

Zif is If

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A conditional takes the form 'If A, then C'. On the truth-conditional view of conditionals, conditional statements state things with truth-conditions. On the suppositional view, conditional statements involve the expression of a supposition. I develop and defend a view on which conditional statements both state things with truth-conditions and express suppositions. On this view, something is fundamentally right about standard truth-conditional and standard suppositional views. Considerations in favor of conditional contents lead us to attribute truth-conditional contents to conditional statements; considerations in favor of the suppositional view then lead us to an unexpected account of these contents. The resulting view has a number of benefits, including a unified treatment of conditional speech acts, a plausible account of our practice of ascribing truth-values to conditional statements, a simple explanation of the apparent equivalence between probabilities of conditionals and conditional probabilities, an intuitive treatment of 'Gibbardian stand-offs', a plausible logic of conditionals, and an explanation of why theorizing about conditionals has proved so difficult.

Supposing that God exists, atheism is false. That is to say, *if* God exists, atheism is false. On the suppositional view of 'if', an utterance of 'If A, C' is semantically equivalent to an utterance of 'Supposing that A, C'. On this view, utterances (C₁) and (S₁) mean the same thing:

- (C₁) If God exists, atheism is false.
- (S₁) Supposing that God exists, atheism is false.

The suppositional view is fully general. It applies to subjunctives as well as indicatives, and to commands and questions as well as statements:

- (C₂) If God were to exist, there would be less suffering.
- (S₂) Supposing that God were to exist, there would be less suffering.
- (C₃) If Jerry loses faith, bring him this bible.
- (S₃) Supposing that Jerry loses faith, bring him this bible.
- (C₄) If God exists, why is there evil?
- (S₄) Supposing that God exists, why is there evil?

The suppositional view is attractive in part because suppositional utterances initially seem capable of playing whatever communicative roles

their counterpart conditionals play. To the naive ear, conditionals (C₁)–(C₄) seem to differ only in notation from their counterpart suppositionals (S₁)–(S₄).

Difficulties arise, however, just as soon as one attempts to say what is in common with a given conditional and its corresponding suppositional. Consider for instance (C₁) and (S₁). According to suppositionalism, the two utterances mean the same thing. But what is this thing?

(C₁) appears to state something, namely, that if God exists, atheism is false. This thing appears subject to belief: I believe that, if God exists, atheism is false. And it appears to have a truth-value: to whatever degree I believe that, if God exists, atheism is false, I believe it to be *true* that, if God exists, atheism is false. (S₁), by contrast, looks more like the expression of a supposition together with a conclusion drawn in its context. The supposition is that God exists; the conclusion is that atheism is false. And while this conclusion appears subject to belief, and while *it* appears to have a truth-value, (S₁) as a whole does not appear to state it.

But if (C₁) states something with a truth-value and (S₁) does not, the two cannot be semantically equivalent, as required by the suppositional view. The proponent of suppositionalism is forced to make a choice. Either she can maintain that, contrary to initial appearances, (S₁) not only states something with a truth-value, but also states the very same thing as (C₁); or she can maintain that, contrary to initial appearances, neither (S₁) nor (C₁) states anything with a truth-value.

Debate over suppositionalism has focused almost exclusively on the second option.¹ This has given the impression that suppositionalism is incompatible with the view that conditional statements have ordinary truth-conditional contents. More generally, it has given the impression that suppositionalism is incompatible with the commonsense view that, in so far as there are such things as contents—things asked by questions, things commanded by commands, things (with complete truth-conditions) stated by statements, and so on—there are such things as conditional contents—things asked by conditional questions, things commanded by conditional commands, things (with complete truth-conditions) stated by conditional statements, and so on. If the two views are in fact incompatible, then suppositionalism is in bad shape. For can we not be certain that we *believe* that, if God exists, atheism is false? And is it not obviously *true* that, if God exists, atheism is

¹ Views consistent with the spirit of suppositionalism on which conditional statements lack ordinary truth-conditional contents include Adams 1965, 1966, 1975, 1998, Bennett 2003, Dudman 1994, Dummett 1978, Edgington 1986, 1995, Mackie 1973, Quine 1952, Ryle 1950, and Woods 1997.

false? What is this thing that we believe and ascribe truth to, if not an ordinary truth-conditional content? To be sure, standard attempts to characterize the contents of conditionals face serious challenges,² and there are initially compelling arguments to the effect that there can be no such contents.³ But could any degree of pessimism about the prospects of identifying the truth-conditional contents of conditionals, or any argument that conditionals do not have contents, have leverage on one's belief, say, that it is *false* that, if the logging industry is deregulated, the forests will thrive, or that it is *true* that, if God exists, atheists are wrong? No wonder the suppositional view is often rejected out of hand: it is portrayed as conflicting with some of our most central beliefs.

My aim is to explore the first option, by developing and defending a suppositional view on which conditional statements have ordinary truth-conditional contents. On this view, something is fundamentally right about both standard truth-conditional and standard suppositional views.

My method for presenting and defending my view is non-standard. It is inspired by an idea of Saul Kripke:

If someone alleges that a certain linguistic phenomenon in English is a counterexample to a given analysis, consider a hypothetical language which (as much as possible) is like English except that the analysis is *stipulated* to be correct. Imagine such a hypothetical language introduced into a community and spoken by it. *If the phenomenon in question would still arise in a community that spoke such a hypothetical language ... then the fact that it arises in English cannot disprove the hypothesis that the analysis is correct for English.* (1977, p. 16)

Kripke's idea has value for the general process of evaluating analyses and is not limited to the evaluation of alleged counterexamples to them. What better way to get an intuitive grasp of an analysis, and to understand its significant consequences, than to examine a community of speakers in which the analysis is stipulated to be correct? The community can be hypothetical, as Kripke suggests, or it can consist of actual speakers who have actually agreed to use a novel expression according to the rules of the stipulation (as with David Kaplan's demonstrative 'dthat' (1978)). By considering such a community, we can learn a lot about what is to be expected if the proposed analysis is correct. If the stipulation breeds all and only phenomena typically associated with the analysandum, that is good evidence in favor of the

² For surveys see Bennett 2003 and Edgington 1995.

³ See, for example, Adams 1975, Bennett 2003, Edgington 1995, 1986, and Gibbard 1981.

analysis; if the stipulation breeds phenomena distinct from that typically associated with the analysandum, that is good evidence against the analysis.

My strategy, then, is to present and defend my view indirectly, by constructing a novel device for creating and talking about suppositional context, describing some of its central syntactical, semantical, and logical features, and noting its striking overall resemblance to ‘if’. In other words, instead of debating up front whether ‘if’ plays the role I claim for it, I first describe that role by characterizing a word that, by stipulation, is a device for communicating suppositional context. In the process I hope to show why such a device would be so rewarding to those who use it, yet so confusing to those who study it. Indeed, we will find that the device should be expected to mislead theorists into holding just the sorts of views that are commonly held about ‘if’—views that by stipulation cannot be right about our new device.

First I create the device and introduce it into practice (section 1). I develop a method for using it, not just to express one’s own suppositions, but also to talk about those of others (section 2). I then characterize statements involving it. I discuss our practices, first, of ascribing truth-values to the statements (section 3); second, of ascribing probabilities to them (section 4); third, of evaluating their authors (section 5); fourth, of compounding them (section 6); and fifth, of evaluating our reasoning with them (section 7). I conclude each section with a discussion of some pitfalls and clues for the theorist who, without the benefit of our stipulated definition, is in the business of interpreting our use of the new device. Though I limit my attention to indicatives, much of what I say applies to subjunctives as well. Finally, I argue that the device is superfluous because the role it plays is already played by ‘if’ (section 8).

1. How to suppose in public

If I say, ‘Suppose that North Korea has nuclear weapons’, you know exactly what to do. And if you respond, ‘Then nuclear war is imminent’, I know just what attitude you are expressing. We all have an intuitive grasp of what it is to suppose something, and of what it is to state something—or, more generally, to act—within the scope of a supposition. For now, an intuitive grasp will suffice.

That there are such phenomena as *supposing* and *acting under a supposition* is uncontroversial. Without controversy, then, we need an efficient method for a speaker to indicate that she is acting under a

given supposition. The first proposals that spring to mind involve the word ‘suppose’ or one of its cognates. Just prior to acting, the speaker could utter any of:

- (1a) I hereby suppose that *A*
- (1b) Suppose that *A*
- (1c) Supposing that *A*, ...

(1b) and (1c) are preferable to (1a) because they are less wordy. (1b) explicitly invites one’s audience to engage in the act of supposition, whereas (1c) merely indicates that the speaker is so engaged. This is a minor difference that could matter only relative to specific purposes. A more important difference is that only (1c) facilitates scope distinctions. It allows the speaker to selectively indicate, of several claims made in a single breath, under which suppositions, if any, each is made. Here is an example:

- (2) My friends do not care for Bush; nevertheless, supposing that the polls are right, he is quite popular; and, supposing that the Christian Right is right, he is quite virtuous.

In uttering (2), my first claim is made free of any supposition; my second is made under the supposition that the polls are right; and my third is made under the supposition that the Christian Right is right. This example illustrates the superiority of (1c) over (1a) and (1b): in addition to being relatively compact, it facilitates mid-sentence scope distinctions.

Still, we can do better. All our candidates so far involve sentence nominalizations—*that A*—and thus involve *reference* to the content of the supposition in question. We can see by analogy that this is inefficient. Consider the task of expressing our beliefs. We could utter ‘I have the belief that *A*’ or ‘I believe that *A*’. But this would be inefficient. For we need only to say ‘*A*’. Our conventions do the rest: the assertoric form of the utterance indicates that we are expressing a belief, and the meaning indicates what we believe. We can in this way express beliefs without reference to them or their contents. Generally speaking, reference burdens the speaker with saying something *about* the referent. In the case of properties, we avoid talking *about* them by predicating them of their bearers rather than referring to them and then having to predicate a relation *of* them and their bearers. ‘Al is tall’ is better than ‘Al has the property of being tall’. The same is true of desires. To express our desires, we need not refer to them or their contents: instead of ‘I have a

desire for you to leave' or 'I desire for you to leave', we just say 'Leave'. Rather than refer to our attitudes or their contents, we simply express them.

How, then, can we express our suppositions? What is needed is a sentence marker to indicate that one who utters the marked sentence is supposing its content. Ideally, the marker should satisfy three criteria:

- (i) it should be lexically compact (unlike (1a));
- (ii) it should not nominalize the sentence it marks (unlike (1a)–(1c));
- (iii) it should, so as to facilitate scope distinctions, be embeddable like (1c).

I recommend 'zif'. Hereafter, by stipulation, an utterance of 'zif A' shall qualify as an expression of the supposition that A.

To get a feel for our new marker, let us rephrase (2) in terms of it:

- (3) My friends do not care for Bush; nevertheless, zif the polls are right, he is quite popular; and, zif the Christian Right is right, he is quite virtuous.

In terms of speech acts, how do we describe my utterance of (3)? Several acts were performed:

- (3a) I stated that my friends do not care for Bush.
- (3b) I expressed a supposition that the polls are right.
- (3c) Within the scope of this supposition, I stated, of Bush, that he is quite popular.
- (3d) I expressed a supposition that the Christian Right is right.
- (3e) Within the scope of this supposition, I stated, of Bush, that he is quite virtuous.

And all in a single breath. How efficient our new device is.

Note that zif-clauses are *dependent* clauses; otherwise (3) would not be grammatical. But their dependence is not like that of typical dependent clauses. Typically, uttering a dependent clause requires a further *linguistic* act, namely, uttering an independent clause. But uttering a zif-clause merely requires some further act whose suppositional context is given by the zif-clause. The act need not be linguistic:

- (4a) Zif you really are the Emperor, [speaker bows]

- (4b) Zif you are not going to eat that, [speaker eats the tofu]
 (4c) Zif you are willing to play for practice, [speaker removes chess set from bag].^{4,5}

The syntactical incompleteness of zif-clauses meshes nicely with the incomplete nature of supposition. The purpose of supposition is to create a context *for an act*. Supposing is only part of a larger project. It gropes for an act to fill the context it creates.

A second noteworthy feature of zif-clauses is that they set the scene for a phenomenon I call *suppositional pronominalization*. Consider:

- (5a) Zif there is an ant in my shoe, it is not very large.
 (5b) There is an ant in my shoe, but it is not very large.
 (6a) Zif Jordan played, it must have been spectacular.
 (6b) Jordan played. It must have been spectacular.

First consider ‘it’ in (5a). In uttering this pronoun, did I aim to refer to an ant in my shoe? I can say with confidence that my aim to refer was *conditional* on there being such an ant. No ant, no aim.⁶ By contrast, in uttering the ‘it’ of (5b), my aim was unconditional: no ant, *failed* aim. Likewise for (6a) and (6b). In uttering the ‘it’ of (6a), I only aimed to refer to a past playing by Jordan *conditional* on there being such an event. In (6b), by contrast, my aim was unconditional. In a suppositional context, whether a pronoun even purports to refer can depend on the status of the supposition. This is the phenomenon of suppositional pronominalization.

Zif-clauses allow us to conveniently convert any standard speech act into a suppositional act: there are zif-statements, zif-questions, zif-commands, zif-promises, and so on. Corresponding for instance to our opening pairs of suppositionals and conditionals are the following zif-acts:

⁴In (4a)–(4c) the zif-clauses provide the suppositional contexts in which the intentions to perform the relevant acts are formed; they thereby provide information about the significance of the acts. In (4a), for instance, the zif-clause indicates that the speaker forms the intention to bow in the context of supposing that the audience is the Emperor.

⁵There are some parallels with ‘because’. An utterance of ‘because A’ purports to give the fact that A as an explanation, or cause, of some state of affairs. Usually, the state of affairs is given by a linguistic act. But not always:

(4d) Because I love you, [speaker delivers diamonds].

Note also that ‘because A’ avoids *reference* to the reason that A; contrary to popular usage, ‘the reason is because A’ is not grammatical.

⁶In section 5 I develop a view of conditional acts that requires a slight modification of this slogan: no ant, no aim *worthy of being deemed a success or a failure*.

- (Z1) Zif God exists, atheism is false.
- (Z2) Zif God were to exist, there would be less suffering.
- (Z3) Zif Jerry loses faith, bring him this bible.
- (Z4) Zif God exists, why is there evil?

To see what the contents of (Z1)–(Z4) are, let us begin by characterizing (Z1) with an eye on determining what is stated by it.

In uttering (Z1), I introduce a supposition and state something. What is supposed is that God exists; what is stated is that atheism is false. That atheism is false is stated, not categorically, but within the scope of the supposition that God exists. In stating sincerely, I express a genuine belief that atheism is false. In stating within the scope of the supposition, I indicate that this belief is borne under the supposition. Supposing that God exists, I believe that atheism is false. Suppositions aside, I may or may not believe that atheism is false. Indeed, supposing that God exists, I am *certain* that atheism is false.

Some find it odd to say that a thinker might, within the scope of a supposition, genuinely *believe* something that she otherwise rejects. I invite such readers to substitute ‘accept’ for ‘believe’ in these contexts. ‘Belief’ can then be reserved for the entire state of accepting something possibly within the scope of a supposition. We can say for instance that, within the scope of the supposition that God exists, I genuinely *accept* that atheism is false—something that I do not otherwise accept. This whole state of *accepting within the scope of the supposition* then qualifies as a state of *suppositional belief*. Of course, we believe some things, not by virtue of consciously accepting them, but merely by virtue of having certain dispositions. These cases are perhaps best characterized in terms of degrees of confidence, rather than the all-or-nothing notion of belief. We calculate a thinker’s degree of confidence in a content *q* within the scope of—or *relative to*—a supposition *p* by calculating the ratio of her absolute confidence in *p* & *q* to her absolute confidence in *p*. In other words, we consider the thinker’s distribution of confidence over the logical possibilities; to relativize the thinker’s confidence to the supposition *p*, we ignore the part that includes the possibility that not-*p*; and we see, of the remaining distribution, what proportion of confidence is assigned to the possibility that *q*. Below I further discuss the idea of believing something (either outright or to some degree) within the scope of a supposition. For now the idea should be clear enough.

Returning to our description of (Z₁),

(Q₁) What supposition do I express?

(A₁) That God exists.

(Q₂) What do I state?

(A₂) That atheism is false.

(Q₃) What attitude do I express?

(A₃) A belief that atheism is false.

(Q₄) By stating within the scope of a supposition, what do I indicate about this attitude?

(A₄) That it is borne within the scope of the supposition.

Thus, on one legitimate characterization of (Z₁), the belief I express is suppositional, not because it is borne to a special kind of content, but because it is borne in a special kind of context, namely, one involving the supposition that God exists. Likewise, my statement is suppositional, not because it has a special kind of content, but because it is made in the context of the supposition that God exists. And the content of my statement is suppositional, not because it has a distinctive suppositional nature, but because it is the content of a suppositional statement.

I say that this is one legitimate characterization of (Z₁). Might there be others? Might there for instance be one on which (Z₁) is a categorical statement of something, say, about the relationship between the supposition that God exists and the claim that atheism is false? If so, we must distinguish two questions:

In sincerely uttering (Z₁),

(Q₂') What do I state *within the scope of the supposition that God exists*?

(Q₂') What do I thereby state *categorically*?

The answer to (Q₂') follows straightforwardly from our stipulation about 'zif': what is stated by (Z₁), within the scope of the supposition expressed by (Z₁), is *that atheism is false*. The answer to (Q₂') depends, not just on our stipulation, but on a general issue concerning suppositional acts: Is an act of bearing a relation *R*, within the scope of a supposition *p*, to a content *q*, identical to an act of bearing *R*, categorically, to some content *r*? In other words, can suppositional acts generally be identified with categorical acts? The answer, it turns out, is *no*. We shall

see in the following sections that suppositional statements do not admit of categorical interpretations. Thus, the answer to (Q2'') is that *nothing* is stated categorically by (Z1).

As for the contents of (Z2)–(Z4), what is stated by (Z2) is that there would be less suffering; what is commanded by (Z3) is that one should bring Jerry this bible; and what is asked by (Z4) is why there is evil.

Interpretive Pitfalls and Clues. Our new device presents both hazards and opportunities for those I call *outsiders*—theorists who, without the benefit of our stipulated definition, are in the business of interpreting our use of ‘zif’. To make their business realistic, we shall cooperate in their investigation only as competent users of ‘zif’, and not as theorists with explicit knowledge of its definition.

The greatest challenge facing the outsider is to recognize that zif-clauses express suppositions and therefore that speech acts that begin with the utterance of a zif-clause are suppositional in nature—they are *not* acts of relating *categorically* to their contents. Zif-questions are not acts of asking categorically what they ask; zif-commands are not acts of commanding categorically what they command; and zif-statements are not acts of stating categorically what they state. As our discussion progresses, we will discover features of ‘zif’ that are likely to draw the outsider toward an incorrect interpretation, usually of a categorical form; these are the *interpretative pitfalls of zif*. We will also discover features of ‘zif’ that point toward its correct interpretation; these are the *interpretive clues of zif*. I close this section by highlighting one pitfall and two clues.

The resemblance of zif/then-statements to both when/then- and where/there-statements presents an interpretive pitfall. For illustration, consider the following statements (which I adapt from Lycan 2001):

- (7a) When Sharon leaves, then I will leave. (When Sharon leaves, then, *at that time*, I will leave.)
- (7b) Where Sharon lives, there I will live. (Where Sharon lives, there, *at that place*, I will live.)
- (7c) Zif Sharon leaves, then I will leave. (Zif Sharon leaves, then, *in that circumstance*, I will leave.)

Plausibly, (7a) and (7b) involve resumptive pronominalization on a denoting clause. That is, in (7a), ‘then’ is plausibly a pronoun denoting whatever time is denoted by the clause ‘when Sharon leaves’, and in (7b) ‘there’ is plausibly a pronoun denoting whatever place is denoted by the clause ‘where Sharon lives’. To an outsider, it may be tempting to treat

(7c) as a categorical statement on a par with (7a) and (7b), by viewing ‘then’ as a pronoun purporting, unconditionally, to denote whatever circumstance is denoted by the clause ‘zif Sharon leaves’. This temptation would lead naturally to an interpretation of ‘zif’ on which an utterance of ‘zif A’ is an act, not of supposing that A, but of *denoting* a circumstance that, if realized, would make it true that A.⁷

There are three related errors in this interpretation. First, zif-statements are not categorical statements of their contents. Second, the pronoun ‘then’ does not purport to denote unconditionally. Third, zif-clauses are not denoting phrases.

Two interpretive clues help to reveal these errors.

First, unlike when- and where-clauses, zif-clauses do not admit of apposition with descriptive phrases. Competent users of ‘zif’ will attest to the fact that, whereas ‘the time when Sharon leaves’ and ‘the place where Sharon lives’ are grammatical, ‘the circumstance zif Sharon leaves’ is not. What explains this difference is that, unlike when- and where-clauses, zif-clauses are not denoting phrases (recall that zif-clauses were designed specifically to avoid reference/denotation).

Second, zif-clauses set the scene for suppositional pronominalization. Competent users of ‘zif’ will attest to the fact that ‘it’ in (5a) and (6a), and ‘then’ in indicative statements of the form, ‘zif A, then C’ conditionally purport to denote. Supposing that A, there once existed, will in the future exist, or now exists, a circumstance that makes it true that A. (Keep in mind that our attention is limited to indicatives.) An utterance of ‘then’ immediately following the utterance of ‘zif A’ is a conditional attempt to refer to such a circumstance. Joe says, ‘Zif the Pope visited yesterday, then we will have a good year’. The outsider responds, ‘What do you mean *then* we will have a good year? There is no *then*, because there was no visit by the Pope’. To which Joe responds: ‘Surely you must recognize the possibility that you are wrong—that the Pope did in fact visit yesterday. *Suppose* this is so. *Then* we will have a good year. When I say “then”, I only *aim* to be talking about a situation in which the Pope visited yesterday *conditional* on there being such a situation. No Pope, no aim.’

The fact that zif-clauses set the context for suppositional pronominalization is a remarkable clue for the outsider. For it is hard to see how, on a categorical interpretation of ‘zif’-statements, embedded pronouns could purport to denote only conditionally. If a pronoun does not refer, then—the possibility of a suppositional context aside—it is hard to see how this absence of reference could qualify as an *absent* attempt at ref-

⁷ See Geis 1973 and Lycan 2001.

erence rather than a *failed* attempt. The outsider who recognizes that zif-clauses set the context for suppositional pronominalization can avoid the remaining two errors by reasoning as follows. In an indicative statement of the form ‘zif *A*, then *C*’, the pronoun ‘then’ purports to denote only conditionally. Because the condition on its purporting to denote is given by the supposition that *A*, it is plausible that ‘zif *A*’ expresses the supposition that *A*. Because a zif-statement is an act of stating within the context of a supposition, it is not a categorical statement of its content.

2. Specifying suppositional context

We know how to use ‘zif’ to *create* suppositional context for the performance of an act. Now we need to develop a method for using it to *specify* the suppositional context of some act under discussion; we need some way to talk about suppositional context without creating it anew.

We face a certain challenge, as witnessed by (8):

- (8) Supposing that he was God’s son, Jesus believed that atheism was false.

(8) is ambiguous between (8a) and (8b):

- (8a) While supposing that he was God’s son, Jesus believed that atheism was false.
- (8b) Suppose that Jesus was God’s son. Then Jesus believed that atheism was false.

Whenever we are both talking about contentful acts and providing suppositional context, we risk confusion: are we providing the context of our own statement—and thus of the attitude we express in making the statement—or are we providing the context of the act under discussion? We need an efficient method for disambiguating.

‘Zif’ will do the job. To indicate that we are specifying, rather than creating, suppositional context, we must use a zif-clause not to perform the act of supposing its content, but to refer to this act. Can this be done simply by nominalizing bare zif-clauses? No. Zif-clauses are *dependent* and will thus resist nominalization. Though they express complete contents (those of the supposition), syntactically they grope for more. Talking *about* suppositions with zif-clauses thus requires talking about entire acts of supposing-cum-acting-under-the-supposition. Stating, commanding, believing, and hoping, while under the supposi-

tion that *A*, that *C*, are all such acts. We can abstract away from particular relations and refer to the general act of bearing a relation, under the supposition that *A*, to the content that *C*, by nominalizing the sentence ‘zif *A*, *C*’. For instance, we nominalize ‘If God exists, atheism is false’ as follows:

(9) that, zif God exists, atheism is false.

To refer to the act of *believing*, while under the supposition that God exists, that atheism is false, we say, ‘the belief that, zif God exists, atheism is false’. To refer to the act of *stating* the same thing under the same supposition, we say, ‘the statement that, zif God exists, atheism is false’. To refer to the *content* of such an act, we simply focus in on the part we want: ‘*the content of the statement that, zif God exists, atheism is false*’ or ‘*what is stated by the statement that, zif God exists, atheism is false*’. To refer to the *supposition* of such an act, we focus in on it: ‘the supposition of the statement that, zif God exists, atheism is false’ or ‘what is supposed by the statement that, zif God exists, atheism is false’. Our device for referring to the entire act of *relating to the content that C under the supposition that A* is highly versatile.

‘Practice chess’ is similarly versatile. To refer to the *activity* of playing chess for practice, we say, ‘practice chess’. To refer to the *game* played in this activity, we focus in on the part we want: ‘*the game of practice chess*’ or ‘*what is played during the activity of practice chess*’. And to refer to the presupposition of this activity—namely, that the game is for practice—we focus in on it: ‘the presupposition of practice chess’ or ‘what is presupposed by the activity of practice chess’.

The ambiguity in (8) is now easily resolved:

(8c) Jesus believed that, zif he was God’s son, atheism was false.

(8d) Zif he was God’s son, Jesus believed that atheism was false.

There is no mistaking the two uses of ‘zif’. In (8c) ‘zif’ is embedded in a nominalized sentence and is therefore used to talk about a supposition. In (8d) ‘zif’ is not so embedded and is therefore used to express a supposition.

Statements are acts of stating things, possibly from within the scope of a supposition. The statement that atheism is false is a different *act* from the statement that, zif God exists, atheism is false. Nevertheless, what is stated in either case is that atheism is false. By analogy, competition chess is a different activity from practice chess. Nevertheless, what

is played in either case is the game of chess.⁸ The analogy is worth illustrating with a diagram:

Table 1:

Act	Relation	Content	Context
Practice Chess	Playing	Game of chess	Agreement to practise
Chess	Playing	Game of chess	
Statement that, zif A, C	Stating	that C	Supposition that A
Statement that C	Stating	that C	

We now have two equivalent ways of classifying *contentful suppositional acts*—acts of bearing a relation *R* to a content that *C* within the context of a supposition that *A*. Either we can say that the act is an act of bearing *R* to the content that *C* and that the act occurs in the context of the supposition that *A*, or we can simply say that the act is an act of *R*-ing that, zif *A*, *C*. For illustration, recall (Z₁):

(Z₁) Zif God exists, atheism is false.

Either we can say that (Z₁) is an act of stating that atheism is false and that it occurs within the scope of the supposition that God exists, or we can simply say that it is an act of stating that, zif God exists, atheism is false. In either case, the relation is one of stating; its object, or content, is that atheism is false; and its context includes the supposition that God exists. By presenting the same relation, content, and context, the two modes of classification present the same act.

Interpretive Pitfalls and Clues. In practice, we never speak of, or evaluate, the content of a suppositional act apart from its suppositional context. This is because the identity and significance of a suppositional act depends not just on (i) the *relation* borne by the agent and (ii) the *content* to which the agent bears the relation, but also on (iii) the suppositional *context* in which the relation is borne. In practice, it would be pointless to consider (i) and (ii) apart from (iii), for neither the act in question nor its significance could be identified. And it would be misleading to report (i) and (ii) apart from (iii), for one's audience would falsely assume that the relevant act had no suppositional context.

⁸ Here I use 'practice chess' to denote the activity of playing a *game* of chess for practice. It is of course possible to practise chess without playing an actual game.

When asked for the content of a given act—say, what was stated, asked, or commanded—we are obliged to give not just the content, but also the suppositional context, should there be one. If you witness Maria state that, zif God exists, atheism is false, and later I ask you what Maria stated, you are obliged to tell me not just that Maria stated that atheism is false—this would be highly misleading—but also that she stated this under the supposition that God exists. I ask, ‘What did Maria state?’ You answer, ‘That, zif God exists, atheism is false’, thus giving me all the information I need to identify the act in question.

By analogy, it would be misleading to report the content of a practice game without reporting the relevant context. I ask, ‘What did Kasparov win?’ You answer, ‘A game of chess’. You mislead me if you know that his game was for practice, for you lead me to misidentify the activity in question and to thus draw false conclusions about its significance.

Because there is pressure in practice never to separate the content of a conditional act from its suppositional context, semantic information that in fact determines the suppositional context of a zif-act might, to the outsider, appear to play a role in determining the content of the act. This appearance may blind the outsider to the fact that zif-clauses help to determine the suppositional contexts, and not the contents, of zif-statements. As a result, he may conclude that what is stated by the statement that, zif *A*, *C* is distinct from what is stated by the statement that *C*.

This pitfall is even more dangerous for the outsider who is accustomed, for theoretical purposes, to individuating speech acts by only two components: (i) the *relation* borne by the agent and (ii) the *content* to which the agent bears the relation. This outsider will be conditioned to make the fallacious move from a plainly obvious fact about our practice—that the statement that *C* is distinct from the statement that, zif *A*, *C*—to the conclusion that the contents of the two statements are distinct. He will thus be led to misidentify the contents of zif-statements and the role of zif-clauses.

What features of ‘zif’ help to reveal this error? In addition to the phenomenon of suppositional pronominalization, we will see below that our practices of ascribing truth-values and probability to zif-statements, of attributing success and failure to authors of zif-statements, and of evaluating our reasoning with zif-statements are all rich with clues pointing to the correct suppositional interpretation.

3. Ascribing truth-values to zif-statements

Statements are acts of stating things. Intuitively, it is the things stated by statements, and not the statements themselves, that are the primary bearers of truth and falsity. What, then, are we doing when we ascribe truth-values to statements?

A standard view is that we are ascribing the following derivative notions of truth and falsity: a statement is true (false) in the derivative sense *iff* what it states is true (false) in the primary sense. This view is dubious. For it makes a false prediction about our practice of ascribing truth-values to suppositional statements. It predicts that a given suppositional statement will seem true to the degree that its content—considered outside the scope of any supposition—will seem true. But in fact it will seem true to the degree that its content, *considered within the scope of its supposition*, will seem true. After all, to evaluate a suppositional statement by evaluating its content independently of its supposition would be to miss the very point of the statement.

For illustration, consider statements (10a) and (10b):

(10a) Philosophizing is illegal.

(10b) Zif thinking is illegal, then philosophizing is illegal.

What are the truth-values of (10a) and (10b)? It seems clear that philosophizing is not illegal. And so we say that (10a) is false. Of course, zif thinking is illegal, then so is philosophizing. And so we say that (10b) is true. As competent users of ‘zif’, we know that, because what is stated by (10a) is identical to what is stated by (10b), what is stated by (10a) has the same truth-value as what is stated by (10b). Nevertheless, we assign different truth-values to the two statements.

What explains this fact is that, in practice, ascriptions of truth-values to statements are simply covert ascriptions of the only notions of truth and falsity there are, to the contents of the statements, from within the scope of whatever might be supposed by the statements. To ascribe truth to a non-suppositional statement *is* to ascribe truth to the content of the statement categorically, which is tantamount to accepting the content categorically. To ascribe truth to a suppositional statement *is* to ascribe truth to the content of the statement from within the scope of what is supposed by the statement, which is tantamount to accepting the content under the supposition. Thus, our practice of ascribing truth-values to statements—both categorical and suppositional—does not commit us to the view that statements themselves have truth-val-

ues; and so no theoretical account of the truth-values of statements themselves is needed.

Interpretive Pitfalls and Clues. The outsider who interprets our ascriptions of truth-values to zif-statements categorically—either as categorical ascriptions of the preceding derivative notions of truth and falsity to the statements themselves, or as categorical ascriptions of the primary notions of truth and falsity to the contents of zif-statements—will fail to identify the contents of zif-statements. He will search for contents whose truth-conditions match our assignments of truth-values to the statements considered relative to various hypothetical scenarios. But zif-statements do not generally have such contents. For we evaluate them by evaluating their contents from within the scope of their respective suppositions. And so only by chance might our evaluation of a zif-statement relative to a hypothetical scenario reflect what truth-value its content would have in that scenario.

Fortunately for the outsider, early in his investigation he is likely to find a clue that points toward the correct interpretation. Because zif-statements involve the utterance of ‘zif’ along with two declarative sentences, from the start the outsider will need to consider the hypothesis that ‘zif’ is a binary truth-functional connective, akin to ‘and’ and ‘or’. To test this hypothesis, he might ask us to evaluate an arbitrary indicative statement *that, zif A, C* on each of four hypotheses about the truth-values of *A* and *C*.

First he asks that we evaluate the statement on the hypothesis that it is true both that *A* and that *C*. Because the statement is itself suppositional, this amounts to a request to evaluate *whether C* from within the scope of an enriched suppositional context, one including not just the supposition included as part of the statement—namely, that *A*—but also the further supposition that *C*. Of course we are certain, supposing that *A* and *C*, that *C*. Hence our response to the outsider: ‘In that case, the statement is certainly true’.

Next the outsider requests that we evaluate the statement on the hypothesis that it is true that *A* but false that *C*. This amounts to a request to evaluate *whether C* while supposing not just *that A* but also *that it is not the case that C*. Of course, we are certain, supposing that *A* and that it is not the case that *C*, that it is not the case that *C*. Hence our response: ‘In that case, the statement is certainly false’.

To the outsider who interprets our ascriptions of truth-values categorically, it will appear so far that the truth-value of the content of a statement *that, zif A, C* is indeed a function of the truth-values of the

contents of its antecedent, *A*, and consequent, *C*. But the appearance is temporary.

In each of the final two requests, we are asked to evaluate the zif-statement under the supposition that it is false that *A*. This amounts to a request to evaluate *whether C* while supposing not just *that A* but also *that it is not the case that A*. And this is a request that we cannot satisfy. Hence our response: 'We are at a loss as to how to respond, for we are unable to evaluate the statement under the supposition that it is false that *A*'.

The outsider needs to consider several candidate explanations for this response.

First, it might be that we really do have an opinion on whether, zif *A*, *C*, but conversational rules prohibit us from expressing it, and we confuse this pragmatic prohibition with a genuine inability to evaluate the statement.⁹ This hypothesis is consistent with the view that 'zif' is a truth-functional connective. The outsider can test it by moving the initial issue out of the public realm, where pragmatic rules apply, and into our heads: 'Do you, on the supposition that it is false that *A*, believe either that it is true that, zif *A*, *C* or that it is false that, zif *A*, *C*?' To which we respond: 'No. On the supposition that it is false that *A*, we are unable even to consider whether, zif *A*, *C*, much less have an opinion on the matter.'

Second, it might simply be that the given hypothesis is not rich enough to determine a truth-value for the content of the statement, and that 'zif' is therefore not a truth-functional connective (at least when its antecedent is false). The outsider can test this hypothesis by asking: 'Are you unable to evaluate the statement simply because the given hypothesis is not rich enough to determine a truth-value for the statement?' To which we respond: 'No. Enriching the supposition would not help.'

Third, it might be (i) that an indicative statement *that, zif A, C* purports to state categorically something about the epistemic possibility, relative to its author, that *A* (where *p* is *epistemically possible* for a thinker *x* iff *x* is not rationally certain that not-*p*) and (ii) that, if there is no such possibility, it fails to state anything (i.e. it semantically presupposes such a possibility).¹⁰ An indicative zif-statement *that, zif A, C* might for instance purport to state categorically *that the epistemic possibility that A is related in such and such way to the possibility that C*; and

⁹ See Grice 1967, Jackson 1979, 1987, and Lewis 1976, 1986b.

¹⁰ This option (as applied to if-statements) is consistent with Jeffrey 1991, Jeffrey and Stalnaker 1994, Kratzer 1986, Lycan 2001, and Stalnaker 1975.

an utterance of ‘the *F* is *G*’ might fail to state anything when there is no *F*. On this hypothesis, we are unable to evaluate whether, zif *A*, *C* because, by supposing that it is false that *A*, we create a context in which it is not epistemically possible for us that *A*, and in which there is therefore no content either to the statement that, zif *A*, *C* or to the question of whether, zif *A*, *C*. The outsider can test this hypothesis by asking us, in a context of supposing that it is false that *A*, to evaluate a statement, made by someone *outside* this context, that, zif *A*, *C*: ‘Suppose that, for some thinker *x*, it is epistemically possible that *A*. Suppose that *x* utters an indicative sentence “zif *A*, *C*” with sincere and literal intent. And suppose that it is false that *A*. How would you evaluate *x*’s statement?’ To which we respond: ‘We have no reason to think that *x*’s statement is in any way defective. We are unable to evaluate it, however, because we are supposing that it is false that *A*.’ We thereby shed doubt on this hypothesis.

Fourth, the possibility of presupposition failure aside, it might be that whenever it is false that *A*, a statement that zif, *A*, *C* fails to state something with a truth-value.¹¹ The outsider can test this hypothesis by asking, ‘Does the statement seem indeterminate, or lacking in truth-value?’ To which we respond, ‘No. Supposing that it is false that *A*, we are *unable to evaluate whether, zif, A, C*. The statement does not seem true in that case; it does not seem false in that case; and it does not seem indeterminate or lacking in truth-value in that case. It does not seem to have one status or another *in that case* because we are unable to evaluate it *relative to that case*.’ We thereby shed doubt on this hypothesis.¹²

¹¹ See Adams 1975, 1998, Bennett 2003, Edgington 1986, 1995, and McDermott 1996. McDermott defends the standard trivalent account of indicative conditionals, on which an indicative conditional statement has the same truth-value as its consequent, if its antecedent is true, and otherwise lacks truth-value. (Adams, Bennett, and Edgington seem for certain purposes willing to talk this way even though they are inclined to reject truth-conditional contents altogether for conditionals.) We can see just how the outsider might draw the same conclusion about zif-statements. For, supposing that their antecedents are true, we ascribe—from within the scope of this supposition—whatever truth-values we take their consequents to have. And, supposing that their antecedents are false, we will report that they neither seem true nor false—a report that is easily confused with the report that they seem to be neither true nor false.

¹² There is a further clue that this hypothesis is mistaken. For the hypothesis predicts that, however unlikely we take the antecedent of a zif-statement to be, we will take it to be at least as likely that the zif-statement is neither true nor false. But this is not the case. Suppose that before us is an urn with ninety-nine red balls and one black ball, and that it is very unlikely that Sue will draw from the urn. The hypothesis predicts that we will find it very unlikely to be true that, zif Sue draws, she will draw red, and very unlikely to be false that, zif Sue draws, she will draw red. In fact, however, we find it ninety-nine percent likely to be true that, zif Sue draws, she will draw red, and one percent likely to be false that, zif Sue draws, she will draw red. We thereby leave no room for the possibility that it is neither true nor false that, zif Sue draws, she will draw red.

Fifth, it might be that zif-statements are suppositional. It might be that the statement that, zif A , C is a statement that C relative to the supposition that A and thus involves a supposition that is inconsistent with the supposition that it is false that A . Given that suppositional statements are properly evaluated by evaluating their contents from within the scope of their suppositions—and thus that ascriptions of truth-values to suppositional statements are ascriptions to their contents from within the scope of their suppositions—this hypothesis explains all of our responses so far. The outsider might seek further confirmation by asking, ‘Would you evaluate a statement that, zif A , C in exactly the same way that you would evaluate a statement that, supposing that A , C ?’ To which we respond: ‘Yes.’

4. Ascribing probability to zif-statements

What are naturally construed as the bearers of both truth-values and probability are the things stated by statements, not the acts of stating themselves. Thus, surface ascriptions of probability to statements are to be interpreted on a par with surface ascriptions of truth-values, as ascriptions to what the statements state from within the scope of whatever they might suppose.

For illustration, suppose that a ball will be selected randomly from a bag containing ninety-nine red balls and one black ball. How probable is it that a red ball will be selected? Answer: 99%. In other words, it is 99% probable that, zif a ball is selected randomly from a bag containing ninety-nine red balls and one black ball, a red ball will be selected. To ascribe $X\%$ probability to a zif-statement is to ascribe $X\%$ probability to what the statement states from within the scope of what it supposes. Probability that is assigned to the content of a statement relative to a supposition—or *given* the supposition—goes under the name *conditional probability*. A standard law of probability is that the conditional probability of q given p is identical to the absolute probability of the conjunction of p and q divided by the absolute probability of p (if the absolute probability of p is zero, the conditional probability is undefined). This law governs ascriptions of probability to a content q from within the scope of a supposition p because, of those possibilities that entail p , the proportion which also entail q corresponds to the absolute probability of the conjunction of p and q divided by the absolute probability of p .

The fact that ascriptions of probability to zif-statements are ascriptions of conditional probability should not be confused with the thesis

that zif-statements themselves have absolute probabilities that are identical to the conditional probabilities of their consequents given their antecedents—abbreviated as the thesis that *probabilities of zif-statements are conditional probabilities*.¹³ Zif-statements themselves do not have probabilities (for zif-statements are *acts* of stating things), and only by chance might one have a content whose absolute probability is the same as its conditional probability given the supposition of the statement. Hence it is false that probabilities of zif-statements are conditional probabilities. The similar sounding, though significantly different, thesis is true: *ascriptions of probabilities to zif-statements are ascriptions of conditional probability*.

Interpretive Pitfalls and Clues. The outsider who interprets our ascriptions of probability to zif-statements categorically will fail to identify the contents of zif-statements. For he will search for a content whose absolute probability is identical to the conditional probability of the consequent, given the antecedent. Yet only by chance might the content of a given zif-statement have this probability.

David Lewis (1976) unearths a clue for the outsider. He proves that no function taking a pair of truth-conditional contents, p and q , and returning a truth-conditional content r is such that, for all probability functions, the absolute probability of r is the same as the conditional probability of q given p (for non-zero probabilities of p). Thus the semantic value of 'zif' is not a function that takes the contents of the antecedent and consequent and returns a truth-conditional content whose absolute probability is the conditional probability of the content of the consequent given the content of the antecedent.

In light of this clue, the outsider would be wise to reject the hypothesis that zif-statements are categorical statements of truth-conditional contents that are a function only of the contents of the antecedents and consequents. For this hypothesis requires attributing systematic error to our practices of ascribing probability to zif-statements. Three hypotheses remain.

On the first, the thesis that probabilities of zif-statements are conditional probabilities is correct; however, the truth-conditional contents of zif-statements are a function of more than just the contents of the antecedents and consequents.¹⁴ In light of Lewis's proof, it turns out that this is only possible given a radically indexical interpretation of zif-statements, one on which the content of a zif-statement is a function,

¹³ This thesis, applied to if-statements, has been advocated by Ellis 1969, Jeffrey and Stalnaker 1994, Kratzer 1986, and Stalnaker 1970.

¹⁴ See Ellis 1969, Jeffrey and Stalnaker 1994, Kratzer 1986, and Stalnaker 1970.

not just of the contents of its antecedent and consequent, but also of the probability function characterizing the degrees of belief of the author of the statement. On such an interpretation, what is stated by a sincere utterance of 'It is not the case that, zif *A*, *C*' is never the negation of what is stated by a sincere utterance of 'Zif *A*, then *C*'.¹⁵ To test this hypothesis, the outsider might ask, 'Is it ever possible for a speaker to reject what is stated by a sincere and literal utterance of "Zif *A*, then *C*" by uttering "It is not the case that, zif *A*, *C*"?' To which we respond, 'Yes'. We thereby shed doubt on this hypothesis.

On the second hypothesis, the thesis that probabilities of zif-statements are conditional probabilities is correct; however, zif-statements do not have truth-conditional contents.¹⁶ This hypothesis should not be taken seriously by the outsider who is acquainted with our practice of ascribing truth-values to zif-statements, for it requires attributing systematic error to the practice. On this hypothesis, even though our ascriptions of probability to zif-statements are legitimate ascriptions of absolute probability, they are not ascriptions of probability of *truth*. Although it is fifty percent likely that, zif this fair coin is flipped, it will land heads, it is on this hypothesis zero percent likely *to be true* that, zif this fair coin is flipped, it will land heads. To test the hypothesis, the outsider might ask, 'How likely is it to be true that, zif this fair coin is flipped, it will land heads?' To which we respond, 'Fifty percent'. We thereby shed doubt on this hypothesis.

On the third hypothesis, zif-statements and our ascriptions of probability to them are suppositional, and so it is *not* the case that probabilities of zif-statements are conditional probabilities. The reason that we ascribe the conditional probability that *C* given *A* to the zif-statement that, zif *A*, *C* is that this statement states that *C* within the scope of the supposition that *A*, and to ascribe probability to a suppositional statement is to ascribe probability to what it states from within the scope of what it supposes. The outsider should prefer this hypothesis to the others, for it respects Lewis's result without (a) attributing systematic error to our practice of ascribing probability to zif-statements; (b) attributing radically indexical contents to zif-statements; or (c) attributing systematic error to our practice of ascribing truth-values to zif-statements.

¹⁵ Edgington (1995, p. 307) complains that such extreme context-dependence destroys the point of attributing truth conditions: 'All disagreement, all change of mind, is equivocation. I do not wish to deny that there is such a thing as context dependence. But to appeal to it to such an extent might be thought to vitiate the point of the appellation "true".'

¹⁶ Lewis (1976) suggests that the standard suppositionalist might go this route by employing a non-standard probability calculus.

5. Evaluating the authors of zif-statements

Their contents we deem true or false. Their authors we deem right, wrong, or neither.

There are two senses in which an author of a zif-statement may be right. She may be right *about* what she states, or she may be right *to believe* what she states. Whether she is right in either sense turns on features of the private act—that is, belief—expressed by her statement. Whether she is right *about* what she states turns on the *outcome* of this act. Whether she is right *to believe* what she states turns on her *reasons* for this act. To be right in the first sense is to act *successfully*. To be right in the second sense is to act *rationally*. In this section we focus on the first sense.

What is it to believe successfully? Success is relative to a goal. To succeed in an activity one must attain the goal of the activity. The goal of chess is checkmate. The goal of belief is accurate representation, or truth. Thus, to believe successfully one must believe the truth.¹⁷

Attaining the goal of an activity is not, however, always what matters. Sometimes we engage in an activity without a meaningful commitment to its goal: we set its goal, not because we care about it, but only because we believe that our very *attempt* to achieve it will end in the satisfaction of another goal, one that we do care about. One goal becomes the instrument of another. This happens for instance in a game of practice chess. Here we aim for checkmate, not because we care about it, but because we believe that working toward this goal will end in the satisfaction of a goal we do care about: improving our skills. By sincerely agreeing to play a practice game of chess, we publicly and privately take on the goal of chess, but only for instrumental purposes. In no meaningful sense do we thereby commit to this goal, as we do when we agree to play for competition. This is why victories and losses in practice games do not count, either publicly, as marks on one's official record, or privately, as feelings of satisfaction or failure—indeed, such feelings would indicate that one was not playing *just* for practice.

The non-instrumental goal of a practice game of chess is *to improve by attempting to attain checkmate*. The goal of practice chess thus includes, as an instrument, the goal of chess. This relation between the two goals allows for two equivalent characterizations of practice chess. We can type it by its instrumental goal and then complete our characterization with context. Or we can type it by its non-instrumental goal,

¹⁷ To say that the goal of belief is truth is not to say that believing truths, and only truths, is the overriding guide for choosing which issues to take a stance on. It is only to say that, once one has embarked on taking a stance, truth is a constitutive aim of that act.

thus obviating the need for context. We can say either that we are *playing a game of chess, though just for practice*; or that we are *playing a practice game of chess*. Either way, we specify the relevant two goals and, by giving their relation, convey which of them does, and which does not, matter to us. We convey that our genuine commitment is to improving by playing a game of chess.

How does this bear on belief? Just as we might set the goal of chess without a genuine commitment to it, we might set the goal of belief without a genuine commitment to it. We might believe without caring whether we believe truly. This is not to say that we might believe without in some sense *aiming* at the truth. Arguably, aiming at the truth is constitutive of believing. Still, we might aim instrumentally: we might set the goal of belief only because we believe that our *attempt* to achieve it might end in the satisfaction of another goal, one that we *do* care about.

We might do this, for instance, in the context of a supposition. When we believe under a supposition, we aim at the truth, but we are only committed to this goal *on the condition that the supposition obtains*. On one valid description of this act, the goal of belief becomes the instrument of another: we attempt to believe truly only to satisfy the non-instrumental goal of *believing truly conditional on the supposition*. On an equally valid description, instead of converting the goal of belief into the instrument of another, we place conditions on caring about it: we attempt to believe truly and, on the condition that the supposition obtains, we care about this goal.

Both descriptions capture what matters: the conditions for the success/failure of the overall act. If the supposition obtains and the belief is true, the act qualifies as a *success*; if the supposition obtains and the belief is false, the act qualifies as a *failure*; and if the supposition fails to obtain, the act qualifies *neither* as a success nor as a failure. Hence, if the supposition obtains and the belief is true, the author is *right about her belief*; if the supposition obtains and the belief is false, she is *wrong about it*; and if the supposition fails to obtain, she is *neither right nor wrong about it*—for she is not committed one way or the other.¹⁸

¹⁸ Quine (1952, p. 19) says, ‘An affirmation of the form “if *p*, then *q*” is commonly felt less as an affirmation of a conditional than as a conditional affirmation of the consequent. If, after we have made such an affirmation, the antecedent turns out true, then we consider ourselves committed to the consequent. If on the other hand the antecedent turns out to have been false, our conditional affirmation is as if it had never been made’. Based on this passage, Edgington (1995, p. 289) attributes to Quine the absurd view that, if the antecedent is false, our conditional affirmation has absolutely no effect on the world. She says: ‘But it is absurd to say it is as if I had not made a conditional assertion—as if I had said nothing at all. I say to you “If you press that switch, there will be an explosion.” As a consequence, you do not press it. Had I said nothing at all, let us suppose you would have pressed it. A disaster is avoided ... It is not as if nothing had been said.’ But Quine is

Now, even if the supposition fails to obtain, there is some sense in which the author is right or wrong about her belief. For she either succeeds or fails in her attempt to believe the truth. Still, as with victories and losses in practice games of chess, such successes and failures do not count. They make no difference, publicly or privately. If the author has sincerely stated her belief, and if she has done so in the appropriate suppositional context, then only on the condition that the supposition obtains has she thereby publicly committed to the truth of her belief. And only on the same condition does the belief itself involve a meaningful commitment to the truth.

Interpretive Pitfalls and Clues. Although suppositional beliefs have three possible outcomes—success, failure, or neither—in practice only two are worth discussing: success and failure. This is not because the third outcome is unlikely, but because assigning it typically has negative conversational value. To say of an author of a zif-statement that she is neither right nor wrong about what she states is tantamount to rejecting the suppositional part of the statement. In the context of the statement, this often would be inappropriate. For the author has put forward the supposition, not for consideration, but for supposing. Typically, to respond by rejecting the supposition would be to make an infelicitous adjustment to the suppositional context; it would miss the author's point.¹⁹ Outside the context of the statement, assigning the third value is inappropriate for a different reason: it is inefficient. Why draw attention to a statement only to point out that its author is not committed to its truth? Why not simply assert the negation of the suppositional part of the statement? In practice, then, we have little use for the third value. Typically we set it aside by supposing what the author supposes.

talking only about our *commitments*: if the antecedent is false, our *commitments* are what they would have been had we not made the statement.

Edgington (p. 290) goes on to say, 'A conditional assertion "If A, B" is an assertion of B when A is true, and an assertion of nothing when A is false'. This 'conditional assertion' view is a standard ingredient of suppositionalist views. I doubt, however, that it is correct. For it does not seem to apply to zif-statements: one who asserts that, zif A, C, asserts something—namely, that C—regardless of whether A. Still, he or she only *commits* to what is asserted on the condition that A. (This, incidentally, is consistent with the commonsense view of assertion, held by Frege, on which, to assert something is to put it forward as true; for we can put things forward as true, categorically, or relative to a supposition.)

¹⁹ There are contexts in which it is appropriate to respond to a statement of 'Zif A, then C' by rejecting the supposition; for instance, if the audience knows both that not-A and that the speaker does not know that not-A.

Here lies an interpretive pitfall. For, supposing what the author supposes, the author is right (wrong) about what is stated just in case what is stated is true (false). And so typically our ascriptions of rightness and wrongness about what is stated go hand in hand with our ascriptions of truth and falsity to what is stated. This may give the impression that the author of a zif-statement is right/wrong just in case what she states is true/false. The outsider who is under this impression might conclude that, whenever it is false that *A*, a statement that, zif *A*, *C* fails to state something with a truth-value. For, in a *theoretical* context in which we are asked to suppose that the antecedent of a given zif-statement is false, we will say that its author is neither right nor wrong about what is stated. The outsider who believes *that the author of a zif-statement is right/wrong about what she states just in case what she states is true/false* will infer that what is stated is neither true nor false.²⁰

There is a second, closely related, pitfall. In practice we typically deem the author of a zif-statement right/wrong just in case we accept/reject what is stated relative to what is supposed. Thus, in practice, whenever we both (i) accept/reject what is stated relative to what is supposed and (ii) reject what is supposed, we will say both (i*) that the author of the statement is right/wrong and (ii*) that the antecedent of the statement is false. This gives the false impression that the author of a zif-statement can be right/wrong about what is stated even if the antecedent of her statement is false.

Nearby lies a pair of interpretive clues. First, on the *supposition* that it is false that *A*, we say both that the author of the statement that, zif *A*, *C* is neither right nor wrong and that we ourselves are unable to evaluate the statement. The most plausible explanation of how we are positioned to evaluate the author without evaluating the statement itself is that the statement involves the supposition that *A*. Second, although we are unable on the supposition that it is false that *A* to evaluate the whole statement, we will, in the appropriate theoretical context, say that *what the statement states* is either true or false (vagueness and other irrelevant threats to bivalence aside). And the most plausible explanation of how, in this context, the author could be neither right nor wrong even though what she states is either true or false is that the statement involves the supposition that *A*.

²⁰ See for instance Edgington 1995, pp. 290–91, Gibbard 1981, and McDermott 1996. McDermott implicitly endorses the preceding equivalence—applied to conditionals—by assuming that a bet on a conditional is won (lost) iff the conditional is true (false).

6. Compounding zif-statements

Five cases are worth considering:

<i>Conjunctions</i>	<i>A and zif B, C</i>
<i>Negations</i>	<i>It is not the case that, zif A, C</i>
<i>Disjunctions</i>	<i>Either A or zif B, C</i>
<i>Zif-consequents</i>	<i>Zif A, then zif B, C</i>
<i>Zif-antecedents</i>	<i>Zif zif A, B, then C</i>

We know already that zif-statements can be conjoined meaningfully with other statements. Recall (3):

- (3) My friends do not care for Bush; nevertheless, zif the polls are right, he is quite popular; and, zif the Christian Right is right, he is quite virtuous.

Although (3) is a unique statement, there is no unique content such that (3) is a statement of it. (3) is not for instance a statement of the conjunction of what is stated by its three conjuncts: it does not state *that my friends do not care for Bush and Bush is quite popular and Bush is quite virtuous*, either within or outside the scope of any supposition. Rather, it is essentially a statement of three things: first, *that my friends do not care for Bush*; second, within the scope of the supposition that the polls are right, *that Bush is quite popular*; and third, within the scope of the supposition that the Christian Right is right, *that Bush is quite virtuous*. Thus, while zif-statements may be conjoined meaningfully with other statements, the resulting conjunctions are not statements of the conjunction of what is stated by the conjuncts.

Two lessons are worth drawing. First, what is stated by a conjunction of statements is not always the conjunction of what is stated by the conjuncts. Second, not every meaningful statement can be characterized as a statement of a single thing.

These lessons have implications for our practices of ascribing probability to the contents of statements indirectly, by speaking as if we are ascribing them to the statements themselves. For only if a statement states a unique thing may we unambiguously ascribe probability to the content of the statement indirectly, by speaking as if we are ascribing it to the statement. For illustration, consider an ascription of 80% probability to (3). To ascribe X% probability to a statement is to ascribe X% probability to what the statement states, from within the scope of what-

ever it might suppose. But (3) states three things—one categorically, one under one supposition, and one under another supposition. And to interpret an ascription of probability to (3) as an ascription to any one, or to any combination, of these three things would be arbitrary. There is no principled way to interpret an ascription of probability to the statement itself. In practice, three that-clauses are needed, one for each thing stated, when probability is ascribed to what is stated by (3): we say that it is X% probable *that my friends do not care for Bush*, Y% probable *that, zif the polls are right, Bush is quite popular*, and Z% probable *that, zif the Christian Right is right, that Bush is quite virtuous*.²¹

In a similar vein, there may be no principled way to attribute success conditions to a conjunction of zif-statements. Suppose, for illustration, that my friends do not care for Bush, that the polls are not right, that the Christian Right is right, and that Bush is virtuous. Then was I right or wrong about (3)? It would seem that the sensible thing to say is that I was right on two counts and neither right nor wrong on a third. It would seem arbitrary to say either that I was overall right about what I stated or that I was overall neither right nor wrong about what I stated.²²

We turn next to negations of zif-statements. To negate a suppositional statement is to negate what it states within the scope of its supposition. To state, for instance, *that it is not the case that, zif the polls are right, Bush is popular* is to state, within the scope of the supposition that the polls are right, that it is not the case that Bush is popular. A statement that it is not the case that, zif A, C is a statement of a unique thing—that it is not the case that C—within the scope of the supposition that A.

Turning to disjunctions, consider (11):

- (11) Either my friends do not care for Bush, or, zif the polls are right, Bush is popular.

What is it to disjoin a zif-statement with another statement? Clearly it is not to state what either statement states; (11) does not state either *that my friends do not care for Bush* or *that Bush is popular*. Nor is it to state the disjunction of what is stated by the two statements; (11) does not state *that either my friends do not care for Bush or Bush is popular*, within or outside the scope of any supposition. Nor is it to state more

²¹ Is there a similar difficulty interpreting ascriptions of truth-values to conjunctions of zif-statements? Perhaps there is not, for perhaps an ascription of truth to such a conjunction is tantamount to an ascription of truth to each of the contents of the conjuncts, relative to their respective suppositions, should they have them.

²² Based on evidence that conjunctions of conditionals sometimes lack unique success conditions, McDermott (1996) draws the radical conclusion that 'and' is ambiguous.

than one thing. For lack of further candidates, I conclude that it is not to state anything at all. Strictly speaking, disjoining a zif-statement with another statement does not result in a genuine statement of something.

None the less, it may qualify as a successful act of communication. A speaker who utters ‘Either zif Jill wins, Ed will place second, or zif Jill wins, Ed will place third’ may for instance successfully communicate that, zif Jill wins, Ed will place second or third. And a speaker who utters ‘Either you will be eaten alive, zif you take the low road, or you will be hit by lightening, zif you take the high road’ may successfully communicate (i) that you will either take the low road or the high road; (ii) that, zif you take the low road, you will be eaten alive, and (iii) that, zif you take the high road, you will be hit by lightening.²³

Turning to zif-statements whose consequents are zif-statements, consider (12):

- (12) Zif terrorists are plotting an attack, then, zif their plan is not foiled, people will die.

What is it to perform a suppositional act within the scope of a supposition? In part, it is to add to the extant suppositional context; suppositional context can grow by further acts of supposition. (12) introduces two suppositions and, within that context, states that people will die. A zif-statement that, zif *A*, then zif *B*, *C* is a statement of a unique thing—namely, that *C*—from within the scope of the supposition that *A* and *B*.

Turning last to zif-statements whose antecedents are zif-statements, consider (13):

- (13) Zif zif *A* will fly, his plane will crash, then *A* should not fly.

(13) purports to be a suppositional statement whose supposition has as its object, not a content, but an entire suppositional statement. Yet a statement is an act, and strictly speaking there is no such thing as an act of supposing an act. We may suppose *of* a given act *that* it is successful, or *that* its content is true, but there is no sense to be made of supposing the act itself.²⁴ Thus, zif-statements whose antecedents are zif-state-

²³ Edgington (1995, pp. 282–83) argues that ‘the disjunction of a conditional is an exceedingly bad way to convey the information you have, and once the necessary background is filled in the disjunction belongs elsewhere.’

²⁴ It might be suggested that, just as talk of ascribing truth to a statement is talk of ascribing truth to the content of the statement within the scope of whatever might be supposed by the statement, talk of supposing a statement is talk of supposing its content, within the scope of whatever might be supposed by the statement. This however cannot be right, for otherwise *zif-consequents* would collapse into *zif-antecedents*, and the intentions behind the two are clearly different.

ments are, strictly speaking, not meaningful statements of anything at all.

Still, just as one might successfully communicate by disjoining a zif-statement with another statement, one might successfully communicate by embedding a zif-statement in the antecedent of another. To see for instance what might be communicated by (13), we need to distinguish the impossibility of supposing an act from the possibility of performing an act *for the purpose of supposition*. To make a suppositional statement for the purpose of supposition is to create a context of accepting the content of the statement within the scope of its supposition, not with the aim of accepting the truth conditional on the supposition, but only of creating a context for some further act. In terms of degrees of confidence, one assigns full confidence to the content, on the given supposition, merely for the purposes of supposition. Thus, while strictly speaking (13) is not a statement of anything, the intention behind it is clear: to state a unique thing—that Al should not fly—within a context of assigning full confidence, merely for the purposes of supposition, on the supposition that Al will fly, to the claim that his plane will crash.

Interpretive Pitfalls and Clues. Four clues are worth highlighting. The first two are closely related: ascriptions of probability to conjunctions of zif-statements often seem to lack unique interpretations, and conjunctions of zif-statements often seem to lack unique success conditions. For the outsider, a simple explanation of both is that, due to the inclusion of suppositions, conjunctions of zif-statements are essentially statements of more than one thing. The third clue is that we treat the negation of the statement that zif A , C as equivalent to the statement that, zif A , not- C . A simple explanation is that what is stated by a zif-statement is given by its consequent, and to negate a statement is to negate what it states from within the scope of whatever it might suppose. The fourth clue is that, although it is sometimes clear what is meant by a speaker who utters a disjunction of zif-statements, or a zif-statement with a zif-antecedent, such statements often sound awkward and ill formed.²⁵ This is to be expected if zif-clauses express suppositions, for on this hypothesis nothing is uniquely stated by a disjunction of zif-statements and nothing is literally supposed by a zif-antecedent.

²⁵ Applied to conditionals with if-antecedents, Gibbard (1981, p. 235) illustrates the awkwardness with the following example: If Kripke was there if Strawson was, then Anscomb was there.

7. The logic of zif-statements

An argument, let us agree, is a set of *statements*, one of which is designated the *conclusion*, the others the *premises*. A statement is *suppositional* just in case it introduces a supposition—by ‘zif’, ‘supposing that’, or any other device—and states something within its scope. An argument is *suppositional* just in case one of its statements is. To accept/reject a premise or conclusion is to accept/reject whatever it states from within the scope of whatever it might suppose.

Laws of truth apply to contents; laws of rationality apply to contentful acts (or states). To see that it is the laws of rationality, and not the laws of truth, that are relevant to evaluating suppositional arguments—and thus to defining a *valid* suppositional argument—consider the following:

- (P1) Zif George made it to the hut, then everyone is alive.
- (P2) George made it to the hut.
- (C) Everyone is alive.

Why does this argument seem valid to competent users of ‘zif’?

Is it that the truth of the contents of the premises seems to guarantee the truth of the content of the conclusion? No. (P1) is an act of stating, within the scope of the supposition that George made it to the hut, *that everyone is alive*. (C) is an act of stating the very same thing, though outside the scope of any supposition. Because what is stated by (P1) is identical to what is stated by (C), the truth of the content of (P1) alone guarantees the truth of the content of the conclusion. This guarantee cannot underlie our intuition that the argument is valid. For the same guarantee holds of the argument from *just* (P1) to (C), and we are not at all inclined to judge it valid.

Perhaps the argument seems valid, not in the sense that the truth of the contents of the premises guarantees the truth of the content of the conclusion, but in the sense that rationally accepting the premises seems to rationally require accepting the conclusion: believing that everyone is alive is rationally required of anyone who believes both that George made it to the hut and that, zif George made it to the hut, everyone is alive.

The source of this requirement lies in the form of the argument:

- (P1') Zif p , then q
- (P2') p
- (C') q

For any two contents p and q , believing q is rationally required of anyone who believes p and, within the scope of the supposition p , believes q . This formal requirement, in turn, has its source in the natures of belief and supposition.

Belief and supposition can both be characterized as acts of discounting possibilities: believing p and supposing p are acts of discounting the possibility that not- p . Where they differ is mainly in aim. Belief aims at the truth; it aims to discount *unrealized* possibilities. The aim of supposition is not sensitive to the alethic status of the possibility discounted; in so far as discounting a possibility creates a context for some other act, a supposition succeeds. To illustrate what is in common between belief and supposition, imagine that someone were to ask you to suppose that Bush has lied to the American people. This would strike you as pointless; for, by virtue of believing that Bush has lied, you already discount the possibility that Bush has not lied.

Now, a thinker who accepts (P1') is a thinker who, in the context of discounting the possibility that not- p , believes q . And a thinker who accepts (P2') is a thinker who *is* in the context of discounting the possibility that not- p . Thus, a thinker who accepts both (P1') and (P2') is a thinker who believes q . That is, a thinker who accepts both (P1') and (P2') is a thinker who accepts (C').

By recasting belief and supposition in common terms, we see why it is a law of rationality that believing both that, *zif* p , q and that p requires believing q . We thereby see a sense in which the preceding argument form is valid: whoever accepts (P1') and (P2') is rationally required to accept (C'). In turn, we see a relevant sense in which our initial argument is valid: due to its form, whoever accepts (P1) and (P2) is rationally required to accept (C).

A similar style of explanation is available for why certain other basic forms of inference seem valid. Take for instance the rule of *simplification*:

(P1'') p and q

(C'') p

A thinker who accepts (P1'') is a thinker who believes what is stated by (P1''), namely, both p and q . And a thinker who believes both p and q is a thinker who believes p . Thus, whoever accepts (P1'') is rationally required to accept (C'').

It is worth noting one candidate rule of inference that cannot be explained in present terms. I call it *conditional proof for zif* because it

would correspond with *conditional proof for the material conditional*. By this rule, for any given set of premises, if a valid argument to the conclusion q results from adding a categorical statement of p to the set, there is a valid argument from the initial set to the conclusion that, zif p, q . For illustration, suppose that our given set of premises has just one member,

(P1''') q

Adding a statement of p , we have a valid argument to the conclusion q :

(P1''') q

(P2''') p

(C''') q

A thinker who accepts the premises is a thinker who accepts (P1'''), and a thinker who accepts (P1''') is a thinker who believes q and thus accepts (C''').

By *conditional proof for zif*, the following argument would be valid:

(P1''') q

(C''') Zif p , then q

But, in terms of rational belief, there is no explanation of why this argument should be valid. To accept (P1''') is to believe q . And to accept (C''') is to believe q in the context of discounting the possibility that not- p . Surely it is not a law of rationality that, for any two contents p and q , whoever believes q must also do so in a context of discounting the possibility that not- p . You might believe that Bush has lied, but you are not thereby rationally required to believe that, supposing that Bush has never uttered a falsehood, Bush has lied.

One proposal, then, is that an argument is *valid* just in case whoever accepts its premises is rationally required to accept its conclusion. Proceeding along the lines above, we could then set out to determine which argument forms are valid. In terms of naturalness and intuitive appeal, there is much to be said in favor of such a program.

There are, however, two problems with it. First, to my knowledge, no such proposal has been formalized, and it is not entirely clear how such a formalization would proceed. Second, on one credible treatment of examples like the Preface Paradox, even for non-suppositional reasoning rational belief is not closed under truth-preservation; on this treatment, certain intuitively valid forms, such as *conjunction introduction*, would not qualify as valid on the present proposal.

Fortunately, we can avoid both problems while maintaining the spirit of our proposal by turning to a formal logic of conditionals developed by Ernest Adams (1965, 1975, 1998). Adams develops a logic on which an argument is *valid* just in case there is no probability function in which the uncertainty of the conclusion (uncertainty = one minus probability) exceeds the sum of the uncertainties of the premises. Adams motivates this definition by arguing that conditionals have probabilities but no truth-values. We need to find a different motivation, for in the case of *zif*-statements there is no such asymmetry between ascriptions of truth-values and ascriptions of probability.

With this goal in mind, let us reformulate our initial proposal—that an argument is valid just in case whoever rationally accepts its premises is rationally required to accept its conclusion—in terms of rational *degrees of confidence/uncertainty in a premise or conclusion*. A degree of confidence/uncertainty in a premise or conclusion is a degree of confidence/uncertainty in whatever is stated by it from within the scope of whatever might be supposed by it. In exchange for a minor loss of intuitive appeal, we can recast our initial proposal in these degree-theoretic terms, first informally, and then in the formal setting of Adams's probability logic.

Perhaps the most natural way to recast the proposal is as follows: an argument is *valid* just in case one cannot rationally be more uncertain—that is, less confident—of the conclusion than of the premises. This proposal admits of several readings.

On one, an argument is *valid* just in case one cannot rationally be more uncertain of the conclusion than of *any one of the premises*. This reading places an unnecessary condition on validity. The Lottery Paradox illustrates the point. Consider a one-hundred-premise argument whose first premise is that the number 1 will not be picked; whose second premise is that the number 2 will not be picked; and so on; and whose conclusion is that no number between 1 and 100 will be picked. Intuitively, the argument is valid. Yet one might rationally be more uncertain of the conclusion than of any of the premises. Indeed, supposing that the Lottery will be won, we might rationally have zero confidence in the conclusion and 0.99 degree in each premise.

On a second reading, an argument is *valid* just in case one cannot rationally be more uncertain of the conclusion than of *the conjunction of the premises*. The problem with this reading is that there is no principled way to interpret an ascription of confidence to a conjunction of *zif*-statements; for, as we saw in the preceding section, conjunctions of *zif*-statements essentially state more than one thing. Thus, our notion

of validity should not rest on the idea of a degree of confidence in the conjunction of the premises of an argument. (Note also that, if we are to define validity in terms of degrees of confidence in the statements of an argument, we must confine its application to arguments each of whose statements states one and only one thing.)

On a third reading, an argument is *valid* just in case one's uncertainty in the conclusion cannot rationally exceed one's *total uncertainty in the premises*—that is, the sum of one's uncertainties in the individual premises. This reading captures the intuition that certainty in the conclusion of a valid argument is rationally required of anyone who is certain of the premises, while respecting our lesson from the Lottery Paradox that the conclusion of a valid argument can inherit a degree of uncertainty from each premise. Moreover, when placed in the formal setting of Adams's probability logic, it can be seen to capture the appeal of the second reading, while avoiding its difficulties, by entailing that one's uncertainty in the conclusion of a valid *non-suppositional* argument cannot rationally exceed one's uncertainty in the conjunction of the premises.

On the assumption that rational degrees of confidence conform to the laws of probability, our third reading finds formal expression in Adams's definition:

Probabilistic Validity: an argument is *probabilistically valid* iff there is no probability function in which the uncertainty of the conclusion exceeds the sum of the uncertainties of the premises.

We interpret 'uncertainty/probability of the premise or conclusion' as 'uncertainty/probability of what is stated by the premise or conclusion, from within the scope of whatever might be supposed by it'. We take the probability of a content q within the scope of a supposition p to be the *conditional probability of q given p* . Likewise, we take the uncertainty of a content q within the scope of a supposition p to be the *conditional uncertainty of q given p* , which by definition is one minus the conditional probability of q given p . And we take a probability function to be an assignment, obeying the standard laws of probability, of numerical values to truth-conditional contents.

In the special case of non-suppositional arguments, Adams shows that an argument is probabilistically valid iff it is truth preserving iff there is no probability function in which the uncertainty of its conclusion exceeds the uncertainty of the conjunction of its premises. We can therefore think of our earlier temptations to treat validity, first in terms of preservation of truth, and later in terms of the second reading of our

degree-theoretic proposal, as sound applications of the notion of Probabilistic Validity to the restricted case of non-suppositional arguments.

To see what results when arguments both suppositional and non-suppositional are considered, it will help to have a convenient symbolism for suppositional statements. Our choice of symbolism raises a question of independent interest: how are we to think of Probabilistic Validity in the setting of an interpreted formal language? The answer depends on how suppositional arguments are to be represented in the language, which depends on how suppositional statements are to be represented.

Suppose we are given an interpreted formal language equipped with the usual truth-functional connectives. Suppose the interpretation of the language assigns a truth-value to each sentence at every possible world, and that the sentences of the language thereby represent, not statements, but contents thereof.²⁶ Consistent, then, with our view that probability is borne by contents and not by statements of them, we can think of a probability function P as an assignment, which conforms to the standard laws of probability, of numerical values to all sentences of the language.

A difficulty arises in representing arguments in the language. For an argument is a set of *statements*, and sentences of our formal language represent *contents* of statements.

No harm is done in representing categorical statements with sentences of our formal language; for, given that our aim is to study Probabilistic Validity, our only need for representing statements is to represent ascriptions of probability to them. And because ascriptions of probability to categorical statements are absolute ascriptions of probability to their contents, we can take assignments of probabilities to the sentences of our formal language to represent ascriptions of probability to categorical statements of the contents they stand for.

But how do we represent suppositional statements and ascriptions of probability to them? Because our only need for representing suppositional statements is to represent ascriptions of probability to them, and because ascriptions of probability to them are ascriptions of conditional probability to their contents given their suppositions, we can introduce into our formal language a new symbolism whose sole purpose is to bear assignments of conditional probability and to thereby represent ascriptions of probability to suppositional statements. We might for instance introduce $A|C$ (where A and C are arbitrary sentences) as an expression of our language that falls into a syntactic cate-

²⁶ We may further suppose that our assignment adds an element of structure to the contents.

gory of its own, call it a *suppositional*; call A the *antecedent* and C the *consequent*. Suppositionals are not sentences. Hence: they are not assigned truth-conditions; they are not in the domain of (absolute) probability functions; and they are not components of compound sentences.²⁷ To play their intended role, they are assigned conditional probabilities: $P(A|C) =_{df} P(C \& A)/P(A)$, if $P(A)$ is positive. A suppositional $A|C$ represents a suppositional statement solely by virtue of the fact that assignments to it of conditional probabilities represent ascriptions of probability to the content assigned to C on the supposition of the content assigned to A .

Premises and conclusions of arguments can then be represented with suppositionals or sentences, depending on whether they are suppositional or non-suppositional statements. For instance, we can represent the premise ‘Zif George made it to the hut, then everyone is alive’ with the suppositional $A|C$, and the premise ‘George made it to the hut’ with the sentence A . We define the uncertainty of a premise/conclusion as one minus its probability, if it is a sentence; and as one minus its conditional probability, if it is a suppositional (whose antecedent has a positive probability). And we have all the ingredients for an understanding of Probabilistic Validity in the setting of an interpreted formal language. (Adams (1998) pursues a similar strategy, though framed in slightly different terms, in his ‘formal theory of probability conditionals’.)

²⁷ But if suppositionals are not components of compound sentences, then how should we represent compounds of suppositional statements? In section 6 we found only three meaningful compounds of zif-statements: conjunctions, negations, and zif-consequents. We can represent these compounds by first separating a conjunction into its conjunct statements; converting a negation *that it is not the case that, zif A, C* into the zif-statement *that, zif A, it is not the case that C*; and converting a zif-consequent *that, zif A, then zif B, C* into the zif-statement *that, zif A and B, then C*. (Note that modus ponens for zif-consequents fails: from (i) A and (ii) $zif A$ and B , then C (our translation of the zif-consequent) we cannot derive (iii) $zif B, C$. For an intuitive counterexample to the rule, let A = ‘There is at least \$100 in my checking account’, B = ‘There is not between \$100 and \$100,000,000 in my checking account’, and C = ‘There is more than \$100,000,000 in my checking account’. See Adams 1965 and McGee 1985 for proposed counterexamples to the corresponding rule for conditionals.)

What about the logic of what is *intended* by a disjunction of zif-statements or a zif-antecedent? In the case of disjunctions, there is no general equation for determining what is intended, and so there is nothing in general to say about the logic of what is intended. In the case of zif-antecedents, there is a general equation: a statement that, zif zif A, B , then C is intended to be a statement that C within the scope of *ascribing a conditional degree of confidence—merely for the purposes of supposition—of 1 to B given A*. We will see below that, in the special case where the premises of an argument are accepted with full certainty, the logic of a simple zif-statement is identical to that of the material conditional. Thus, because the zif-statement in the antecedent of a zif-antecedent is accepted with full certainty (for the sake of supposition), we can treat it as a material conditional and thereby treat zif-antecedents as simple zif-statements.

For an attempt to generalize Adams’s logic over certain compounds of conditionals, see McGee 1989.

With a convenient symbolism for suppositional statements in hand, some important results of applying the notion of Probabilistic Validity to arguments both suppositional and non-suppositional can be put in terms of a comparison between the logic that emerges for the material conditional and that for the suppositional. Because a non-suppositional argument is probabilistically valid just in case it is truth preserving, the logic for the material conditional is classical truth-functional logic, on which there is one basic elimination rule—modus ponens—and one basic introduction rule—conditional proof. Of the corresponding two rules for suppositionals, only the first is probabilistically valid. Six noteworthy consequences of the departure are as follows:

	Valid	Invalid
1. Paradox of Material Conditional	$\sim A \therefore A \supset C$	$\sim A \therefore A C$
2. Paradox of Material Conditional	$C \therefore A \supset C$	$C \therefore A C$
3. Or-to-zif	$A \vee C \therefore \sim A \supset C$	$A \vee C \therefore \sim A C$
4. Contraposition	$A \supset C \therefore \sim C \supset \sim A$	$A C \therefore \sim C \sim A$
5. Transitivity	$A \supset B; B \supset C \therefore A \supset C$	$A B; B C \therefore A C$
6. Antecedent Strengthening	$B \supset C \therefore (A \& B) \supset C$	$B C \therefore (A \& B) C$

We confirm these results with counterexamples to the suppositional versions of (1)–(6). For (1) and (2), let A = ‘There is a monkey on my back’ and C = ‘There is not a monkey on my back’. For (3) and (4), let A = ‘The universe is more than ten years old’ and C = ‘The theory of evolution is correct’. For (5) and (6), let A = ‘Aliens have landed’, B = ‘There are other life forms in the universe’, and C = ‘We will never know that there are other life forms in the universe’.

We began by noting that laws of truth apply to contents, whereas laws of rationality apply to contentful acts. We saw that it is the laws of rationality, and not the laws of truth, that are relevant to the evaluation of suppositional arguments. A natural progression of attempts to define validity in terms of the laws of rationality led us ultimately to Adams’s Probabilistic Validity. We say that an argument is valid, not because the truth of the content of the conclusion is guaranteed by the truth of the contents of the premises, but because confidence in the conclusion is rationally guaranteed by confidence in the premises—in the precise sense given by Probabilistic Validity.

Interpretive Pitfalls and Clues. One method for determining whether a non-suppositional argument is valid is to suppose that the premises are true and see whether the conclusion might none the less be false. The outsider who assumes that zif-statements are non-suppositional might ask us to apply this method to arguments involving zif-statements. A remarkable pitfall awaits him. For in this setting a wide range of our responses will give the impression that ‘zif’ is logically equivalent to ‘ \supset ’. Imagine, for instance, that the outsider asks us to evaluate rule (2) for ‘zif’ by this method. We are asked to suppose that C and then, in the context of this supposition, to consider whether it might be false that, zif A , C . In other words, in the context of supposing that C and A , we are asked to consider whether it might be false that C . We respond with a definite *no*. And we give the same response with respect to rules (3)–(6).²⁸ Imagine, furthermore, that the outsider asks us to apply the method at hand to the following two argument forms:

Material Conditional to Zif: Either not- A or C
Therefore, zif A , then C

Zif to Material Conditional: Zif A , then C
Therefore, either not- A or C

First we are asked to suppose that it is the case either that not- A or that C . In this context, we are to consider whether it might be false that, zif A , C . In other words, in the context of supposing that A and that it is the case either that not- A or that C , we are to consider whether it might be false that C . Clearly, the answer is *no*. Next we are asked to suppose that, zif A , C . In our best effort to comply, we *accept* that, zif A , C , for the purposes of supposition. In other words, for the purposes of supposition, we assign a conditional degree of confidence of one to C given A . In this context, we are to consider whether it might be false both that not- A and that C . Once more, the answer is a definite *no*. To the outsider who assumes that zif-statements are non-suppositional, our positive evaluation, by the given method, of rules (2)–(6) for ‘zif’ as well as *Material Conditional to Zif* and *Zif to Material Conditional* will give the impression that ‘zif’ is a truth-functional connective logically equivalent to ‘ \supset ’.

Closely related to this pitfall is an interpretive clue. It is that, whether we deem a given form of reasoning with zif-statements valid depends on whether we employ the preceding method—that of supposing the

²⁸ Though we cannot actually suppose the suppositional premises of (4)–(6), we can accept them for the purposes of supposition—see section 6.

premises and asking whether the conclusion might be false—or rather the method of asking whether confidence in the premises rationally guarantees confidence in the conclusion, in the sense given by Probabilistic Validity. Because the first method is a legitimate method for determining whether a non-suppositional argument is truth preserving, and because a non-suppositional argument is truth preserving just in case it is probabilistically valid, the divergence of results upon applying the two methods to arguments involving zif-statements suggests that zif-statements are suppositional.

A second, rather remarkable clue is that we deem it possible for a pair of thinkers to reason by valid rules, from justifiably certain beliefs, to incompatible views—one to the view that, zif A , C , the other to the view that it is not the case that, zif A , C .

Here is such an example.²⁹ George and Saddam are chatting over a cup of tea. George begins to wax philosophical:

George: Is it true that, zif only one of us is a subject of experience, it is you?

Saddam: It must be, Cowboy. For I am certain that I am a subject of experience. Hence, I am certain that, zif only one of us is a subject of experience, it is I.

George: That, Dr. Evil, is the wrong answer. For *I* am certain that I am a subject of experience. Hence, I am certain that, zif only one of us is a subject of experience, it is *I*. Hence, I am certain that it is *not* the case that, zif only one of us is a subject of experience, it is you.

Now, Saddam is *justifiably* certain that he is a subject of experience. George is *justifiably* certain that he is a subject of experience. And neither is guilty of any error in reasoning. Hence, Saddam is justifiably certain of what he concludes, and George is justifiably certain of what he concludes. And yet what Saddam concludes is the negation of what George concludes.

The outsider who accepts our description of the example cannot maintain a categorical interpretation of zif-statements. For, on a categorical interpretation, there is a content, p , such that Saddam's conclusion is an act of categorically accepting p and George's conclusion is an act of categorically accepting not- p . But if p , then George is wrong about what he believes. And if not- p , then Saddam is wrong about what

²⁹ By virtue of affinities to Alan Gibbard's River Boat example (1981), my example qualifies as a 'Gibbardian Stand-off'.

he believes. Either way, one of the two is wrong about what he believes. And if a thinker is wrong about what he believes, he is not justifiably certain of what he believes. Hence, on a categorical interpretation, either what George concludes is not the negation of what Saddam concludes³⁰ or one of the two thinkers is not justifiably certain of what he concludes.³¹ Either way, the outsider cannot accept our description of the example.

To avoid attributing error to competent users of 'zif', the outsider must turn to a suppositional interpretation of zif-statements. On this interpretation, our description of the example does not commit us to a content, p , such that Saddam's conclusion is an act of categorically accepting p and George's conclusion is an act of categorically accepting not- p . Rather, it commits us to a pair of contents, p , q , such that Saddam's conclusion is an act of accepting q with full confidence under the supposition that p , and George's conclusion is an act of accepting not- q with full confidence under the same supposition. Given the trivalent success conditions of suppositional statements, only on the condition that the shared supposition is true must one of the two thinkers be wrong about what he concludes.³² And the shared supposition is false: it is not the case that only one of the two is a subject of experience. Hence, on a suppositional interpretation, there is no problem in saying both that what George concludes is the negation of what Saddam concludes and that each thinker is justifiably certain of what he concludes.

³⁰ This response to Gibbardian stand-offs comports with the aforementioned radically indexical treatment of zif-statements. The outsider who confuses being right *about* what is believed with being right *to* believe what is believed is likely to take this route. For both Saddam and George are right *to* believe what they do with full confidence; that is, both are rational to believe what they do with full confidence. A proponent of the categorical interpretation who confuses this fact with the false claim that Saddam and George are both right *about* what they believe will conclude that Saddam and George do not have inconsistent beliefs. See Jeffrey 1991, Jeffrey and Stalnaker 1994, Kratzer 1986, and Stalnaker 1975.

³¹ This response is consistent with the material conditional interpretation of zif-statements, on which neither subject's reasoning is valid: let S = Saddam is a subject of experience; let G = George is a subject of experience; let $C = ((G \ \& \ \text{not-}S) \ \text{or} \ (S \ \& \ \text{not-}G)) \supset (S \ \& \ \text{not-}G)$. Saddam reasons from S ; George reasons from G . Saddam infers C ; George infers not- C . Because neither inference is truth-preserving, neither is valid. See Grice 1967, Jackson 1979, 1987, and Lewis 1976, 1986.

³² The outsider who conflates success conditions with truth conditions may react to the example by concluding that what is believed by Saddam and rejected by George is neither true nor false. See Adams 1975, 1981, Bennett 2003, Edgington 1986, 1995, Gibbard 1981, and McDermott 1996.

8. Zif is if

Let us take stock. Without controversy, we need an efficient device for expressing suppositions. To meet this need, we stipulated that a sincere and literal utterance of ‘zif *A*’ qualifies as an act of expressing the supposition that *A*. An act prefaced by a zif-clause is an act performed within the context of the supposition expressed by the zif-clause. There are zif-statements, zif-promises, zif-commands, zif-questions, and so on. We developed a method for using zif-clauses to talk about suppositional context without creating it anew. By embedding a zif-clause in a that-clause, we can talk about suppositional beliefs, statements, promises, commands, and so on. We can talk for instance about the statement that, zif God exists, atheism is false. This statement is an act of stating that atheism is false from within the scope of the supposition that God exists. Indicative zif-statements have ordinary truth-conditional contents: what is stated by the statement that, zif *A*, *C* is simply that *C*. To ascribe a truth-value, a probability, or a degree of confidence to a statement is to ascribe the value to what is stated by the statement, from within the scope of whatever might be supposed by the statement. To negate a zif-statement is to negate its content within the context of its supposition. To conjoin a zif-statement with another statement is, essentially, to state more than one thing. To state that, zif *A*, then zif *B*, *C* is to state that *C* under the supposition that *A* and *B*. Disjunctions of zif-statements, as well as zif-statements with zif-antecedents, may sometimes qualify as successful acts of communication even though, strictly speaking, they are ill formed. An argument involving a zif-statement is valid just in case confidence in its conclusion is guaranteed by confidence in its premises, in the sense given by Adams’s Probabilistic Validity.³³

In my view, the stipulated role of ‘zif’ is identical to the natural role of ‘if’. For short: *zif is if*. My reasons for holding that *zif is if* are three-fold. First, in every respect that I can think of, our practices with ‘zif’ match perfectly with our practices with ‘if’. Second, for each interpretive clue that we identified in our practice with ‘zif’, there is a corre-

³³One topic that we did not address is how zif-clauses behave with respect to ‘even’ and ‘only’. A sincere utterance of ‘Even zif *A*, *C*’ is an expression of one’s belief that *C* within the scope of the supposition that *A*, and an indication that one also believes that *C* outside the scope of the supposition that *A*. One believes that *C*, *even on the supposition that A*. (For attempts to analyse ‘Even if *A*, *C*’ in categorical terms, see Bennett 2003, Hazen and Slote 1979, Lycan 1991, and Pollock 1976.) ‘*C* only zif *A*’ seems to be short for something like ‘*C* is possible only zif *A*’, a sincere utterance of which is an expression of one’s belief that *C* is possible within the scope of the supposition that *A*, and an indication that, within the scope of the supposition that not-*A*, one rejects that *C* is possible.

sponding feature of our practice with ‘if’ that stands as independent evidence in favor of the suppositional interpretation that, by stipulation, is true of ‘zif’. Third, corresponding to the interpretive pitfalls of ‘zif’ are features of our practice with ‘if’ that, on the proposed suppositional interpretation, can be predicted to mislead theorists into holding just the sorts of rival views that are commonly held about ‘if’—views including the various categorical interpretations, as well as the standard suppositional interpretation on which if-statements lack truth-conditional contents.

Recall our opening pairs of conditionals and suppositionals:

- (C₁) If God exists, atheism is false.
- (S₁) Supposing that God exists, atheism is false.
- (C₂) If God were to exist, there would be less suffering.
- (S₂) Supposing that God were to exist, there would be less suffering.
- (C₃) If Jerry loses faith, bring him this bible.
- (S₃) Supposing that Jerry loses faith, bring him this bible.
- (C₄) If God exists, why is there evil?
- (S₄) Supposing that God exists, why is there evil?

On the view that *zif is if*, conditionals (C₁)–(C₄) are simply more efficient ways of expressing what is expressed by the corresponding suppositionals; they are more efficient because they avoid reference to the contents of the suppositions they express. Contrary to the standard suppositional view, conditionals state, command, and ask ordinary things. (C₁) and (S₁) for instance have ordinary truth-conditional contents: what is stated by both is *that atheism is false*. Contrary to standard truth-conditional views, conditionals are not categorical acts. (C₁) is not a categorical statement of its content; it states that atheism is false *within the context of the supposition that God exists*.

Some features of our practices with ‘if’ may give the impression that conditional acts admit of categorical interpretations. For example, because the significance of a conditional act depends both on its content and on its suppositional context, in practice we never separate the contents of conditional acts from their suppositional contexts. When asked for instance what is stated by (C₁), we typically respond by providing what is stated *together* with its suppositional context: *that, if God exists, atheism is false*. A theorist who is not actively considering a suppositional interpretation might think that we are providing only what is stated and might thus infer that (C₁) states something categorically.

Though pervasive, interpretive pitfalls like this one can be overcome. For our practices are rich with interpretive clues. Here are ten:

- (1) If-clauses set the context for suppositional pronominalization (e.g. in an indicative statement 'if *A*, then *C*', 'then' purports to denote a situation in which it is the case that *A* only conditional on the existence of such a situation).
- (2) We are unable to evaluate an indicative question whether, if *A*, *C* on the supposition that it is false that *A*.
- (3) We ascribe the conditional probability that *C*, given that *A*, to the statement that, if *A*, *C* (yet unless conditionals are radically indexical they cannot generally express truth-conditional contents whose absolute probabilities are guaranteed to be identical to the conditional probabilities of their consequents, given their antecedents).
- (4) On the supposition that it is false that *A*, we say both that the author of the statement that, if *A*, *C* is neither right nor wrong and yet that we ourselves are unable to evaluate the statement.
- (5) Conjunctions of conditionals often seem to lack unique success conditions.
- (6) Ascriptions of probability to conjunctions of conditionals often seem ambiguous.
- (7) To reject what is stated by a statement that, if *A*, *C*, we state that, if *A*, not-*C*.
- (8) Disjunctions of conditionals, as well as conditionals with conditional antecedents, often sound awkward and ill formed.
- (9) Whether we deem a given form of reasoning with conditionals valid depends on whether we employ the method of *supposing the premises and asking whether the conclusion might be false* or the method of *asking whether confidence in the premises rationally guarantees confidence in the conclusion* (in the sense given by Probabilistic Validity).
- (10) We deem it possible for a pair of thinkers to reason by valid rules, from justifiably certain beliefs, to incompatible views—one to the view that, if *A*, *C*, the other to the view that it is not the case that, if *A*, *C*.

Anyone who rejects that *zif* is *if* faces the obvious challenge: to find a relevant difference between our entrenched practices with 'if' and our inchoate practices with 'zif'.³⁴

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³⁴ For helpful comments and discussion I am grateful to Yuval Avnur, Thomas Baldwin, David Christensen, Dorothy Edgington (a once-anonymous reviewer for *Mind*), Hartry Field, Mark Moyer, Adam Pautz, Derk Pereboom, David Robb, and to William Lycan and David Sanford, my commentators at a symposium on conditionals at the 2003 meeting of the North Carolina Philosophical Society.

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