

Imperatives in conditional conjunction *

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Abstract. This paper provides evidence for an ambiguity of bare VPs in the English conditional conjunction construction. This ambiguity, undetected by previous researchers, provides a key to the development of a compositional semantic analysis of conditional conjunction with imperative first conjuncts. The analysis combines existing semantic theories of imperatives, the future tense, modal subordination, and speech act conjunction to yield the correct semantics without further stipulation.

1. Introduction

Certain sentences coordinated with *and* and *or* are interpreted as conditionals.

- (1) a. Everyone drink another can of beer and we'll set a record.
≈ if everyone drinks another can of beer, we'll set a record.
- b. John drinks one more can of beer and he'll be too drunk to drive home.
≈ if John drinks one more can of beer, he'll be too drunk to drive home.

This paper aims to develop a theory of conditional coordination (CC) with syntactically imperative first conjuncts like (1-a) whereby the semantics of the individual conjuncts combine with ordinary coordinating conjunctions in a way that predictably yields a conditional interpretation. The first part of the paper (Section 2) has three subparts. First, a puzzle about the force of CC sentences is outlined: certain CC sentences with ostensibly imperative first conjuncts do not have imperative force; others do. It is then demonstrated that this puzzle does not arise for CC sentences with imperatives generally, but only for CC sentences with bare VP first conjuncts. But then an ambiguity in CC sentences with VP first conjuncts is exposed: whereas bare VPs have traditionally been assumed to be unambiguously imperatives, I argue that they are,

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in fact, ambiguous between imperatives and subjectless declaratives. In light of this ambiguity, the puzzle is dissolved: CC sentences with imperative first conjuncts always have imperative force. The second part of the paper goes on to characterize previous analyses of CC with imperatives: they all fail to consider CC with non-bare VP imperatives, missing the generalization that such sentences always have imperative force and, therefore, they all make the wrong predictions. With this generalization in mind, a compositional analysis of CC sentences with imperatives is developed. Using independently argued-for semantics for imperatives (Huntley, 1984) and the future tense (Thomason, 1970) for each conjunct, speech act conjunction (Krifka, 2001) for the semantics of *and*, and modal subordination (Roberts, 1989), this analysis provides the conditional-like interpretation of such sentences without further stipulation.

2. A hidden ambiguity of bare VPs

In conditional *conjunction*, i.e., CC sentences coordinated with *and*, first conjuncts may be declarative simple present sentences (2-a), bare verb phrases (2-b), or non-finite clauses (2-c). In each sentence that will be examined in the majority of this paper, the second conjunct is a future tense declarative.¹ For this reason, each CC sentence type will be identified by the form of its first conjunct.

- (2) a. Chalmers finds out about Ross and we'll get fired. (simple present)
 b. Move a muscle and Frank will shoot you. (bare VP)
 c. Everyone shut up and I'll tell you who Renick is. (non-finite)

For the sake of completeness, corresponding conditional *disjunction*, i.e., CC with *or*, sentences are listed in (3). These may have verb phrases (3-b) or non-finite clauses (3-c) as the first disjunct.

- (3) a. *Someone closes the window or it will get too chilly in here. (simple present)
 b. Keep your eyes on Ross or he'll get away. (bare VP)
 c. Everyone contribute or this crime will go unsolved. (non-finite)

¹ Culicover and Jackendoff (1997) have mentioned sentences with simple present second conjuncts, like “Big Louie sees you and he puts a contract out on you,” but these will not be addressed here. For discussion of some non-future second conjuncts see Section 4.5 below.

The three categories (simple present, bare VP, and non-finite) have been purposely given descriptive names. This is because I will make a case below, against the assumptions of previous literature, that the bare VPs in sentences like (2-b) are not, in fact, imperatives.

2.1. A PUZZLE: THE BARE VP FORCE GENERALIZATION

Previous literature on conditional conjunction with ostensibly imperative first conjuncts has used various labels for the construction (among these: *pseudo-imperatives* and *if-less conditionals with and and or*). Crucially, this literature has been mostly limited to CC sentences with bare VP first conjuncts, and this has given rise to a puzzle. In much of the previous literature (Bolinger, 1967; Davies, 1979; van der Auwera, 1986; Han, 2000), it is assumed that CC sentences may be built from a bare VP and a declarative *D* in such a way that they have the following sort of dual semantics.

- (4) a. The imperative *I* associated with the VP is issued, and
 b. a conditional is asserted:
- (i) a *conjunctive* (coordinated with *and*) sentence asserts, “If you comply with *I*, then *D*,” and
 - (ii) a *disjunctive* (coordinated with *or*) sentence asserts, “If you don’t comply with *I*, then *D*.”

This assumption gives rise to the following puzzle.

- (5) **Bare VP force puzzle**
 Conjunctive bare VP sentences are only felicitous if the second conjunct is presumed to be undesirable for the addressee, whereas disjunctive bare VP sentences are felicitous whether the second conjunct is desirable or undesirable:
- a. Drink another can of beer or you’ll lose the game.
 - b. #Drink another can of beer or you’ll be sober enough to drive home.
 - c. Drink another can of beer and you’ll win the game.
 - d. Drink another can of beer and you’ll puke.

This pattern, in particular the felicitousness of (5-d), is puzzling given the assumption in (4) that such sentences denote both imperatives and conditionals. On this assumption, the sentences in (5) should pattern with the imperative-conditional sequences in (6).

- (6) a. Drink another can of beer. If you don’t, you’ll lose the game.
 b. #Drink another can of beer. If you don’t, you’ll be sober enough to drive home.

- c. Drink another can of beer. If you do, you'll win the game.
- d. #Drink another can of beer. If you do, you'll puke.

The puzzle may be elaborated as follows: It is unsurprising that (5-a) is felicitous because this sentence is both a command to drink another can of beer, and a conditional “If you don’t drink another can of beer, you’ll lose the game.” This conditional is a felicitous threat, given the imperative; it is an assertion that failure to comply with the imperative results in a negative consequence. It is also unsurprising that (5-b) is infelicitous: it is a command to drink another can of beer combined with the assertion “If you don’t drink another can of beer, you’ll be sober enough to drive home.” Asserting a negative consequence for complying with the imperative just issued is odd—does the speaker want the hearer to comply or not? This contradiction is a plausible source of the infelicitousness of (5-b). Likewise, the felicitousness of (5-c) is unsurprising: it is a directive to drink another beer and an assertion that compliance with this directive will lead to a reward. The surprising fact is that (5-d) is felicitous: it is assumed to consist of a directive to drink another can of beer plus the threat “If you drink another can of beer, you’ll puke.” It should be infelicitous to issue an imperative, then immediately threaten that compliance will lead to a negative result; this should give rise to the same sort of contradiction found in (5-b). But (5-d) is, puzzlingly, not contradictory. That is, each CC sentence with a bare VP first conjunct in (5) is understood as an order, suggestion, or request to drink another can of beer except (5-d)—why does this sentence fail to project the imperative it apparently contains?

The first solution proposed for this puzzle is due to van der Auwera (1986), who claims that the conditional meaning of CC sentences with negative consequents can provide imperative-like force that is strong enough to cancel out the force of the proper imperative contained in such sentences. The conditional meaning of a disjunctive CC sentence with a positive consequence, on the other hand, is not strong enough to cancel out its imperative force, so such sentences are still predicted to be contradictory and, hence, infelicitous. Because van der Auwera’s solution depends on inferencing from the conditional meanings of CC sentences, the discussion can be framed around the following two sentences, which are assumed to have the same conditional interpretation as (5-d) and (5-b):

- (7) a. If you drink another can of beer, you’ll puke.
- b. If you don’t drink another can of beer, you’ll be sober enough to drive home.

Intuitively, each sentence carries some imperative-like force: both seem to recommend that the addressee not drink another can of beer. But this recommendation, according to van der Auwera, is *logically* implied by an utterance of (7-a), whereas it is a *pragmatic* implication of (7-b). Schematically, the “logical” inferencing is as follows:

- (8) a. $drink \rightarrow puke$ (literal meaning of (7-a))
 b. $\neg puke$ (addressee’s desire)
 c. $\neg drink$ (modus tollens)

Compare this to the “pragmatic” inference licensed by (7-b):

- (9) a. $\neg drink \rightarrow sober$ (literal meaning of (7-b))
 b. $sober$ (addressee’s desire)
 c. $\neg drink$ (maximize the likelihood of desirable propositions)

In (8), the addressee’s desires “entail” that she not drink another beer by modus tollens: the *only* way for her desire $\neg puke$ to be true is for $\neg drink$ also to be true. But in (9) there is no such “entailment”— $\neg drink$ guarantees that the desirable $sober$ will be true, but $sober$ can also be true without $\neg drink$ being true. The addressee may infer that making $\neg drink$ true will maximize the likelihood of her desires being satisfied and thus that the speaker intends for her to make $\neg drink$ true, but this, according to van der Auwera, is a “pragmatic” inference.

The strength of the inference in (8) relative to (9), van der Auwera argues, has consequences for CC sentences: when D is undesirable, as in (5-d), a “logical” inference along the lines of (8) *not* to drink another beer is made. This logical inference is strong enough to cancel the imperative force of the imperative *drink another beer*, eliminating any contradiction and explaining the felicitousness of (5-d). On the other hand, only “pragmatic” inferencing is licensed by (5-b), and this is not strong enough to cancel the force of the imperative *drink another beer*, so the contradictory imperatives remain, and the sentence is infelicitous. Thus van der Auwera solves the puzzle.

But van der Auwera’s solution has several problems. Although the reasoning given in (8) and (9) makes sense, it is clearly all *pragmatic* reasoning—neither is literal, or semantic. This is because the presumed desires of the addressee are a crucial premiss in the reasoning, and in the absence or modification of this presumption, (7-a) and (7-b) have no imperative force at all. For example, in a context where Nick makes it clear that he’s dreading the long drive home from the party and Martha tells him, “If you don’t drink another can of beer, you’ll be sober enough to drive home,” the understood imperative force is reversed—Martha has recommended that Nick drink another can of beer. Likewise, if

Nick later confides to Martha that he actually gets a weird sort of kick out of puking, and Martha tells him, “If you drink another can of beer, you’ll puke,” she has again recommended that he drink yet another can of beer. This context-sensitivity of the imperative force of conditionals is a sure sign that it is pragmatic force in both cases. But the imperative force of ID sentences is literal, van der Auwera argues, so his theory is that the pragmatic imperative force of bare VP CC sentences with negative second conjuncts cancels the literal imperative force of such sentences. Thus, the distinction between “pragmatic” and “logical” force that van der Auwera argues is responsible for the distinction between (5-b) and (5-d) dissolves, and he is left without a principled explanation. And, indeed, if there were such a distinction, we would expect to observe it in sequences with ordinary conditionals, which license exactly the same kind of reasoning as is found in (8) and (9). But, as we saw in (6), repeated below, this is not the case.

- (6) a. Drink another can of beer. If you don’t, you’ll lose the game.
 b. #Drink another can of beer. If you don’t, you’ll be sober enough to drive home.
 c. Drink another can of beer. If you do, you’ll win the game.
 d. #Drink another can of beer. If you do, you’ll puke.

The sequence in (6-d), by the reasoning found in (8), should cancel the force of the imperative “Drink another can of beer”, resolving the contradiction, and yielding a felicitous sequence. But the sequence is infelicitous—evidence against van der Auwera’s solution.

Further, conjunctive bare VP CC sentences can fail to carry the force of the imperatives they contain without their associated conditionals having any pragmatic force to the contrary. Bolinger (1967) and Franke (2005) give the following examples:

- (10) a. Tell him anything and he just looks at you blankly.
 b. Open the Guardian and you’ll find three misprints on every page.

The latter sentence carries no imperative to open the Guardian or not, pragmatically or otherwise. Intuitively, it is simply an assertion equivalent to the following:

- (11) If you open the Guardian, you’ll find three misprints on every page.

Because it is natural to assume that an ordinary addressee doesn’t have desires about finding misprints, the sentence does not have any pragmatic imperative force. But this is the only way van der Auwera

can account for the failure of (10-b) to project the force of *Open the Guardian*. A similar argument can be made about (10-a). These felicitous bare VP CC sentences that carry no imperative force at all thus fall outside the coverage of van der Auwera's theory.

So the puzzle persists: why do disjunctive bare VP CC sentences always have imperative force, whereas their conjunctive counterparts apparently lack such force? The key to the answer lies in a closer examination of a wider range of CC sentences with imperatives, which, upon scrutiny, reveal the same property as disjunctive bare VP CC sentences: CC sentences with imperatives always carry the force of the imperatives they contain. Previous researchers have failed to come to this conclusion, I argue, because they have ignored two classes of sentences: CC sentences with non-bare VP imperative first conjuncts and CC sentences with declarative first conjuncts.

2.2. CONDITIONAL COORDINATION WITH OTHER IMPERATIVES

The example sentences that give rise to the force puzzle in the previous section all have bare VP first conjuncts. But the inventory of English imperatives contains much more than just bare VPs, and this full inventory of English imperatives is needed for a thorough investigation of imperatives in conditional coordination. This section will give a brief syntactic characterization of imperatives with the aim of providing such an inventory; then the force puzzle is demonstrated not to apply to CC sentences with imperatives generally.

Imperatives are a distinct clause type, roughly characterized syntactically as non-finite clauses, optionally subjectless, in which negation precedes subjects, when both are present (see Schmerling, 1980; Davies, 1986; Potsdam, 1998; and Han, 2000 for extensive refinements to and arguments about this characterization):

- (12)
- a. Kneel down.
 - b. Don't kneel down.
 - c. Do kneel down.
 - d. Don't be kneeling when the priest arrives.
 - e. Do not kneel down.
 - f. Everyone/someone/nobody kneel down.
 - g. Don't everyone/anyone kneel down.

Subjects of imperatives may be 3rd person singular generalized quantifiers like *every NP*, *some NP*, and *any NP* (though *any* must be licensed by a downward-entailing operator; e.g., *Don't anyone move!*).²

² Many studies of imperatives have claimed that proper names are suitable subjects for imperatives; examples of such imperatives tend to be given in a list (Davies, 1986; Potsdam, 1998; Portner, 2004), as in (i).

- (i) Tom wait in the car; Mary bring the stuff inside.

It is generally recognized that the individual clauses of (i) are not independently acceptable without a pause following *Tom* or *Mary*. Although this provides evidence that *Tom* and *Mary* are vocatives, Davies (1986) and Potsdam (1998) argue that such proper names can indeed be subjects as well as vocatives.

Nonetheless, Davies herself gives reason to think they are vocatives. She notes that pauses are not a necessary property of vocatives, which may appear without their characteristic intonation when they are “part of a larger tone unit”; the final noun phrases in the following sentences can't be anything but vocatives, since all verbs' arguments are saturated:

- (ii) a. Have you got a light anybody?
b. It's all over darling.

This suggests that the lack of pauses in list-presented imperatives may be a consequence of the intonational properties of the list itself, not an indication of subjecthood. Further, Davies notes that vocatives, unlike imperative subjects, cannot bind a third person pronoun:

- (iii) a. Someone_i lend me his_i coat.
b. *John_i, don't forget his_i room number.

Davies does not mention, however, that proper names in a list of imperatives pattern with vocatives, not subjects:

- (iv) Tom lend me *his/your coat; Mary write down *her/your room number.

Further, imperatives with such putative proper name subjects must be negated differently from imperatives with other subjects:

- (v) a. Tom don't wait in the car; Mary don't bring the stuff inside.
b. *Don't Tom wait in the car; don't Mary bring the stuff inside.
c. Don't you/anyone/everyone wait in the car/bring the stuff inside!

The hypothesis that list intonation licenses the pauseless vocatives in (i) predicts that pauseless vocatives should be generally licit in non-imperative list environments. Indeed, vocatives paired with a list of assertions may have the same sort of pauseless intonation as the list of imperatives in (i):

- (vi) Tom you're stepping on my foot; Mary you bought too many oysters.

And, as expected, imperatives with subjects may appear with pauseless vocatives:

- (vii) Tom don't you fret; Mary don't you cry.

Imperatives are negated in an idiosyncratic way (see, e.g., Han, 2000 for a more complete discussion): *don't* appears before subjects, as illustrated in (13).

- (13) a. Don't everyone get up at once.
 b. *?Everyone don't get up at once.³
 c. Don't you eat another bite!
 d. *?You don't eat another bite!
 e. Don't anyone move!
 f. *Someone don't move!
 g. *Anyone don't move!

English declaratives do not allow this style of negation, so sentences thus negated will be considered unambiguously imperative.

I now turn to the properties of CC sentences containing imperatives from this broader inventory. Section 2.1 provided data that suggested conjunctive bare VP CC sentences like those in (14) do not carry conventional imperative force—they are felicitous despite their undesirable second conjuncts. But this is not the case for conjunctive CC sentences with unambiguous imperative first conjuncts: in (15) we see that all other such sentences with undesirable consequents are infelicitous.

- (14) a. Steal from the church and you'll go to hell.
 b. Don't tithe and you'll go to hell.
- (15) a. #Do steal from the church and you'll go to hell.
 b. #?Do not tithe and you'll go to hell.
 c. #Nobody tithe and you'll all go to hell.
 d. #Everyone steal and you'll all go to hell.
 e. #Don't you tithe and you'll go to hell.

Each sentence in (15) is odd in contexts where the addressee is assumed to want not to go to hell. This may be explained by the assumption that the first conjuncts in such sentences must have imperative force. Then, if the second conjunct is conditionalized upon the first (along the lines of the compositional analysis in Section 4), the sentences carry contradictory force: “Do as I say; if you do, you'll be punished.” Pre-

At the very least, then, it seems contentious to say that proper names may be the subjects of imperatives, so I'll only consider imperatives with generalized quantifier or second person subjects in the following discussion, with a footnote when proper names are relevant.

³ Examples like (13-b) and (13-d) are judged grammatical by some authors, including Davies (1986) and Potsdam (1998). To my ear (and to my informants'), such sentences are awkward without a pause after *everyone*, indicating it is more likely a vocative (see discussion in footnote 2). The issue has little bearing on the phenomena at hand, so Subj-Neg imperatives may be safely ignored.

dictably, as shown in (16), all imperatives are felicitous in conditional conjunction with desirable second conjuncts, since they have a natural “reward” interpretation: “Do as I say; if you do, you’ll be rewarded.”

- (16)
- a. Tithe and you’ll go to heaven.
 - b. Don’t steal and you’ll go to heaven.
 - c. Do tithe and you’ll go to heaven.
 - d. Do not steal and you’ll go to heaven.
 - e. Nobody steal and you’ll all go to heaven.
 - f. Everyone tithe and you’ll all go to heaven.
 - g. Don’t you steal and you’ll go to heaven.

These facts show that, in general, conditional conjunction with imperatives is not puzzling in the way suggested by (5); rather, like corresponding disjunctive sentences, they always carry the force of the imperatives they contain. This suggests that the exceptional bare VP sentences do not contain imperatives after all. But if these bare VP first conjuncts are not imperatives, what are they? In the following sections, an argument is presented that (some) bare VP CC sentences belong to another class of conditional conjunction, which has declaratives as first conjunct.

2.3. SIMPLE PRESENT IN CONDITIONAL CONJUNCTION

Whereas conditional coordination with imperatives is discussed by several authors (Bolinger, 1967; Davies, 1979; Hamblin, 1987; van der Auwera, 1986; Clark, 1993; Han, 2000; Franke, 2005), none of these studies has seriously investigated the properties of corresponding CC sentences with simple present declarative first conjuncts (though Culicover and Jackendoff, 1997 contains a nice descriptive study of both bare VP and simple present CC sentences). This section shows that simple present CC sentences have three deep commonalities with indicative conditionals: they lack imperative force, they license negative polarity items in their first conjuncts (antecedents), and they allow binding of pronouns in first conjuncts (antecedents) by quantifiers in second conjuncts (consequents).

Like ordinary conditionals, simple present CC sentences carry no conventional imperative force—they may be used when the speaker wants the antecedent to be true or when she wants the antecedent to be false, or, indeed, when she doesn’t care either way.

- (17)
- a. Everyone eats all their vegetables and they’ll get dessert.
 - b. Harry eats another hamburger and he’ll have terrible heartburn.

- c. Guillaume buys that statuette and he'll have twenty-five in his collection.

In (17-a), the speaker presumably wants everyone to eat all their vegetables; she asserts that this will result in dessert, a reward. But in (17-b), the speaker is predicting that there will be a negative consequence if Harry eats another hamburger. And in (17-c), it's hard to imagine caring how many statuettes Guillaume has in his collection, so the speaker presumably does not care whether Guillaume buys the statuette.⁴

Simple present CC sentences behave like ordinary conditionals in another way: they license NPIs in their first conjuncts.

- (18) a. Anyone moves and I'll shoot.
- b. Anybody orders the rack of lamb and they'll be disappointed.
- c. Jenny finds even one poppyseed on her bagel and she'll throw it in the trash.
- d. Tazio spends any more time in the ocean and he'll turn into a dolphin.
- e. Giulietta drinks a drop of grappa and she'll start to nod off right away.
- f. George lifts a finger to help us find the lost kitten and he'll demand an equal share of the reward.

Simple present CC sentences robustly license NPIs—including *any more*, *drink a drop* and *lift a finger*, which don't get free choice readings.⁵ As is well-known, ordinary conditionals behave similarly.

Finally, Culicover and Jackendoff (1997) observe that simple present CC sentences allow binding of a pronoun in the first conjunct by a quantifier in the second conjunct, mirroring the binding of pronouns in

⁴ Though each example is designed to exemplify each speaker bias with respect to a default context, they can all convey positive, negative, or neutral bias, given appropriately rigged contexts.

⁵ The behavior of *ever* is somewhat puzzling—it is somewhat degraded in such sentences:

- (i) a. ?Fernand ever hears you talk about his niece like that and he'll bloody your nose.
- b. ?The police ever catch Bernard and he'll get twenty years.

Some speakers (including myself and most of my informants) find such sentences acceptable; others (including an anonymous reviewer) don't. If they are, in fact, ungrammatical, this is a wrinkle in the NPI-licensing generalization that merits further investigation.

the antecedents of conditionals by those in their consequents, and in contrast to ordinary coordinated declaratives:

- (19)
- a. Mary comes up with a few nice stories about him and every senator will change his vote in her favor.
 - b. If Mary comes up with a few nice stories about him, every senator will change his vote in her favor.
 - c. *Mary came up with a few more nice stories about him and every senator changed his vote in her favor.

Culicover and Jackendoff argue that these tests show that at some level of semantic representation, simple present CC sentences are literally conditionals. The present paper does not aim to support or challenge this view—the object of inquiry is the semantics of CC with imperatives. These properties are simply evidence of semantic composition that yields a meaning for simple present CC sentences that is closely related to that of corresponding conditionals.

2.4. BARE VPs ARE NOT ALWAYS IMPERATIVES

We have already seen one property that bare VP CC sentences, but not those with other imperatives, share with simple present CC sentences: they lack imperative force, as evidenced by the fact that they are felicitous with desirable, undesirable, or neutral second conjuncts. This suggests a simple hypothesis: the bare VPs in CC sentences are ambiguous between imperatives and subjectless declaratives. Three additional types of evidence for this hypothesis are presented below.

In the previous section, simple present CC sentences were shown to license NPIs. CC sentences with bare VP first conjuncts also license NPIs; those with imperatives, in general, do not:

- (20)
- a. Drink any more beer and you'll puke.
 - b. *Do eat any raw pork and you'll contract trichinosis.
 - c. *Anyone turn out the light and I'll show you my slides.
 - d. *Someone lift a finger to help and we'll finish building the model today.

Whereas the NPI *any* is licensed in bare VP sentences like (20-a), it is not licensed in CC sentences with imperatives. Notice that, in this case, the full range of imperatives used to support the force generalization above is not available. This is because there are a number of independent reasons that NPIs may be licensed or unlicensed in imperatives in CC sentences. First, *any* should not be licensed in an such sentence if it is not the subject. This is because, aside from second person subjects, third person generalized quantifier subjects are the only good subjects

for imperatives. Even among these, *every*, *all*, *some*, *any*, and *no* seem to be the only really good quantifiers.⁶

- (21) a. All/*Most/*Many/*Few/*?Exactly three graduate students write a three-page statement.⁷
 b. Don't any graduate students write a three-page statement.
 c. Every/Some/?No/Don't any graduate student write a three-page statement.

But neither *every* nor *some* can be the subject of a sentence with NPIs: *every* is an intervener (Linebarger, 1987; Chierchia, 2004), so if *any* were licensed by the conditional interpretation of an imperative CC sentence, *every* would intervene on that licensing, as in (22).

- (22) *If everyone eats any pork chops they'll all get trichinosis.

Further, *some* subjects are not compatible with NPIs, since NPIs appear in environments where *any* is preferred to *some*:

- (23) ??If someone eats any pork chops they'll probably get trichinosis.

Finally, imperatives with overt second person subjects cannot be used to test whether *any* is licensed in imperative CC sentences, since the simple present second person verb form is identical to the non-finite form used in imperatives.⁸ For example, (24-a) is ambiguous between an imperative and a sentence in the simple present, so a sentence con-

⁶ However, as noted above in footnote 2, many authors argue that names are acceptable subjects for imperatives. If this is the case, imperatives like *John write a three page statement* could, in principle, be used to test the claim that NPIs are unlicensed in true imperative first conjuncts of CC sentences. Indeed, informants who find proper name subjects at least marginal definitively do not accept sentences like the following:

- (i) *Harry bring any more stuff inside and we'll finish today; Mary lift a finger to help and Harry will be happy.

If *Harry* and *Mary* are indeed licit imperative subjects, then (i) provides further evidence that NPIs are not licensed in CC sentences with imperative first conjuncts.

⁷ Notice that the plural subject introduces a possible simple present reading of the sentences. The *, then, indicates ungrammaticality as an imperative.

⁸ The only English verb for which it is not the case that the non-finite form is identical to the simple present form is *be*, and indeed *be* provides an example of a non-finite clause first conjunct licensing *any* (and lacking imperative force):

- (i) You be any noisier and we'll be kicked out of the church.

Nonetheless, this does not seem to be an imperative; for discussion, see Section 2.5 below.

taining (24-a) like (24-b) may be disambiguated as a CC sentence with second person simple present first conjunct.⁹

- (24) a. You (always) drink every can of beer on the bar.
 b. You (always) drink every can of beer on the bar and you'll get a free beer.

Imperatives with second person subjects can, of course, be differentiated from corresponding simple present sentences by applying Neg-Subj order negation:

- (25) a. You don't (usually) drink every can of beer on the bar.
 b. Don't you drink every can of beer on the bar.

But sentences with negated imperatives do not provide a diagnostic for NPI licensing in imperative CC sentences, of course, because negation locally licenses NPIs, independent of other factors:

- (26) a. Don't you eat any onions and you might get a kiss from the senator.
 b. Don't you eat any onions.

So negated imperatives form yet another class that cannot be used to test the licensing of NPIs in the first conjuncts of CC sentences with imperatives.

Thus, the evidence is relatively sparse: only imperatives with *any*-based generalized quantifier subjects may be used to test the licensing of NPIs in imperative CC sentences. Nonetheless, *any*-noun phrases do not apparently make a good subject for the imperative first conjuncts of imperative CC sentences, indicating that such sentences are not NPI licensing environments, unlike bare VP and simple present CC sentences.

There is yet another property that differentiates bare VP CC sentences from those with imperative first conjuncts. Like simple present CC sentences, those with VP first conjuncts allow binding of pronouns in first conjuncts by quantifiers in second conjuncts.

- (27) a. Come up with a few nice stories about him and every senator will change his vote in your favor.
 b. Given him enough money and every senator will give you access to his files.

⁹ As expected, sentences like (24-b) with simple present first conjuncts do license NPIs, as discussed in Section 2.3.

Whereas these sentences are not perfect, they are as good as corresponding indicative conditionals and simple present CC sentences. CC sentences with unambiguous imperatives, however, robustly disallow quantifiers in their second conjuncts to bind pronouns in their first conjuncts.¹⁰

- (28) a. *Someone come up with a few nice stories about him and every senator will change his vote in our favor.
 b. *Everyone give him enough money/ten dollars and every senator will give us access to his files.
 c. *Don't you slander him and every senator will give you access to his files.

Culicover and Jackendoff claim that CC sentences involve a special *and* which is distinct from propositional/Boolean *and*. List conjunction (i.e., *and*-ellipsis, where conjuncts are separated by commas, or pauses) provides evidence for such a special *and* in simple present and bare VP CC sentences, and evidence against it in CC sentences with true imperatives. That is, under the plausible assumption that list conjunction is the use of a single *and* for the coordination of more than two conjuncts, we expect comma-separation to be licit only when the same *and* may be used for all three conjuncts. Interestingly, CC sentences with imperatives may have comma-separated (*and*-elided) first conjuncts:

- (29) a. Everyone sit down, someone turn out the lights, and I'll show you my slides.
 b. Everyone sit down and someone turn out the lights and I'll show you my slides.
 c. If everyone sits down and someone turns out the lights, I'll show you my slides.

This suggests the same *and* may be used to conjoin a complex “antecedent” in imperative CC sentences as is used to conjoin this “antecedent” with its consequent. In other words, the *and* that conjoins imperatives with declaratives in CC sentences is apparently, in some sense, the same old *and* (see 4 below for elaboration on this point).

But “antecedents” of bare VP sentences with undesirable second conjuncts (i.e., bare VPs that cannot be analyzed as imperatives) and simple present sentences may not be comma-separated:

- (30) a. *Make a lot of noise, goof off, and you won't get a lollipop.

¹⁰ Ungrammaticality stars here indicate lack of a binding-into-first-conjunct reading.

- b. Make a lot of noise and goof off and you won't get a lollipop.
 - c. If you make a lot of noise and goof off, you won't get a lollipop.
- (31)
- a. *Harriet wins the lottery, Seymour marries her, and he'll be rich.
 - b. Harriet wins the lottery and Seymour marries her and he'll be rich.
 - c. If Harriet wins the lottery and Seymour marries her, he'll be rich.

If comma-separation is, indeed, elipsis of an *and* that is identical (semantically) to a later *and*, these data suggest that the *and* that is used in bare VP and simple present CC sentences is distinct from that used in ordinary coordination, whereas the *and* used with imperatives is not. This suggestion will be put to use in Section 4 in the development of a semantics of imperative CC sentences. For now, simply note that whereas unambiguous imperatives like those in (29-a) may be comma-separated, bare VPs like those in (30-a) may not, further evidence that such VPs are not imperatives.

There is yet another reason to doubt that the bare VPs found in CC sentences are unambiguously imperatives. The assumption in previous literature that the bare VPs in CC sentences are always imperatives is motivated by two facts: imperatives are among the only licit subjectless sentences in English; and, furthermore, the implicit subject of these bare VPs must be understood to be second person, as is the case with imperatives. But this is not exactly accurate: imperatives require the subject (or domain restriction for a quantificational subject) to be equal to the addressee. This is not identical to a requirement that the subject be understood to be *you*, since *you* has a non-addressee interpretation: impersonal *you*. For example, in the following sentence, it is presumably not the addressee who could marry her sister.

- (32) In the sixteenth century, you could marry your sister.

Imperatives, in contrast, cannot have impersonal *you* as subject; consider the following contrast where each sentence is spoken to a sisterless addressee:

- (33)
- a. You should never marry your sister.
 - b. #Never marry your sister!

Further, it turns out that bare VP CC sentences, but not those with imperatives, allow the use of impersonal *you*. Consider the following

pair of sentences, (34-a) with a bare VP first conjunct and (34-b) with an unambiguous imperative, spoken to an addressee without a sister.

- (34) a. Marry your sister and your kids will probably be messed up.
 b. #Don't you marry your sister and your kids will probably be OK.

The fact that the implicit subject of (34-a) can be impersonal *you*, whereas the subject of (34-b) must, like an imperative, be understood as the addressee, suggests that the former contains a deleted (or otherwise implicit) second person subject, which, since it is not semantically the addressee, implies that the bare VP in (34-a) is not an imperative.

These phenomena all suggest that CC sentences with imperative first conjuncts, on the one hand, are qualitatively different from those with simple present and bare VP sentences, on the other. The latter behave like ordinary conditionals with respect to at least four semantic phenomena whereas the former seem to be related only in the intuitive sense that they have a conditional aspect to their interpretation. This suggests that there is a way to compose bare VPs or simple present sentences with future tense sentences to yield a conditional interpretation that is not available to imperatives. This is expected if bare VPs are ambiguous between imperatives and subjectless declaratives—indeed, this is the assumption that will be maintained for the rest of the paper. CC sentences with true imperative first conjuncts will be labeled *Imperative-Declarative* (abbreviated ID); whereas those with simple present or non-imperative bare VP first conjuncts will be assumed to belong to a distinct *Declarative-Declarative* (DD) construction. The elimination of non-imperative bare VPs from the class of acceptable first conjuncts of ID sentences makes possible the parsimonious semantics of ID sentences developed in Section 4. But first I elaborate the hypothesis that bare VPs may be subjectless declaratives and explore one of its consequences.

2.5. THE NATURE OF THE BARE VP AMBIGUITY

The previous section argued that bare VPs are ambiguous between subjectless declaratives and imperatives; this section briefly investigates the syntactic and semantic properties of these subjectless declaratives. The simplest assumption would be that bare VPs are simply simple present declaratives with *you* deleted. For the most part, this approach would account for both the fact that bare VPs enter into the DD construction, as well as the fact that they've been consistently mistaken for

imperatives. This is because, in general, second person simple present verb forms are identical to the bare stem used in imperatives (You sure *eat* a lot./*Eat* the steak!; You usually *make* the bed on Tuesdays./*Make* the bed now!). The only exception to this is the copula, which is *are* in simple present with second person subject, but whose non-finite form is *be*:

- (35) a. You are a nice boy.
b. Be a nice boy!

So, if the bare VP in non-imperative CC sentences is just a simple present sentence with *you* deleted, we expect CC with *be* VPs to pattern with ID sentences, always carrying imperative force, and not licensing NPIs.¹¹ We further expect *are* VPs to be licit first conjuncts in CC sentences. But none of these predictions is borne out:

- (36) a. (You) be naughty and you won't get any dessert.
b. (You) be any noisier and they'll kick us out of the theater.
c. *(?You) are naughty and you won't get any dessert.

Rather, *are* VPs are illicit in bare VP CC sentences, and *be* VPs pattern with simple present sentences, not imperative. So the proposal that such sentences are in simple present tense with a dropped *you* subject seems untenable. But notice the following (marginally) good sentences:

- (37) a. If you be good, you'll get a lollipop.
b. If you be naughty, you'll get nothing.

These show second person non-finite clauses may appear in the antecedents of conditionals, as they do in simple present and bare VP CC sentences.¹²

¹¹ And, of course, disallowing binding into first conjuncts and impersonal *you*. These diagnostics, though applicable, will be omitted in further discussion wherever they agree with the NPI and force diagnostics.

¹² The licensing of non-finite clauses in the antecedents of conditionals and in CC sentences is complex; in addition to second person subjects, third person plurals are marginally acceptable (thanks to an anonymous reviewer for pointing this out):

- (i) a. The boys ?be/are good and they'll get a lollipop.
b. If the boys ?be/are good, they'll get a lollipop.

However, in both simple present CC sentences and ordinary conditionals, *be* is not acceptable with third person singular subjects, which need the simple present form, *is*.

- (ii) a. Sally *be/is good and she'll get a lollipop.
b. If Sally *be/is good, she'll get a lollipop.

So, in fact, the bare VPs in non-imperative CC sentences seem to be non-finite subjectless second-person sentences, subject to the same constraints as second person sentences in antecedents of conditionals. Whether these sentences are declarative or not is a question I will not address here: on one hand, they behave the same way in the CC construction as declaratives (simple present sentences); on the other hand, they are clearly non-finite (as evidenced by the appearance of the copula as “be”), which suggests they are something more like subjunctives. The conclusion for this section is simply that while bare VPs are not (always) imperatives, are also not (always) simple present declaratives.

2.6. OTHER NON-IMPERATIVE NON-FINITE BARE VPs IN ENGLISH

In general, *you* can't be dropped in English (38), giving rise to the awkward conclusion that the bare VP ambiguity posited above is only found when bare VPs appear in a CC construction.

- (38) a. *(You) have a lot of nerve.
b. *(You) ate a lot of food.

But there are notable exceptions to this in questions:

- (39) a. ((Do) you) want a cracker?
b. ((Do) you) know what I did today?

These examples differ in significant ways from the bare VPs found in CC sentences, but they do provide evidence that *you* may, in certain cases, be dropped in English. Further, bare VP questions lack non-second person readings, as seen in (40-a); this shows that certain tenseless, subjectless sentences in English are necessarily interpreted as second person.¹³

- (40) a. *(Does he/Do they) want a cracker?¹⁴
b. *(He) wants a cracker?
c. *(May I) have a cracker?

¹³ Of course, there are no copular bare VP questions; instead, we get the following pattern:

- (i) ((Are) you) happy?

Thus, the bare VPs used as questions are not identical to those found in CC sentences. This is, presumably, a syntactic fact—subjectless questions have different constraints on the appearance of auxiliaries than CC bare VPs.

¹⁴ The * here indicates the lack of a third person reading.

Though the bare VPs used in such questions differ in significant ways from those in CC sentences, the fact that they are interpreted unambiguously as second person suggests that the second person-ness of CC sentences may be the consequence of a more general second person deletion mechanism.

Further, non-imperative bare VPs are found in another variety of conditional coordination, which I'll label VPVP sentences. These were noticed at least as early as Bolinger (1967):

- (41) a. Scratch a Russian and find a Tartar.
b. Be there or be square.

The conjuncts of these sentences are bare non-finite VPs; pairs of unambiguous imperatives can not generally be composed into CC sentences:

- (42) a. #Everyone eat another burger and everyone puke.
b. #Don't you buy another sports car and don't you go bankrupt.
c. #Someone scratch a Russian and someone find a Tartar.
- (43) a. #Everyone stop eating or everyone puke.
b. #Don't you spend all your money or everyone go bankrupt.
c. #Do be there or please be square.

Like the VPs in DD sentences, VPs in VPVP sentences do not, in general, carry imperative force. VPs considered to be undesirable may appear in either the first or second conjunct of *conjunctive* VPVP sentences, as in (44-a), or the second disjunct of *disjunctive* VPVP sentences, as in (44-c).¹⁵

- (44) a. Fail this exam and lose your scholarship.
b. Draw another card and lose the hand.
c. Pass this class or lose your scholarship.
d. Sit tight or lose the hand.

The second VP in VPVP sentences, whether coordinated with *and* or *or*, and the first VP in conjunctive VPVP sentences, appears to be the same sort of semantic and syntactic object as the bare VP first conjunct found in DD sentences. In particular, it has no imperative force, and it

¹⁵ Notice, however, that VPVP sentences obey the same force generalization as found in other conditional coordination and stated in (5) sentences: the first VP in *or* sentences always carries imperative force, making desirable second conjuncts odd:

- (i) a. #Eat another burger or avoid heartburn.
b. #Be naughty or be rewarded.

See Section 2.7 below for relevant discussion of disjunctive ID sentences.

cannot be replaced with an unambiguous imperative. And, like the VP in a DD sentence, its understood subject is required to be second person (addressee or impersonal *you*). So non-imperative subjectless VPs with implicit *you* subject are not just found in DD sentences—they are attested elsewhere. Since this paper is on *imperatives* in conditional conjunction, I will not speculate further about what such VPs are. It is nonetheless clear that they are not imperatives, and that they may therefore be safely disregarded in the development of a semantic analysis of ID sentences; this informs the semantics developed in Section 4 below.

2.7. CONDITIONAL DISJUNCTION

At this point, it may not be clear that the proposal above that bare VPs are ambiguous provides a solution to van der Auwera's original force puzzle, the exemplars of which are repeated in (5).

- (5) a. Drink another can of beer or you'll lose the game.
 b. #Drink another can of beer or you'll be sober enough to drive home.
 c. Drink another can of beer and you'll win the game.
 d. Drink another can of beer and you'll puke.

It explains the felicitousness of conjunctive bare VP CC sentences with negative second conjuncts ((5-d)): the VPs in such sentences are (optionally) not imperatives, and they are therefore not required to carry imperative force, and so they are compatible with negative “results”. But if bare VPs are ambiguously simple present sentences, and may therefore fail to carry imperative force, why are disjunctive bare VP CC sentences with desirable second conjuncts like (5-b) infelicitous? The absence of non-imperative bare VP CC sentences is actually predicted by the present theory, given the independent (unexplained) fact that there are no disjunctive DD sentences in English. Bare VP DD sentences are constructed in the same way as simple present DD sentences; such subjectless declaratives are predicted not to occur in *disjunctive* CC sentences because simple present declaratives do not—that is, disjunctive DD sentences are unattested, as seen above in (3-a), repeated below.¹⁶

¹⁶ There is a peculiar wrinkle to this generalization: *either* makes such sentences good:

- (i) Either someone closes the window or it will get too chilly in here.

Further, such sentences must have desirable first conjuncts:

- (3) *Someone closes the window or it will get too chilly in here.

The present paper, which is focused on the semantics of conjunctive ID sentences, does not provide a theory of DD sentences, either with bare VP or simple present first conjuncts. It simply claims they are generated differently from ID sentences. And this generation mechanism apparently does not have a disjunctive analog, as evidenced by the absence of disjunctive simple present DD sentences. Further investigation into conditional conjunction with declarative first conjuncts may reveal why this is so, but for present purposes, it is enough to say that the absence of forceless bare VP disjunctive CC sentences is expected, given the fact that corresponding simple present disjunctions are ungrammatical.

2.8. CONCLUSIONS FOR SECTION 2

In this section, we have found a clear divergence between the properties of bare VP simple present DD sentences on the one hand, and conditional conjunction with unambiguous imperatives—those with auxiliaries, subjects, and imperative negation—on the other. Unlike the latter, DD sentences carry no imperative force, license NPIs, permit binding of pronouns in first conjuncts by quantifiers in second conjuncts, and allow impersonal *you* subjects. This points to two distinct constructions: one with declarative first conjuncts, and another with imperatives—DD and ID sentences, respectively. The exclusion of forceless bare VP sentences from the ID construction makes ID sentences more amenable to compositional analysis. The no longer puzzling fact that bare VP CC sentences need not carry imperative force should not fall within the coverage of a theory of ID sentences. In fact, it is quite the opposite: an analysis of ID sentences must predict that they *always* carry imperative force. Likewise, an analysis should predict that NPIs are not licensed by the ID construction, binding into first conjuncts is not expected, and ID sentences' subjects must always be the conversational addressee (or, more precisely, the conversational addressee must be the contextual domain restrictor for IDs' subjects).

3. Existing theories of conditional coordination

Culicover and Jackendoff (1997), revisiting an early squib by Culicover (1970), introduce a novel lexical item they call *LSand* (left-subordinating *and*) as a way to build structures that are “semantically subordinated

- (ii) #Either you fail this class or you'll be allowed to enroll again next semester.

This difficulty will be saved for future research.

despite syntactic coordination”. The idea behind *LSand* is that it has the syntax of ordinary *and*, but the semantics of *if*. The data Culicover and Jackendoff cover consist of simple present and bare VP DD sentences, and they provide sound arguments that such sentences have many of the same semantic properties as indicative conditionals. They do not make any claims about whether bare VP CC sentences contain imperatives, and they do not spell out a compositional semantics for structures with *LSand*. Moreover, their idea that *and* is ambiguous, with one reading where it simply means *if*, makes it mysterious that conditional coordination is attested across a broad spectrum of languages (see, e.g., Han, 2000, for data).

There are two attempts in the literature to provide a compositional semantics of conditional conjunction: Han (2000) and Franke (2005). Both try to give a semantics whereby *and* combines a declarative with an imperative, yielding a conditional (or quasi-conditional) meaning for which the content of the imperative serves as the antecedent. But both theories are misled by the force puzzle; i.e., both assume that conjunctive CC sentences with imperatives do not carry the force of the imperatives they contain. They therefore build a mechanism into the semantics for neutralizing the force of imperatives in such sentences. Not only does this complicate the semantics, it also makes the wrong empirical prediction: conjunctive ID sentences are expected to lack imperative force.

Franke (2005) adapts Culicover and Jackendoff’s *LSand* so that it can take imperative first conjuncts. In order to account for the fact that bare VP CC sentences have no imperative force, Franke’s *LSand* is defined in such a way that it robs imperatives of their force. Under this theory, conjunctive ID sentences are literally a special kind of conditional in which the antecedent is an *action* rather than a *proposition*, and the meaning of the whole sentence is that the consequent is a *result* of that action. To compose actions and results, Franke introduces a new logical connective. All this boils down, in the end, to the same stipulation that Culicover and Jackendoff make: *and* sometimes means *if*. Moreover, Franke’s *LSand* theory predicts the entire spectrum of imperatives can combine with declaratives to give a forceless conditional reading. And NPIs should be licensed in sentences thus composed, and quantifiers in second conjuncts should be able to bind pronouns in imperative first conjuncts. These predictions are incorrect—the data in Section 2.4 above illustrate that bare VP sentences pattern differently from those with imperatives with respect to these phenomena. Further, in addition to its unsuitability for ID sentences, Franke’s *LSand*, having its particular action-result semantics, cannot be used for DD sentences, which will require another *LSand*.

Han (2000) develops a syntax and semantics of bare VP CC sentences; like Franke, she assumes that the bare VPs in such sentences are unambiguous. She proposes that the bare VPs in the construction are syntactically imperatives with a defective [directive] feature—that is, quasi-imperatives. Because of this, by Han’s account, conjunctive ID sentences all lack imperative force; it is the [directive] feature which gives imperatives their force. This successfully reflects the generalization that bare VP CC sentences do not necessarily carry the force of the imperatives they contain; i.e., that non-imperative bare VP CC sentences exist. But Han’s claim is incompatible with the data presented in the present paper: in her theory, true imperatives, i.e., those with a [directive] feature, do not enter into the conjunctive ID construction. In particular, the following sentences are all listed as ungrammatical by Han (page 194, from examples numbered (294) and (295)).

- (45) a. Do put the light on and you’ll see better.
 b. Don’t you worry so much and you’ll be happier.
 c. Someone open the window and we’ll get some fresh air.

These sentences are all, by the judgments of native English speakers, grammatical, undermining Han’s claim that not all imperatives can be first conjuncts of conjunctive ID sentences.

Han assumes (against the arguments in Section 2.4 above) that bare VP CC sentences are built from imperatives and future tense declaratives, and gives them a semantics that is essentially equivalent to that of an ordinary conditional. Her analysis has three key components. First, *and* in an ID sentence is the standard *and* from dynamic semantics (see, e.g., Groenendijk and Stokhof, 1990): it updates the information state with each conjunct in succession. Second, the imperative in an ID sentence does not issue a directive; it merely introduces a new variable, associated with the imperative’s proposition, to the information state. Third, quantification by the modal *will* in the second conjunct is then restricted to the proposition associated with this variable. The lack of force of the imperative plus the modal restriction results in a roughly conditional semantics. (For the formal details, I refer the reader to Han’s own exposition).

The main problem with Han’s analysis is that the semantic contribution of each conjunct in the construction is different from its meaning in isolation, rendering the analysis noncompositional. First, when an ordinary imperative is uttered, it does not merely introduce a variable that can later be picked up by a modal looking for restriction. It actually issues a directive for the addressee to comply with (or not). But Han must give the imperative a different meaning, since otherwise dynamic

and would project its force, giving the overall sentence imperative force. Second, the modal in the second conjunct is obligatorily restricted to set of worlds in the imperative's proposition. Ordinary modals may pick up their restriction from the context; Han needs to account for the obligatoriness of the conditional interpretation of non-imperative bare VP CC sentences. On two accounts, then, Han's analysis falls short: it stipulates a special CC semantics for imperatives and requires a mechanism for obligatory modal restriction. But, as will be discussed in detail below, the conditional reading of true ID sentences, though preferred, is optional, so Han's application of modal subordination is well-suited to ID sentences. In this way, the analysis that follows is related to Han's.

4. A compositional analysis of conditional conjunction with imperatives

I argued above in section 2.4 that CC sentences with true imperatives as first conjunct always carry imperative force in addition to asserting a conditional-like meaning. This double effect suggests that conjunctive ID sentences issue two speech acts: one imperative, the other a conditional-like assertion. The analysis developed in this section, then, is as follows: *and* in ID sentences will be analyzed as a speech act conjunction (Krifka, 2001), where speech act *and* conjoins two sentences "after" they've been mapped to their respective speech acts. With this operation, the imperative conjunct is directed *and* the declarative conjunct is asserted, each in succession. This gets us part-way to the correct semantics for conjunctive ID sentences, but the analysis must also capture the fact that the declarative second conjunct does not simply assert its associated proposition, but rather a conditional-like meaning of which the imperative's associated proposition is the antecedent, and the declarative second conjunct is the consequent. This conditional interpretation, I will argue, is given by modal subordination, or contextual restriction of modals (Kratzer, 1991b; Roberts, 1989): the imperative proposition restricts a modal in the second conjunct. In sum, the analysis combines established semantics of imperatives, future tense, speech act conjunction, and modal restriction to yield the correct semantics for conjunctive ID sentences.

4.1. THE SEMANTICS OF IMPERATIVES

There are three modern schools of thought on the semantics of imperatives. The first, Huntley (1984), holds that imperatives denote

propositions, and these propositions differ from those associated with indicatives in that they are not grounded indexically to the world of utterance and so, by convention, are interpreted as imperatives. The second, developed by Portner (2004), treats imperatives as predicates whose domain is restricted to the conversational addressee; these predicates populate a conversant's *to-do list*. The third school, advanced by Mastop (2005) following Hamblin (1987), treats imperative semantics as *actions*, with a corresponding logic of action.

The analysis in this paper assumes a hybrid of Huntley's propositional denotations and Portner's to-do list.¹⁷ Huntley's theory is based on the observation that, in English, imperatives are non-finite clauses (they are tenseless) and the assumption that the semantics of finite clauses is derived from that of non-finite ones (by the application of tense). Huntley gives only a vague functional sense of *why* non-finite root clauses should be interpreted as imperatives: it is somehow more basic to talk about our desires than our beliefs; it is a more "primitive" communicative function to issue a command than it is to express an opinion (see Mastop, 2005 for criticism of this idea). His idea is that the introduction of tense serves as a way to translate the temporally ungrounded propositions used for issuing imperatives to expressions of belief about the real world.

In particular, then, an imperative like (46-a) below denotes the set of worlds (47-a) in which not every individual is in the set of kneel-downers; this same proposition is associated with the present progressive sentence (46-b).¹⁸ However, adapting from Huntley, the tense operator *PRESENT* adds semantic information to (47-a) in the case of a simple present sentence like (46-b). This indexically grounds the proposition to the time of utterance, yielding the proposition in (47-c).

- (46) a. Don't everyone kneel down.
 b. Not everyone is kneeling down.
- (47) a. $\lambda w \lambda t. \neg \forall x [kneel(x)(w)(t)]$
 b. $PRESENT = \lambda p \lambda w. p(w)(NOW)$

¹⁷ Nothing hinges on this assumption; I believe any adequate analysis of imperatives will work with the present analysis of ID sentences. However, propositions are simplest to deal with, mostly because the semantics of conditionals has been investigated in terms of propositional antecedents, and imperatives appear to serve as the antecedents of conditional-like meanings in these ID sentences.

¹⁸ I've sort of cheated here, using the generalized quantifier *not everyone* to mirror the lack of negation/universal scope ambiguity in the imperative. Schmerling (1980) argues that the *don't* in negated imperatives is a different item from the ordinary *don't*. However imperatives and scope are compositionally handled, this *don't* will have to be un-outscopable.

- c. $\lambda w. \neg \forall x [kneel(x)(w)(NOW)]$

Whereas the tensed sentence is associated with assertion, the non-finite clause is conventionally associated with imperative force; i.e., its propositional content is added to the imperative component of the conversational state. For the purposes of this paper, I will stipulate that this mapping is determined by syntactic properties: root non-finite clauses are, by convention, associated with directive acts, whereas root finite clauses are associated with assertion acts, with the hope that this association will eventually be found to be a consequence of some sort of general principles. Now, because the non-finite clauses of imperatives are never mapped to assertions, they can't receive truth values with respect to the world/time of utterance. Instead, they have compliance conditions, as outlined in the following paragraph.

Compliance conditions of imperatives can be understood with respect to conversational states—in particular, in terms of the following adaptation of Portner's (2004) to-do List, or TDL. The TDL, populated by imperative denotations, complements Stalnaker's common ground (CG), and both are components of the conversational state (CS).¹⁹

¹⁹ Portner assumes imperative denotations to be predicates defined only for the addressees of the conversations in which they were uttered. When a speaker utters an imperative like "Open the window", the addressee puts the predicate $\lambda x \in \{\text{ADDRESSEE}\}.open(\nu window)(x)$ in her TDL. Compliance with imperatives is modeled as the following sort of rational, cooperative behavior:

- (i) An agent i is rational and cooperative to the extent that i makes it more likely that there is no $w_1 \in CG$, and P in i 's TDL, such that $P(i)$ is false in w_1 .

In other words, to comply with an imperative, you make sure every world in the common ground is a member of the proposition denoted by the application of the imperative predicate to yourself.

This account of compliance works relatively well in cases where imperatives are bare VPs. But it does not extend well to an account of compliance for imperatives with subjects. In particular, an imperative like "Everybody leave!", which is only felicitous in a context where the addressee is a set of individuals, has the semantics in (ii).

- (ii) $\lambda x \in \{\text{ADDRESSEE}\}.x \subseteq \llbracket \text{leave} \rrbracket$ (= $P_{(ii)}$)

Suppose each member of the addressee set puts this predicate in her TDL. Remember that an individual i is deemed cooperative and rational, or complies with the imperative, if i makes it more likely that the predicate $P_{(ii)}(i)$ is in the common ground. But i is not in the domain of $P_{(ii)}$, since this is a predicate whose domain is the singleton set containing the plural addressee. So for Portner's theory to work with imperatives with subjects, plural addressees need to maintain their own collective TDLs. The vaguely Jungian idea of collective to-do-lists seems difficult to implement,

Unlike the common ground, which is a set of worlds, the to-do-list is a set of propositions—those propositions that some future world must be an element of in order for the imperative to have been complied with in that world. At any point in which the worlds compatible with a participant’s knowledge are contained in a proposition in her TDL, she may remove the proposition from the list. Thus, compliance with an imperative corresponds with removal of an imperative from a participant’s TDL. For example, consider the following representations of an agent’s to-do-list and knowledge state (K) over the course of the issuing of and compliance with an imperative associated with the proposition p_3 , assumed to be the set of worlds $\{w_2, w_7, w_{11}, w_{23}\}$.²⁰

(48)	$p_3 = \{w_2, w_7, w_{11}, w_{23}\}$				
	time	TDL	K		note
	i	$\{p_5, p_8\}$	$\{w_4, w_7, w_9, w_{11}, w_{25}\}$		initial state
	$i + 1$	$\{p_3, p_5, p_8\}$	$\{w_4, w_7, w_9, w_{11}, w_{25}\}$		result of <i>Direct</i> (p_3)
	$i + 2$	$\{p_3, p_5, p_8\}$	$\{w_7, w_{11}\}$		K worlds eliminated
	$i + 3$	$\{p_5, p_8\}$	$\{w_7, w_{11}\}$		p_3 removed from TDL

At $i + 1$, the proposition p_3 is added to the agent’s TDL; by $i + 2$, the agent has eliminated worlds from her knowledge state (in simple cases, by acting; in more complex cases, by observing others’ acts); at this point, $K \subset p_3$, so she may remove p_3 from her TDL, resulting in the state shown at $i + 3$.²¹ This provides an adequate (simplified) model of the compliance conditions of imperatives, which is all we need to proceed. Note that this approach does not attempt to model what it means for a particular agent to comply with an imperative, making

and it will not be pursued here; instead, I’ll assume propositional denotations. (An anonymous reviewer wonders whether collective TDLs might be necessary for the imperatives that involve collective predicates like *gather* in *everyone gather around the campfire*. But the model of compliance given below apparently works for such imperatives: each individual in the set of addressees adds the proposition with the collective predicate to her TDL; they each may remove the predicate when that proposition becomes true.)

²⁰ Of course, this simplified representation is somewhat misleading, since knowledge states like K and propositions like p_3 will typically involve infinite sets, whereas TDLs will typically be finite sets. The representation may thus be made more realistic by appending $\cup W$ to both p_3 and each listing of K, where W is understood to be some infinite set, disjoint from p_3 and K, compatible with what the agent knows.

²¹ An anonymous reviewer makes the suggestion of modeling compliance simply as containment of p_3 in K at $i + 2$, and not bothering with the removal of p_3 from the TDL. This suggestion is worth developing, but, due to the tenseless nature of imperatives, it leaves open the possibility of compliance with an imperative like *close the window* being reversed when the window is later re-opened.

compliance a relation between agents and imperatives, settling instead for the simpler notion of an imperative being complied with, so that compliance is a property of imperatives.

4.2. SPEECH ACT CONJUNCTION

Formally, the definition of speech act conjunction is very simple. If we think of speech acts as update functions on conversational states, an act is a function from conversational states to conversational states. The force of an utterance is a function from its content to a speech act. This fact makes ordinary propositional-conjoining *and* an unacceptable candidate for ID sentences: once it intersects the two propositions, there is no way to map each one to its own speech act. However, speech act *and* (Krifka, 2001) takes two speech acts—that is, sentences that already have force—and returns an update function on conversational states (CS; here viewed as a tuple consisting of Stalnakerian common ground, to do list, question set, etc.); i.e., another speech act.

$$(49) \quad \text{and}_{sa} = \lambda a_1 \lambda a_2 \lambda CS. a_2(a_1(CS))$$

A speech act, seen as a function from conversational states to updated conversational states, has different effects depending on what sort of act it is—assertions restrict the common ground to a given proposition, questions add a set of propositions to the question set, and so on. Speech act *and* simply takes to acts and returns the update that would result in applying the two acts in succession. So speech act *and* has the same effect as ordinary *and* when conjoining assertion acts (modulo dynamic effects).²² For example, suppose a particular conversational state consists of a common ground, CG, as its first element, and that p_1 and p_2 are both propositions. Then we can show that $(\text{Assert}(p_1) \text{and}_{sa} \text{Assert}(p_2))$ and $\text{Assert}(p_1 \text{ and } p_2)$ have the same conversational effect as follows.

$$(50) \quad \begin{aligned} & (\text{Assert}(p_1) \text{and}_{sa} \text{Assert}(p_2))(\langle CG, \dots \rangle) \\ &= \text{Assert}(p_2)(\text{Assert}(p_1)(\langle CG, \dots \rangle)) \\ &= \text{Assert}(p_2)(\langle CG \cap p_1, \dots \rangle) \\ &= \langle (CG \cap p_1) \cap p_2, \dots \rangle \\ &= \langle CG \cap (p_1 \cap p_2), \dots \rangle \\ &= (\text{Assert}(p_1 \text{ and } p_2))(\langle CG, \dots \rangle) \end{aligned}$$

²² Indeed, propositional conjunction can, it seems, be derived from speech act conjunction as follows: Speech act *and* simply performs each conjoined act. If the two conjuncts are assertions, *and* asserts both, giving the classical truth table for *and*: if both p and q are asserted, then the complex assertion is true if each individual assertion was true, and false otherwise. This can then serve as the base step of the recursive definition of *and* found in Partee and Rooth (1983).

Further, given the definition in (49), there is nothing to prevent and_{sa} from conjoining acts of non-like types. This gives the following straightforward semantics of imperatives conjoined with declaratives:

$$\begin{aligned}
 (51) \quad & (Direct(p_1) \textit{and}_{sa} Assert(p_2))(\langle CG, TDL, \dots \rangle) \\
 & = Assert(p_2)(Direct(p_1)(\langle CG, TDL, \dots \rangle)) \\
 & = \langle CG \cap p_2, TDL \cup \{p_1\} \rangle
 \end{aligned}$$

Notice that speech act *and* thus defined predicts that imperatives and declaratives can generally conjoin, regardless of linear order. This seems right to me:

$$(52) \quad \text{I want a sandwich, and put pickles on it!}$$

So and_{sa} gives a way for conjunctions to deliver a complex speech act that has the effect of two simple speech acts, as desired. But the conversational state in (51) is not the right one for an ID sentence, since the assertion made is simply the second conjunct, not the second conjunct conditionalized upon the first. This desired semantics will be developed in the next two sections.

4.3. THE SEMANTICS OF CONDITIONALS

Before a compositional theory of conditional coordination can be developed, it's necessary to at least approximate the proper denotation for the conditional meaning expressed by such sentences. In this section, I propose that the conditional interpretation of conjunctive ID sentences can be correctly modeled by a semantics similar to that developed by Kratzer (1991a) for ordinary conditionals.

Kratzer's main argument for a modal analysis of conditionals is the fact that the truth conditions of conditionals with modals in their second conjuncts cannot be modeled with material implication (\rightarrow), which is defined in terms of classical disjunction as $p \rightarrow q$ iff $\neg p \vee q$. Kratzer follows Lewis (1975) in adopting this position. Among the linguistic data Kratzer brings to bear on this problem are sentences like the following.

$$(53) \quad \text{If the witness stalls, he probably has information.}$$

Supposing that *probably* quantifies over possible worlds and means *for most epistemically accessible worlds*, a material implication analysis gives (53) the following semantics:

$$\begin{aligned}
 (54) \quad & \neg \textit{stall}(\textit{witness}) \vee \text{for most worlds } w : \\
 & \quad \textit{have}(\textit{information})(\textit{witness})(w)
 \end{aligned}$$

According to this semantics, (53) is true iff the witness doesn't stall or most worlds are witness-has-information worlds. This is clearly not right; *the witness probably has information* must be evaluated with respect to the worlds where the witness stalls. In particular, the semantics in (54) will give true if most worlds are witness-has-information worlds, whether or not any of those worlds coincide with witness-stalls worlds.

Further, putting the material conditional inside the modal structure doesn't do the trick, either; this would yield:

$$(55) \quad \text{for most worlds } w : \\ \neg \text{stall}(\text{witness})(w) \vee \text{have}(\text{information})(\text{witness})(w)$$

This meaning makes (53) true in whenever most accessible worlds are not stalling witness worlds, no matter how unlikely the witness is to have information. And this is certainly not right.

Instead, Kratzer proposes that an *if* clause serves as the restriction for some modal or adverbial operator in the consequent. In the case of (53), this gives the following semantics:

$$(56) \quad \text{for most worlds } w \in \{w' : \text{stall}(\text{witness})(w')\} : \\ \text{have}(\text{information})(\text{witness})(w)$$

This is in accordance with general intuitions about the truth conditions of (53), and such a semantics works for a broad range of modals and adverbials, including *mostly*, *probably*, *must*, *can't*, *should*, and others. In Kratzer's view, then, the study of conditionals is really the study of the modals (overt and possibly covert) that are found in their second conjuncts. This is the view taken in this paper: the conditional interpretation of ID sentences will depend crucially on the modals that appear in their second conjuncts.

4.4. CONDITIONAL INTERPRETATION FROM MODAL RESTRICTION

The ID sentences that have been considered so far in this paper all have the future tense modal *will* in their second conjuncts. Based on standard theories (Thomason, 1970; Copley, 2002), I will assume the following semantics for the future tense modal (**F**) with respect to a proposition p , an accessibility relation R^{23} , and a world-time pair w, t :

$$(57) \quad \mathbf{F}(p)(w)(t) =_{def} \forall w' \in R[w][\exists t' \succ t[p(w')(t')]]$$

To give ID sentences Kratzer-style conditional semantics, then, the accessible worlds need only be restricted to the proposition denoted by

²³ I assume here that an accessibility relation relates a world w to a set of worlds compatible with w in some contextually-determined way.

the first conjunct. In general, it is assumed that accessibility relations are computed according to conversational principles relative to contexts (in much the same way that the domains of quantifiers like *every* and *some* are restricted by context). Because restricting this accessibility relation is of particular importance, I will notate the restriction as a subscript on \mathbf{F} :

$$(58) \quad \mathbf{F}_X(p)(w)(t) =_{def} \forall w' \in R[w] \cap X[\exists t' > t[p(w')(t')]]$$

Notice that the formula in (58) is equivalent to a Kratzer-style conditional with X as antecedent and *will p* as consequent. It seems reasonable, but perhaps contentious, to suppose that propositions denoted by the first conjuncts are contextually available for this restriction. In this section, I provide evidence that these propositions are indeed available modal restrictors, and use this fact to derive the conditional interpretation of conjunctive ID sentences.

To see that first conjuncts may serve as the modal restriction of second conjunct modals, let us shift momentarily to the more familiar territory of conjoined declaratives. Conjoined declaratives, of course, entail both their conjuncts: (59) can't be true unless it is the case that Delgetti will badger the informant and it is also the case that the informant will clam up.

$$(59) \quad \text{Delgetti will badger the informant and she will clam up.}$$

But there is also an intuition that this sentence conveys that the clamming-up depends on the badgering. This intuition can be explained by the restriction of the modal in the second conjunct that is restricted to the set of worlds denoted by the first conjunct; i.e., if the second conjunct has the semantics $\mathbf{F}_{badger}(clamup)$, where *badger* and *clamup* stand for the propositions *that Delgetti will badger the informant* and *that the informant will clam up*, respectively. The restriction in the second conjunct does not contribute anything to the truth conditions of the overall sentence; this is because the first conjunct has already specified that every accessible world is one in which Delgetti badgers the informant; restricting the quantification in the second conjunct to those worlds is therefore vacuous in this context. To illustrate, the semantics of (59) is provided in (60-a), with rough set-theoretic and prose equivalents in (60-b) and (60-c).

$$(60) \quad \begin{array}{l} \text{a. } \mathbf{F}(badger) \wedge \mathbf{F}_{badger}(clamup) \\ \text{b. } (R[w] \subset badger) \wedge (R[w] \cap badger \subset clamup), \\ \text{c. } \text{Delgetti will badger the informant and if Delgetti badgers} \\ \quad \text{the informant, then the informant will clam up.} \end{array}$$

Since $R[w] \subset \textit{badger}$ is asserted by the first conjunct, it must be the case that $R[w] \cap \textit{badger} = R[w]$, so the formula in (60-b) is equivalent to $(R[w] \subset \textit{badger}) \wedge (R[w] \subset \textit{clamup})$ —i.e., the non-modally subordinated conjunction. The free application of modal subordination in conjoined declaratives, then, will not have unexpected or undesirable truth-conditional consequences: it does not have a truth-conditional effect at all.

Although modal subordination does not, in the above example, have a truth-conditional effect, it has desirable consequences for the retraction of each conjoined element.

- (61) Delgetti will badger the informant and she will clam up.
- a. Oops! I was wrong. Delgetti won't badger her. So I guess maybe she won't clam up.
 - b. #Oops. I was wrong. The informant won't clam up. So I guess maybe Delgetti won't badger her.

In contexts where there is no plausible causal connection between the propositions, this asymmetry disappears. For example, suppose I've just found out that my niece Bridget in Sacramento and my nephew Gus in Minneapolis each received a check for Christmas, and I'm asked to make a prediction about what each of them will buy.

- (62) Bridget will buy a can of anchovies and Gus will buy a pair of shoes.
- a. #Oops! I was wrong. Bridget won't buy a can of anchovies. So I guess maybe Gus won't buy a pair of shoes.
 - b. #Oops! I was wrong. Gus won't buy a pair of shoes. So I guess maybe Bridget won't buy a can of anchovies.

Because it is hard to see how Bridget's purchase can affect Gus's, or vice versa, neither proposition enters into the modal restriction of the other, and the retraction of one does not affect the other.

I will not develop a full theory of retraction here, but a theory along the following lines is in accordance with the facts in (61) and (62). If utterances are understood as update functions on conversational states, the retraction of an utterance u_i can be understood as mapping a conversation state resulting from utterances $u_1, \dots, u_i, \dots, u_n$ to the state resulting from $u_1, \dots, u_{i-1}, u_{i+1}, \dots, u_n$. A given utterance's semantics may dynamically depend on those of a retracted utterance, and if this is the case, the retracted utterance's effects are not completely eliminated. In the case of (61), retraction of *Delgetti will badger the informant* maps the conversational state in (63-a) to (63-b):

- (63) a. $\text{Assert}(\mathbf{F}_{\text{badger}}(\text{clamup}))(\text{Assert}(\mathbf{F}(\text{badger}))(CS))$
 b. $\text{Assert}(\mathbf{F}_{\text{badger}}(\text{clamup}))(CS)$

What remains after retraction of a sentence that served as another sentence’s modal restriction is a conditional-like interpretation; i.e., the modal restriction given by the second sentence remains in effect. Analogously, retraction of a sentence containing a pronoun’s reference does not affect the interpretation of the pronoun. The utterance of the sequence “Ross is hiding out in a hotel room. He just arrived from Chicago,” followed by the retraction of *Ross is hiding out* does not affect the interpretation of *he*. Whether or not the hearer believes Ross just arrived from Chicago after discovering the speaker was misinformed about the hiding out, the discovery of this misinformation won’t change who the hearer understands the pronoun to “refer” to. Since modal restriction works much like anaphora resolution, the modal restriction of the second sentence is not expected to be affected by the retraction of the first. This means that retraction of *Delgetti will badger the informant* leaves a conversational state that does not entail *The informant will clam up*, making the sequence in (61-a) felicitous.

Implicit in this example is the assumption that conversational principles govern modal subordination. Speakers use extralinguistic knowledge to resolve reference of modal restrictions. For example, an assumed or inferred causal link between two propositions can lead speakers to use one as the modal restriction for the other. Because (62) is uttered in a context where dependence between the propositions is highly unlikely, the second is not modally restricted by the first. On the other hand, (61) contains propositions that can be assumed to be causally linked, so the second is modally restricted with the first. Finally, *and* doesn’t contribute anything special to this kind of modal restriction; sentences uttered sequentially also convey (weakly) a dependence between the first and second conjuncts:

- (64) Delgetti will badger the informant. She will clam up.

Here, *She will clam up* is intuitively understood to be dependent on Delgetti’s badgering, just as in the conjoined example, and the retraction facts are similar.

An anonymous reviewer raises the question of why modal restriction should be invoked to explain the dependency between the conjuncts in such cases. Indeed, Gricean theory provides an potential account of this intuition: the understood dependency is a conversational implicature. My claim is not that Gricean principles are absent in the understanding that a second conjunct depends on its corresponding first conjunct. But if the understood dependency between the conjuncts is simply

a conversational implicature, retraction of a first conjunct should be more likely to license subsequent retraction of this implicature than the second conjunct. And continuing a sentence like (65) with such an attempted retraction is odd:

- (65) Delgetti will badger the informant and she'll clam up.
 #?Oops! Delgetti won't badger the informant. So I guess maybe that's not why she'll clam up.

On the other hand, retraction of past tense sentences, which do not contain modals like future tense sentences, are much more naturally followed with retraction of the implicature:

- (66) Delgetti badgered the informant and she clammed up.
 a. #Oops! Delgetti didn't badger the informant. So guess she didn't clam up.
 b. Oops! Delgetti didn't badger the informant. So I guess that's not why she clammed up.

Past tense sentences, where the understood dependence between conjuncts can only be the result of an implicature, pattern differently from future tense modals, motivating the assumption, crucial for the analysis that follows, that modal subordination may freely apply in such cases.

Modal subordination provides the final tool necessary to provide a full analysis of conjunctive ID sentences. Since second conjunct *will* sentences are modals whose modal base can, in general, be restricted by the proposition denoted by the first conjunct, second conjuncts in *and*-conjoined sentences can literally be equivalent to conditionals. As shown above, this has no effect on the truth conditions of ordinary conjoined sentences, since the first conjunct is entailed. But if the first conjunct is an imperative, and thus un-entailable, the restriction on the modal base of the second conjunct has a dramatic effect on truth conditions: the first conjunct has imperative force (projected by speech act *and*); the second is equivalent to a conditional with the proposition denoted by the imperative as antecedent. The sentence in (67-a) has, as its components, a directive act (67-b), speech act *and* (67-c), and a future tense declarative, modally restricted to the proposition in the first conjunct (67-d); these compose to give the semantics in (67-e).

- (67) a. Everyone shut up and I'll tell you who Renick is.
 b. Everyone shut up: *Direct(shutup)*
 c. and: $\lambda a_1 \lambda a_2 \lambda CS [a_1(a_2(CS))]$
 d. I'll tell you who Renick is: *Assert(F_{shutup}tell)*
 e. $\lambda CS. \text{Assert}(\mathbf{F}_{shutup} \text{tell})(\text{Direct}(\text{shutup})(CS))$

This semantics, of course, accounts for the generalization that conjunctive ID sentences are interpreted as conditionals: the second (outer) conjunct has the semantics of a Kratzer (1991a)-style conditional. It also accounts for the fact that the first conjunct does not, in general, have the semantic properties of the antecedent of an ordinary conditional (i.e., NPI licensing and binding into the antecedent). This is because the first conjunct is simply an imperative speech act, not an NPI-licensing environment. The conditional reading arises from anaphoric reference to the first conjunct, and anaphoric reference in a licensing environment cannot license NPIs in the anaphoric element's antecedent. Analogously, in the following dialog, anaphoric reference cannot license the NPI *anything*:

- (68) A: *Mary Kate ate anything.
B: I don't believe that.

So NPIs are expected to be licensed in first conjuncts of ID sentences only if there is an independent licenser within the imperative. Finally, by the same logic, this semantics accounts for the fact that ID sentences carry the force of the imperatives they contain: the imperative speech act must be performed, since speech act *and* is the only way to conjoin an imperative with a declarative.²⁴

And, like non-conjoined declaratives, non-conjoined imperative-declarative sequences can (somewhat more weakly) yield a conditional interpretation:

- (69) Everyone shut up. Frank will tell you who Renick is.

Here, if the imperative is not complied with, it seems that it is not necessarily the case that Frank will tell you who Renick is—rather, the telling, as in the conjoined sentences, can be understood to depend on the shutting up. This shows that the conditional interpretation of the ID construction has nothing to do with *and*; it is simply a consequence of the context that the modal *will* finds itself in.

4.5. OTHER MODALS IN THE SECOND CONJUNCT

Given the previous analysis, the conditional reading of ID sentences is due to anaphoric resolution of the restriction on the modal element *will*. As mentioned above, this is motivated by the fact that ID sentences are not acceptable without a modal in the second conjunct:

²⁴ It is probably too optimistic to hope that a theory of *or* in disjunctive ID sentences could work along the same lines as the theory of conjunctive ID sentences in this section. See Russell (2005) for arguments.

- (70) a. *Everyone fill out this form and the government mails you a check.
 b. Everyone fill out this form and the government will mail you all a check.

This contrast can be explained under the present theory: the second conjunct of (70-a) here does not contain a modal element that can be restricted by the first conjunct; therefore, no conditional reading is available.²⁵ But not every modal element is permitted in the ID construction: necessity modals other than *will* lead to degraded examples:²⁶

- (71) a. *Everyone fill out this form and the government has to mail you all a check.
 b. *Don't you skip class and the administration should give you a diploma.

This contrasts sharply with such modals in ordinary conditionals, where they are unexceptionable:

- (72) a. If everyone fills out this form, the government has to mail you all a check.
 b. If you don't skip class, the administration should give you a diploma.

Whereas time of evaluation of consequents is known to depend on their antecedents in actual conditionals, in ID sentences, I propose, second conjuncts must be evaluated with respect to time of utterance. Given this assumption, a sentence with *will*, like (70-b), means that for all currently accessible worlds where everyone fills out the form (at some future time), there is a future (with respect to the present) time at which the government sends a check. By contrast, the ordinary conditional reading is that in each world where everyone fills out the form, there is a subsequent (with respect to the time of form-filling) time at which the government sends a check.²⁷ To simplify, the modally-

²⁵ Of course, no non-conditional reading is available either, since *The government mails you a check* is not an acceptable root clause in English.

²⁶ Because modal restriction is optional in ID sentences and speech act conjunction freely conjoins imperatives and declaratives, (71-a) should be felicitous on a non-modally restricted reading; i.e., one where (71-a) is simply a directive and an assertion, where the assertion does not depend on the directive. My intuition is that this is the case, and my informants, after a bit of head scratching, agree. Moreover, the ostensible ungrammaticality of sentences like (71-a) is a testament to the strength with which the modally restricted reading is preferred.

²⁷ This can be illustrated formally as follows, where **F** is the future modal as described above:

restricted future tense sentence is true *right now* if we're in a world where everyone eventually fills out the form, whereas the consequent of the ordinary conditional is true *at the time everyone fills out the form* in all worlds where everyone fills out the form.

Further, given this assumption that second conjuncts of ID sentences must be interpreted with respect to the time and world of utterance, a sentence like (71-a) is expected to be incoherent for the following reason: its second conjunct denotes a present obligation. It means that in all worlds accessible from the present world, the government is, *right now*, obligated to send you a check. But it is incoherent to say that a present obligation depends on a future event, so it is infelicitous to restrict the modal to the set of worlds in the imperative denotation.

This analysis also predicts that *might*, expressing epistemic possibility, is an acceptable modal for the second conjunct of an ID sentence:

- (73) Everyone fill out this form and the government might mail you a check.

The second conjunct here means that there is, at present, an epistemic possibility (among worlds where everyone eventually fills out the form) where the government (eventually) mails everyone a check. This is sensible: a present epistemic possibility *can* depend on a future state of affairs: I can have beliefs about what might happen in worlds where it rains tomorrow vs. worlds where it doesn't. In sum, then, acceptability of a modal in an ID second conjunct seems to depend on the coherence of an un-shifted, modally subordinated interpretation for that modal.

5. Conclusion

The first half of the paper presents an argument that bare VPs are ambiguous in English: they may either be imperatives or second person non-finite clauses. The hypothesis is supported by three facts. First, non-bare VP imperatives may never be divorced from their con-

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- (i) a. $\mathbf{F}_p q(w)(t) = \forall \langle w', t' \rangle \in p \cap R[\langle w, t \rangle] :$
 $\exists t'' : t'' \succ t \wedge q(w')(t'')$
 b. $if(p, \mathbf{F}q)(w)(t) = \forall \langle w', t' \rangle \in p \cap R[\langle w, t \rangle] :$
 $\exists t'' : t'' \succ t' \wedge q(w')(t'')$

Here, propositions are sets of world-time pairs, and the accessibility relation R maps world-time pairs to sets of world-time pairs. The key point is that the formulae differ only with respect to what the future time t'' is subsequent to. In the case of the conditional, it is subsequent to the antecedent proposition's time; in the case of \mathbf{F} , it is subsequent to the "utterance time"; i.e., the time at which the root clause's proposition is evaluated.

ventional force. A true imperative in a conditional coordination construction always carries with it the command, request, or permission associated with the imperative itself. Second, NPIs are licensed in bare VP CC sentences, but not CC sentences with imperatives generally. This suggests that the VPs in bare VP CC sentences are optionally non-imperative second person sentences that can enter into the DD construction, which licenses NPIs. Likewise, imperative CC sentences do not allow binding into first conjuncts, while bare VP CC sentences, like their simple present counterparts, do allow such binding. These properties of the conjunctive ID construction make available a simple analysis: independently motivated semantics for imperatives and future tense declaratives, speech act conjunction, and modal subordination yield the observed dual imperative/conditional interpretation.

The landscape of conditionally coordinated sentences is vast, and I hesitate to express too much optimism that the approach taken here will extend to DD sentences or disjunctive sentences. But I will speculate briefly on the extension of the analysis to a class of apparently embedded ID sentences:

- (74) a. Mary told Tom to finish his vegetables and she'd give him dessert.
 b. #Mary told Tom to be naughty and she'd beat him.

Sentences like (74-a) share a number of properties with ordinary conjunctive ID sentences. First, the semantics of the embedded infinitival *to finish his vegetables*, like the semantics of an imperative in an ID sentence, is “used” twice: once as an infinitival argument of *tell*, and again as the antecedent of the conditional-like meaning of a propositional argument of *tell*: *if Tom finished his vegetables, she'd give him dessert*. Second, the embedded infinitival seems to carry imperative force (relative to the conversation being described): (74-b) reports the issuing of an infelicitous directive if Tom is presumed to want not to be beaten.

The approach to this phenomenon is blocked by the same obstacle that led to the adoption of speech act *and* for ID sentences: Boolean *and* is unsuitable, since *tell* makes different entailments about each of the conjoined propositions (one is directed by *tell*'s subject; the other is asserted). To get around this, suppose a verb like *tell* takes speech acts as complement, where $tell(a)(y)(x)$ entails that x applied the speech act a to y 's conversational state. Then speech act *and* is available to conjoin the two clauses in *tell*'s complement in (74-a) (abbreviating the proposition *that Tom get dessert* as *dessert* and *that Tom eat his vegetables* similarly):

$$(75) \quad \begin{aligned} & tell(\mathit{and}_{sa}(\mathit{Assert}(\mathbf{F}\mathit{dessert}))(\mathit{Direct}(\mathit{vegetables}))) (t)(m)) \\ & = tell(\lambda CS(\mathit{Assert}(\mathbf{F}\mathit{dessert})(\mathit{Direct}(\mathit{vegetables})(CS)))(t)(m)) \end{aligned}$$

This entails Mary issued a complex speech act: first a proposition about vegetables was directed; then one about dessert was asserted. Adding in modal restriction, we get an apparently adequate semantic representation:

$$(76) \quad tell(\lambda CS(\mathit{Assert}(\mathbf{F}_{\mathit{vegetables}}\mathit{dessert})(\mathit{Direct}(\mathit{vegetables})(CS)))(t)(m))$$

That is, Mary directs him to eat his vegetables and asserts that in all worlds where he eats his vegetables, she'll give him dessert.

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