Supposition as Quantification *versus* Supposition as Global Quantificational Effect[1]

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A major theme in the secondary literature of the last three decades has been the question: What is the medieval theory of the modes of personal supposition a theory *of*? It is beyond question (and has never been questioned) that this theory is a study of quantificational phenomena, but what *kind* of study, and *which* quantificational phenomena?

Spade 1988 suggests that there are actually two theories to address this question to, an early one and a later one.[2] Most of the present paper is a development of this idea. I suggest that early work by Sherwood and others was a study of quantifiers: their semantics and the effects of context on inferences that can be made from quantified terms. Later, in the hands of Burley and others, it changed into a study of something else, a study of what I call *global quantificational effect*. In section 1, I explain what these two options are.

In section 2, I look at the early tradition, which is found in many thirteenth century writers, including William of Sherwood, Peter of Spain, Lambert of Auxerre, and in several anonymous texts, with remnants of it extending also to much later works, such as the Logica Parva of Paul of Venice. This is an investigation of the semantics of quantifiers, coupled with an investigation of ascent and descent, which are kinds of inference that are consequent on, but distinct from, the semantics of the quantifiers.

In the fourteenth century, that tradition evolved into a quite different one, represented primarily by Walter Burley, William Ockham, and John Buridan. In this later development the terminology of modes of common supposition comes to be defined in terms of the possibility of descent and ascent. The result, discussed in section 3, is a theory that is no longer a theory of quantifiers, but a theory of global quantificational effect. This was a great step forward in the clarification of technical terms, but a step backward in studying what is important from a twentieth century point of view, since global quantificational effect is consequent upon an underlying system of quantifiers, and the theory has turned its back on their study.

Finally, in section 4, I return to the long-standing question of the purpose of supposition theory. Settling the question of what it was a theory of does not settle the question of what it was thought to accomplish. I suggest that the medieval studies of supposition parallel modern theories of opacity and transparency; in both traditions there is no single purpose; instead, there are different stages and different participants, all with their own different purposes.

On the usual interpretation, there was an account of quantifiers in the early medieval period which was obscure; it was "cleaned up" by fourteenth century theorists by being defined in terms of ascent and descent. I am suggesting that the cleaning up resulted in a totally new theory. But this is not compelling if the obscurity of the earlier view prevents us from making any sense of it at all. In the Appendix, I clarify how I am reading the earlier accounts. They are obscure, but I think they can be read so as to make good sense. These same issues arise in interpreting the infamous nineteenth century doctrine of distribution; I touch briefly on this.

1 Quantification versus Global Quantificational Effect

All of the authors under discussion here classify the functioning of common terms in propositions into three categories: Determinate, Distributive, and

Merely Confused[3]. Determinate has something to do with wide-scope existential quantification, distributive with universal quantification, and merely confused with something like narrow-scope existential quantification. Paradigm examples are these:

Some donkey is a runner.	`Donkey= has Determinate supposition.
Every donkey is a runner.	`Donkey= has Distributive supposition.
Every donkey is a runner.	`Runner= has Merely Confused supposition.

Although virtually all authors agree about how to classify terms in simple propositions, it has always been puzzling what they thought this represents or accomplishes. The point of this paper is to make a small advance in exploring this question. I will argue that William Sherwood, Peter of Spain, and Lambert of Auxerre have a theory of modes of common supposition that amounts to a semantics of quantifiers, whereas Walter Burley, William Ockham, and John Buridan have a quite different theory, one that amounts to a theory of global quantificational effect. The purpose of this section is to explain the difference between these options.

1.1 The Semantics of Quantifiers

Let us suppose that we have given an explanation of the semantics of quantifiers and connectives, and that someone then asks us what our theory has to say about `□x’ as it occurs in

_□xPx.

A natural reply would be:

> Well, it’s a universal quantifier, just as it was before a negation sign appeared in front of it. In fact, there is nothing new to say about it at all; we have given the semantics of the quantifier, and of negation, and everything there is to say follows from these.

This reply construes the question as a question about the semantics of quantifiers.

1.2 Global Quantificational Effect

We could also give a different reply, consistent with the first. We could say:

> In the context `_□xPx=, the quantifier has an existential _effect_. In that context, the quantifier has the actual effect that it would have if it were moved in front of the negation and changed to existential: `□x_Px=. So its _global effect_ here is existential, not universal.

It is fairly easy to see what this amounts to, and the idea can be made precise within the theory of "normal forms". If no biconditional sign appears in a formula of quantification theory, then you can take any quantifier in that formula and move it in stages toward the front of the formula, each stage being equivalent to the original formula, provided that you switch the quantifier from universal to existential (or _vice versa_) whenever you move it past a negation sign or out of the antecedent of a conditional, and provided that you do not move it past a quantifier of opposite quantity (i.e. you don't move a universal past an existential, or _vice versa_). For example, you can take the universal quantifier in `_(□xPx ⎯ G)' and move it onto the front of the conditional as an existential, to get `_□x(Px ⎯ G)', and then the resulting existential can be moved further front, turning into a universal again: `□x_(Px ⌐_ G)'. If you do this systematically to all the quantifiers in a formula, the result is a formula in "prenex normal form," and in terms of these forms you can define the global quantificational effect of any quantifier in any formula as follows:

A quantifier is globally strongly universal in a formula if it becomes a wide scope universal quantifier in (one of) the prenex normal form(s) of that formula.

A quantifier is globally strongly existential in a formula if it becomes a wide scope existential quantifier in (one of) the prenex normal form(s) of that formula.

A quantifier is globally weakly universal in a formula if it becomes a universal quantifier in (one of) the prenex normal form(s) of that formula, but it has scope inside an existential quantifier in any such form.

A quantifier is globally weakly existential in a formula if it becomes an existential quantifier in (one of) the prenex normal form(s) of that formula, but it has scope inside a universal quantifier in any such form.

For example, the second universal quantifier in the following formula is globally weakly existential, as is shown by the equivalences:

□x(Px ⌐ _□yRxy)

□x(Px ⌐ □y_Rxy)

□x□y(Px ⌐ _Rxy)

(It cannot be moved in front of the initial universal quantifier in any way while preserving equivalence with the original formula.)

The contrast between the early supposition theory and the later one shows up as the following contrast, using distributive supposition as an example:

<u>The Early Theory:</u> The early theory is a theory of the quantification of terms, analogous to a modern semantics of quantifiers. In this kind of account, a universally quantified term such as `man' in `every man' has distributive supposition as a result of the presence of the word `every'. When this term (with the `every') appears in more complex contexts, it still has distributive supposition. This is because distributive supposition is the

status a term has in virtue of its being directly quantified by a quantifying sign such as `every’ or `no’. So in

Not every man is an animal

the term `man’ has distributive supposition because of the `every’. The fact that the whole sentence has a negation on the front does not affect the mode of supposition of `man’ (just as `□x’ is a <u>universal</u> quantifier even in `_□xPx’).

<u>The Later Theory:</u> The later theory is an account of global quantificational effect, with distributive supposition being analogous to global universal effect. As in the earlier account, the `man’ in `every man’ has distributive supposition as a result of the presence of the word `every’. But when this term (with the `every’) appears in more complex contexts, it can lose this distributive supposition. This is because distributive supposition is the status a term has in virtue of its global effect. So in

Not every man is an animal

the term `man’ loses its distributive supposition because of the negation on the front.

In the later theory, determinate supposition is analogous to global strongly existential effect, merely confused supposition is analogous to global weakly existential effect, and distributive supposition is analogous to global universal effect (lumping together strong and weak).

1.3 Distinguishing the Theories

What distinguishes the earlier theory from the later one is whether the mode of supposition of a term in a proposition is something that that term retains when its proposition is embedded in further contexts. Nobody will dispute that quantification remains unchanged under embedding while global quantificational effect changes. The question is which phenomenon is supposed to be captured by the mode of supposition of a term. The early kind of theory uses modes of supposition to stand for quantificational status, and thus this kind of theory is a study of quantification; the later kind of theory uses modes of supposition to stand for global quantificational effect, and so that is what it studies.

All theorists in fact spend a great deal of time in studying inferences, a point rightly stressed by Karger 1993. They even study much the same inferences in much the same examples. But they express their findings differently. In the early theory there is much discussion of "mobility," i.e. whether or not one can make inferences to singulars under the term. Here, one finds ample discussion of contexts in which inferences are immobilized. For example, from `Every man is running', one may descend under `man' to infer

`This man is running'; but in `Not every man is running' the negation immobilizes that inference, so that one is not able to descend from `Not every man is running' to `This man is not running'. On this account the mode of supposition of `man= (that is, its quantification semantics) remains unchanged when the `not= is added, but the `not= affects what inferences can be drawn, because mobility has entirely to do with inferences..

In the later theory little is said of immobile distributive supposition,[4] since distributive supposition is defined in terms of the possibility of descent. On that approach, the analyses of inference failures are couched in terms of the negation's altering the supposition of the term. In `Every man is running', the term `man' has distributive supposition (on both theories), and if distributive supposition is not immobilized, one may descend under the term. In the later theory the negation in `not every man is running' does not immobilize the distributive supposition of `man'; it changes it into determinate supposition, and it is already known that descent is not sanctioned by determinate supposition. So the account of inference failure in `not every man is running= does not need an appeal to immobilization.

Of course, both theories need to get the same answers regarding what inferences are correct, and thus they proceed in parallel, even regarding many of the details. The difference is that in the early account one needs a theory of immobilization added on to a theory of the semantics of quantifiers; in the latter theory one needs an account of shift-of-mode-of-supposition to explain the same cases. It is no surprise then that the details of the conditions under which inferences are immobilized in the early theory are closely paralleled by the details of the conditions under which supposition is altered in the later theory. These parallels give the impression of different articulations of a common theory. I think that instead we have quite distinct theories that run in parallel partly because of a common heritage, and partly because they both aim at accounting for much the same data.

Each approach has its own apparent advantages. An advantage of the later theories is that inference patterns can be stated quite generally. For example, one can take it as a perfectly general principle that "distributive entails determinate," that is, from any proposition containing a term with distributive supposition, if that term gets its supposition changed to determinate (without any other changes in the proposition) then the resultant proposition follows from the original. In the earlier theories the general principle has to be "distributive entails determinate, unless immobilized." This appears to be a far less useful principle, since one needs to check for immobilization before applying the principle, and that can be a complicated matter. But something similar already happens in the later theory, since in that theory it is an equally tricky matter to tell <u>whether</u> a term is distributive or determinate. So there is a tradeoff here, and it is not clear that either theory is better overall at addressing inferences.

2: Supposition as a Theory of Quantification: The Early Accounts

The purpose of this section is to argue in detail the first claim made above, that the <u>early</u> accounts of supposition construed the modes of supposition as kinds of quantification, not as kinds of global quantificational effect.

2.1 How it goes overall

A theory of quantifiers generally works as follows. First, each quantifier is understood to have a canonical position. Then the semantics of the quantifier are explained for an occurrence of the quantifier in that canonical position, in terms of an assumed understanding of the rest of the elements present. For example, in modern first order logic, the canonical position of a quantifier is on the front of a formula, with scope over the whole formula. The semantics of the quantifier are then explained in terms of a prior understanding of how the rest of the formula works, in particular, in terms of what objects satisfy the formula. For example, the existential quantifier is explained by saying that `(□x)(...x...)' is true iff something satisfies `...x...'.

The medieval theory of supposition discusses quantified terms, not quantifiers themselves, but this is only a matter of formulation. In all versions of supposition theory, the canonical positions for quantified terms are as subject term or as predicate term of a categorical proposition. Thus the theory needs to address how they work in these places.

The account of which mode of supposition a term has in its canonical position is usually specified in terms of rules such as these:

A term not preceded by a special sign (or preceded only by `some') has determinate supposition.

A universal affirmative sign (e.g. `every') distributes the term it is adjoined to, and merely confuses any other term to its right.

A negative term (e.g. `no' or `not') distributes any term to its right.

The results for standard form categorical propositions are these:

In `Some S is P' neither term is preceded by a sign other than `some', and so both have determinate supposition.

In `Some S is not P' the subject term has determinate supposition, and the `not' makes the predicate term supposit distributively.

In `No S is P' the `no' makes both terms supposit distributively.

In `Every S is P' the `every' makes the subject term distributive and makes the predicate term merely confused.

These rules (in the early theory) give an algorithm that is no different in principle than a modern account that reads:

> If a quantifier contains a variable all by itself or preceded by `□' it is universal; if it contains a variable preceded by `□' it is existential.

The above rules thus give syntactic tests for determining mode of supposition. The uniform account of the semantics of these terms then goes something like this (this is a "generic" version):

> A term has determinate supposition in a categorical proposition when the locution containing it can be expounded by means of its being true for some single thing.

> A term has distributive supposition in a categorical proposition when it supposits there for all of its supposita.

> A term has merely confused supposition in a categorical proposition when it can be taken there for several of its supposita, not necessarily for

all.

These accounts will appear frustratingly vague to many contemporary readers (they will be clarified somewhat in the appendix). But their unclarity is not necessarily an impediment to classifying them. First, it is clear that they make no appeal to ascent or descent. Second, the accounts yield (unclear) accounts of the semantics of quantified terms, accounts which do not change when categorical propositions appear embedded in more complex constructions. In particular, just as in modern quantification theory, once the semantics of the quantified terms are given, we are done with them; they do not metamorphize into one another when sentences containing them are embedded in larger sentences (as in the later theory), nor is their semantics affected by such embedding. (This claim will be justified below.)

It is especially easy to misread certain rules of the early theory as rules for altering suppositional status with embedding. There are two sorts of such rules susceptible of such misreading, and I need to explain why these are not rules for altering modes of supposition.

First are the rules given above that explain how the presence of signs such as \`every', \`no' and \`not' affect the suppositional status of terms following them. These *could* be (mis)interpreted as *altering* suppositional status; for example, one could imagine that the (distributive) terms of `No S is P' had determinate supposition *before* the `no' was added to the proposition, and that the `no' changed the supposition from determinate to distributive. But this would be like mistaking `(□x)Px' as something that became an existentially quantified sentence by starting with the universally quantified `(x)Px' and having the existential sign added. That isn't how modern quantification theory works, and it isn't how to read the rules above (in the context of the early theory) that specify suppositional status. In neither case are the semantics of the resulting formula explained in terms of the semantics of the alleged input formula; it is only a syntactic accident that the resulting formula looks like another meaningful formula with a sign added. One might think otherwise, because there is much talk e.g. about `every' *confusing* or *distributing* terms that follow it, with the terms present before the `every' shows up to do something to them. But `every' distributes or confuses the terms themselves, not the terms construed as things already having (determinate) supposition.

Second, there are rules that explain how the presence of signs such as `not' affect mobility (ascent and descent) upon embedding. Rules such as "What mobilizes the immobile, immobilizes the mobile." These rules form an important part of both enterprises. The later theories define suppositional status in terms of descent and ascent, and so in these theories such rules are rules about how embedding affects suppositonal status. But in the theories under discussion, ascent and descent are never part of the semantics of the quantifiers; the modes of supposition are characterized without these notions. So in the early accounts, rules about mobility say nothing about suppositional status. (They say instead what they say literally: they say what may or may not be inferred from a sentence containing terms in such and such positions.)

I have sketched a theory in which quantified terms have their semantics explained in their canonical positions in categorical propositions, and in which the terms retain their suppositional status and semantics when sentences containing them are combined into larger sentences. On this account, since `dog' has distributive supposition in `Every dog is spotted' it also has that status in `Necessarily, every dog is spotted', `If every dog is spotted then every giraffe is spotted', and so on. But so far I have simply asserted that this is the right interpretation of the earlier (thirteenth century) authors. The case is yet to be made. In the remainder of this section I consider the evidence that William of Sherwood, Peter of Spain, and Lambert of Auxerre actually held theories of this sort.[5]

2.2 William of Sherwood's Theory of Quantification

William gives the following sorts of explanations of the modes of common personal supposition (Kretzmann 1966, '5.2):

> Supposition is determinate when the locution can be expounded by means of some single thing. Which is the case when the word supposits for some single thing. Therefore in `a man is running' it can be true for anyone running.
>
> Supposition is distributive when [the word] supposits for many in such a way as to supposit for any.
>
> Supposition is merely confused when [the word] supposits as does

`animal' in `every man is an animal'.

William also defines mobility (for distributive supposition only) in terms of descent, independently of (though immediately after) the account of supposition. Our present concern is not to get clear on the precise meaning of these definitions (for that, see the appendix), but to get clear about what the definitions are definitions of: quantification, or global quantificational effect?

What evidence is there that Sherwood has a theory of quantification and not a theory of global quantificational effect? The best evidence would be for him to make the distinction and choose, but no author seems to have done this. Instead, we have two kinds of evidence:

A. So far as I can find, Sherwood never gives an example of a term that changes suppositional status as a result of embedding the categorical proposition containing it in a larger context. If his goal had been to discuss global quantificational effect, this would be a strange lapse on his part.

B. In at least one case Sherwood cites an example of a term whose global quantificational effect is at odds with its quantificational classification. The example is the term `man' in `not every man is running'. In this example, he says that `man' has immobile distributive supposition, which is exactly what one would expect if the quantificational word `every' has a distributional semantics, and if the negation is seen as not affecting suppositional status, but affecting mobility. The `every' gives `man' distributive supposition, and the `not' creates a context in which descent under the distributive term is invalid, that is, it makes the term immobile without changing its distributive supposition. If Sherwood's suppositional status were a kind of global quantificational effect, then the negation would affect the supposition of the term `man', making it something other than distributive. (On the later account, it would make the term have determinate supposition.)

2.1.1 A doubt concerning this point

Certain commentators would challenge the interpretation of this example; I will spend some time on the reason. (This subsection may be skipped without loss of continuity.)

The full sentence in which the above quote occurs is:

> Sometimes, however, distribution remains immobile, as in `not every man is running' `only every man is running', and other cases of that sort.

Kretzmann 1966, 119-20 suggests that Sherwood is not talking here about distributive supposition at all, but rather about an independent notion of distribution. And this claim cannot easily be discounted. After all, Sherwood doesn't say "distributive supposition remains immobile," he says "distribution remains immobile," and the term `distribute' does have a meaning independent of supposition theory proper. For example, Sherwood himself goes on to classify copulation into determinate, distributive, and merely confused. (Copulation is the analogue for adjectives of supposition for nouns.) And distribution is sometimes defined independently of any application.[6] It is clear that Sherwood's distributive supposition is meant to be the sort of supposition that typically results from distribution. So one might make sense of saying that a term is distributed and has supposition but nonetheless lacks distributive supposition. But this would be highly misleading, and one would expect a fairly pointed and lengthy explanation, which Sherwood does not give. This would be especially pertinent, since he has earlier defined `mobile' specifically for distributive supposition, and for him to use `immobile' (in connection with a term with supposition) for a quite different purpose would be disconcerting in a way that he would not be likely to overlook.

Further, there is a parallel passage where immobility is discussed, and where distribution alone cannot be what is meant. It is in William's discussion of copulation, which immediately follows the one on supposition. In this section, copulation is presented as a phenomenon parallel to supposition, and here, in comparing the two notions, we find the comment ('5.14):

> We also find immobile distributive copulation, as in `not every sort of ...'

This cannot be a comment about distribution in isolation, since he says `immobile distributive copulation'. The parallel to the preceding remark about immobile distribution for terms that supposit is close, and indicates that mobility is not an issue of distribution per se, but rather of something created from it.

There is one more piece of evidence that Kretzmann cites in favor of the view that Sherwood is discussing distribution, and not distributive supposition. It is the incongruity of the last sentence of the whole context in Kretzmann's translation (Kretzmann 1966 '5.13.5):

> Sometimes, however, distribution remains immobile, as in `not every man is running' `only every man is running', and other cases of that sort. It is called immobile, however, not because we cannot ascend in the subject but because we cannot descend. This is due to the fact that distribution is of the supposita themselves, and therefore when we cannot descend to one of them it is a case of what is properly called immobile distribution.
>
> Supposition is called immobile for a similar reason, viz., that we cannot descend to the supposita; for supposition is for a suppositum.

Kretzmann suggests that the last line is meant to contrast immobile supposition with immobile distribution. But on this interpretation Sherwood says that supposition can be immobile, but never gives either an example or an explanation of immobile supposition, and we are completely in the dark about what it could be.

In the Latin from which this is translated, the text is somewhat differently organized. The single-sentence last paragraph is not separated from the previous one at all; it is a conjunct of the last sentence of the preceding paragraph. So the whole quote has this form:

Sometimes, however, distribution remains immobile, as in `not every man is running' `only every man is running', and other cases of that sort. It is called immobile, however, not because we cannot ascend in the subject but because we cannot descend. This is due to the fact that distribution is of the supposita themselves, and therefore when we cannot descend to one of them it is a case of what is properly called immobile distribution; and supposition is called immobile for a similar reason, viz., that we cannot descend to the supposita; for supposition is for a suppositum.

With this parsing, the selection appears to be a slightly complicated explanation of why distributive supposition is called Aimmobile@ in these examples.[7]

Still, this is only one example, and one might wonder if it could have been a blunder on Sherwood's part. But in an apparently later text (Treatise on Syncategorematic Words) he also gives an example with immobile distributive supposition. He is illustrating the rule that

When there are two distributions over the same part of a locution the first immobilizes the second.

The illustration is the example

Every man seeing every man is running,

regarding which he indicates that the second `man' has immobile supposition.[8] This example is a complex proposition in which the term under discussion occurs in a subordinate clause (omnis homo videns omnem hominem currit). It is really not clear how the theory is supposed to handle embeddings of this sort; this is the sort of issue with which Sherwood struggles throughout the text.[9] But it is clear that he sees `man' in the subordinate clause as getting distributive supposition from its `every', and this distributive supposition remains intact in the larger sentence, even though it gets immobilized by the first `every'. (In the later theories the second `man' would have its distributive supposition destroyed by the embedding. It is not clear what kind of supposition would result.[10])

Nor is there any indication in the later text of an expression that changes supposition upon embedding. The evidence is not conclusive, and probably cannot in principle be further clarified. This is because Sherwood often discusses what kind of supposition a term has in what we would see as an embedded context without discussing what kind of supposition it might have had were its local context not embedded. Indeed, in the contexts of most interest to us, he probably was not thinking in terms of propositions becoming embedded in others, and of how that might have affected a kind of supposition they already have. And so in even posing this question we are in danger of reading our thoughts back into his. But what is clear, I think, is that it is both possible and natural to attribute to him a view according to which terms get their kinds of supposition assigned to them by the patterns of (mostly syncategorematic) signs in categorical propositions, without any attention at all being paid to the global quantificational effect of that term when its local categorical is part of a larger sentence.

2.3 Lambert of Auxerre

Lambert, like Sherwood, defines the modes of supposition independent of mobility. He defines determinate supposition as follows:

> Determinate supposition is what a common term has when it can be taken equally well for one or for more than one, as when one says `A man is running'. In that proposition `man' has determinate supposition because it is true if one man is running or if more than one are running.[11]

Instead of `distributive' and `merely confused', Lambert uses the terminology `strong' and `weak'. Strong is when the term is interpreted for all its supposita necessarily; weak is when the term is interpreted necessarily for more than one suppositum contained under it but not for all. These accounts are not unproblematic, but for present purposes the issue is not the unclarity of the accounts, but their independence from considerations of ascent and descent, and the question of how they are affected by embeddings.

Lambert gives one of Sherwood's examples to illustrate strong immobile supposition: `Only every man is running'.  This example is not conclusive, since it is not exactly clear what it means.  But it is natural to interpret it as being equivalent to the conjunction of `every man is running' and `no non-man is running', with the second conjunct being added by the `only'. Presumably, the singulars under `man' in `only every man is running' are of the form `only this man is running'[12]; since these cannot be inferred, the supposition is immobile.  The most natural interpretation then is that `every' gives `man' strong (= distributive) supposition, and that the `only' changes the overall import of the proposition, but without changing the fact that `man' has distributive supposition. This is consistent with the view that supposition is a matter of how terms are quantified, and it is inconsistent with the view that supposition is a matter of a term's global quantificational effect. But the discussion is so terse that it is hard to make a great deal out of it, and Lambert terminates his discussion of supposition at this point.[13]

2.4 Peter of Spain

The views of Peter of Spain on personal supposition, if taken literally, can fit nicely into the same category as Sherwood. But they are so meager that it is hard to know whether he put things in a certain way because he meant them strictly that way, or because he just wasn't thinking beyond a certain restricted set of applications.

Peter defines the modes without reference to ascent or descent, with heavy reliance on syntax. We find (VI.8):[14]

> Determinate supposition labels what a common term has when taken indefinitely or with a particular marker, as in `man runs= or `some man runs=.

By `taken indefinitely' he seems to have meant that no quantifier-like sign (such as the Aparticular@ sign `some=) precedes it syntactically.[15] He defines confused supposition (VI.9) as

> [Confused][16] supposition is the acceptance of a common term for several things by means of a universal sign.

There is no discussion of a term changing its suppositional status upon embedding. But Peter does clearly distinguish the question of the suppositional status of a term from the question of what inferences (descents and ascents) can be made using it (VI.9):

> [In `Every man is an animal= the term `man=] Astands for@ [confusedly] and distributively, since taken for every man; mobilely, since descent can be made from it to any supposit, . .

This seems to drive a wedge between suppositional status and mobility which would at least preclude defining one in terms of the other.

In the section on supposition, he does not divide confused supposition into distributive and merely confused. Instead, he has a long later section on distribution in which much is discussed, but little that bears directly on the present issue, since the words `distributive' and `supposition' (indicating <u>mode</u> of supposition) rarely occur. But when he does discuss distribution directly he seems to take sides against viewing it in terms of global effect. An illustration: Peter asks (XII.24) whether the negation in `Not man is just' {Non homo est iustus} distributes `man'. He concludes not.[17] He argues that if there were distribution, there should be a common term taken universally, and so there should be a sign signifying universality. But, he says, a universal sign signifies universality, while negation does not; so there is no distribution. Now if Peter saw distribution as a matter of global quantificational effect, there would be no reason to think that a sign signifying universality should be needed to achieve this. Nor did he overlook this possibility, for he thinks that the case under examination is just such a case. He concludes that `Not man is just' is universal, but only because the negation negates, and not because it causes distribution:[18]

> The solution to the objection is now clear, for the fact that `Not man is just' is universal is not because of the nature of distribution found in negation, but because man in common is negated, and once that is removed, so is any inferior.

So this is a case in which one clearly has "universal" global quantificational effect, but without distribution, and so Peter cannot view distribution as a matter of global quantificational effect.

3 Supposition as a Theory of Global Quantificational

Effect: The Later Accounts

3.1 How it Goes

In the later theory, the mode of supposition of a term in any proposition, no matter how complex, is defined in terms of descent from and ascent to that proposition under the term in question. An account of determinate supposition goes something like this:

> A term F has determinate supposition in a proposition `...F...' if and only if:
>
> > (i) From `...F...' one may infer `...this F... or ...that F... or . . . '
> >
> > assuming that the demonstrated F's include all the F's that there are, and
> >
> > (ii) One may infer the original proposition `...F...' from any singular of the form `...this F...'.

Example: The term `donkey= has determinate supposition in `Some donkey is grey= because:

> (i) From `Some donkey is grey= one may infer `This donkey is grey, or that donkey is grey, or that donkey is grey, or . . . , assuming that

these are all the donkeys. And:

(ii) One may infer `Some donkey is grey= from any singular of the form `This donkey is grey=.

Complications abound; issues that will not be addressed here include these:

∐In descending, you need to make changes in the original proposition. E.g., you descend from `Every man is running' to `This man is running', not to `Every this man is running'.  How can you tell in general what changes to make?  (E.g. In descending from `Only donkeys are grey= do you descend to `Brownie is grey= or to `Only Brownie is grey=?)

∐What is the force of `on the assumption that the demonstrated F's include all the F's'?

∐What if there is only one F, or no F's at all? What if necessarily there are no F's at all?

∐Exactly how are the other modes to be characterized?

These are matters that are well discussed in both primary and secondary sources; the points I am making here are independent of them.

Although my use of the terminology `global quantificational effect' is new, the classification of the later theories under this title relies on an already developed consensus about how to test for modes of supposition in the later theories, and the remaining subsections of this section are (I think) just well-known facts brought together as evidence for a theoretical analysis of the subject matter of the theory.

3.2 Walter Burley

Burley wrote (at least) two tracts on supposition. The first influenced Ockham's own views, and the second was written partly in reaction to Ockham=s writing. If Burley=s first writing construed supposition as global quantificational effect, then we might speculate that Burley invented this approach; otherwise Ockham is a good bet. In my opinion, the evidence is unclear. Here is how it goes.

3.2.1 Burley=s Early Work:

In Burley's first work, De Suppositionibus, he clearly defines modes of supposition (except determinate) in terms of the possibilities of ascent and descent, and mobility is not an independent notion at all. In fact, Burley has four modes of common personal supposition: determinate, merely confused, mobilely distributed, and immobilely distributed. His account of determinate supposition is primarily by example:[19]

> (32) . . . Determinate supposition is when a common term supposits distributively for its supposita, as in `Some man runs'.

(His use of `distributively' is misleading here, since it is disjoint from <u>confused and distributive</u> supposition.) His accounts of the second mode is in terms of ascent and descent:

> (34) A term supposits merely confusedly when it supposits for several things in such a way that it is implied by any of them and one can descend to none of them [either] copulatively or disjunctively. `Animal' supposits this way in `Every man is an animal'. For it is implied by [its] supposita. For it follows: `Every man is this animal; therefore every man is an animal'. But it does not follow: `Every man is an animal; therefore every man is this animal', and it also does not follow: `Every man is an animal; therefore every man is this animal or that one'.

By contrast with this account, we can assume that the previously introduced determinate supposition is when the proposition containing the term <u>is</u> implied by any instance, and one <u>can</u> descend to a disjunction of instances.

The two forms of confused-and-distributive supposition are mobile and immobile, both explained here:

> (44) Confused and distributive supposition is . . . mobile when a common term has supposition and the power of distributing and one can descend to some suppositum of it. [It is] immobile when a common term supposits for its supposita and one cannot descend to these supposita. The term `man' supposits in the latter way in `Every man besides Socrates runs'. For the term `man' is distributed, and one cannot descend to a suppositum.

This provides roughly the following operational definition: a term is distributed mobilely when there is no ascent from an instance but one can descend to an instance, and it is distributed immobilely when there is no ascent from an instance and one cannot descend to an instance.[20] (An additional condition is given for mobile distribution, that the term be distributed by a sign. This is not defined, but its rationale is explained later (section 46); it is to rule out possible descents that are unrelated to supposition, as in the inference `Some proposition is true; therefore this proposition is true', pointing to `Some proposition is true'.)

It is certainly possible to read these explanations as definitions of modes of supposition in terms of ascent and descent, meant to be applied globally.

Read in this way, Burley had this view of suppositions apparently before either Ockham or Buridan. But this interpretation is not conclusive, for two reasons. One is that these might not be definitions, but just symptoms of another more basic account of supposition, not articulated. Secondly, if these definitions were to be confined to atomic (categorical) propositions, they could be construed as providing local, not global, truth conditions for the quantifiers, as in the earlier accounts. The test to distinguish these would be to see what happens to supposition when categorical propositions are embedded in other contexts. I have not found discussion of such an example in Burley's early tract.

3.2.1 Burley=s Later Work:

The matter is different in Burley=s later work, The Longer Treatise on the Purity of the Art of Logic. Here he gives essentially the same accounts of the modes, but he gives an example in which he tests for the supposition of a term in an embedded context by testing the descents for the whole context. This illustrates that the test for mode of supposition is to be applied globally, not locally. Here is the quote:[21]

> (91) . . . a syncategoric word conveying a multitude [of things and] occurring in one categorical does not have the power of confusing a term

> occurring in another categorical. Thus the copulative `Every man is an animal and some man is he' is false on account of its second part. For the term `man' occurring in the second categorical is not confused by the preceding [universal] sign. Therefore, it supposits determinately, and it is denoted [by the proposition] that every man is an animal and Socrates is he or every man is an animal and Plato is he, and so on.

This illustrates descent under the second term `man=. The important point is that the descent is from the whole complex proposition `Every man is an animal and some man is he', not just from the second conjunct. If determinate supposition were a matter of how a term behaves in its own categorical proposition, the descent under discussion could not be taken to be directly relevant to the mode of the term.[22]

3.3 William Ockham

Ockham=s work is as difficult to classify as is Burley=s early work. One thing is clear: Ockham gives systematic accounts of all the modes of supposition (including determinate!) entirely in terms of the possibilities of ascent and descent, and he may be the first to do so. Here are his accounts:[23]

> Common personal supposition is divided into confused and determinate supposition.
>
> There is <u>determinate</u> supposition when it is possible to descend by some disjunction to singulars. Thus this is a good inference, `A man runs, therefore this man runs, or that,= and so on for singulars. . . . It is therefore an established rule that when there can be descent to singulars under a common term by a disjunctive proposition and the said proposition can be inferred from any one of the singulars, then the term has determinate personal supposition.
>
> Confused personal supposition . . . is divided, since some is merely confused supposition and some is confused and distributive supposition.
>
> There is <u>merely confused</u> supposition when a common term supposits personally and it is not possible to descend to singulars through a disjunction if no change has been made to the other extreme, but [it is

possible to descend] through a proposition with a disjunctive predicate and it is possible to infer the [original] proposition from any singular. For example, in this proposition, `Every man is an animal,= the `animal= has merely confused supposition because it is not possible to descend under `animal= to its referents by disjunction, since we cannot infer: `Every man is an animal, therefore every man is this animal, or each man is that animal,= and so on for the singulars. But it is certainly possible to descend to a proposition with a disjunctive predicate of singulars. For this is a good inference: `Every man is an animal, therefore every man is this animal or that or that, and so on for the singulars=.

There is <u>confused and distributive</u> supposition when it is possible in some way to descend conjunctively, if [the term] has multiple referents, but no formal inference [to the original can] be made from any [of the conjuncts], as in this proposition, `Each man is an animal.= Its subject has confused and distributive supposition, for this follows: `Each man is an animal, therefore this man is an animal, and that, and so on for the singulars.= Moreover, this does not follow formally: `That man is an animal,= someone or other having been pointed to, `therefore each man is an animal.=

What is not completely clear is whether these accounts are meant to be applied locally or globally. One could decree that they are to be applied only locally, to terms in categorical propositions; this would yield a version of the early theory with a new account of the semantics of quantifiers, couched entirely in terms of ascent and descent. But Ockham never suggests such a limitation. Still, I have not found clear examples that would commit him to applying the theory globally. I leave this as a loose end.

3.4 John Buridan

Buridan begins with his feet planted in the past, characterizing determinate supposition (3.5.1) as[24]

> when it is necessary for the truth of the sentence ... that it is true for some determinate supposit,

but he immediately cashes this out (3.5.5-6) in terms of requirements on ascent and descent:

> From any given supposit of a term the common term can be inferred with

> the other [terms] unchanged in the given sentence,

and

> From a common term suppositing this way, all the singulars can be inferred disjunctively in a disjunctive sentence.

Distributive supposition is given a similar definition, and merely confused supposition is defined as common personal supposition that is neither determinate nor distributive.

It is clear from Buridan=s writings that the new theory is now fully developed, in that these conditions are presented as conditions that are to be applied globally, so that the result is a classification of terms in terms of their global quantificational effect. Here are some illustrations:

> (3.7.7): He says that the term `man' in `Not every man is running' is not distributed; this is because the negation "removes" the distribution of `man'.

> (3.7.37): We find that in `A man does not run and a horse is white' the terms `horse' and `white' are not distributed, but in `Not: a man is running and a horse is white' both `horse' and `white' are distributed.

(3.7.44): He speaks of embedding signs as altering the supposition of terms contained in what they embed: "what naturally distributes an undistributed term can remove the distribution of a distributed term." (The example is of `No' removing the distribution of `man' in `non-man runs' when combined to yield `No non-man runs'.)

(3.8.18): We find that `man' has determinate supposition in both `Not: no man runs' and in `Socrates does not see no man'.

Clearly these examples illustrate a theory in which a term has a kind of supposition in a given sentence, but that kind can be altered when the sentence becomes more complex. The test in every case is in terms of conditions of ascent and descent applied to the whole sentence in which the term occurs, and the result is a theory of global quantificational effect.

3.5 Albert of Saxony

Albert wrote at about the same time as Burley, Ockham, and Buridan. His account is not completely clear, but overall it appears to be in the later tradition.

As noted above, there is no necessary connection between appealing to ascent and descent in the definition of modes of supposition and having a theory of global quantificational effect instead of quantification. One could use ascent and descent to explain the meanings of quantifiers in canonical position, and then hold that they do not change mode when embedded. It almost looks as if Albert of Saxony does this. He begins with an account of modes supposition in terms of ascent and descent, virtually identical to Ockham=s:[25]

> (II.4) Determinate supposition is the use of a general term for each of the things it signifies by its imposition, . . . , in such manner that a descent to its singulars can be affected by a disjunctive proposition. In this sentence, `A man runs=, the term `man= has determinate supposition, because the term `man= in this sentence stands, disjunctively, for everything which it signifies by its imposition. For it is sufficient for the truth of the proposition `A man runs= that this disjunctive proposition be true: `This man runs, or that man runs=, and so on for all singulars.

Merely confused supposition is the interpretation of a term for each thing it signifies by its imposition, . . ., in such manner that a descent to its singulars can be made by a proposition of disjunct predicate, but not by a disjunctive or a conjunctive proposition. . . . This kind of supposition is had by the term `animal= in the sentence `Every man is an animal=; for this is a valid consequence, `Every man is an animal, therefore every man is either this animal or that animal, etc.=, . . .

(II.5) Confused and distributive supposition is the interpretation of a spoken or written term, in conjunctive manner, for each thing . . . which it is instituted to signify, . . . , such that a descent to the singulars for which it stands can be made in conjunctive manner, by reason of that supposition.

Later, however, he explains universal and particular signs as follows:

(III.2) A sign of universality is one which indicates that the general term, to which it is joined, stands conjunctively for each of its values . . .

A sign of particularity is that by which it is indicated that a general term stands disjunctively for each of its values . . .

If these last points are taken literally, one would be forced to treat the subject of `Not every man runs' as having distributive supposition, since the universal sign is clearly present; this would make Albert=s view a case of the early tradition as outlined above. But Albert explicitly denies this, saying

> (I.6) Every general term which follows immediately on a sign of universality, without a preceding negation, has confused and distributive supposition. . . . And I say expressly, `without a preceding negation=, because if it is said `Not every man runs', the term `man' does not have confused and distributive supposition, even though it does follow immediately on the sign of universality.

It is thus clear in context that Albert=s linking of the universal sign with confused and distributive supposition is meant to apply to non-embedded propositions only, and on balance his account turns out to be substantially the same as Buridan's.

3.6 Paul of Venice: the Logica Parva

The Logica Parva is an eclectic work written about a half century after Ockham and Buridan, and thus subsequent to what I am calling the Alater@ period.. It seems to draw on a wide variety of sources, and it is somewhat haphazard in its presentation. There is a section on supposition, and a traditional coverage of the modes, which are defined in terms of descent and ascent, as follows:[26]

> Determinate supposition is the acceptance of a common term suppositing personally beneath which descending occurs to all of its singulars disjunctively, e.g. `man runs and these are all men; therefore, this man runs or this man runs and thus of singulars'.
>
> Common mobile personal supposition which is merely confused is the acceptance of a common term standing personally beneath which one descends to all of its supposita in disjuncts, as in `every man is [an] animal, and these are all [the] animals; therefore, every man is this animal or that animal and thus of singulars'.
>
> Mobile distributive supposition is the acceptance of a common term standing personally beneath which one descends to all of its referents conjunctively; e.g. `every man runs and these are all men'; therefore

`this man runs and this woman runs and thus of singulars'.

These appeals to ascent and descent do not entail that this is a theory of global quantificational effect, for if these definitions were meant to apply to terms only in canonical position in categorical propositions, the resulting theory could still be a theory of quantifiers. The key lies in how the theory is to be applied to terms in propositions that are embedded in such a way that their supposition would be altered under the Burley-Buridan approach: does such embedding alter the mode of supposition, or only the term's mobility? Paul seems to have it both ways, and the text supports both conclusions.

3.5.1 Vestiges of the Early Theory:

First, there is one central theme according to which embedded terms retain their original mode of supposition, but are rendered immobile. These examples are given along with Paul's (paradoxical) characterizations of immobile supposition. His definition of immobile distributive supposition is this (II.4):

> Immobile distributive personal supposition is the acceptance of a term with common personal supposition beneath which descending does not happen, but if it did happen, one would descend conjunctively, as `necessarily every man is [an] animal'; here `man' supposits in this

> way, because it does not follow [even] with a due mean: `therefore necessarily this man is [an] animal, and so on for singulars' . . .

It is difficult to make sense of the idea that although no descent happens, there is a way for it to happen if it should happen. Here is one speculation about what this means.[27] In all the cases Paul gives, the terms in question are in categoricals that are embedded in larger contexts. The terms have (mobile) distributive supposition in the categoricals considered in isolation, since descent is possible there; e.g. the categorical embedded in `necessarily every man is an animal' is `every man is an animal', and from this proposition one may descend under `man' to the conjunction `this man is an animal and that man is an animal, and so on'. Apparently, when embedded under `necessarily' the term retains its distributive supposition, but loses its mobility because descent is no longer possible . This is exactly what one would expect if distribution were a kind of quantification, which retains its integrity under embedding. The other examples (still in II.4) that are given immediately after this definition are also arguably of this kind; they classify as immobilely distributive the indicated terms in:[28]

> If every <u>animal</u> runs, every <u>human</u> runs.
>
> Every <u>man</u> except Socrates runs.
>
> No <u>animal</u> except <u>man</u> is rational.

[For] every man to be an animal is known by me.

3.5.2 Vestiges of the Later Theory:

This theme is contradicted in other sections of the text. The section on supposition is followed immediately by one on confounding terms, which contains this discussion (II.5):

> . . . in this proposition `not every man is [an] animal', `man' does not supposit distributively, but determinately, according to one rule pertinent to this matter, viz., whatever mobilizes the immobile immobilizes the mobile. That is: If any sign having the power to distribute some term finds again the same term undistributed, the sign makes the term stand distributively; and if the sign finds again the same term distributed, the sign makes the same term stand without distribution, i.e., it makes it stand determinately or merely confused.

The `that is' clause is crucial; contrary to the distinctions of the preceding section on supposition, it identifies distribution with mobile distribution. The result is that the term `man' in `not every man is an animal' is not just rendered immobile by the `not', it has its distributive supposition turned into determinate. This is clearly part of the later heritage in which the distributive mode of supposition is a matter of global quantificational import. This same pattern is found in a later section on rules of inference (III.3). Here, we are given the example of a bad inference: `Not no animal runs, therefore not no man runs' and we are told that this is an inference in which the term is not distributed. Apparently, placing the additional `not' in front does not just immobilize the distribution of `animal' in `no animal runs'; it removes it entirely.

I conclude from this that the Logica Parva is a piecing together of ingredients of a broadly developed tradition without the careful thought that is necessary to see whether and how they fit together. It contains elements of both of the earlier traditions that I have discussed.

4 What is Supposition Theory For?

One debate in the current literature takes this form: There are grave difficulties with the idea that supposition theory was intended to be either a theory of the truth conditions for quantifiers, or a theory of inference, or a theory of meaning, or a theory of understanding. But then what could its purpose be? I have suggested that the content of the theory changed somewhere in the middle of its development, from something like a theory of quantifiers to a theory of global quantificational effect. But this does not answer the long-standing question regarding the purpose of the theory. What did its authors think it accomplished? Here are some brief remarks about this (different) topic, informed by the historical view put forth above.

This question has a modern parallel. Suppose a historian of twentieth century philosophy were to notice our preoccupation with opaque contexts, and what is said about them. (S)he might naturally wonder: What is the purpose of the theory of opacity/transparency? It is neither a theory of the truth conditions for quantifiers, nor a theory of inference, nor a theory of meaning, nor a theory of understanding. But then what could its purpose be?

There is no single purpose behind opacity theory. Its earlier developers, such as Frege and Carnap, had their purposes, Quine has his, and others have theirs. And the same is true of supposition theory.

In inquiring about supposition theory, people usually start in the middle, by focusing on William Ockham. Suppose we make the similar move with opacity theory, correlating William of Ockham with Willard van Orman. We jump into the middle of current concerns with van Orman's criteria for opacity/transparency:

A term t occurs transparently in ...t... iff we can infer ...s... on the assumption that s=t, and we can also infer in the other direction on the same assumption.

A term t occurs transparently in ...t... iff we can infer □x(...x...).

A term t occurs opaquely in ...t... iff it does not occur transparently in ...t...

Is this a theory of quantification? No, though it's partly a theory about quantification. Is it an ingredient of a semantic theory at all? It seems not to be, since when people give semantic rules for languages they rarely use the notion of opacity or transparency in giving these rules.[29] Instead, it is used in two ways. One is in classifying the results of our semantic treatment; e.g. we give a semantics that does/does not result in certain contexts being opaque. The other way is that we classify constructions for which we do not have a semantic account; it is thought to be important in how to approach the phenomena to be able to say whether we are attempting to produce an account of an opaque context or a non-opaque one.

We can compare this with medieval accounts of supposition. First, change the terminology slightly; instead of `inference', speak of `descent' and `ascent'. Then the first characterization of referential transparency is:

> A term t occurs transparently in ...t... iff we can descend to ...s... on the assumption that s=t, and we can also ascend from ...s... back to ...t... on that same assumption.

Clearly, the modern notion of non-opacity and the medieval notion of personal supposition (in the later tradition) have a kind of parallel structure in their exposition. There are other parallels as well. Each theory tests for the status of a term in a sentence (one for a singular term, the other for a general term), and each tests for the status of a term that occurs <u>anywhere</u> in the sentence, no matter how deeply embedded in the sentence it may be. More strikingly, both theories consist entirely of definitions![30] So what are the definitions for?

Opacity theory didn't begin this way, it began with a different person (Frege) with different purposes. It began with an attempt in Frege=s work on sense and reference to develop the theory of reference. Frege needed to distinguish sense from reference in order to indicate how opaque contexts may be handled so as not to threaten his theory of reference, and this in turn was in order to have a logic that would secure the logical foundations of mathematics. His discussion of indirect (= opaque[31]) contexts allowed him to maintain his thesis of intersubstitutivity; i.e. the general validity of a kind of modified law of identity. As a side benefit he gave a fertile proposal for the semantics of propositional attitude contexts, though that was far from his main purpose.

Quine's purposes were different. He wanted to show that certain constructions are meaningless: the opaque contexts themselves, in his most stringent moods, and quantifying into them in all of his moods. This was part of his campaign to avoid intensions, entities whose identity conditions he found unclear. And this in turn was motivated by his nominalism. Quine defended his nominalism by "cleaning up" talk of intensions; he abjured Frege=s sort of reference to them, and instead classified contexts as Aopaque@ or Atransparent@ using operationally defined tests for the classification. Just as Ockham defended his nominalism by replacing obscure accounts of the meanings of quantifiers by cleaned-up tests for the modes of supposition in terms of ascent and descent.[32]

What about people other than Quine? They are now interested in opacity simply because they see it as an important phenomenon that affects the semantics of certain constructions, in virtue of which these contexts seem to require "special handling".

Both theories have parallel histories, consisting roughly of three stages. In the first stage, the earlier developers (Frege and Carnap/William of Sherwood et. al.) were realist minded logicians interested in a fertile domain of study. They developed theories that cut at the joints, theories that could be developed later on into recursive accounts of truth and meaning. In the second stage, the nominalists (Quine/Ockham) simplified and clarified the study, taking a global perspective, thereby discarding in the process much that was of interest in the earlier study, by using notions that are consequent on a recursive semantics, but that do not themselves lead naturally to such an account. Finally, later writers in both traditions are willing to draw on notions from both enterprises. At almost any point in the ongoing work, everyone is writing within an ongoing tradition that is mostly taken for granted; few writers pause to ask basic questions about why they are focusing on the problems at hand. That is left for future historians, who may thus be left with a question with no clear answer.

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Appendix: Making Sense of Supposition without Descent

I argued above that the early accounts explained supposition without appeal to ascent and descent. This seems clear. But the accounts themselves are not only not clear, they can seem positively bewildering, at least if taken literally. I think that these accounts are actually primitive versions of good accounts of the semantics of quantification. In this appendix, I explain how one might interpret the texts so as to get this result. The modern paraphrases I produce are not intended to state what the original authors had to say, for these authors said nothing in modern terms. They are rather explanations in modern garb of what the original passages meant.

The explanations I give cannot be justified from the original passages alone; they are given in the light of the consequences the authors thought their explanations had, consequences that are found in the surrounding writings. They are not the only possible interpretations. For example, it is clear to anyone reading the original explanations that it is possible to interpret these writers so as to have them asserting unreconcilable nonsense or sheer falsehoods. I do not dispute that such interpretations are possible; I only wish to make clear that there are different, coherent options.

In A.1, I try to clarify and make coherent the account of William of Sherwood. In A.2, I briefly indicate how this relates to the accounts of Peter of Spain, and Lambert of Auxerre. Then, in A.3, I explain how one can see the nineteenth century doctrine of distribution as an example of this sort of theory.

A.1 William of Sherwood's Account

Determinate Supposition: William ('5.2)[33] gives the following account of determinate supposition :

> Personal supposition is determinate when the locution can be expounded by means of some single thing. Which is the case when the word supposits for some single thing. Therefore in `a man is running' it can be true for anyone running.

He adds:

> The sentence `A man is running' means that the predicate is in some one individual, not in many, even though the predicate is in many *C* for a sentence sometimes permits this but it does not signify it.

I assume that the basic account is in the first sentence; supposition is determinate when the locution can be expounded by means of some single thing.[34] But how are we to expound it? To expound means to provide an analysis, but what analysis? The answer lies at the end of the first quote: the expounding should say something about the original proposition being true for the (single) thing. I suggest that William's basic account is this:

> WILLIAM'S ACCOUNT OF DETERMINATE SUPPOSITION:
>
> Term A has determinate supposition in `...A...' when `...A...' can be expounded by means of its being true for some single thing.

This is a complete and accurate characterization of determinate supposition. It stands in need of explanation, but not correction. That is, it is not clear from the wording alone, as it stands, what it means, but once it is understood, it can be seen that it is exactly right. So the discussion below is not an effort to replace William's definition by a better one, it is an attempt to clarify this one.

There are three ingredients to clarify: "to expound," "by means of some single thing," and "to be true for." I take these in turn.

To expound a proposition is to analyze it by providing a different, necessarily equivalent proposition. So we need to find a necessarily equivalent proposition which makes some kind of appeal to "some single thing".

It is clear from both comments and applications that this thing must be one of the supposita of the term. It is also clear from both comments and applications that selection of any <u>particular</u> thing to play this role would be incorrect. (Recall that in `A man is running' it can be true for <u>anyone</u> running.) So we are looking for an analysis of this form:

> Term A has determinate supposition in `...A...' when: Necessarily, ...A... if and only if for some x which is A: `...A...' is true for x.

But what does it mean for a full-fledged proposition `...A...' to be <u>true for</u> something? For example, what does it mean for `Some animal is running' to be <u>true for</u> a given thing? What is meant, of course, is that the proposition is true for a thing <u>with respect to the term `A'</u> in the proposition, and, in particular, that the proposition is true when the supposita of `A' in that proposition are limited to that thing:

> A proposition `...A...' is true for x with respect to `A' if and only if the proposition is true when you "limit" the supposita of `A' to x itself.

So we need to clarify what it is to limit the supposition of `A' to x (in the proposition under discussion). There are two ways to do this, with different virtues.

WAY #1: We can most simply "limit the supposita of `A' to x" by considering the original proposition with the relevant occurrence of the term `A' replaced by `A that is x'. For example, to ask whether `Every animal is spotted' is true for Brownie (with respect to `animal'), you consider the revised proposition `Every <u>animal that is Brownie</u> is spotted'. To say that `Every man is running' is true for Socrates (with respect to `man') is to say that `Every <u>man that is Socrates</u> is running' is true. And so on. Using this technique, the explanation from above becomes:

A term `A' has determinate supposition in `...A...' when: Necessarily,

...A... if and only if for some x which is A: ...A that is x...

The results are what we expect of determinate supposition. For example, the term `dog' <u>has</u> determinate supposition in `Some dog is spotted' because

Necessarily:

Some dog is spotted iff there is some dog x such that some dog that is x is spotted.

The term `dog' does <u>not</u> have determinate supposition in `Every dog is spotted' because it is false that

Necessarily:

Every dog is spotted iff there is some dog x such that every dog that is x is spotted.

It is easy to check that under this clarification, William's account gives the intended results for all of the standard form propositions. It also provides an account of the semantics of quantification, in the sense that when a term has determinate supposition, its occurrence in canonical position is stated to be equivalent to something that we now would recognize as a statement of the truth conditions for an existentially quantified statement.

The problem with WAY #1 is that it produces artificially complex propositions, in the face of the obvious fact that they can be simplified. This suggests the (equivalent) WAY #2.

WAY #2: This is just like WAY #1 except that you simplify `A that is x' to `x' all by itself, while removing any quantifying sign directly governing `A' (and also adding a negation if that sign is itself negative). Thus, instead of considering:

Some dog that is x is spotted

one considers:

x is spotted,

and instead of considering:

No dog that is x is spotted

one considers:

x is not spotted.

The explanation of determinate supposition on this way becomes:

A term A has determinate supposition in `...A...' when: Necessarily, ...A... if and only if for some x which is A: [...x...]*

where the notation `[...x...]*' indicates that the relevant adjustments have been made to the proposition in question. We now get the expected results: The term `dog' <u>has</u> determinate supposition in `Some dog is spotted' because

Necessarily: Some dog is spotted iff there is some dog x such that x is spotted.

The term `dog' does <u>not</u> have determinate supposition in `Every dog is spotted' because it is false that

Necessarily: Every dog is spotted iff there is some dog x such that x is spotted.

It is easy to check that under this second clarification, William's account also gives the intended results for all of the standard form propositions.

This explanation rests on an assumption that the scope for analysis has been determined. But suppose that a term occurs in a proposition that is itself part of a larger proposition; which do we pick for the `...A...' in the explanation? I argued in section 2 that William's approach is to pick the smaller proposition for this purpose, so that the "testing scope" for deciding whether a term has determinate supposition is the categorical proposition in which it occurs, not any larger proposition containing the categorical proposition. This is what makes the theory into an account of quantification, and not an account of global quantificational effect. The analyses discussed above could be incorporated into either sort of theory.[35]

Distributive Supposition: William ('5.2) defines confused and distributive supposition as follows:

> Personal supposition is confused ... when the word supposits for many, and distributive when it supposits for many in such a way as to supposit for any.

To assess this we need to know first what it is for a term to "supposit for many". I think that this is a very weak claim; it only denies that the term has determinate supposition, i.e. it only denies that it supposits for one. That is, it says that the proposition in question can not be expounded in terms of anything involving "some single thing." It is clear that nothing stronger is intended than this, or, if something stronger is intended, it is soon retracted. For example, William says soon after this definition (in '5.12) that a word has confused supposition whenever it supposits either for many things or for one thing taken repeatedly. (He is worried about the second `man' in `Every man sees a man' when everyone sees the same man *C* so that it is false that many men are seen.) So the `many' is merely a way of denying that we have a case of `one', that is, of determinate supposition. This reduces the characterization of distributive supposition to:

WILLIAM'S ACCOUNT OF DISTRIBUTIVE SUPPOSITION:

A term has distributive supposition when it does not have determinate supposition and it supposits for any.

It is clear in context that `supposits for any' means that the term supposits for any <u>of its supposita</u>; I will take this limitation for granted. The trick is to see how to get this to mean anything other than a tautology. After all, how could a term not "supposit for any" of its supposita? The answer must be that for a term to supposit <u>for</u> something in a proposition requires more than just that the thing in question be among the term's supposita. I suggest that a term "supposits for any of its supposita in a proposition" just in case that proposition's being true entails that it (that very proposition) is <u>true for</u> any of the supposita of the term (with respect to the term in question), in the sense of `true for' discussed above. Thus, a necessary and sufficient condition for:

`A' supposits for any of its supposita in `...A...'

is this:

> \`...A...' entails that \`...A...' is true for any of A's supposita (with respect to \`A').

This can then be further spelled out as follows:

> Necessarily, if ...A..., then for any x that is A: \`...A...' is true for x (with respect to \`A'),

that is, appealing to WAY #2 above:

> Necessarily, if ...A..., then for any x that is A: [...x...]*

For example, the term \`dog' has distributive supposition in \`every dog is spotted' because it does not have determinate supposition there, and:

> Necessarily: if every dog is spotted, then, for any x that is a dog: x is spotted.

Again, one can check that this account gives the intended results for terms in standard form categorical propositions. (Again, this is an explanation of how to understand William's account, not a proposal for how to replace his account with something clearer. His account was already fully stated above, and I have not suggested revising it.)

One might wonder why I have formulated the condition for distributive supposition in terms of a conditional instead of a biconditional. Here I am guided by the intended applications; in order for the predicate of `Some S is not P' to have distributive supposition (which is required by William's rule at '13.1), one needs a conditional, not a biconditional[36].

Merely Confused Supposition: The definition of merely confused supposition is the hardest to get clear on. Sherwood's explanation is virtually no explanation at all ('5.2):

> [Personal supposition] is merely confused [when the word supposits as does] the word `animal' [in `every man is an animal'].

There are a number of additional examples, but little in the way of explanation. So either there is some specific notion in mind that is not stated, or merely confused supposition is nothing other than personal common supposition that is neither determinate nor distributive.

A.2 Peter of Spain and Lambert of Auxerre

Peter and Lambert are easy to cover since their discussions of the modes of personal supposition are so terse.

Determinate Supposition: Peter of Spain says this regarding determinate supposition (VI.8, Dinneen 1990, 71):

> Determinate supposition labels what a common term has when taken indefinitely or with a particular marker, as in `man runs' or `some man runs'. Each of these is called determinate, since though in each, the term `man' stands for every man running or not, they are true only if one man is running. To stand for is one thing, to make a locution true for something another. In the examples above, ... the term `man' stands for every man, running or not, but it makes the utterance true for one man running.

This formulation is disconcertingly loose, and there is little profit in exploring all of the readings that clearly do not cohere with the intended applications. It is possible to read the remarks so that they are consistent with William's account as explained above, and this seems to cohere also with Peter's applications. So I presume that this is what is intended.

Lambert says this (3g(iv), Kretzmann & Stump, 111):

> Determinate supposition is what a common term has when it can be taken equally well for one or for more than one, as when one says `A man is running'. In that proposition `man' has determinate supposition because it is true if one man is running or if more than one are running. But it is called determinate because for the truth of a proposition in which

a common term that has that sort of supposition is used, it is enough that the common term is interpreted necessarily for some suppositum, and it is not required that it be interpreted necessarily for more than one, although in supposition of this sort it can be interpreted for more than one.

I take it that the heart of this account is:

LAMBERT'S ACCOUNT OF DETERMINATE SUPPOSITION:

Term A has determinate supposition in `...A...' when it is sufficient for the truth of `...A...' that `A' be interpreted in `...A...' for one of its supposita.

When Lambert talks about interpreting a term in a proposition for one, it may be that this is the same as when William talks about the proposition being true for a single thing (with respect to that term). On this interpretation Lambert's remarks yield a slightly different account than William's; Lambert's account is a conditional instead of a biconditional:

Term A has determinate supposition in `...A...' when it is sufficient for the truth of `...A...' that `...A...' be true for one of A's supposita with respect to `A'.

If we look at the terms of standard form categorical propositions, this yields the standard results except that it makes predicates of universal affirmatives have determinate supposition; it does this since `Every S is P' does follow from `For some x that is P, every S is a P that is x'. This cannot be what Lambert intended, since he says that these predicates have confused supposition. Perhaps Lambert was taking for granted that in determinate supposition it is also <u>necessary</u> for the truth of `...A...' that `...A...' be true for one of A's supposita with respect to `A'. If this is added to the above account, it becomes equivalent to William's.

<u>Distributive Supposition</u>: Peter of Spain says (XII.1, Dinneen 1990, 185):

> Distribution is the multiplication of a common term effected by a universal sign.

He doesn't say much more. Whatever he has in mind, his account is not the same as William's, for he insists that a universal sign is needed for distribution, and he thinks that negation is not a universal sign. (This was discussed in '2.4.) So the predicate of a particular negative cannot have distributive supposition for Peter; instead, he says that such predicates have simple supposition.[37]

Ignoring predicates, the best way to read Peter is probably to assume that he means roughly the same as William except that he holds the additional view that distribution occurs only in connection with a distributing sign,[38] coupled with the view that `every' and `no' are distributing signs but `not' is not. He thus agrees with the others for the most part, though he differs in some details.

Lambert's account is much closer to Sherwood's. He says:

> [Distributive] ... supposition is what a common term has when it is interpreted for all of its supposita necessarily...[39]

Above I suggested that Lambert's `the term is interpreted for' is the same as William's `the proposition is true for'. If we make this same equation here, Lambert's account is the same as William's.

Merely Confused Supposition: Peter of Spain does not define `merely confused'.[40] His view seems to be that where others see a need for merely confused supposition (most prominently, in the predicates of universal affirmatives) he sees only simple supposition. So probably Peter parts company with the others on this category.

Lambert defines merely confused supposition as follows :

> [Merely confused] ... supposition is what a common term has when it is

> interpreted necessarily for more than one suppositum contained under it but not for all...[41]

How this works depends on how it is interpreted. Suppose, for example, that we interpret it as weakly as possible. Then we construe Lambert's `more than one' as we did William's `many', that is, merely as a way to deny that the term "can be interpreted for one." This part of the clause then simply denies that the term has determinate supposition. Then we interpret `but not for all' as merely denying that the term is "interpreted for all of its supposita," that is, as merely denying that the term is used distributively. The overall result is that a term is defined to have merely confused supposition when it has personal supposition that is neither determinate nor distributive. This is a satisfactory account that coheres with everybody else's.[42] Stronger construals are possible, but I do not see any natural way to produce one that coheres with the application of the theory to the subjects and predicates of simple categorical propositions.

A.3 Distribution in the Nineteenth Century

The sort of clarification and explanation that was needed above for supposition is also needed for the nineteenth century notion of distribution. I take as a sample the definition of `distribution' offered by Richard Whately in what was apparently the most widely used text in Great Britain and America throughout that century. Whately (1826, 40) gives this definition:

> ... a term is said to be "distributed" when it is taken universally, so as to stand for everything it is capable of being applied to ...

In an important clarification, Whately discusses a universal affirmative proposition in which the subject and predicate terms are distinct but coextensive. He notes that <u>this</u> fact should not make the predicate term distributed, even though it does stand for everything it is capable of being applied to, because this fact is accidental to the logical form of the proposition:

> ... yet this is not <u>implied by the form of the expression</u>; ...

Putting these two ideas together, Whately's account seems to be:

> WHATELY'S ACCOUNT OF DISTRIBUTED TERM:
>
> A term is distributed iff <u>it is implied by the form of the expression</u> that it stands for everything it is capable of being applied to.

Clearly the "standing for" in question is in virtue of how the term is used in "the expression," so it seems fair to expand this to:

> A term is distributed in a proposition iff it is implied by the form of that proposition that <u>in that proposition</u> the term stands for everything it is capable of being applied to.

A term `F' is presumably capable of applying to all the F's, and nothing else. So it appears that we can offer the following elucidation:

> A term `F' is distributed in `...F...' iff `...F...' formally entails that in `...F...' the term `F' stands for every F.

This is almost a perfect parallel to Sherwood's definition of distributive supposition, which, with a slight emendation[43] is:

> A term `F' is distributed in `...F...' iff `...F...' formally entails that in `...F...' the term `F' stands for any of its supposita.

Duplicating the discussion of A.1 makes Whately's account of distributed term essentially the same as Sherwood's account of distributive supposition. The explanation is coherent; it results in the traditional classification of terms into those that are distributed and those that are not.

Much has been made of the parallel account of non-distribution. A fuller quote from Whately (p. 40) yields this:

> ... a term is said to be "distributed," when it is taken universally, so

> as to stand for everything it is capable of being applied to; and consequently "undistributed," when it stands for a portion only of the things signified by it...

The account of `undistributed' makes it appear that we need an independent account of non-distribution in terms of a term's standing for a portion of a class, and it is easy to expound this idea so as to render it incoherent, as Peter Geach has pointed out in several places.[44] One can certainly blame Whately (and others; his exposition is typical) of faulty exposition here. But there is another option, which is to see the account of `undistributed' as merely an unfortunate way to try to express the negation of the account of `distributed'. It really is a poor choice of terminology, but it is clear what is being got at.

I suggest, then, that one can make good sense of the nineteenth century doctrine of distribution along the same lines that one can make sense of the thirteenth century accounts of distributive supposition.[45]

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Notes

1. I am indebted to the participants in the UCI conference on Signifier and Supposita (Spring 1995), especially to Elizabeth Karger, Gareth Matthews, Calvin Normore, Stephen Read, and Paul Vincent Spade. I am responsible for any and all inadequacies.

2. I am uncomfortable, however, with characterizing the early theory as a theory of <u>reference</u>, in the sense that it is intended to answer the question <u>what</u> a term refers to on a given occasion (Spade 1988, 208), with the typical options being <u>one of</u>, <u>several of</u>, or <u>all of</u> the term's supposita. This pattern is certainly there, but I suggest that the early theory was more sophisticated than this. (Cf. Matthews= paper in this volume.)

3. The reason for the terminology `merely confused= is this. On most accounts, a common term (such as a common noun, or an adjective or intransitive verb) that is unaffected by any special sign has determinate supposition. Special signs such as `every= or `not= can Aconfuse@ the supposition of a term. This happens in two ways. In some cases the sign confuses the term by distributing it; thus Adistributive@ supposition (frequently called Aconfused and distributed@ supposition). But sometimes the supposition of the term is confused without distributing it, so that

the term is merely confused.

4. Ockham gives it his best shot in Summa Logicae I.70, but his suggestion is ad hoc; it is not clear how to generalize it to other cases. (Burley uses the terms `mobile= and `immobile= differently from other authors; see section 3.2.1 below.)

5. I discuss William of Sherwood first because he is the most explicit. Peter apparently wrote before Lambert, and it is very unclear when William wrote, though it is likely to have been after Peter. All of these writers seem to be discussing an already established tradition.

6. Lambert (in Kretzmann & Stump 1988, '7): "Distribution is the division of one thing into divided [parts]."

7. The odd discussion of ascent in this selection may be in response to a topic existing in the literature at Sherwood's time. The anonymous author of On the Properties of Discourse (in de Rijk 1967; translation in this volume), an earlier text, worries about the propriety of calling supposition "immobile" when although one cannot move downward, one can move upwards, as in `Every human is an animal, therefore every human is a substance'. That author explains that the use of `immobile' with supposition is not intended to cover such upward movements. Sherwood's discussion here seems to tersely echo this point.

8. He says (Kretzmann 1968, '1.17):

... Suppose there are three men who see every man and are running while all the others see Socrates [only] and are not running. Then every man who sees every man is running. (Inductive proof.) Someone may infer `therefore every man who sees Socrates is running', which is false.

... there is a fallacy of figura dictionis here [in moving] from immobile to mobile supposition, and a quale quid is transformed into a hoc aliquid. When such a term stands for many immobilely it stands as a quale quid, but when it stands for many mobilely it also stands for each of them as a hoc aliquid. ...

9. We would say that he was in the process of formulating a theory of scope distinctions. His solutions constantly invoke structural ambiguities (the "compounded/divided" distinction, and the "fallacy of figure of speech") that we call scope ambiguities, and he frequently talks of one locution having "power" over another, and/or of a locution (that we would see as causing scope) being (un)able to "pass over" to a different (later) part of the sentence. E.g. he says of `qualelibet currit' that "The distribution can stay in the subject and not pass over to the predicate..." (VI.2).

10. The question of what mode of supposition results turns on what you take to be the singulars of the sentence under the second occurrence of `man'. The natural

hypothesis is that they are of the form:

`every man seeing this man is running'.

On this hypothesis the second occurrence of `man' has no kind of personal supposition on Ockham's theory, but it has merely confused supposition (by default) on Buridan's theory. For ingenious alternatives, see section 7 of Read 1991.

11. From Kretzmann & Stump 1988, '3g(iv). The explanation goes on further; it is discussed in the appendix.

12. Sherwood assumed that the singulars would have this form (Kretzmann 1966, '5.2), and it would be odd for Lambert to assume something else without comment.

13. Later, Lambert uses the example `not every man is running' to illustrate how negation can immobilize a term that is previously mobile, but he gives the example without comment about the suppositional status of the term.

14. Translations from Peter of Spain are all from Dinneen 1990.

15. These contexts are common in Latin, which has no definite or indefinite articles. The examples Peter has in mind are ones that would most naturally be translated into English using the indefinite article, and, if he is right, given an existential interpretation.

16. I have replaced Dinneen=s `Diffuse= with `Confused= to preserve continuity with the majority of other translators.

17. He gives two reasons; the first reason is not relevant to the point at issue; it is also rather unpersuasive. He says: if negation could distribute, then since `Every Socrates runs' is incongruous, so would be `Not Socrates runs'; but the latter is not incongruous; so negation does not distribute. Spade suggests (personal communication) that `incongruous= here means Aungrammatical@.

18. XII.24 Dinneen 1990 translates the Latin example as `non-man is just=, but there is nothing in the original that suggests that the negation should be term negation.

19. Quotes are from Spade 1997.

20. He repeats the explanation of immobile confused and distributive as:

> (45) Thus . . . when one cannot descend to the supposita under a term that has supposita, and neither is the term that has supposita implied by [its] supposita, then the term supposits confused and distributively immobilely.

21. From translation in Spade [forthcoming].

22. I am ignoring the fact that Burley cites the fact that the term has determinate supposition to justify the descent, instead of citing the validity of the descent as a justification for saying that the term has determinate supposition. All that is needed for my point is that the kind of supposition is linked with the kinds of global descents that are possible; it is less clear whether the kind of supposition or the possibility of descent/ascent is prior.

The fact that a term in one categorical proposition cannot confuse a term in another categorical was well-entrenched at least a century before Burley wrote; it would be natural for him to take this for granted.

23. All from Chapter 70 of Summa Logicae I, from an unpublished translation by Gareth Matthews.

24. All quotations attributed to Buridan are from King 1985.

25. Translations from Parts II and III of Summa Logicae by Albertus de Saxonia; they are from an unpublished draft by Norman Kretzmann.

26. Logica Parva II.4. All citations from Paul of Venice are based on Perreiah 1984, with occasional small variations; I take responsibility for any inaccuracy introduced by these variations..

27. I am indebted here to conversation with Stephen Read.

28. The two exceptives are awkward as examples for my point, since they presume that e.g. `Every man except Socrates runs' is formed from `Every man runs' by adding `except Socrates'. It is not clear that Paul had any opinion about this.

29. An exception is Mates 1972.

30. Here is another parallel between opacity and supposition. Both notions typically get appealed to both in the discussion of contexts for which we already have a good semantics, <u>and</u> in discussing contexts for which we so far lack a good account, such as `Joan believes that Agatha has a horse' in opacity theory or `I promise you a horse' in supposition theory.

31. Actually, Frege's indirect contexts diverge slightly from Quine's opaque contexts; this is because the former follow faithfully the recursive structure of language and the latter are globally defined. The simplest illustration of the difference is that `it is true that S' contains an indirect context (because of the `that' clause) but no opaque context.

32. Spade points out (personal communication) that this could not have been Burley=s purpose, since Burley was not a nominalist.

33. All citations to William are from Kretzmann 1966 unless otherwise specified.

34. It is odd that the first quote says that the word supposits for some single thing, since the word in question (`man') supposits for many things. The key to this is probably in the second quote: the word supposits for one thing <u>by virtue of the expression</u>. That is, the <u>expression</u> forces supposition for at least one thing, but does not force supposition for more than one.

35. The account sketched above seems to fit well with the examples on which William gave an opinion, but it is not clear how to apply it to certain others. For example, how do we test for the supposition of `donkey' in `Every man who sees a donkey is running'? A twentieth century approach would be to construe this as `Every man x such that x sees a donkey is running'; then we could test for the supposition of `donkey' in `x sees a donkey', and get the answer, "determinate". But it is not at all obvious how any of the early medievals would approach this question. (I haven't found a case in which William selects a mode of supposition for such an example.) This is probably a gap in the theory.

36. Some commentators (e.g. Priest & Read 1980) see this as a flaw in the theory; they would say that William <u>should</u> have intended a biconditional, because the predicate of a particular negative proposition should not have

distributive supposition. My goal here is to explain the theory, not to correct it. For better or for worse, this was William's account.

37. All authors assume that terms can be used in two or three different ways. When a term is used Anormally@ it has personal supposition; the theory of modes of common supposition is a classification of this kind of use. A term can also have material supposition when it stands for itself (or a grammatically related word); an example is `horse= in `Horse has five letters=. The non-nominalists (including Peter) thought that a term can also be used to stand for the associated universal; an example is `man= in `Man is a species=. This is called simple supposition. Peter thought that all predicate terms tend to have simple supposition; he needn=t determine which mode of personal supposition they have, because they don=t have personal supposition at all.

38. This appears to be what he argues in VI.10-12 and in XII.24.

39. The full quote ('3g(v), Kretzmann & Stump 1988, 112) is "Strong mobile supposition is what a common term has when it is interpreted for all of its supposita necessarily and a [logical] descent can be made under it." Lambert uses the terminology `strong' where others use `distributive'. In the full quote he is simultaneously defining both strong supposition and mobility.

40. At VI.10 it appears that he might consider defining merely confused as immobilely confused, but this is in the context of a speculation that he goes on to reject.

41. The full quote ('3g(v), Kretzmann & Stump 1988, 112) is "Weak immobile supposition is what a common term has when it is interpreted necessarily for more than one suppositum contained under it but not for all, and a descent cannot be made under it." He uses `weak' where others use `merely confused', and he defines `immobile' in the same sentence. Lambert holds that there is no such thing as mobile weak confusion.

42. Actually, it agrees with Peter of Spain vacuously in the case of merely confused supposition, since Peter apparently holds that nothing falls into this category; terms that appear to do so actually have simple supposition.

43. The emendation is to replace Sherwood's use of the necessity of a conditional with the more modern notion of formal entailment. I am not sure whether this is what Whately intends by `in virtue of the form of the expression'.

44. In Geach 1956, 1962, 1972, 1976.

45. This does not vindicate another of Geach's culprits, the doctrine that

distribution is the key to all of inference. This view seems to appear first in the Port Royal Logic; it is clearly inaccurate there even for standard Aristotelian syllogistic. This doctrine is quite separate from anything discussed in this paper.