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CHARLES JARRETT

THE LOGICAL STRUCTURE OF SPINOZA'S *ETHICS*, PART I

INTRODUCTION

In this paper I will present Part I of Spinoza's *Ethics* as a formalized axiomatic theory. The theory itself will be found in Section III following a discussion of the text from Definition (i) through Proposition (xi) (since considerations of space prohibit a discussion of all thirty-six propositions of Part I).

The formal theory will be presented in a quantified modal logic which contains two necessity operators. The question whether this language is adequate for the representation of Spinoza's metaphysics is a large one, which I touch upon, but do not attempt to settle here.

Two types of reservations might be expressed: first, that the language, with its inference rules, is too strong, in the sense that it contains theses which Spinoza would not (or worse, could not) accept. The 'paradoxes' of material and strict implication might be cited, and the thesis, in the modal system S5, that $MLp \rightarrow Lp$. I do not think that these examples present any difficulty, however, since a rejection of them would, *prima facie*, block a number of inferences which Spinoza needs to make. A more difficult question is whether Spinoza can correctly be represented in a language that has an 'absolute' identity predicate, or whether it should merely have various predicates expressing equivalence relations such as 'is the same substance as' and 'is the same mode as'. This question is bound up with the classical problem of the attributes, which I cannot discuss fully here. Nevertheless, an alternative formalization will be given in a language without identity (see Section IIIB). The philosophical implications of this I leave for another occasion.

The second type of reservation is the worry that a quantified modal logic is insufficient for the expression of certain theses and inferences made by Spinoza. There is little question, I think, that this is in fact the case – if we have in mind the whole of the *Ethics*. For it is clear that some means is needed of expressing propositional attitudes. This can presumably be handled

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by an extension of the language here used, although there is no prior assurance that there is a 'non-deviant' logic underlying, for example, Spinoza's inferences concerning desire and belief. Here, as elsewhere, it seems desirable to posit the 'minimum' (acceptable) logic required, or, to give it a transformational twist, to posit no more 'deep structure' than Spinoza needs. But we need not suppose that there is a unique answer to the question, 'What logic underlies Spinoza's inferences?'

As will be most evident from my treatment of the *Ethics* through Proposition (xi), I have attempted to stay as close as possible to the actual evidence of the text, in determining how Spinoza is to be represented. The major assumption on which I proceed is that Spinoza was serious in attempting to present a consistent axiomatized theory of metaphysics (and of epistemology, psychology, and ethics, derivable from this metaphysics, on the addition of a small number of definitions and axioms). Perhaps the best justification of this (which seems to me obviously true) is simply that Spinoza's *Ethica Ordine Geometrico Demonstrata* is clearly an attempt to set out a philosophical system, or theory, on the model of Euclid's *Elements*. It is, furthermore, the only major philosophical work of the 17th century rationalists which undertakes, and at least in form achieves, the frequently expressed goal of extending the mathematical 'method' in this direction.

The history of the interpretation of Spinoza, and more specifically, the very great divergence among interpretations, inclines one to suspect that no interpreter can cast off the biases of his own outlook, in order to give a relatively objective interpretation of Spinoza. Nevertheless, to the suggestion that, like those who have seen Spinoza through Kantian, Hegelian, or Russellian-tinted spectacles, I view him through a monocle of logic, it should be noted that this lens was worn, if not ground, by Spinoza himself. In his words, "Mentis . . . oculi, quibus res videt, observatque, sunt ipsae demonstrationes."[1]

IA. THE DEFINITIONS

Preliminary Note

In this section, Spinoza's definitions will be treated, insofar as it is possible, as notational abbreviations, or 'nominal' definitions. To the extent that they can be so treated, they differ significantly from the axioms (the substantive

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theses) of the theory. Where Spinoza attempts to explain why he gives the definition he does, I regard him as giving an informal elucidation of his motivation, not a justification. (See, for example, E, I, x, s.[2] The explanation of Definition (vi) is here put, quite rightly, in a scholium.) The evidence for supposing that Spinoza in fact intended his definitions to be notational abbreviations, is found primarily in Epistle IX (to De Vries, 1663), when compared with the wording of the initial definitions of the *Ethics*, and in this remark, made by Ludwig Meyer with Spinoza's approval: "Definitiones enim nihil aliud sunt, quàm terminorum, atque nominum, quibus res tractandae designantur, apertissimae explicationes . . ."[3]

Definition (i)

> Per causam sui intelligo id, cujus essentia involvit existentiam, sive id, cujus natura non potest concipi, nisi existens.[4]

Note that the definition is clearly intended as a (universal closure of a) biconditional. For one half (left to right) is used in E, I, vii, d and the other half (right to left) is used in E, I, xxiv, d.

But it is not immediately clear whether the definiendum is to be understood, or represented, as a genuinely relational predicate (a two-place predicate) or as a one-place predicate. On the latter alternative, we have a fused idiom ('is-the-cause-of-itself'). On the former, we have as definiendum, not 'x is the cause of y' but 'x is the cause of x'[5]. The former alternative is required because without it, (a) Spinoza has provided no justification for saying in E, I, xxv, s, that the sense in which God is the cause of himself is the same sense in which he is a cause of all things, and (b) the demonstration of I, vii would be defective, due to equivocation of 'cause'. It is for these reasons that we (and Spinoza) should say that 'cause' as it occurs in I, Def. i is a two-place predicate.

Having taken this alternative, we should note that the form of this definition does not conform to modern standards. A definition of a two-place predicate should have two distinct variables in the definiendum; otherwise it is, for example, not general enough to permit elimination wherever it occurs.[6] So in a formal representation of Spinoza, this 'definition' should be taken as an axiom.[7] It is a substantive, and questionable, thesis.

But there is a second difficulty here. What licenses the insertion of "sive id, cujus natura non potest concipi, nisi existens,"[8] in the latter portion of

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the definition? Are we to suppose that this is equivalent to "id, cujus essentia involvit existentiam,"[9] or not? It seems that Spinoza inserted this, and is justified in doing so, on the basis of I, Axiom vii: "Quicquid, ut non existens, potest concipi, ejus essentia non involvit existentiam."[10] Grammatically, this appears to be a (universal closure of a) conditional, but actually, I think, it is intended as a biconditional.[11] What it states is not merely that (a) if x can be conceived as not existing, then the essence of x does not involve existence, but also, (b) if x cannot be conceived as not existing, then the essence of x does involve existence.[12] Thus if something is *causa sui*, its essence involves existence, and so (by (a)) it cannot be conceived as not existing. A similar argument, using (b), shows that if a thing cannot be conceived as not existing then it is *causa sui*.

What does Spinoza mean by "that whose essence involves existence"?[13] Grammatically it looks as if the essence is supposed to bear a certain relation (involving) to the thing (that is, its existence). But it seems to me that there is good reason for thinking that Spinoza regarded "the essence of x involves existence," as merely another way of saying, "it is necessary that x exist."

The main argument that I have for this interpretation is as follows: E, I, xi, d (the first demonstration) is clearly a *reductio ad absurdum*, where the assumption whose negation is to be proved is: God can be conceived not to exist (or: it is conceivable that God does not exist). Thus "God necessarily exists" (the conclusion) and "It is conceivable that God does not exist," are inconsistent. Why is this so? Because, I think, "It can be conceived that God does not exist," means, "It is possible that God does not exist." And this, of course, *is* inconsistent (in a 'standard' modal system) to "It is necessary that God exists."

On this interpretation, the move made in the second sentence of E, I, xi, d ("Ergo . . .") is licensed because "It is possible that God does not exist," is equivalent to "It is not necessary that God exist." So Spinoza's 'sub-conclusion', that "The essence of God does not involve existence," is simply a variant way of saying, "It is not necessary that God exists." It is a very attractive feature of this interpretation that I, Axiom vii is a theorem of any standard model system, since what it states in the form, "The essence of whatever can be conceived as not existing, does not involve existence," means, "Everything is such that it is possible that it not exist if and only if it is not necessary that it exist."

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It might be objected that there are things besides God that necessarily exist, although only God is *causa sui*, and so only God is such that his essence involves existence. But this objection merely requires that there be two necessity symbols, the stronger of which is used to represent the necessary existence of God, the weaker to represent the necessary existence of other things (for example, the infinite modes). And Spinoza himself held that "things are necessary in two ways," namely, in virtue of their essence, or in virtue of their cause (v. E.I, xxxiii, s.i).[14]

Definition (ii)

> Ea res dicitur in suo genere finita, quae aliâ ejusdem naturae terminari potest. Ex. gr. corpus dicitur finitum, quia aliud semper majus concipimus. Sic cogitatio aliâ cogitatione terminatur. At corpus non terminatur cogitatione, nec cogitatio corpore.[15]

The reason, evidently, that Spinoza in the definition states that something is finite in its kind if and only if it can be limited by another of the same nature, and yet states that a body is said to be finite because we conceive a larger (limiting) one, is because "It is conceivable that phi," is equivalent to, "It is possible that phi." This supports the above interpretation of E, I, ax. vii.

The definition is used by Spinoza in E, I, viii, d and E, I, xxi, d. As we learn from an examination of I, viii, d (see below), for one thing, x to be of the same nature as another, y, is for x to have just those attributes which y has. We may then take the definition to read: for all x, x is finite if and only if (there is a y such that $y \neq x$ & y limits x & for every z,z is an attribute of y if and only if z is an attribute of x). This requires, of course, that the idea that there might be just one finite thing, and nothing else, is untenable. Difficulties about this, and about the notion of limitation as used by Spinoza, I pass by here.

Definition (iii)

> Per substantiam intelligo id, quod in se est, & per se concipitur: hoc est id, cujus conceptus non indiget conceptu alterius rei, à quo formari debeat,[16]

In this definition we meet two of the most important primitives in Spinoza's system – the notions of being in and of being conceived through. Both, evidently, are two-place predicates.

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It should be noted that for x to be conceived through y is the same as for the concept of x to involve (depend on, be in need of) the concept of y. This is strongly suggested by, e.g. E, I Ax. v, which reads in part, "... per se invicem intelligi non possunt, sive conceptus unius alterius conceptum non involvit,"[17] where 'intelligi' surely means the same as 'concipi.'[18]

An important question that arises concerning I, Def. iii is this: how is the second part of the definition related to the first? It seems that what follows "hoc est" is added in order to make it clear that what is conceived through itself is conceived through itself alone (not conceived through another), but on what basis is this claimed? The answer to this seems to be that, just as I, Ax. vii licenses the additional remark, "sive id, cujus natura non potest concipi, nisi existens," in I, Def. i, I, Ax. ii licenses the addition in Definition (iii) of "hoc est id, cujus conceptus non indiget conceptu alterius rei, à quo formari debeat."

Although Axiom (ii) appears to state a conditional, it is actually a biconditional. (The same is true of Axioms (iv), (v), (vi), and (vii).) It reads, "Id, quod per aliud non potest concipi, per se concipi debet." ("That which cannot be conceived through another, must be conceived through itself.") This seems, *prima facie*, to mean that (for all x) if there is nothing distinct from x through which x is conceived, then x is conceived through itself.[19] As far as I know, however, the axiom is not used anywhere in the *Ethics* in the above form. Its converse, however, seems to be used implicitly in II, vi, d, where I, x, which states that each attribute must be conceived through itself, is cited in justification for saying that each attribute is conceived through itself *and without another.*[20] Hence I, Ax. ii should in my view be regarded as a biconditional, and this justifies the equation of "x is conceived through itself" with "x is not conceived through another" in I, Def. iii.

But even if we grant this equation, there is a further question: did Spinoza intend to commit himself in this definition to the claim that being conceived through itself is a sufficient condition for being a substance? It is difficult to see how we can decide this with much confidence. What is more important, perhaps, is the question whether Spinoza is in fact committed to the view that being conceived through itself is sufficient for being a substance. My view is that he is,[21] but of course this is disputable. For if this is so, then (by I, x) each attribute is a substance (and, presumably, the same substance as every 'other' attribute (by I, xiv)).

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Definition (iv)

> Per attributum intelligo id, quod intellectus de substantiâ percipit, tanquam ejusdem essentiam constituens.[22]

This definition is notoriously unclear.

First, is the intellect 'referred' to here understood by Spinoza to be any intellect, or only an infinite one? Haserot[23] has argued that it must be an infinite intellect, because there are an infinity of attributes, and a finite intellect can only perceive a finite number of them. This does not establish the conclusion, however, since while there may be no finite intellect that perceives an infinity of attributes, each of those attributes might be such that some finite intellect perceives it. That is, Haserot has not shown by his argument that there is something wrong with this (partial) representation: For all x, x is an attribute if and only if there is a y such that y is a finite intellect and y perceives x as constituting the essence of some substance. This does not require that there be some one finite intellect that perceives all the attributes. My intellect may only perceive two, but if α is neither of these, it may well be that some other intellect perceives α as constituting the essence of some substance. Whether this is so or not, according to Spinoza, I shall not attempt to argue (although I think it is). For the question appears to be settled by a remark that Haserot quotes:

> Hîc, antequam ulteriùs pergamus, revocandum nobis in memoriam est id, quod suprà ostendimus; nempe, quòd quicquid ab infinito intellectu percipi potest, tanquam substantiae essentiam constituens, id omne, ad unicam tantùm substantiam pertinet . . .[24]

This is not conclusive, but it is the best evidence we have.

The reference to an intellect in Definition (iv) appears to be eliminable, however, if each attribute really does constitute the essence of a substance: the definiens may then be represented simply as "that which constitutes the essence of some substance." Is this the case? The evidence of the text makes it relatively clear, I think, that in Spinoza's view it is. In E, I, xx, d Spinoza argues that since the same things (the attributes) that constitute the essence of God constitute (at the same time) his existence, the essence and existence of God are "one and the same" ("unum et idem"). Now whatever exactly this means, it is clear that Spinoza would never have given this demonstration if

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he had thought one of the premises to be false, nor, of course, would the conclusion be established, if one were false.

But what is it to constitute the essence of something? This phrase is defined in E, II, Def. ii as follows.[25]

> Ad essentiam alicujus rei id pertinere dico, quo dato res necessariò ponitur, & quo sublato res necessariò tollitur; vel id, sine quo res, & vice versa quod sine re nec esse, nec concipi potest.[26]

Does Spinoza mean the same by "x is in and conceived through y" as by "x can neither be nor be conceived without y"? If so, the definition of "x constitutes the essence of y" requires only the two primitives with which 'substance' is defined. And then we may understand the definition to assert this:

> x constitutes the essence of y if and only if x is in y and x is conceived through y and y is in x and y is conceived through x.

A comparison of the second sentence of I, xv, d with I, Def. v supports this view. There Spinoza switches from "is in and conceived through" to "can neither be nor be conceived without" and back again.[27]

But if this is correct, then we know almost immediately that being in and being conceived through are not transitive relations, or else something is very wrong with the definition. For if these relations are transitive, then if something constitutes the essence of a mode, then that mode is in itself and conceived through itself. (This is clear; for if a constitutes the essence of b, then (by the above definition) a is in b and b is in a, and so, given transitivity, a is in a and b is in b. Hence b is in itself. A similar argument establishes that b is conceived through itself.)

Intuitively, being in is a transitive relation. The general idea expressed by saying that x is in y, is that x is ontologically dependent on y, or that x cannot exist unless y, does. And, it seems, no matter what a, b, and c are, if a cannot exist unless b does, and b cannot exist unless c does, then a cannot exist unless c does. Furthermore, understanding by "a cannot exist unless b does," "it is necessary that if a exists, then b exists," (and so on), this is provable in the modal system T, which is 'contained in' S5 (and S4).[28]

Although this is so, we can easily see that "x is in y" cannot be defined as suggested above, for from the definition, $(x)(y)(Ixy \equiv L((\exists v)$-

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$(v = x) \rightarrow (\exists v)(v = y)))$, it follows that $(x)Ixx$ (where 'Ixy' is to be read 'x is in y'). But Spinoza cannot accept this.[29] Interestingly enough, a very plausible definition does not require that 'x is in y' is transitive.[30] Moreover, the only type of case in which transitivity would not hold is one in which a is in b, and b is in c, but $a = c$ and $a \neq b$ – that is, in the type of case that would otherwise make trouble for the above definition.

Now since an attribute is defined as constituting the essence of a substance, and the above definition of 'constitutes the essence of' is acceptable, we may represent the definition of an attribute as follows:

> x is an attribute if and only if there is a y such that y is in and conceived through y and x is in and conceived through y and y is in and conceived through x.

Here, all defined terms (including 'substance') have been eliminated from the definiens. From this definition, in conjunction with other theorems (such as Def. iii and Ax. ii), we can derive a number of conclusions accepted by Spinoza, that might otherwise seem difficult to obtain – most notably I, x, and the claim made in I, iv, d that substances and their attributes are the same. (Note: for the connection between being an attribute and being an attribute *of* a certain thing, see my discussion of Proposition (iv) in Section II below.)

Definition (v)

> Per modum intelligo substantiae affectiones, sive id, quod in alio est, per quod etiam concipitur.[31]

Thus like that of a substance (and *causa sui*), the definition of a mode consists grammatically of two parts. It is somewhat tempting to suppose that the 'alio' of the definition must be a substance, and so to suppose that something, x, is a mode of a thing just in case the thing is a substance and x is in it and conceived through it. This amounts to:

(i) for all x and for all y, x is a mode of y if and only if y is a substance and $x \neq y$ and x is in y and x is conceived through y.

In fact on several occasions Spinoza argues as if this were true. It is suggested by the second 'aliter' demonstration of I, xi:

(a) Atqui nos, vel in nobis, vel in alio, quod necessariò existit, existimus (*vid. Axiom. 1. & Prop. 7.*).[32]

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and by E, V, xxviii, d:

(b) Nam quicquid clarè, et distinctè intelligimus, id vel per se, vel per aliud, quod per se concipitur, intelligimus . . .[33]

And its truth seems to be required by the remark found in I, xv, d, that:

(c) Modi autem (*per Defin.* 5.) sine substantiâ nec esse, nec concipi, possunt; quare hi in solâ divinâ naturâ esse, & per ipsam solam concipi possunt.[34]

and again, in I, xxiii, d:

(d) Modus enim in alio est, per quod concipi debet (*per Defin.* 5.), hoc est (*per Prop.* 15.) in solo Deo est, & per solum Deum concipi potest.[35]

But if (i) were correct, there could not be a mode which is in and conceived through another mode, unless that other mode is a substance. For from this definition (as is evident) it follows that if x is a mode of y, then y is a substance.

But Spinoza certainly does not hold that there could exist something that is both a mode and a substance; this may be established in a number of ways, one of which is this: assume that a is a substance; then, by Definition (iii) and Axiom (ii), there is nothing distinct from a through which a is conceived. But however Definition (v) is construed, it requires at least that if something is a mode, then there is *something* distinct from it through which it is conceived. Hence a is not a mode. And so, for all x, if x is a substance then x is not a mode.

That this is in accord with Spinoza's intentions can be shown by considering E, I, xxiv and its demonstration. It is there claimed that "The essence of things produced by God does not involve existence" ("Rerum à Deo productarum essentia non involvit existentiam"), where the "things produced by God" designates modes. That is, in short, no mode is *causa sui*, although every substance is *causa sui* (by I, vii).

However, contradicting the conjunction of (i) and the thesis that no mode is a substance, is the view that there are modes of modes, since there are affects which are defined in this way:

> Per affectum intelligo Corporis affectiones, quibus ipsius Corporis agendi potentia augetur, vel minuitur, juvatur, vel coërcetur, & simul harum affectionum ideas,[36]

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where a *corpus* is itself a mode of substance (v. E, II, Def. i), and *affectiones* are *modi* (by E, I, Def. v).

Hence the definition of a mode should be such that there may be modes of modes (where no mode is a substance), and yet every mode is a mode of some substance. Now we cannot very well give *two* definitions of one predicate, which is what Spinoza here (and on other occasions, e.g. in E, I, Def. vi) appears to want, but we can introduce a one-place predicate, 'is a mode', which is defined in terms of the *different* two-place predicate, 'is a mode of'. (Spinoza uses 'modus' both ways, much as we use familial terms like 'uncle', 'parent', 'sister', etc.) We may now capture the two requirements on the definition of 'mode' in this way:

(ii) A mode of something is whatever is in and conceived through that (distinct) thing.

(iii) A mode is a mode of a substance.

More explicitly this comes to:

(ii′) For all x and for all y, x is a mode of y if and only if $x \neq y$ and x is in y and x is conceived through y.

(iii′) For all x, x is a mode if and only if there is a substance, y, such that x is a mode of y.

From these definitions it follows that every mode is a mode of something, but it does not follow that every mode of something is a mode. Since this is desirable (just as someone is a father just in case he is a father of someone), let us state as an added axiom:

(iv) For all x, if there is a y such that $y \neq x$ and x is in y and x is conceived through y, then x is a mode.

Now (i) (see above), whose truth was suggested by (a) and (b) above, and required by (c) and (d), should be rejected, since it is incompatible with the view that there are modes of modes (and no mode is a substance). But the inferences made in (a) and (b) are licensed by (ii)-(iv) along with some suppressed premises. And the only difficulty with (c) and (d) is the gratuitous insertion of (some form of) 'solus.'

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Definition (vi)

> Per Deum intelligo ens absolutè infinitum, hoc est, substantiam constantem infinitis attributis, quorum unumquodque aeternam, & infinitam essentiam exprimit.[37]

It is tempting to suppose that the definition amounts to this: for all x, x = God if and only if x is a substance and x has an infinity of attributes. The problem here, however, is that we would not then be able to establish I, xiv – in Spinoza's manner at least. For the demonstration of that proposition requires that God have all attributes. Although there is some evidence that Spinoza habitually confused 'infinite' and 'all', it seems relatively clear that he did not do so here (in I, xiv, d). For he explained "ens absolutè infinitum" as follows:

> Dico absolutè infinitum, non autem in suo genere; quicquid enim in suo genere tantùm infinitum est, infinita de eo attributa negare possumus; quod autem absolutè infinitum est, ad ejus essentiam pertinet, quicquid essentiam exprimit, & negationem nullam involvit.[38]

This, on my interpretation, is not inserted as a denial of the view that God *is* infinite in kind (he really is infinite 'with respect to' extension, etc.); what is denied is that he is *merely* infinite 'in suo genere'. But this passage ensures that God have not merely an infinity of attributes, but all attributes. Nothing that "expresses essence and involves no negation," can be denied to be an attribute of God. And Spinoza is careful in I, xiv, d to note that God has all attributes (since he is absolutely infinite in the sense explained above). Hence the definition should at least capture the idea that God is a substance with *all* attributes. And on one interpretation this is all that the definition should capture, if (a) Spinoza's theory is to be consistent and (b) there is an identity predicate in the language (*vide* Section IIIB). Thus, taking 'God' as an individual constant, the definition could be represented as follows: (x) $(x$ = God if and only if Sx & (z) $(Az \rightarrow Azx)$, where the predicates are to be read in accordance with the lexicon of Section III. (Note that, if we like, we can dispense with individual constants altogether, and represent 'God' by means of a predicate. On this, see my discussion of Proposition (xi) in Section II.)

If, on the other hand, we do want to capture the idea that there are an infinity of attributes,[39] we can add this to the above definition. This can be

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represented quite easily if there is a relation between attributes which is irreflexive, transitive, and such that for all x, if x is an attribute then there is an attribute, y, such that Rxy. (We must also know that there is an attribute.) For if these conditions are met, then there must be an infinity of attributes. But since, so far as I know, there is no such (non-extensional) relation, another alternative is called for – namely, we may put the attributes into one-one correspondence with the positive integers.

Definition (vii)

> Ea res libera dicitur, quae ex solâ suae naturae necessitate existit, & à se solâ ad agendum determinatur: Necessaria autem, vel potiùs coacta, quae ab alio determinatur ad existendum, & operandum certâ, ac determinatâ ratione.[40]

The primary use to which the first part of this appears to put is in I, xvii, c. ii, which claims that God alone is free (or, as Spinoza states, a free cause). Although Spinoza gives no definition of, nor axiom concerning, things that are 'determined' it is plausible to suppose that to be determined by a thing is to be caused by it. Hence the definition may be represented in this way:

(a) $(x)\,(Bx \equiv (Kxx\ \&\ -(\exists y)(y \neq x\ \&\ Kyx)))$

(b) $(x)\,(Nx \equiv (\exists y)(y \neq x\ \&\ Kyx))$

(where 'Kxy' is to be read as 'x is a cause of y', 'Bx' as 'x is free', and 'Nx' as 'x is necessary').

Although Spinoza generally uses expressions defined in the first part of the *Ethics* in accordance with his definitions, an exception is found with respect to 'necessary.' For from his definition, in conjunction with the thesis that God is *the* cause of himself, it follows that God is not necessary. He is certainly not, in Spinoza's view, determined to existence and action by *another*. Spinoza, however, in I, xxix maintains that all things are necessary[41], and in I, xxxiii, s.i, he explains that things are necessary in two ways – in virtue of their essence or in virtue of their cause. (And it is clear that he regards God as necessary by reason of his essence.) Where Spinoza does state, or imply, that God is necessary, we must hold that this means that God necessarily exists, not that God is determined to existence and action by another. The fact is, it seems, that Spinoza does not always strictly adhere to

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what is, prima facie, his own distinction between necessity as an operator ('it is necessary that', or 'necessarily') and necessity as a predicate ('is necessary').

Definition (viii)

> Per aeternitatem intelligo ipsam existentiam, quatenus ex solâ rei aeternae definitione necessariò sequi concipitur.[42]

This definition might be thought to be both circular and ambiguous – circular because 'aeternae' is used in the definiens of 'aeternitatem', and ambiguous because it is unclear whether an eternal thing's existence must follow from its *own* definition, or whether it may follow from something else, whose existence follows from *its* definition. In the former case, only God is eternal (or 'has eternity'), while in the latter, everything (*apparently*) is eternal.

It seems to me, however, that the apparent circularity comes about because of Spinoza's attempt to disambiguate the definition; eternity is the existence of a thing, insofar as it is conceived (correctly) to follow from the definition of the thing itself. But if this is so, then strictly speaking only God (with his attributes) is eternal, according to Spinoza – in spite of the loose usage in I, xxi.

IB. THE AXIOMS

The axioms of Part I of the *Ethics* are in general grammatically misleading. Axioms ii, iv, v, vi, and vii, although they appear to be conditional statements, are actually biconditional.

Axiom (i)

> Omnia, quae sunt, vel in se, vel in alio sunt.[43]

This axiom is not, *pace* Wolfson, a trivial truth in any first order predicate calculus (to the effect that everything is such that it is not in another or else it is in another). But it is a logical truth in a 'standard' quantified modal logic, when 'x is in y' is appropriately defined.[44]

Axiom (ii)

> Id, quod per aliud non potest concipi, per se concipi debet.[45]

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This seems to assert that if a thing is not conceived through another, then it is conceived through itself. But, for reasons advanced above, it is not conditional, but biconditional in form. (Axiom (i) *might* be regarded similarly, but the grammar suggests otherwise.)

Axiom (iii)

> Ex datâ causâ determinatâ necessariò sequitur effectus, & contrà, si nulla detur determinata causa, impossibile est, ut effectus sequatur.[46]

This maintains that cause and effect are connected necessarily, and may be represented as,

$$(x)(y)[Kyx \rightarrow N((\exists v)(v = y) \equiv (\exists v)(v = x))]$$

It has been held that Axiom (iii) is "the doctrine of universal causation," but for arguments against this, see Note 69.

Axiom (iv)

> Effectûs cognitio à cognitione causae dependet, & eandem involvit.[47]

On the supposition, argued above and in Note 18, that for the knowledge of x to involve the knowledge of y is for x to be conceived through y, this axiom may be represented as follows:

$$(x)(y)(Kxy \equiv Cyx)$$

(where 'Kxy' is to be read 'x is a cause of y', and 'Cyx' is read as 'y is conceived through x'). The axiom might in fact be taken as a definition of 'cause'. Note that the axiom is used as a biconditional. For in I, iii, d one half of the biconditional is used, and in I, xxv, d the other half is used.

Axiom (v)

> Quae nihil commune cum se invicem habent, etiam per se invicem intelligi non possunt, sive conceptus unius alterius conceptum non involvit.[48]

This is used primarily in I, iii, d. I, ii, d, however, appears to require that things that cannot be understood through each other, have nothing in common. If E, I, v is taken as a biconditional then I, ii, d is valid. The main difficulty in understanding the axiom is in determining what sorts of things count as being common to others. One might argue, e.g. that since a mind and a body do have something in common, viz. they are both modes of substance, they are

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both finite, etc., they might causally interact (contra III, ii). But it is clear that the sorts of things Spinoza intends as being common to others, exclude such things. But on what general grounds these are to be excluded, we have little or no evidence. Since the internal structure of 'is common to' is irrelevant to Spinoza's inferences in Part I, I represent the axiom as

$$(x)(y)(-(\exists z)(Czxy \equiv (-Cxy \ \& \ -Cyx)))$$

Axiom (vi)

> Idea vera debet cum suo ideato convenire.[49]

This, as I think Mark has shown, is a biconditional (to put it very loosely), and may be understood to assert: for all x, if x is an idea, then (x is true if and only if x agrees with its object). One half of the biconditional is used in I, xxx, d (and this half is suggested by the grammar of I, Ax. vi), while the other is used in II, xxxii, d (and, incidentally I, v, d).

Axiom (vii)

This has been quoted and discussed above. In my view, it is a theorem of any standard modal system, amounting, really, to

$$(x)(M - (\exists y)(y = x) \equiv -L(\exists y)(y = x)))$$

where 'M' is read as 'it is possible that', and 'L' is read as 'it is necessary that'.

In Section III will be found a symbolic representation of Spinoza's axioms and definitions.

II. PROPOSITIONS (i)–(xi)

Proposition (i)

> Substantia prior est naturâ suis affectionibus.[50]

Spinoza held that this was evident from Definitions (iii) and (v). There seem to be two possibilities as to what Proposition (i) means. First, it might mean that every mode of a substance is in that substance, while the substance is in itself, or in other words,

(i) for all x and for all y, if x is a mode of y, and y is a substance, then x is in y and y is in y.

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This follows from Definitions (3) and (5a) of Section III below. Secondly, this might mean that every mode is such that there is a substance such that the mode is in the substance and the substance is in itself, or,

(ia) for all x, there is a y such that if x is a mode, then y is a substance and x is in y and y is in y.

This follows from definitions (3), (5a), and (5b) of Section III.

It might be thought that in the consequent of (i) and (ia) it should be added that x is conceived through y and y is conceived through y. Indeed, this is suggested by a passage in Ep. IV (to Oldenburg) where, after defining substance and "modificationem . . . sive Accidens", Spinoza wrote,

> Hinc clarè constat Primò, quod Substantia sit prior naturâ suis Accidentibus. Nam haec sine illâ nec existere, nec concipi possunt.[51]

It seems, however, that in I, i Spinoza is using 'natura' in contrast to 'cognitione.' Thus, although it is true that, ". . . naturam divinam . . . tam cognitione, quàm naturâ prior est ((omnibus))," [52] all that is actually stated by I, i, is that substance is 'naturâ' prior to its modes, not also 'cognitione.' Hence (i) or (ia) captures what the proposition actually claims.

The only use to which E, I, i is put in the *Ethics* (as far as I know) is in the demonstration of E, I, v. Its use there, however, is by no means clear, and it is eliminable (as should be expected) in favor of the definitions of substance and mode. The grammatical form of E, I, i would be quite misleading if (ia) were correct, and so (although I do not regard this as conclusive) it seems more probable that (i) is what Spinoza meant.

Proposition (ii)

> Duae substantiae, diversa attributa habentes, nihil inter se commune habent.[53]

The demonstration is puzzling for two reasons. First, although the proposition to be proved is concerned with two substances *having different attributes*, the proof makes no mention of attributes, but only of substances. Secondly, it is not immediately evident what the connection is between things having concepts that do not involve each other, and things having nothing in common. I suggest that Proposition (ii) should be held to state that two distinct substances have nothing in common, since this is what is

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proved by the demonstration. It is in fact true, however, that according to Spinoza, two substances must have different attributes. (This is also provable.) The second difficulty can be solved by the supposition that there is a suppressed premise. This is clearly I, Ax. v, if regarded as stating an equivalence, or else it is the converse of Axiom (v), if regarded as saying, 'if x and y have nothing in common, then x cannot be conceived through y and y cannot be conceived through x.' The proof from (D3), (A2) and (A5), with I, Ax. v regarded as a biconditional in Section III, is straightforward.

Proposition (iii)

> Quae res nihil commune inter se habent, earum una alterius causa esse non potest.[54]

This presents no problems. It may be represented as,

$$(x)(y)(-(\exists z)Czxy \rightarrow (-Kxy \ \& \ -Kyx))),$$

where the predicates are to be read as in the lexicon of Section III. As Spinoza claims, it follows from Axioms iv and v. Note that, for the demonstration to work, 'x is conceived through y' (that is 'the concept of x involves the concept of y') must be an alternate way of saying, 'the knowledge of x involves (depends on) the knowledge of y.'

Propositions (iv) and (v)

> Duae, aut plures res distinctae, vel inter se distinguuntur ex diversitate attributorum substantiarum, vel ex diversitate earundem affectionum.[55]

A first attempt at formalizing this might go as follows:

(iv) For all x and for all y, if $x \neq y$, then either (there is a z and a z' such that z is an attribute of x and not of y. and z' is an attribute of y and not of x) or (there is a w and a w' such that w is a mode of x and not of y and w' is a mode of y and not of x).

This at least seems to capture what one might mean by saying that distinct things are distinguished either by a difference of attributes of substances or by a difference of modes. It is, of course, reminiscent of a view commonly attributed to Leibniz.

A formidable difficulty with such a formulation, however, is that the strategy that Spinoza employs in proving Proposition (v) is to argue that

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satisfaction of the second disjunct stated in I, iv, is never sufficient to show that x and y are distinct, if they are substances. If (iv) were correct, then, Spinoza's argument for I, v would disbar us from holding that if x and y are substances and there is a mode of x which is not a mode of y (or vice versa), then x is distinct from y. But then

$$(\exists x)(\exists y)(\exists z)(Mzx \ \& \ -Mzy) \ \& \ x = y)$$

would be consistent.

This problem does not arise, if we attempt to understand what Spinoza means in Propositions iv and v by comparing them with their historical antecedents. In II, vi of the *Cogitata Metaphysica*, Spinoza deduced, or purported to deduce, Descartes' three types of distinctions from the claim that only substances and their modes exist; and in the first appendix to the *Short Treatise*, he stated as an axiom that "Things which are different are distinguished either *realiter* or *modaliter*," which was used to prove the proposition that "To no substance that exists can one and the same attribute be ascribed that is ascribed to another; or (which is the same) in Nature there cannot be two substances, unless they are distinguished *realiter*."[56]

The general lines along which he is reasoning in the *Ethics* are now seen to be somewhat different from what they must be if I, iv is represented as above. Proposition (iv) is an expression of the view that distinct things are either really or modally distinct, and this is supposed to follow, as in the *Cogitata Metaphysica*, from the claim that there are only substances and modes. Descartes' *distinctio rationis* has been dropped because Spinoza thinks that substances are (in some sense) the same as their attributes (by I, Def. iv, he says in I, iv, d.).

An informal exposition for I, iv, which in my opinion is correct, but not complete, would go as follows; there are only two sorts of things, viz. by I, Ax (1), Definitions (3), (5a), (5b), and certain suppressed premises,[57] substances and modes. Therefore, if x is distinct from y, then either they are both substances, or else they are both modes, or else one is a mode and the other a substance. (These alternatives are exclusive of each other, nothing is both a substance and a mode.) But a real distinction, for Spinoza as well as for Descartes, is one that obtains between two substances,[58], while a modal distinction is one that obtains between a substance and its modes or between two modes of the same substance. Hence distinct things, being either two

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substances or two modes or a substance and a mode, are either really or modally distinct.

If this exposition were complete, however, then we might as well represent I, iv as,

(iva) For all x and for all y, if $x \neq y$, then either (x is a substance and y is a substance) or (x is a mode and y is a mode) or (x is a substance and y is a mode) or (x is a mode and y is a substance.)

But this representation neither accounts for the grammar of I, iv (unlike (iv)), nor does it explain the concluding line of the proof, viz.,

> Nihil ergo extra intellectum datur, per quod plures res distingui inter se possunt praeter substantias, sive quod idem est (*per Defin.* 4) earum attributa, earumque affectiones. Q.E.D. [59]

It also makes the proof of (v), and with it (v) itself, more trivial than would otherwise appear.

A correct representation of I, iv would in my view be this:

(ivb) For all x and for all y, if $x \neq y$, then there is a z and a z' such that (z is an attribute of x and z' is an attribute of y and $z \neq z'$) or (z is an attribute of x and $z = x$ and y is a mode) or (z' is an attribute of y and $z' = y$ and x is a mode) or (x is a mode and y is a mode).

This exceedingly complex version of E, I, iv has the following four advantages: (a) it captures, like (i), the grammar of I, iv (at least in part); (b) it avoids, unlike (i), a contradiction in the attempt to use it to establish I, v; (c) it is derivable from statements made by Spinoza, given two suppressed premises, one of which is stated by him, the other of which is extremely plausible; (d) it may be used in conjunction with other premises which are acceptable to Spinoza in a derivation of I, v.

With regard to (c), we find in E, I, x, s that according to Spinoza, "... nihil in naturâ clarius, quàm quòd unumquodque ens sub aliquo attributo debeat concipi,"[60] i.e. that everything is such that there is an attribute under which it is conceived. On the supposition that to be conceived under is the same as to be conceived through, we may say,

(A) For all x, there is a y such that y is an attribute and x is conceived through y.

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But we also know that if x is a substance, then there is nothing distinct from it through which it is conceived (by I, Def. iii and Ax. ii). Hence if y is an attribute and x is a substance which is conceived through y, then $y = x$. On the further supposition that,

(B) For all x and for all y, x is an attribute of y if and only if x is an attribute and y is conceived through x,

the truth of (ivb), that is, I, iv, follows.

With regard to (d), a natural representation of I, v, i.e. "In rerum naturâ non possunt dari duae, aut plures substantiae ejusdem naturae, sive attributi,"[61] would be

(v) For all x and for all y, if x is a substance and y is a substance and $x \neq y$, then there is no z such that z is an attribute of x and z is an attribute of y.

This follows from I, iv, Def. iii, Ax. ii, (B) above, and the derived conclusion that nothing is both a substance and a mode. But it should be noted that I, v follows much more easily from I, Def. iii, Ax. ii, and (B) above alone. That is, on my view, I, iv, when properly understood, yields I, v when conjoined with premises which by themselves yield I, v.

We should further note that I, v is what Spinoza is most interested in establishing, and I, iv is conceived merely as a means to it; for I, iv is used only once, in establishing I, v, while v is used twice in I, vii, d and once each in I, xii, d, xiii, d, and xiv, d. Its importance is also illustrated by Spinoza's attempt to re-prove it in I, viii, s. ii. Furthermore, I, v can be established by taking as premises, I, ii, and the apparently obvious truth that if two things (no matter what they are) have the same attribute, then they have something in common.

Proposition (vi)

Una substantia non potest produci ab aliâ substantiâ.[62]

This, as Wolfson has noted,[63] is concerned to some extent with denying the view that God could be something 'outside the world' which produced it. This, however, is really more the concern of I, xviii.[64] At any rate I, vi is without doubt concerned with any two substances at all. The proof from I, ii and iii, is straightforward.

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The first proof of the corollary ("Hinc sequitur substantiam ab alio produci non posse") takes it for granted that a mode could not produce a substance, but the second is valid as it stands. In fact the second may be viewed as a part of the first, not 'aliter', filling up the hole just noted. A mode could not produce a substance (but then neither could anything distinct from the substance) because the substance produced would have to be understood (conceived) through its cause; hence, if the cause *were* distinct from it, it would not be a substance (by definition). This is really the short way (and a *reductio*, so not so helpful psychologically) of proving not only the corollary, but the proposition as well. (The proposition follows from, and is a special case of, the corollary.)

Proposition (vii)

> Ad naturam substantiae pertinet existere.[65]

I, vii is the first proposition of the *Ethics* that seems to *require* modal indicators. For while (various forms of) 'posse' and 'debere' are used in stating E, I, iii; v, vi, and vi, c, they are quite plausibly interpreted as having only rhetorical force, just as the use of 'debet' has in the restatement, or use, of E, I, Def. iii in I, ii, d. Thus, I, iii, which states that things having nothing in common *cannot* be a cause of each other, is based on Axioms (iv) and (v), where (iv) makes no use of modal indicators, and (v) equates "they cannot be understood through each other," with "the concept of the one *does not* involve the concept of the other" (my emphasis). And the demonstration of I, v begins, "Si darentur plures distinctae, *deberent* inter se *distingui*, vel ex diversitate attributorum, vel ex diversitate affectionum (*per Prop. praeced.*),"[66] where the preceding proposition states merely, "Duae, aut plures res distinctae, vel inter se *distinguunter* ex diversitate attributorum substantiarum, vel ex diversitate earundem affectionum."[67] Again, the use of a modal indicator in the last line of I, iv, d is fairly clearly of the 'inference-making type.' Similar remarks can be made about I, vi and I, vi, c.

One could represent the proposition as 'Every substance is the cause of itself,' which follows from I, vi, c and I, Def. iii in conjunction with I, Ax. iv (see below). So we might consider dropping I, Def. i and representing such locutions as 'the essence of x involves (necessary) existence,' and 'it pertains to the nature of x to exist,' as 'x is the cause of x.'

This suggestion is only attractive, it seems to me, if it allows us to

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represent Spinoza's thought (and the ontological argument) adequately without the use of modal logic. I shall not here try to show either that this can or cannot be done. For a first attempt at representing his thought should *prima facie* make use of expressions that indicate modality. Similarly, if the validity of the ontological argument requires the use of 'necessarily' (and/or 'possibly'), as it seems, then so does a representation of I, vii (cf. I, vii and I, xi, d (the first proof)).

The inference made in the demonstration from "substance cannot be produced by anything else," (which is I, vi, c) to "every substance is the cause of itself" requires a suppressed premise. It seems that Spinoza is assuming either that every substance has a cause, or that everything does. The latter is stated in the second scholium to I, viii,[68] but it is provable given I, Ax. ii and Ax. iv (both taken as biconditionals). Of the axioms, (iii) perhaps comes closest, but is manifestly, and significantly, different.[69] Furthermore, since every substance is conceived through itself (by I, Def. iii), every substance is *a* cause of itself (by I, Ax. iv). Hence (by I, vi, c) every substance is *the* cause of itself.

The argument may be summarized as follows, then: no substance has something distinct from it as a cause (I, vi, c); but every substance is a cause of itself (by I, Def. iii and Ax. iv). Hence every substance is *the* cause of itself. So, by I, Def. i, every substance necessarily exists.

The account of E, I, vii, d given by Wolfson is quite different from the above, primarily because, according to him, to be *causa sui* is to have no cause.[70]

> The essence of substance must involve existence, he argues, because substance has no cause, for "there is nothing by which substance can be produced."[71]

Wolfson does not cite a reference for the above quote but there is little question that he would have cited E, I, vi, c. For according to him,

> The corollary begins with the statement, "Hence it follows that there is nothing by which substance can be produced" ("Hinc sequitur substantiam ab alio produci non posse"), and ends with a similar statement, "Therefore absolutely there is nothing by which substance can be produced" ("Ergo substantia absolutè ab alio produci non potest")[72]

Wolfson here gives the White-Stirling translation, which fails to bring out the

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force of 'alio'; preserving their syntax, the first passage in question should read, "Hence it follows that there is no other thing by which substance can be produced," but better yet, I think, the translation should be, "Hence it follows that a substance cannot be produced by another thing." The second passage in question should similarly be translated. Hence there is no support in E, I, vi, c (nor for that matter in the *Ethics*) for Wolfson's interpretation.

There are passages in Spinoza's works that state or imply that substance has no cause, however. For example in the TDIE we find these three:

> ... si res sit in se, sive, ut vulgò dicitur, causa sui, tum per solam suam essentiam debebit intelligi; si verò res non sit in se, sed requirat causam, ut existat, tum per proximam suam causam debet intelligi:[73]
>
> Definitiionis verò rei increatae haec sunt requisita. I. Ut omnem causam secludat, hoc est, objectum nullo alio praeter suum esse egeat ad sui explicationem.[74]
>
> principii ... quod causam non habet, & per se et in se cognoscitur.[75]

And in Ep. II, we find:

> Secundò, substantiam non posse produci; sed quòd sit de ipsius essentiâ existere.[76]

But these passages, it should be noted, are not reproduced in the *Ethics*, and contradict what is said there and elsewhere. For in E, I, viii, s. ii, it is said that,

> III. Notandum, dari necessariò uniuscujusque rei existentis certam aliquam causam, propter quam existit. IV. Denique notandum, hanc causam, propter quam aliqua res existit, vel debere contineri in ipsâ naturâ, & definitione rei existentis (*nimirùm quòd ad ipsius naturam pertinet existere*), vel debere extra ipsam dari.[77]

And again, in E, I, xi 'Aliter' (the first), it is said that,

> Cujuscunque rei assignari debet causa, seu ratio, tam cur existit, quàm cur non existit ... Haec verò ratio, seu causa, vel in naturâ rei contineri debet, vel extra ipsam.[78]

Thus in the *Ethics* (and elsewhere), Spinoza distinguishes internal from external causes, and rather than deny that substance has a cause, he claims that it has an internal one.

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Furthermore, since I, Ax. iv is a biconditional, if it is denied that God, or any substance, has a cause, then God is not conceived through anything, and hence he is not conceived through himself. But Spinoza's view is that God, and every substance, is conceived through itself, by definition. This argument will presumably carry no weight with Wolfson, however, since, according to him,

> . . . to be conceived through itself is really a negation. It does not mean anything positively. All it means is that it cannot be conceived through anything else. This is the significance of Axiom II . . . The implication therefore is that Spinoza's substance is inconceivable, and its essence undefinable and hence unknowable.[79]

In a footnote to the above passage, however, we are referred to page 142 of *The Philosophy of Spinoza* (vol. I), where we find,

> The God or substance of Spinoza . . . is unknowable in His essence. He may indeed, in Spinoza's view, be immediately perceived as a clear and distinct idea, but He is not subject to knowledge that defines its object in terms broader and more general.

Now aside from the fact that this conflicts with E, II, xlvii, Wolfson here seems to assume just what Spinoza denies, namely that to have knowledge of the essence of something, one must be able to define it "in terms broader and more general," i.e. in terms of genus and species. But it is the denial of this that forms the basis for one of Spinoza's criticisms of those philosophers who "seek to excuse their ignorance in Theology."[80]

Thus Wolfson's view that "is the cause of itself" means "has no cause," and hence that no substance has a cause, seems quite untenable, in spite of the support found in the TDIE and Ep. II. The issue is in my opinion conclusively settled by the following:

> From all this, then it follows clearly that we can prove both *a priori* and *a posteriori* that God exists. Better, indeed, *a priori*. For things which are proved in the latter way (*a posteriori*) must be proved through their external causes . . . God, however, who is the first cause of all things, and also the cause of himself (*causa sui*), makes himself known through himself. Hence one need not attach much importance to the saying of Thomas Aquinas, namely that God could not be proved *a priori* because he, forsooth, has no cause.[81]

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Proposition (viii)

> Omnis substantia est necessariò infinita.[82]

At least two difficulties arise concerning the demonstration of this. Both arise from the fourth sentence:

> Name (*per Defin.* 2) deberet terminari ab aliâ ejusdem naturae, quae etiam necessariò deberet existere (*per Prop.* 7); adeóquae darentur duae substantiae ejusdem attributi, quod est absurdum (*per Prop.* 5.).[83]

The first is that I, Def. ii states that something is finite (*in suo genere*) if and only if it *can* ('potest') be limited by another of the same nature ('naturae'), whereas it is used here as if it said that something is finite if and only if it *must* be limited by another of the same nature. The second is that there is an apparent equivocation on 'ejusdem naturae.' Spinoza pretty clearly means here the same by this as by 'ejusdem attributi' (cf. I, v, where "ejusdem naturae, sive attributi" is used), and furthermore the demonstration requires it. But he also presupposes in this proof that if a substance is limited by another it is limited by another *substance* – as if "x is of the same nature as y" were equivalent to "x is a substance if and only if y is a substance."[84] But whether or not Spinoza is using 'natura' equivocally here, there has yet been given no justification for supposing that a substance, if finite, is limited by a substance. Why could it not be limited by a mode?

Formally, both of these difficulties can be solved rather easily; the first is overcome by dropping (as I have for the most part been doing up to this point) the modal indicators 'can' and 'must.' We may simply read, or represent, them as 'is'. The second is solved by inserting a suppressed premise to the effect that a substance is, if finite, limited by a substance. For the purposes of Spinoza's argument, this may be done with "if x is a substance and y limits x, then y is a substance." (The difficulty about why Spinoza is involved in the above mentioned problems I here leave unsolved.)

Proposition (ix)

> Quò plus realitatis, aut esse unaquaeque res habet, eò plura attributa ipsi competunt.[85]

In Part I, this proposition is not used at all, except to provide an informal explanation, in I, x, s, for the definition of God as an absolutely infinite being, and for the view that one substance may have many attributes.

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Spinoza's proof seems to require that the 'res' ('thing') of the proposition be restricted to substances. For the demonstration states that the proposition is evident from the fourth definition (of an attribute). Spinoza's reasoning here appears to be as follows: the reality of a thing is its perfection,[86] and its perfection (and reality) is its essence.[87] Now since, as stated in I, Def. iv, the essence of a substance is an attribute, the more reality (and hence perfection and essence) a substance has, the more attributes it has. But at least apparently, this is not generally true, i.e. this proposition concerns substances only, and not modes, because an attribute does not constitute the essence of a mode.

To represent this proposition symbolically we evidently need the two-place predicates 'has more reality than' and 'has more attributes than.' The latter can be further analyzed, but for sake of simplicity I leave it unanalyzed in my representation. As will be evident from Section III, I regard this proposition as (in effect) an axiom. (I of course grant that this is not satisfactory as a representation of Spinoza; as a reconstruction, however, I see no better course, short of an extended discussion of the notion of degrees of reality.)

Proposition (x)

> Unumquodque unius substantiae attributum per se concipi debet.[88]

This states that every attribute is conceived through itself, and is held by Spinoza to be provable on the basis of Definitions (iii) and (iv) (the definitions of substance and attribute, respectively). It appears that the proof goes through because an attribute can be shown to be a substance. (This is how, and why, Definition (iii) is used: to conclude that the attribute, since it is a substance, is conceived through itself.) Thus Spinoza's demonstration of I,x appears to support one version of the so-called 'subjective interpretation' of the attributes. (See Section III below.) Note that the proof will work on the basis of I, Def. (iv) and Axiom (ii), when stated without defined terms, and (A2), of Section III.A).

Proposition (xi)

> Deus, sive substantia constans infinitis attributis, quorum unumquodque aeternam, &. infinitam essentiam exprimit, necessariò existit.[89]

Spinoza gives several demonstrations of this, most of which are drawn from

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Descartes.[90] I shall concentrate on the first proof because with some modification it is sufficient to establish the conclusion.

Spinoza's demonstration (the 'demonstratio') is incomplete as it stands, but, given a necessity operator that conforms to S5, and given the supressed premise that it is possible that God exists, I,xi is provable. This extra premise was no doubt believed by Spinoza (and probably on independent grounds). It might, indeed, be held to be expressed in the first 'aliter' proof of I,xi.[91]

The argument itself may be understood as follows: Assume that it is possible that God does not exist. Then, by Axiom (vii), it is not necessary that God exists. But this is absurd, for by Proposition (vii), every substance necessarily exists. Hence, it is not possible that God does not exist – that is, God necessarily exists.

Now we see that Axiom (vii) is only used here because the argument is put in the form of a *reductio*. But this is inessential. It might just as well be stated in this way: every substance necessarily exists (by Proposition (vii)): therefore, God necessarily exists.

A suppressed premise of this argument is the view that God is a substance. And it is clear that Spinoza would justify this by reference to Definition (vi).

Now this argument (God is a substance; every substance necessarily exists; ergo, God necessarily exists) is perfectly valid, but there is little reason to suppose that it follows from Definition (vi) that God in fact is a substance. If we take 'God' as an individual constant, and suppose that the definition is, in form, correct, this will *not* follow. (What will follow is that if God exists, then God is a substance.)

But the situation can be remedied by supposing that the following hypotheses are true:

(a) 'God' is an individual constant and Definition (vi) is of the proper form (a universal closure of a biconditional). Specifically, let the definition hold that a thing is God just in case it is a substance with all attributes. (We could, if we like, include the idea that it has an infinity of attributes.) Symbolically we get:

$$(x)(x = g \equiv (Sx \ \& \ (z)(Az \rightarrow Azx)))$$

where 'g' is read as 'God', 'Sx' as 'x is a substance', 'Az' as 'z is an attribute' and 'Azx' as 'z is an attribute of x'.

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(b) Spinoza is operating, in the conclusion of I,xi,d, and in I, Definition (i), with a notion of necessity which conforms to S5.

(c) It is an axiom of Spinoza's theory that it is S5-possible that God exists.

(d) Spinoza's definitions and axioms are S5-necessary.

The argument then proceeds as follows: From Definition (vi) it follows that if God exists, then God is a substance. But by Proposition (vii) (which is provable on the basis of the definitions and axioms), if God is a substance, then it is necessary that God exists. Hence, since the definitions and axioms are necessary, it is necessary that if God exists, then he necessarily does (i.e. $L((\exists v)(v = g) \rightarrow L(\exists v)(v = g)))$. But since it is possible that God exists, it follows in S5 that it is necessary that God exists. (This is so because it is provable in S5 that $(Mp \,\&\, L(p \rightarrow Lp)) \rightarrow Lp)$.

Note that the general idea behind this demonstration is found in 'The Irreducibly Modal Structure of the Argument,' by Charles Hartshorne (Chapter XVIII of *The Many-faced Argument*, edited by John Hick and Arthur C. McGill).

A sketch of the formal argument is as follows:[92]

(1)	$L(x)(x = g \equiv (Sx \,\&\, (z)(Az \rightarrow Azx))$	Def. vi
(2)	$L(Sx \rightarrow L(\exists v)(v = x))$	Prop. vii
(3)	$M(\exists v)(v = g)$	Extra Axiom
(4)	$L((\exists v)(v = g) \rightarrow L(\exists v)(v = g))$	by (1), (2)
(5)	$L(\exists v)(v = g)$	by (3), (4), in S5

Now the following problem arises: we began by supposing that Definition (vi) is to be treated as a notational abbreviation – which requires that it be of the proper form, and *also* that it is a theorem of the system that there is (necessarily) a unique thing satisfying the definiens. For without this, the definition may be creative and it may not allow elimination of the definiendum wherever it occurs. The trouble here is that, thus far, we have no assurance that the definition is not creative, for we have used it as a *premise* in establishing a theorem which is itself required for the definition to be formally correct. What must therefore be shown is that the necessary exis-

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tence of a substance with all attributes, can be established without the help of Definition (vi). (This is only part of the task; (necessary) uniqueness will be discussed in a moment.)

A solution to this problem is provided by establishing that every substance with all attributes is necessarily a substance with all attributes, i.e.

(i) $(x)[(Sx \,\&\, (y)(Ay \rightarrow Ayx)) \rightarrow L(Sx \,\&\, (y)(Ay \rightarrow Ayx))]$

For this, in conjunction with Proposition (vii), that is,

(ii) $(x)(Sx \rightarrow L)(\exists v)(v = x)),$

yields the conclusion that if there is a substance with all attributes, then necessarily there is such a substance, or

(iii) $(\exists v)(Sv \,\&\, (y)(Ay \rightarrow Ayv)) \rightarrow L(\exists v)(Sv \,\&\, (y)(Ay \rightarrow Ayv)).$

So when Spinoza's definitions and axioms are taken to be necessary, (i) and (ii), and hence (iii), are also necessary. Thus, as before, the possibility of the existence of a substance with all attributes, establishes in S5, the necessity of the existence of such a substance.

To establish (i), we show first that every substance is necessarily a substance. (From Definition (i) we show that $L[L(\exists v)(v = a) \rightarrow (Kaa \,\&\, -(\exists z)(z \neq a \,\&\, Kza))]$, and hence, by Aziom (iv), $L[L(\exists v)(v = a) \rightarrow (Caa \,\&\, -(\exists z)(z \neq a \,\&\, Caz))]$. Thus $L(L(\exists v)(v = a \rightarrow Sa)$ (see (DP4) of Section IIIA), and so $LL(\exists v)(v = a) \rightarrow LSa$. But by I,vi, $Sa \rightarrow L(\exists v)(v = a)$, and, in S4, $L(\exists v)(v = a) \rightarrow LL(\exists v)(v = a)$. So $Sa \rightarrow LSa$).

Now we regard 'x is in y' as a notational abbreviation:

(D9) $$(x)(y)[Ixy \equiv [(x \neq y \rightarrow L((\exists v)(v = x) \rightarrow (\exists v)(v = y))) \,\&\, (x = y \rightarrow -(\exists z)(z \neq x \,\&\, L((\exists v)(v = x) \rightarrow (\exists v)(v = z))))]].$$

(See Note 30.) Assume that a is a substance. Either it is necessary that a has all attributes or it is not necessary. If it is not necessary, then it is possible that there is an attribute that is not an attribute of a. Hence, when a is a substance, it is possible that there are *two* things that are in themselves (by Definitions (D3), (D4a), (D4b), and Axiom (A2) of IIIA below). But by the

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definition of '*Ixy*' above, and I, vii, this is not possible. So it is necessary that *a* have all attributes.

Thus if *a* is a substance with all attributes, it necessarily is. (Note that we can dispense with the definition of '*Ixy*' and still get (i), *if* the Barcan formula is available. But, for reasons I will not here discuss, this is undesirable in a representation of Spinoza.)

An analogue of (iii), obtained by replacing defined terms by their definiens, is also provable, without the help of Definitions (iii), (iv), (vi) or the definition of '*x* is in *y*'. (Definition (i) is required, however. Cf. Section III.)

Definition (vi) is thus eliminable as a *premise* of E,I,xi,d. And from the preceding, we can see that a uniqueness proof is obtainable. For it follows from I,vii,I, Def. (iii), and the above definition of '*x* is in *y*', that there is at most one substance. Hence there is at most one substance with all attributes. (There are several alternative proofs available, however, once I,xi is established.)

We have, then, a proof that Definition (vi) is formally correct. (We have not mere uniqueness, but provable, and hence necessary, uniqueness.) But we can also establish (from (A2), (D4b) and (D3)) that there is at most one attribute. (See (DP4) in Section IIIA below.) This representation of Spinoza is therefore 'subjectivist', in so far as it holds that there is no real distinction between attributes. But of course it is not subjectivist, if this is taken to mean that the attributes are modes. (See section IIIB below.)

If, however, we suppose that a correct representation of Definition (vi) will include a clause asserting that there are an infinity of attributes (perhaps: 'there is a set, *z*, with an infinity of elements & (*w*) (*w* is an element of *z* if and only if *w* is an attribute), then the elimination of Definition (vi) as a premise of the ontological argument, and as a substantive thesis of Spinoza's metaphysics, will presumably proceed by the addition of extra premises. One will on the face of it have to establish, or assume, (i), and in addition, something like this: if there are an infinity of attributes, then necessarily there are an infinity of attributes. But, as discussed more fully below, this representation of Spinoza's definition threatens the consistency of his metaphysics.

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IIIA

The non-logical constants used in representing the first part of the *Ethics* are as follows:

Lexicon

Ax:	*x* is an attribute
Bx:	*x* is free
Dx:	*x* is (an instance of) desire
Ex:	*x* is eternal
Fx:	*x* is finite
Gx:	*x* is a god
Jx:	*x* is (an instance of) love
Kx:	*x* is an idea
Mx:	*x* is a mode
Nx:	*x* is necessary
Sx:	*x* is a substance
Tx:	*x* is true
Ux:	*x* is an intellect
Wx:	*x* is a will
Axy:	*x* is an attribute of *y*
Cxy:	*x* is conceived through *y*
Ixy:	*x* is in *y*
Kxy:	*x* is a cause of *y*
Lxy:	*x* limits *y*
Mxy:	*x* is a mode of *y*
Oxy:	*x* is an object of *y*
Pxy:	*x* is the power of *y*
Rxy:	*x* has more reality than *y*
Vxy:	*x* has more attributes than *y*
Cxyz:	*x* is common to *y* and *z*
Dxyz:	*x* is divisible into *y* and *z*

Note that Spinoza's talk about God will be represented by means of a predicate, not an individual constant (but see below). We could, however, introduce an individual constant '*g*' instead, and dispense with this predicate.

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It is unimportant which alternative is taken, since Definition (vi) is in any case formally correct.

Some of the above predicates which are undefined by Spinoza (such as '*Cxyz*', '*Rxyz*', and '*Pxy*' may well have internal structure which is not captured by my representation. However, for the purposes of Spinoza's arguments through Part I, it seems that no such structure is needed.

What is needed by way of a logical system, to formalize Spinoza, is a predicate calculus (here with identity) in which;

(a) There are two modal operators, say 'L' and 'N', where we have the axiom-schema, $L\Phi \rightarrow N\Phi$, and 'L' conforms to S5. (The Brouwerische system appears to be an alternative, as pointed out to me at the 1975 Eastern Division meeting of the A.P.A.) 'N' may be taken to conform to any standard system, such as T, S4, or S5.

(b) There is some way of representing tense distinctions, either by means of operators or otherwise. This is required, for reasons which I will not here discuss, for the representation of Propositions (xxi), (xxii), and (xxviii) (and also for the extra axiom (A15)). All that is really needed here is some way of distinguishing, for example, '*a* always exists' from '*a* sometimes exists (and sometimes doesn't).' This can be done by means of operators or quantification over time. I opt for the latter, but no special significance should be attached to this choice. It is simply a device for representing such locutions as "res, quae ... determinatam habet existentiam", as used in I,xxviii, and "supponitur enim aliquando non exstitisse, aut non exstitura" (I,xxi,d); for the purposes of Part I, the use of operators will do just as well.

(c) The converse of the Barcan formula is not provable – that is, it is not provable that $L(x)\,\Phi x \rightarrow (x)L\Phi x$. Furthermore the weaker claim, that if it is provable that $L(x)\Phi x$, then it is provable that $(x)L\Phi x$, should not in general be true. The reason for rejecting the converse of the Barcan formula and its weaker analogue is this: if we had either, then we could show (by axioms yet to be given) that $(x)L(\exists y)(y = x)$, since it is provable that $L(x)(\exists y)(y = x)$. But if this were so, it could be shown that nothing distinct from and caused by God, exists (by E,I,xxiv). Hence, since every mode is distinct from and caused by God, no mode would exist. Similar remarks hold for 'N', on the assumption, which is in my view correct, that a thing, x, is finite just in case it is such that $-N(\exists y)(y = x)$.

Further features of the language and the logic underlying Spinoza's meta-

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physics can be specified in a variety of ways. We can, for example, modify the type of system set out by Kripke in 'Semantical Considerations on Modal Logic' or by Mates in 'Leibniz on Possible Worlds.' But each of these systems will require modification, because of considerations (a) and (b) above. In neither, however, is the converse of the Barcan formula provable.

For the sake of definiteness, I will formalize Part I of the *Ethics* in the language *ML*. The grammar of *ML* is like that of Mates' L_1 in *Elementary Logic*, except that '*L*', '*M*', '*N*', '*P*', and 'at' are added as logical constants, '*t*' and subscripted '*t*' are reclassified as variables, and '≡' is used instead of '↔'. '*N*-ary' predicate', 'sentential letter', 'individual symbol', 'atomic formula', etc. are defined as in Mates, *ibid*.

The variables are divided into two types: ω-variables are all those except '*t*' and subscripted '*t*': χ-variables are '*t*' and subscripted '*t*'.

A formula is either atomic or built up from atomic formula by (finite) application of the following rules:

(i) if ϕ is a formula, then $-\Phi$, $L\Phi$, $M\Phi$, $N\Phi$, and $P\Phi$ are formulae.

(ii) if Φ is a formula, and ζ is a χ-variable or individual constant, then (Φ at ζ) is a formula.

(iii) if Φ and Ψ are formulae, then $(\Phi \vee \Psi)$, $(\Phi \& \Psi)$, $(\Phi \rightarrow \Psi)$, and $(\Phi \equiv \Psi)$ are formulae.

(iv) if Φ is a formula and α is an ω-variable, then $(\alpha)(\Phi)$ and $(\exists\alpha)(\Phi)$ are formulae.

(v) if Φ is a formula and ζ is a χ-variable, then (ζ) (Φ at ζ) and $(\exists\zeta)$ (Φ at ζ) are formulae.

A sentence is a formula in which there is no free occurrence of a variable.

The χ-variables are to range over times, and appropriate (but *ad hoc*) restrictions on clauses (ii) and (v) will allow us to maintain that every sentence of the form $(\Phi \vee -\Phi)$ is true, even though no formal counterpart of 'There is a time at which the unique God exists or else there is no time at which there is a unique God' is true. (There will be no formal counterpart of this, and perhaps similar, remarks.) This will build into the syntax the view that God 'bears no relation' to time.

The inference rules of *ML* are those of Mates, op cit., modified to prevent certain inferences, and additional rules concerning modal operators. (Rules, or axioms, concerning temporal priority, etc. and such schema as '(Φ at ζ) &

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(Ψ at ζ); ergo ((Φ & Ψ) at ζ)' will not be explicitly stated.) The rules *P, T, C, Q, Th* (as found on pages 189–90), and *Ib* are taken over without change. *US, UG,* and *Ia* are modified as follows:

US: If $(\alpha)\Phi$ appears on an earlier line, $(\exists\gamma)(\gamma = \beta) \rightarrow \Phi\alpha/\beta$ may be entered on a new line; as premise-numbers of the new line, take those of the earlier line.

UG: If $(\exists\gamma)(\gamma = \beta) \rightarrow \Phi\alpha/\beta$ appears on a line, then $(\alpha)\Phi$ may be entered on a line, if β occurs neither in Φ nor in any premise of the earlier line. The premise-numbers of the new line are those of the earlier line.

Ia: $(\alpha)(\alpha = \alpha)$ may be entered on a line, with premises $\wedge$.

In addition, we have (for completeness):

PA: If $\Phi\alpha/\beta$ appears on an earlier line, $(\exists\gamma)(\gamma = \beta)$ may be entered on a new line, if Φ is atomic and undefined. Premise numbers of the new line are those of the earlier one.

EX: If $(\alpha)\Phi$ appears on an earlier line, $(\exists\alpha)\Phi$ may be entered on a new line, with premise numbers of the earlier line.[93]

Note that we can obtain, as derived rules, EG and ES, when appropriately modified. (The modfications are essential.)

The semantics of the non-modal part of the system is as in Mates, which requires that an interpretation specify a non-empty domain, but it will allow interpretations which do not assign anything to the individual constant, β. The truth-conditions for sentences of the form $(\alpha)\Phi$ and $(\exists\alpha)\Phi$ will use the notion of a β-assigning variant of an interpretation. (Thus I′ is a β-assigning variant of I just in case (a) I′ assigns something to the constant, β, and (b) I and I′ differ at most in what, if anything, they assign to β. (The non-modal part of the system is sound, and, I conjecture, complete, although I do not attempt to show this here.)

The inference rules include, besides those above, the following (where '$\Phi \mapsto \Psi$' may be read, 'if Φ appears on an earlier line, then Ψ may be written on a later line, and the premise-numbers of the later line are those of the earlier'):

R1: $L\Phi \mapsto N\Phi$

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R2: $N\Phi \mapsto \Phi$
R3: $L(\Phi \rightarrow \Psi) \mapsto L\Phi \rightarrow L\Psi$
R4: $M\Phi \mapsto LM\Phi$
R5: $\Phi \mapsto L\Phi$ only when the premises of Φ are $\wedge$.
R6: $N(\Phi \rightarrow \Psi) \mapsto N\Phi \rightarrow N\Psi$

Given R1 and R2, we can obtain the following derived rule:

DR1: $L\Phi \mapsto \Phi$

DR1, R3 and R5 are sufficient for showing that 'L' conforms to S5. 'N' conforms to T. (See Hughes and Cresswell's *An Introduction to Modal Logic*.) I assume the usual definitions of '$M\Phi$' as '$-L - \Phi$', and '$P\Phi$' as '$-N - \Phi$'. The semantics of this natural deduction system can be set out on the model of Kripke's 'Semantical Considerations on Modal Logic.'

Spinoza's definitions and axioms are as follows:

Definitions

(D1) $(x)[Kxx \,\&\, -(\exists y)(y \neq x \,\&\, Kyx)) \equiv L(\exists y)(y = x)]$
(D2) $(x)[Fx \equiv (\exists y)((y \neq x \,\&\, Lyx) \,\&\, (z)(Azx \equiv Azy))]$
(D3) $(x)[Sx \equiv (Ixx \,\&\, Cxx)]$
(D4a) $(x)[Ax \equiv (\exists y)((((Sy \,\&\, Ixy) \,\&\, Cxy) \,\&\, Iyx) \,\&\, Cyx)]$
(D4b) $(x)(y)[Axy \equiv (Ax \,\&\, Cyx)]$
(D5a) $(x)(y)[Mxy \equiv ((x \neq y \,\&\, Ixy) \,\&\, Cxy)]$
(D5b) $(x)[Mx \equiv (\exists y)(Sy \,\&\, Mxy)]$
(D6) $(x)[Gx \equiv (Sx \equiv (y)(Ay \rightarrow Ayx))]$
(D7a) $(x)[Bx \equiv (Kxx \,\&\, -(\exists y)(y \neq x \,\&\, Kyx))]$
(D7b) $(x)[Nx \equiv (\exists y)(y \neq x \,\&\, Kyx)]$
(D8) $(x)[Ex \equiv L(\exists y)(y = x)]$

Axioms

(A1) $(x)[Ixx \vee (\exists y)(y \neq x \,\&\, Ixy)]$
(A2) $(x)[-(\exists y)(y \neq x \,\&\, Cxy) \equiv Cxx]$
(A3) $(x)(y)[Kyx \rightarrow N((\exists v)(v = y) \equiv (\exists v)(v = x))]$
(A4) $(x)(y)[Kxy \equiv Cyx]$
(A5) $(x)(y)[-(\exists z)Czxy \equiv (-Cxy \,\&\, -Cyx)]$
(A6) $(x)[Kx \rightarrow (Tx \equiv (\exists y)(Oyx \,\&\, Hxy))]$
(A7) $(x)[M - (\exists y)(y = x) \equiv -L(\exists y)(y = x)]$

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Extra Axioms (Suppressed Premises of the arguments)

(A8) $(x)(y)[Ixy \rightarrow Cxy]$
(A9) $(x)(\exists y)(Ayx)$
(A10) $(x)(y)(z)[Dxyz \rightarrow M-(\exists w)(w = x)]$
(A11) $(x)(y)[(Sx \,\&\, Lyx) \rightarrow Sy]$
(A12) $(x)[(\exists y)Mxy \rightarrow Mx]$
(A13) $M(\exists x)Gx$
(A14) $(x)[N(\exists y)(y = x) \equiv -Fx]$
(A15) $(x)[-Gx \rightarrow [(-L(\exists y)(y = x) \,\&\, N(\exists y)(y = x))$
$\equiv (t)((\exists y)(y = x) \text{ at } t)]]$
(A16) $(x)(y)[(\exists z)(Azx \,\&\, Azy) \rightarrow (\exists z)Czxy]$
(A17a) $(x)[Ux \rightarrow -Ax]$
(A17b) $(x)[Wx \rightarrow -Ax]$
(A17c) $(x)[Dx \rightarrow -Ax]$
(A17d) $(x)[Jx \rightarrow -Ax]$
(A18) $(x)(y)[(Sx \,\&\, Sy) \rightarrow (Rxy \rightarrow Vxy)]$
(A19) $(x)(y)[(((Ixy \,\&\, Cxy) \,\&\, Iyx) \,\&\, Cyx) \equiv Pxy]$

Note that by rules Th and (R5) we obtain the preceeding with 'L' prefixed to each. Note too that the above definitions and axioms have been stated with defined terms, following Spinoza. This is of course inessential, but quite convenient, for, to take an example, (D6), when stated without defined terms, becomes

$$(x)[Gx \equiv ((Ixx \,\&\, Cxx) \,\&\, (y)[(\exists z)(((((Izz \,\&\, Czz) \,\&\, Iyz) \,\&\, Cyz) \,\&\, Izy) \,\&\, Czy) \rightarrow ((\exists z)(((((Izz \,\&\, Czz) \,\&\, Iyz) \,\&\, Cyz) \,\&\, Izy) \,\&\, Czy) \,\&\, Cxy)])].$$

Strictly speaking, definitions which are stated with defined terms in their definiens are to be regarded as derived theorems. (And they are easily derived from their expanded counterparts.) Thus, despite appearances, it is not true that 'Axy' is defined via 'Ax', for example. (Both are defined via 'Ixy' and 'Cxy'.)

Propositions

(P1) $(x)(y)[(Mxy \,\&\, Sy) \rightarrow (Ixy \,\&\, Iyy)]$
(P2) $(x)(y)[((Sx \,\&\, Sy) \,\&\, x \neq y) \rightarrow -(\exists z)Czxy]$

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(P3) $(x)(y)[-(\exists z)Czxy \rightarrow (-Kxy \;\&\; -Kyx)]$

(P4) $(x)(y)[x \neq y \rightarrow (\exists z)(\exists z')[(((((Azx \;\&\; Az'x) \;\&\; z \neq z')$
$\vee\; ((Azx \;\&\; z = x) \;\&\; My)) \vee ((Az'y \;\&\; z' = y) \;\&\; Mx)) \vee (Mx \;\&\; My))]\,]$

(P5) $(x)(y)[((Sx \;\&\; Sy) \;\&\; x \neq y) \rightarrow -(\exists w)(Awx \;\&\; Awy)]$

(P6) $(x)(y)[((Sx \;\&\; Sy) \;\&\; x \neq y) \rightarrow -(Kxy \;\&\; -Kyx)]$

(P6c) $(x)[Sx \rightarrow -(\exists y)(y \neq x \;\&\; Kyx)]$

(P7) $(x)[Sx \rightarrow L(\exists y)(y = x)]$

(P8) $(x)[Sx \rightarrow -Fx]$

(P9) $(x)(y)[(Sx \;\&\; Sy) \rightarrow (Rxy \rightarrow Vxy)]$

(P10) $(x)[Ax \rightarrow Cxx]$

(P11) $L(\exists x)Gx$

(P12) $(x)(y)(z)[Sx \rightarrow -Dxyz]$

(P13) $(x)(y)(z)[(Sx \;\&\; (w)(Aw \rightarrow Awx)) \rightarrow -Dxyz]$

(P14) $(\exists x)[Gx \;\&\; (y)(Sy \rightarrow y = x)]$

(P14-A) $(\exists x)(y)(Gy \equiv y = x)$

For the sake of convenience only, I state the remaining propositions with the help of an individual constant '*g*' (which is short for 'the unique *G*'). Propositions which employ this are to be regarded as abbreviations for propositions which employ Russellian definite descriptions with smallest scope (although in the end, scope distinctions are here irrelevant). Thus (P16), for example is "$(x)(\exists y)(z)((Gz \equiv z = y) \;\&\; Kyx)$."

(P15) $(x)[Ixg \;\&\; Cxg]$

(P16) $(x)Kgx$

(P17) $-(\exists x)(-Ixg \;\&\; Kxg) \;\&\; (x)Kgx$

(P17c2) $Bg \;\&\; (x)(Bx \rightarrow x = g)$

(P18) $(x)[Ixg \equiv Kgx]$

(P19) $Eg \;\&\; (x)(Ax \rightarrow Ex)$

(P20) $(x)[Ax \rightarrow g = x]$

(P21) $(x)[(\exists y)(((Ayg \;\&\; x \neq g) \;\&\; Kyx) \;\&\; -(\exists z)((z \neq y) \;\&\; Kzx)) \rightarrow$
$[[(t)((\exists v)(v = x) \text{ at } t) \;\&\; N(\exists v)(v = x)] \;\&\; -Fx]\,]$

(P22) $(x)[(\exists y)(\exists y')((((((Ayg \;\&\; My') \;\&\; -Fy') \;\&\; N(\exists v)(v = y')) \;\&\; Kyx) \;\&\; Ky'x)$
$-(\exists z)(((z \neq y) \;\&\; (z \neq y')) \;\&\; Kzx))) \rightarrow ((t)((\exists v)(v = x) \text{ at } t) \;\&\;$
$(N(\exists v)(v = x) \;\&\; -Fx))]$

(P23) $(x)[N(\exists v)(v = x) \rightarrow (\exists y)(Ayg \;\&\; N((\exists v)(v = y) \rightarrow (\exists v)(v = x)))]$

(P24) $(x)[(x \neq g \;\&\; Kgx) \rightarrow -L(\exists y)(y = x)]$

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(P25) $(x)Kgx$

(P26) $(x)(y)[((\exists z)(\exists z')(Myz \,\&\, Mzz') \,\&\, Kxy) \rightarrow Kgy]$

(P27) $(x)[(Kgx \,\&\, -(\exists z)(z \neq g \,\&\, Kzx)) \rightarrow N(\exists v)(v = x)]$

(P28) $(x)[(Fx \,\&\, (\exists t) - ((\exists v)(v = x) \text{ at } t)) \rightarrow [(Kgx \,\&\, (y)(Ixy \rightarrow Kyx)) \,\&$
$(\exists z)((((z \neq x \,\&\, Kzx) \,\&\, -N(\exists v)(v = z)) \,\&\, (\exists t)$
$-((\exists v = z) \text{ at } t)) \,\&\, Fz)]\,]$

(P29) $L(\exists x)(x = g) \,\&\, (x)(x \neq g \rightarrow Nx)$

(P30) $(x)(y)[((Kx \,\&\, Tx) \,\&\, Oyx) \rightarrow (Ay \vee My)]$

(P31a) $(x)[Ux \rightarrow Mx]$

(P31b) $(x)[Wx \rightarrow Mx]$

(P31c) $(x)[Dx \rightarrow Mx]$

(P31d) $(x)[Jx \rightarrow Mx]$

(P32) $(x)[Wx \rightarrow (-Bx \,\&\, Nx)]$

(P34) $(x)[Axg \equiv Pxg]$

(P35) $L(\exists x)(x = g) \,\&\, (x)(x \neq g \rightarrow Nx)$

Note that all of the above propositions are derivable from the definitions and axioms. Propositions (xxxiii) and (xxxvi) are, however, not derivable in my view. (Reasons for this will be given below.) Proposition (ix) is, on my interpretation, equally suspect, in view of the *ad hoc* manner in which it is derived.

Before indicating how the above representations of Spinoza's propositions are derivable from the definitions and axioms, I state some "derived premises" which will be useful.

Derived Premises		*Derivable From*
(DP1)	$(x)[Sx \equiv Ixx]$	(D3), (A8)
(DP2)	$(x)[Cxx \rightarrow Ixx]$	(A1), (A2), (A8)
(DP3)	$(x)[Sx \rightarrow Ax]$	(D3), (D4a)
(DP4)	$(x)[Sx \equiv Cxx]$	(D3), (DP2)
(DP5)	$(x)[Sx \vee Mx]$	(A1), (A8), (A12), (D5a), (DP1)
(DP6)	$(x) - (Sx \,\&\, Mx)$	(D3), (D5a), (D5b), (A2)
(DP7)	$(x)(y)[(Axy \,\&\, Sy) \rightarrow x = y]$	(D3), (D4b), (A2)

Proposition Derivable From

(P1) (D5a), (D3)

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(P2) (D3), (A2), (A5)
(P3) (A4), (A5)
(P4) (A9), (DP5), (DP6), (DP7)
(P5) (P4), (DP6), (DP7)
or (DP7) alone
or (P2), (A16) alone
(P6) (P2), (P3)
(P6c) (D3), (A2), (A4)
(P7) (D3) (P6c), (A4), (D1)
(P8) (D2), (A9), (A11), (P5)
(P9) (A18)
(P10) (D3), (D4a), (A2)
(P11) (D1), (D3), (D4a), (D4b), (D6), (A1), (A2), (A4), (A8), and (D9) of page 4
(When stated without defined terms: (D1)
(A1), (A2), (A4), and (A8))
(P12) (A10), (P7)
(P13) (P12)
(P14) (P11), (D6), (A9) (D4b), and either (DP7) or (P5)
(P14-A) (P14), (D6)
(P15) (DP5), (P14), (D3), (D5b), (D5a)
(P16) (P15), (A4)
(P17) (P15), (P16)
(P17c2) (P14-A), (D1), (D7a), (A4), (DP4), (P14)
(P18) (P15), (P16)
(P19) (D8), (P14), (P14-a), (D4b), (P10), (DP4)
(P20) (D4b), (P10), (DP4), (P14), (P14-A)
(P24) (D1)

Note that from (P24) and (P16) we obtain

(P24-A) $(x)[x \neq g \rightarrow -L(\exists v)(v = x)]$
(P21) (P19), (D8), (A3), (P24-A), (A15), (A14)
(P22) (DP6), (P14), (P14-A), (D1), (P19), (D8), (A3), (A14), (P24-A), (A15)
(P23) (P14), (A9), (P19), (D8)
(P25) (P15), (A4)
(P26) (P16)
(P27) (P14-A), (A3)

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(P28) (P14-A), (P16), (A8), (A4), (A14), (A3), (A15), (DP4), (P8)
(P29) (P14-A), (P16), (D7b)
(P30) (DP5), (A9), (D4b), (D3), (A2)
(P31-A) (DP5), (A9), (D4b), (D3), (A2), (A17a)
(P31-B) [The demonstrations of (P31-B), (P31-C), and (P31-D) are just
(P31-C) like the demonstration of (P31-A), except (A17b), (A17c), and
(P31-D) (A17d) are used, respectively, instead of (A17a).]
(P32) (P31b), (DP6), (P14), (P29), (P16), (D7a)
(P34) (DP7), (P14-A), (D6), (D3), (D4b), (A19)
(P35) see the demonstration of (P29)

Note that (P16) and (P25) are the same, as are (P29) and (P35). I regard I,xvi as asserting that God is *a* cause of all things, not the (sufficient) cause of everything, primarily to avoid conflict with I,xxi and I,xxviii. In Part I of the *Ethics*, Spinoza should be seen as making at least tacit use of the distinction, formally drawn in Part III, between adequate and partial causation. (See E,III, Def. (i).) But it seems that Spinoza himself is not entirely clear on the question whether God alone is sufficient for the production of a finite thing. (See, for example, letters LXXX–LXXXIII.)

Similarly, I regard I,xxxv as stating that God necessarily exists, and everything distinct from him is necessary. Here I make use of the distinction between necessity as an operator and as a predicate, and I take definition vii (literally) as a definition of necessity as a predicate. But a full discussion of these matters takes us too far afield.

Proposition xxxvi, which states in effect that everything is a cause of something ("Nihil existit, ex cujus naturâ aliquis effectus non sequatur") seems to me not to be derivable from Spinoza's definitions and axioms. The proof appears to be basically this: if this were not true, then there would be something that is not a cause of something, and so it would be false that an infinity of things follow from God. (This is the move indicated in G. II, 77, 18–19, by "adeóque (*per Prop.* 16)". The idea, then, is that for an infinity of things to follow from God, each thing must produce something different from it. But on the contrary, to take one type of case, if *a* is produced by God, and does not produce anything else, it might still be that *b* is produced by God, and produces another, *c*, which in turn produces *d*, and so on. So far as I can see, then, I, xxxvi, d fails to establish the conclusion.

Proposition (xxxiii) maintains that "Things could have been produced by

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God in no other way, and in no other order, than they have been produced." The demonstration is defective in arguing that, if things had been produced in a different way, then the nature of God would have been different (and hence, by I, xi, there would have been two or more Gods, which is impossible, by I, xiv, c. i). For this, on the face of it, requires that God, or God's nature, be by itself a sufficient condition for "the way things are", and thus, for reasons indicated above, it threatens the possibility of the existence of finite modes.

Note that, for the purposes of Part I of the *Ethics*, we can regard the substantive theses as: (D1), (A1)–(A3), (A5), (A6), (A8), (A10)–(A15), and (A17-A)–(A18), when stated without defined terms. (For (D2)–(D8), (A4), and (A19) may be regarded as dispensable notational abbreviations: (A7) is a theorem of quantified modal logic; (A9), when stated without defined terms, is derivable from the above theses; and (A16) is used only in the demonstration of (P5), which is derivable without it. We could plausibly eliminate '*Cxyz*' anyway, in favor of '((*Mxy* & *Mxz*) v (*Axy* & *Axz*))'.) We reduce the number of axioms to 17 when (A1) is taken as a notational abbreviation of a theorem of logic.[94], (And this is required for (D6) to be formally correct.)

IIIB

The above formalization expresses a 'subjectivist' interpretation of the attributes, insofar as it holds that there is really no distinction between the attributes. But it is 'objectivist' in holding that each attribute does constitute the essence of a substance. In this section, I suggest an alternative solution to the problem of the attributes, along with what I take to be the major difficulty with that solution.

The problem of the attributes is in essence simply this: on a number of occasions (I, iv, d; I, vi, c; I, xv, d; I, xxviii, d; for example), Spinoza claims that only substances and modes exist. But the attributes (which surely exist[95]) seem to fit into neither of these categories.

An attribute cannot be a mode, because attributes are conceived through themselves (I, x), modes are conceived through another (I, Def. v), and these features are incompatible (I, Ax. ii). Furthermore, if a mode constituted the essence of a substance, the substance could neither be nor be conceived without the mode (by II, Def. ii). But this is contradicted in II, x, c, s.

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On the other hand, it seems impossible that each attribute be a substance. For we seem to be able to derive a contradiction from

(i) Every attribute is a substance
(ii) There is more than one attribute (*vide* I, xi, and I, Def. vi)

and

(iii) There is exactly one substance (*vide* I, xiv)

Of course we *do* get a contradiction if we represent these by means of an identity predicate:

(ia) $(x)(Ax \rightarrow Sx)$
(iia) $(\exists x)(\exists y)((Ax \,\&\, Ay) \,\&\, x \neq y)$
(iiia) $(\exists x)(y)(Sy \equiv x = y)$.

But there is an alternative that is at least worth mentioning, namely that we dispense with an identity predicate, and introduce the primitive predicates, 'is the same substance as', 'is the same mode as', and 'is the same attribute as'. We can then express (ii) (taking 'A^*xy' as 'x is the same attribute as y') in this manner:

(iib) $(\exists x)(\exists y)(Ax \,\&\, Ay) \,\&\, -A^*xy)$

or by saying

(iib′) $(\exists x)(\exists y)((A^*xx \,\&\, A^*yy) \,\&\, -A^*xy)$.

Similarly we might represent (iii) as

(iiib) $(\exists x)(Sx \,\&\, (y)(Sy \rightarrow S^*yx))$

or as

(iiib′) $(\exists x)(S^*xx \,\&\, (y)(S^*yy \rightarrow S^*yx)$,

where 'S^*xy' is read 'x is the same substance as y'.

Thus (i)–(iii) can be expressed without contradiction, and we may capture the view that many attributes constitute one substance (E, I, x, s) and that substances and their attributes are the same (E, I, iv, d) – that is, the same substance.

One way we can incorporate the above idea into a formal representation of

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Spinoza is as follows:

(a) Modify (and in some cases, drop) the inference rules regarding quantifiers of *ML*. (Corresponding changes in the semantics will also be made.) The details of this I omit here.

(b) Add as primitive predicates, 'S^*xy', 'A^*xy', and 'M^*xy', understood as, 'x is the same substance as y,' 'x is the same attribute as y,' and 'x is the same mode as y', respectively.

(c) Take as axioms and definitions, those of section A above, except that where an expression of the form $\alpha = \gamma$ occurs, replace it by an appropriate expression of the form $(S^*\alpha\gamma \vee M^*\alpha\gamma)$.

(d) Add axioms to the effect that the new primitives of (b) above are transitive, symmetrical, and weakly reflexive (for example, add '$(x)(y)(S^*xy \rightarrow S^*xx)$'). In addition, take '$(x)(Sx \equiv S^*xx)$', '$(x)(A^*xx)$', and '$(x)(Mx \equiv M^*xx)$' as axioms.

(Note that, when Φ = '$(S^*xy \vee M^*xy)$', Φ can be shown to be an equivalence relation (strongly reflexive, symmetrical, and transitive), but it should not be a Geachean I-predicable.[96] Otherwise, we can establish that $((Aa \,\&\, Ab) \rightarrow A^*ab)$.)

We could, if we wish, modify (D6*) to read 'Gx if and only if Sx & x has an infinity of attributes & $(y)(Ay \rightarrow Ayx)$.' (A13) may be modified in a corresponding way.

The propositions can be stated with appropriate changes (as in (c) above), and most can be derived by means similar to those indicated above.[97] A difficulty arises, however, in connection with proofs that employ Mates' rule Ib, which allows unrestricted substitution of (names for) absolute identicals. Although alternate proofs for some of these propositions, such as (P11*) and (P14*) can be obtained without too much difficulty, additional axioms seem required for the proofs of others (e.g. (P21*), (P22*), and (P26*)). Such a solution, while formally acceptable, is clearly *ad hoc*, and indicates the need to determine for which properties, Φ, the schema $(\Phi\alpha \,\&\, A^*\alpha\beta) \rightarrow \Phi\beta$ will hold. (Similarly for corresponding formulae using '$S^*\alpha\beta$' and '$M^*\alpha\beta$'.) This problem, along with the general problem of providing an adequate semantics for the system employing 'relative identity', suggests, what I think is correct, that the main threat to this representation of Spinoza is the questionable intelligibility of claims such as, "Thought is the same substance as Extension,

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but Thought is not the same attribute as Extension" (even when they are both attributes). And this threat will be greater, the more we think we understand, and need, the notion of absolute, unqualified, identity.[98]

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NOTES

[1] ". . the eyes of the mind, by which it sees and observes things, are demonstrations themselves." E, V, xxiii, s (G.II, 296, 6–7) Unless otherwise noted, translations are the author's, from Gebhardt's *Spinoza Opera*. The following abbreviations are used: G. = *Spinoza Opera*, edited by Carl Gebhardt (followed by volume (I–IV), page and line numbers); E. = *Ethica* (followed by part numbers (I–V) and proposition numbers (i, ii, etc.) and/or Def. = Definition, Ax. = Axiom, lem. = lemma, s. = scholium, c. = corollary, d. = demonstration, expl. = explanation, pref. = preface, app. = appendix. (Thus, for example, 'E, I, xiv, c. ii' refers to the second corollary to proposition fourteen of the first part of the *Ethics*, and 'II, x, c, s' to the scholium following the corollary of II, x.) TDIE = *Tractatus de Intellectus Emendatione*; K.V. = *Korte Verhandeling van God, de Mensch en des zelfs Welstand* (also referred to as 'S.T.' and '*Short Treatise*'; PP. = *Renati Des Cartes Principiorum Philosophiae* (followed by part numbers, etc. as in E.); CM. = *Cogitata Metaphysica*; TTP. = *Tractatus Theologico-Politicus*; Ep. = Epistolae (as numbered by Gebhardt in G.). Wolf's translation of the *Short Treatise* is used throughout.

[2] G. II, 52, 13–17.

[3] "For definitions are nothing other than the clearest explanations of the terms and names by which the things treated are designated." G. II, 127, 17–18.

[4] "By the cause of itself I understand that whose essence involves existence, or that whose nature cannot be conceived, unless existing."

[5] The alternative, that 'causa sui' is to be understood as 'has no cause', is discussed, and rejected, below. See the discussion of Proposition (vii).

[6] On this point see Mates' *Elementary Logic*, pp. 189–190.

[7] I do not mean to suggest that Spinoza's definition was intended to be a definition of the two-place predicate, 'is a cause of'.

[8] "or that whose nature cannot be conceived, unless existing."

[9] "that whose essence involves existence."

[10] "The essence of whatever can be conceived as not existing, does not involve existence."

[11] I use 'biconditional' loosely here, and on other occasions, understanding 'universal closure of a biconditional'. Similarly for 'disjunction', 'conjunction', 'converse', etc.

[12] So the negation of '*x* can be conceived as not existing' is not '*x* can be conceived as existing,' but rather '*x* cannot be conceived as not existing.'

[13] I ask here for an informal elucidation, not a formal definition. The expression is not defined formally, and hence is *prima facie* a primitive in Spinoza's theory.

[14] But compare the discussion of Definition (vii) below.

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[15] "That thing is said to be finite in its kind, which can be limited by another of the same nature. For example a body is said to be finite, because we always conceive another larger one. Thus a thought is limited by another thought. But a body is not limited by a thought, nor a thought by a body."

[16] "By a substance I understand that which is in itself, and conceived through itself, that is, that whose concept is not in need of the concept of another thing, from which it must be formed."

[17] ". . . ((they)) cannot be understood through each other, or the concept of one does not involve the concept of the other."

[18] There is no simple argument that establishes the synonymy of 'x is conceived through y' and 'the concept of x involves the concept of y,' so far as I can see. The supposition that they are synonymous goes a long way toward explaining Spinoza's arguments, however; for example in E, II, v, d, Spinoza uses I, x (which states that each attribute must be conceived through itself) to show that a mode of thought does not involve the concept of any attribute other than thought. Even though this part of the argument is suspect (and suppressed premises needed), it appears from this that Spinoza equates 'x is not conceived through another' with 'the concept of x does not involve the concept of another.' We can, however, by a long argument show a material equivalence between 'x is conceived through y' and 'the concept of x involves the concept of y.' The argument, which I shall not give in detail, is based on Spinoza's use of I, Ax. iv in I, iii, d and I, xxv, d. The use of I, Ax. iv in I, iii, d is explained on the ground that if x is not conceived through y the knowledge of x does not involve the knowledge of y (where the knowledge of something is the concept of it (*vide*, e.g., the restatement of E, I, Def. iii in E, I, viii, s ii. (G.II, 50, 4–6)). Its use in I, xxv, d is explained on the supposition that if the knowledge of x does not involve the knowledge of y, then x is not conceived through y.

[19] The omission of modal indicators is discussed below (under '*Proposition (vii)*').

[20] "Unumquodque enim attributum per se absque alio concipitur (*per Prop. 10. p. 1.*)." *vide etiam* II, v, d.

[21] By (D3), (A1), (A2), and (A8) of Section III below. Cf. (DP4).

[22] By an attribute I understand that which the intellect perceives of substance, as (if) constituting its essence.

[23] In 'Spinoza's Definition of Attribute', p. 31 of *Studies in Spinoza* (edited by Paul Kashap).

[24] "Here, before we proceed further, it should be remembered what we have shown above, namely, that whatever can be perceived by the infinite intellect as constituting the essence of a substance, all pertains to only one substance . . ." E, II, vii, s (G.II, 90, 1–5).

[25] Spinoza in this definition uses the expression "ad essentiam alicujus rei id pertinere," but it is clear from the restatement of this in the last lines of II, x, c, s (G.II, 94, 10–11) that this is equivalent to "id ((*quod*)) . . . essentiam alicujus rei constituere."

[26] "I say that pertains to the essence of some thing, which, when given the thing is necessarily posited, and when taken away, the thing is necessarily destroyed; or that without which the thing can neither be nor be conceived, and vice versa, that which without the thing, can neither be nor be conceived."

[27] On the assumption that for x to be conceived through y is for the concept (or

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knowledge) of x to involve the concept of y, further support is found on comparing I, Ax. iv with its use in I, xxv, d.

[28] See Hughes and Cresswell's *An Introduction to Modal Logic*, pp. 30–31 (for T), 46 (for S4), and 49 (for S5).

[29] It requires that no modes exist. See (DP1) & (DP6) in IIIA.

[30] See my 'A Note on Spinoza's Ontology,' *Philosophical Studies* |*29* (1976) for the definition. This raises the question of the relations between Spinoza's technical vocabulary and our 'ordinary' notions, since one would ordinarily think that ontological dependence is a transitive relation.

[31] "By a mode I understand the affections of a substance, or that which is in another, through which it is also conceived."

[32] "But we exist, either in ourselves, or in another that necessarily exists (see Axiom 1 and Prop. 7.)." (G.II, 53, 34–35).

[33] "For whatever we clearly and distinctly understand, we understand either through itself, or through another wich is conceived through itself . . ." (G.II, 297, 29–298, 2).

[34] "Modes, however, can neither be nor be conceived without substance (by Def. 5); whence these can be in the divine nature alone, and can be conceived through it alone." (G.II, 56, 29–31).

[35] "For a mode is in another, through which it must be conceived (by Def. 5); that is (by Prop. 15) it is in God alone, and can be conceived through God alone." (G.II, 66, 30–67, 1)

[36] "By an affect I understand the affections of a body, by which that body's power of acting is increased, diminished, helped, or hindered, and at the same time ideas of those affections."

[37] "By God I understand an absolutely infinite being, that is, a substance consisting of infinite attributes, each of which expresses eternal and infinite essence."

[38] "I say absolutely infinite, not however in its kind; for we can deny infinite attributes of whatever is infinite only in its kind; however, to the essence of what is absolutely infinite, pertains whatever expresses essence and involves no negation."

[39] Wolf, in 'Spinoza's Conception of the Attributes of Substance,' (p. 26 of Kashap's *Studies in Spinoza*) maintains that in saying that substance has infinite attributes Spinoza means only that there are at least two, and possibly more. This, however, fails to account for the following passage in the *Short Treatise*: ". . . we have so far not been able to discover more than two attributes only which belong to this all-perfect being . . . we find in us *a something* which openly tells us not only of more, but of infinite perfect attributes, which must belong to this perfect being . . . And whence comes this idea of perfection? This *something* cannot be the outcome of these two (attributes): for two can only yield two and not an infinity."

[40] "That thing is called 'free' which exists from the necessity of its nature alone, and is determined to act by itself alone. However, that thing is called 'necessary', or rather 'compelled', which is determined by another to exist and act in a certain and determinate way."

[41] Although in I, xxix, d Spinoza does not explicitly say that God is necessary (rather, that he necessarily exists), and I, xxix asserts that nothing is contingent ("In rerum naturâ nullam datur contingens, sed omnia ex necessitate divinae naturae determinata sunt ad certo modo existendum, & operandum"), it is clear from II, xliv and its

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demonstration that he regards I, xxix as saying that everything is necessary. (v. II, xliv, d and his use of I, xxix there.)

[42] "By eternity I understand existence itself, insofar as it is conceived to follow necessarily from the definition alone of an eternal thing."

[43] "All things which exist are either in themselves or in another."

[44] See Note 30.

[45] "That which cannot be conceived through another, must be conceived through itself."

[46] "From a given determinate cause an effect necessarily follows, and on the other hand, if no determinate cause be given, it is impossible that an effect follow."

[47] "The knowledge of an effect depends on and involves the knowledge of a cause."

[48] "Things which have nothing in common with each other, cannot be understood through each other, or the concept of the one does not involve the concept of the other."

[49] "A true idea must agree with its *ideatum*."

[50] "Substance is prior by nature to its affections."

[51] "Hence it is clearly evident, first, that substance is prior by nature to its accidents. For these can neither exist nor be conceived without that." (G.IV, 13, 35–14, 2)

[52] ". . . the divine nature . . . both in knowledge and by nature is prior ((to all things))." (G.II, 93, 31–34) E. II, x, c, d, s.

[53] "Two substances having different attributes, have nothing in common."

[54] "Things which have nothing in common, cannot cause each other."

[55] "Two or more distinct things are distinguished from each other by a difference of the attributes of substances, or by a difference of their affections."

[56] *Short Treatise,* p. 153 (Wolf translation).

[57] See (DP5) in Section IIIA below.

[58] Derivatively, for Descartes, the distinction obtains in other cases, but this is unimportant for Spinoza's proof. *Vide The Principles of Philosophy*, I, lx-lxii.

[59] "Nothing therefore outside the intellect is given, by which many things can be distinguished from each other besides substances, or, what is the same (by Def. 4), their attributes, and their affections." (G.II, 47, 29–48, 2)

[60] "nothing in nature is clearer than that each being must be conceived under some attribute." (G.II, 52, 10–11)

[61] "In the nature of things, there cannot be given two or more substances of the same nature or attribute."

[62] "One substance cannot be produced by another substance."

[63] *The Philosophy of Spinoza*, I, pp. 110–111.

[64] Wolfson seems to indicate this, p. 111.

[65] "It pertains to the nature of a substance to exist."

[66] "If many distinct ((substances)) were given, they would *have to be* distinguished either by a difference of attributes, or by a difference of affections (by the preceeding Prop.)." My emphasis here and in the next quote.

[67] "Two or more distinct things *are* distinguished either by a difference of the attributes of substance, or by a difference of their affections." (G.II, 47, 23–25)

[68] It is also stated in E, I, xi, 'aliter' (the first), Ep. xxxiv; PP.I, Ax. vii and Ax. xi (and note), and C.M. I, iii.

[69] Parkinson, in *Spinoza's Theory of Knowledge*, p. 44, held that axiom iii is "the

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doctrine of universal causation." But what I, Ax. iii appears to state is that cause and effect are necessarily connected, or that every cause is necessarily connected to some effect, and every effect to some cause. But it does not state or imply that each thing is properly described as a cause, or as an effect. Nor did Spinoza think that it did, since it is used in part I only in the demonstration of I, xxvii, which states, "Res, quae à Deo ad aliquid operandum determinata est, se ipsam indeterminatam reddere non potest." (Axiom (iii) actually licenses a stronger conclusion, that a thing that has been determined to some operation cannot be rendered indeterminate by anything.) Furthermore we might, on Parkinson's reading, expect the last proposition of Part I (E, I, xxxvi) to be said to be evident from Axiom (iii), for I, xxxvi states, "Nothing exists from whose nature some effect does not follow," i.e. that everything is a cause of something. But Spinoza does not use Ax. iii in I, xxxvi, d: rather he cites I, xvi, I, xxv, c, and I, xxxiv, none of which are based on Ax. iii. Thus it seems clear from I, xxxvi, d that Spinoza does not confuse, 'Every cause has some effect,' with 'Everything has some effect.' It is thus probable that he did not confuse 'Every effect has some cause,' with 'Everything has some cause.'

[70] *The Philosophy of Spinoza*, vol. I, p. 127.

[71] *Ibid.*, p. 127.

[72] *Ibid.*, p. 95.

[73] "... if a thing be in itself, or as is commonly said, cause of itself, then it must be understood through its essence alone; if in fact the thing is not in itself, but requires a cause for it to exist, then it must be understood through its proximate cause." (G.II, 34, 10–13)

[74] "These things are required of the definition of an uncreated thing: First, that it exclude any cause, that is, that it need no other object besides its own being for its explanation." (G.II, 35, 28–30)

[75] "of a principle, that does not have a cause, and is known through itself and in itself." (G.II, 26, 34–35)

[76] "secondly, that a substance cannot be produced; but that it exists by its own nature." (G.IV, 8, 8–9)

[77] "III. It should be noted that there is necessarily given some certain cause of each existing thing, on account of which it exists. IV. Lastly, it should be noted that this cause, on account of which some thing exists, either must be contained in its nature and the definition of the existing thing (*surely because it pertains to its nature to exist*) or it must be given outside it." (G.II, 50 29–33)

[78] "A cause or reason must be assigned to each thing, as much why it exists as why it does not exist ... This reason or cause must either be contained in the nature of the thing, or it must be outside it." (G.II, 52, 31–53, 3)

[79] *Ibid.*, p. 76.

[80] *S.T.*, p. 54, Wolf translation. This point and others are made by Curley in a good, but brief criticism of Wolfson's view. *Vide Spinoza's Metaphysics*, pp. 28–36.

[81] S.T., I, i (Wolf translation, p. 20). V etiam S.T., I, vii (last paragraph): Wolf translation, p. 55.

[82] "Every substance is necessarily infinite."

[83] "For (by Def. 2) it must be limited by another of the same nature, which must also necessarily exist (by Prop. 7); and so two substances of the same attribute would be given, which is absurd (by Prop. 5)."

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[84] Cf. the demonstrations of xii and xiii, where "will retain the nature of substance" and "will retain the nature of substance absolutely infinite" mean (respectively) "will be a substance" and "will be an absolutely infinite substance."

[85] "The more reality or being each thing has, the more attributes belong to it."

[86] E, II, Def. vi: "Per realitatem, & perfectionem idem intelligo."

[87] E, IV, pref: "Denique per perfectionem in genere realitatem, uti dixi, intelligam, hoc est, rei cujuscunque essentiam, quatenus certo modo existit, & operatur, nullâ ipsius durationis habitâ ratione." (G.II, 209, 1–4)

[88] "Each attribute of one substance must be conceived through itself."

[89] "God, or substance consisting of infinite attributes, each of which expresses eternal and infinite essence, necessarily exists."

[90] See Wolfson, *The Philosophy of Spinoza*, Vol. I, pp. 176–213.

[91], See G.II, 53, 24–26, where it is asserted that it is absurd to suppose that the nature of an absolutely infinite, supremely perfect being involves a contradiction. It is questionable, however, whether this establishes the right kind of possibility.

[92] The formal system here assumed allows vacuous names.

[93] This rule, and the requirement that an interpretation specify a non-empty domain, may seem undesirable, given (A9), and the fact that (A1), (A2), (A8), (A12), (D3), (D5a), and (D5b) yield, when EX is available, the conclusion that $(\exists x)Sx$. If so, one may omit the rule, and allow empty domains.

[94] See Note 30.

[95] See, for example, E, I, xxi, d: "Cùm autem cogitatio Dei attributum supponatur, debet & necessario, & immutabilis existere (*per Prop.* 11. *& Coroll.* 2. *Prop.* 20.)." (G.II, 66, 5–7) This also seems to me to require that the attributes exist *in the same sense* in which substances exist.

[96] See P. T. Geach, *Logic Matters*, p. 238. For an exposition of the idea of 'relative' identity, see *Logic Matters*, pp. 238–249.

[97] Occasionally we can get stronger results, however. For not only is '$(x)(y)((Axy \,\&\, Sy) \rightarrow (S^*xy \vee M^*xy))$' derivable from the axioms and definitions, but so is

(DP7*) $(x)(y)((Axy \,\&\, Sy) \rightarrow S^*xy)$.

In a similar way, we could regard E, I, xiv as

(P14*) $(\exists x)((Gx \,\&\, (y)(Sy \rightarrow S^*yx))$.

[98] Cf. my 'Some Remarks on the "Objective" and "Subjective" Interpretations of the Attributes,' *Inquiry*, 1977. For helpful remarks on earlier versions of this paper, I am indebted to George Bealer, William Craig, Paul Grice, Benson Mates, Wallace Matson, and Brian Skyrms.

REFERENCES

Boscherini, G.: *Lexicon Spinozanum*, Martinus Nijhoff, The Hague, 1970. (2 vols.)

Curley, E. M.: *Spinoza's Metaphysics. An Essay in Interpretation*, Harvard University Press, Cambridge, Mass., 1969.

Descartes: *Philosophical Works K*, Haldane and Ross (trans. & ed.), Cambridge University Press, Cambridge, 1968.

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Geach, P.: *Logic Matters*, University of California Press, Berkeley/Los Angeles, 1972.

Gebhardt, Carl: *Spinoza Opera*, Carl Winter, Heidelberg, 1925. (4 vols.)

Hartshorne, C.: 'The Irreducibly Modal Structure of the Argument,' Chapter XVIII of *The Many-faced Argument*, edited by John Hick, and Arthur McGill. Macmillan, N.Y. 1967.

Haserot, Francis S.: 'Spinoza's Definition of Attribute,' *The Philosophical Review* **62** (1953). (Reprinted in Kashap, 1972.)

Hughes, G. E. and Cresswell, M. J.: *An Introduction to Modal Logic*, Methuen, London, 1968.

Kashap, S. Paul (ed.): *Studies in Spinoza. Critical and Interpretive Essays*, University of California Press, Berkeley/Los Angeles, 1972.

Kripke, S.: 'Semantical Considerations on Modal Logic,' *Acta Philosophica Fennica* **16**, (1963).

Mark, Thomas Carson: *Spinoza's Theory of Truth*, Columbia University Press, N.Y. and London, 1972.

Mates, Benson: *Elementary Logic*. Oxford University Press, N.Y., 1972 (2nd edition).

Mates, Benson: 'Leibniz on Possible Worlds,' (as reprinted in Frankfurt, H. G., *Leibniz*, Anchor Books, Doubleday & Co. Garden City, N.Y. 1972).

Parkinson, G. H. R.: *Spinoza's Theory of Knowledge*, Oxford University Press, Oxford, 1964.

White, W. Hale, and Stirling, Amelia H.: *Ethic of Benedict De Spinoza*, Oxford University Press, 1923. (4th edition.)

Wolf, A.: *Spinoza's Short Treatise on God, Man, and His Well-Being*, Russell & Russell, N.Y., 1966.

Wolfson, Harry Austryn: *The Philosophy of Spinoza: Unfolding the Latent Processes of His Reasoning*, Schocken, N.Y., 1969. (2 vols.)

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