Past counterfactuality in Spanish imperatives and its implications for the analysis of imperatives*

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Abstract This article examines a class of Spanish root perfective infinitives (*retrospective imperatives*, RIs) that express past counterfactual modality. The narrow goal of the article is to explain why RIs have a modal semantics despite lacking an overt modal. The solution is based on Bosque's (1980) suggestion that these sentences are a subtype of imperatives. The broader goal is to use RIs as a probe into the proper semantic and pragmatic analysis of imperatives. The difficulty lies on the fact that RIs exhibit a set of properties that can't be completely covered by any of the existing analyses of imperatives. To solve this quandary, I propose a combination of the modal operator analysis (Grosz 2011, Kaufmann 2012) and the discourse analysis (Portner 2005, 2007), each one accounting for a different subset of properties. The overarching theoretical result is that imperatives have a covert modal operator in their syntactic structure, contrary to Portner's claims.

Keywords: Spanish, imperatives, modality, counterfactuality

1 Introduction

Imagine that I arrive late to a meeting. As I apologize, I explain that I am late because I tried to drive through rush hour and I got stuck in a traffic jam. You know that this could have been avoided if I had taken the subway instead. In Spanish, you may express this opinion through a standard counterfactual modal construction:

(1) ¡Deberías haber cogido el metro!
should.2SG have.INF taken the subway
"You should have taken the subway!"

On top of (1), Spanish offers a second way to express past counterfactual necessity — namely, through a root perfective infinitive of the form [*haber* + past participle], where *haber* is the infinitival form of auxiliary *have* (2). After Bosque (1980), I will refer to these examples as *retrospective imperatives* (RIs).[1]

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1 Biezma (2010, 2011) has proposed the alternative label *haber + participle clauses* (HPCs), which should be preferred on the basis that it is not as analytically biased as Bosque's (i.e., "retrospective

(2) ¡Haber cogido el metro!
have.INF taken the subway
"You should have taken the subway!"

Biezma (2011:25–26) points out that the translation given on the third line of (2) is not entirely accurate, as English *you should have* sentences don't exhibit a number of the characteristic properties of RIs (cf. sections 2 and 3). I agree with her observation, but I choose to retain this translation nonetheless, for two reasons. The first reason is a practical one: despite its inaccuracy, a *you should have* translation is arguably the best available one that doesn't involve a long cumbersome paraphrase. The second reason is that this translation manages to capture what is arguably the most salient property of RIs, *viz.*, the fact that RI express past counterfactual modality (mostly, necessity). This parallelism in meaning between RIs and modal past counterfactuals will be the focus of the article, as it presents an interesting problem for the syntax-semantics interface — i.e., we want to know why (2) receives a modal interpretation despite apparently lacking the crucial component of this semantics — namely, a modal verb like *deberías*. The narrow goal of this paper is to provide a solution to this problem. Specifically, I follow Bosque's (1980) conjecture that, contrary to initial appearances, RIs are not a reduced form of the modal sentence in (1); rather, they are imperatives retroactively imposed on a point in the past of the utterance time, hence the term "retrospective imperative". This assumption, which will be properly justified in section 2, provides the basis for a workable compositional semantics.

The broader goal of this paper is to use RIs as a probe into the proper analysis of imperative clauses. It is standard to assume that imperatives are a type of modal expression, in the sense that they involve a ranked set of possible worlds. If I say *Take the subway!*, part of what I am saying is that those worlds where you take the subway are ranked higher than those where you don't, according to a contextually determined ranking criterion (e.g., deonticity, teleologicity...). How this idea is to be technically implemented, however, is a matter of debate. The two current major lines of attack in the literature differ in the amount of explicit modal syntax that they assume.

- *The modal analysis* (Grosz 2011, Kaufmann 2012): imperative clauses are literally modal clauses — i.e., they contain an actual modal operator, albeit one that has a some peculiarities that set it apart from more familiar modals like *must* or *should*. Most notably, it is phonetically null, and it can only be used performatively, not descriptively (truth-conditionally).

imperative" unambiguously classifies (2) as a type of imperative). Nonetheless, I choose to retain Bosque's label, given that the analysis I propose here will be based on his conjecture that these clauses are indeed imperatives.

- *The discourse analysis* (Portner 2005, 2007): imperative clauses don't come with a modal verb; rather, the subcomponents of modality (conversational backgrounds, modal base, ordering source) are distributed among various discourse components, *viz*, the Common Ground, the To-Do List, and a series of parametrized selection functions.

The interest of RIs lies on the fact that, as we will see, they exhibit a combination of properties that cannot be completely covered by either analysis. The properties in question are the following.

(3) *Properties of RIs*

a. Temporal interpretation: as already mentioned, RIs have a past counterfactual reading (section 3.1).

b. Expressive meaning: a speaker uttering an RI is expressing disapproval of or dissatisfaction with the addressee's past actions (section 3.2).

c. Discourse position: RIs typically cannot be discourse initial utterances (section 3.3).

We will see that the modal analysis (section 4) provides a relatively straightforward account of (3a) as a function of the interaction between the modal operator and tense (specifically, a past tense morpheme in T^0 shifts the time of the world that the modal base is computed from, yielding a set of sets of worlds that lie in the future of some past point). However, it has nothing to say about (3b) and (3c). On the other hand, the discourse analysis (section 5) can offer some interesting insights into (3b) and (3c), but it doesn't offer a good approach to the past counterfactual reading of RIs (specifically, it fails to connect this reading to the characteristic morphology of RIs). This situation suggests a divide-and-conquer line of attack. In section 6, I develop a hybrid analysis where (3a) follows from Kaufmann's (2012) compositional semantics for imperatives. After her, I propose that imperatives contain a modal operator IMPMOD that is largely analogous to a standard Kratzerian modal; as such, the time of evaluation of the modal can be shifted to the past, resulting in a past counterfactual reading. Properties (3b) and (3c), which are related to discourse and pragmatics rather than to compositional semantics, are handled by the discourse subcomponent that Portner (2005, 2007) calls the *To-Do List*.

The analysis I have just sketched takes us to the core theoretical claim of the article. In a nutshell, what I am proposing is that RIs contain a covert modal operator. If this claim is correct, we may then extrapolate it and conclude that imperative clauses at large contain an explicit syntactic representation of modality — i.e., contrary to Portner's claims, but as defended by Kaufmann (2012) and Grosz (2011).

2 RIs are a subclass of imperatives

2.1 Bosque's (1980) arguments

2.1.1 Lack of a truth value

Imperatives lack a truth value, as suggested by the infelicity of *That's (not) true!* replies (although see Biezma 2011:88–91 and Kaufmann 2012:163–168 for an extensive discussion of this test).

(4) A: Take the subway! B: # That's not true!

(5) A: ¡Coge el metro!
take.IMP the subway
"Take the subway!"
B: # ¡Eso no es cierto!
that not is true
"That's not true!"

Bosque (1980) observes that the same restriction holds for RIs, which he takes as an indication that RIs are formally imperatives.[2]

(6) A: ¡Haber cogido el metro!
have.INF taken the subway
"You should have taken the subway!"
B: # ¡Eso no es cierto!
that not is true
"That's not true!"

2.1.2 Impossibility of embedding

As further support for the parallelism between imperatives and RIs, Bosque (1980) cites the fact that neither type of clause can be embedded.[3]

2 Biezma (2011) argues that this argument is invalid, on the grounds that imperatives are not the only clause type without a truth value. The observation is correct, but the criticism loses force due to the fact that RIs cannot be assimilated to many (if not all) of the other clause types that lack a truth value. For example, they are clearly not interrogatives. Biezma's favored alternative (that RIs are reduced optative clauses) is also inadequate, as I will argue in section 7.2.

3 Crnič & Trinh (2011) have recently challenged the claim that imperatives in general can never be embedded (see also Han 1998 for a similar claim). Nonetheless, their arguments for English don't seem to carry over to Spanish. To give a single example, they notice that (ia) allows co-reference of *John* and *his*, like regular embedded clauses but unlike quotes (ib). The equivalent Spanish sentence (ic) only permits the same disjoint reference reading as (ib), suggesting that it too should be analyzed as a quote rather than an embedded imperative.

(i) a. John$_i$ said call his$_i$ mom.

(7) a. * ¡Creo que coge el metro!
think.1SG that take.IMP the subway
"I think that you must take the subway"

b. * ¡Creo que haber cogido el metro!
think.1SG that have.INF taken the subway
"I think that you must have taken the subway"

One exception to this rule, unnoticed by Bosque, are consecutive clauses headed by *así que* or *por lo tanto* 'so/therefore', as illustrated below. The fact that this appears to be the only environment that allows embedding of both regular imperatives and RIs provides further support for the proposed parallelism between the two.

(8) a. Ya has terminado lo que tenías que hacer, { así que /
already have.2SG finished what had.2SG to do so
por lo tanto } ¡vete de aquí!
therefore go.IMP from here
"You've already finished what you had to do, so go away!"

b. Ya habías terminado lo que tenías que hacer, { así que /
already had.2SG finished what had.2SG to do so
por lo tanto } ¡haberte ido de ahí!
therefore have.INF gone from there
"You had already finished what you had to do, so you should have gone away!"

2.1.3 Person restrictions

The regular imperative paradigm in Spanish is a morphologically defective one, in that it only has second person forms. However, imperatives with third person addressees (i.e., the actual third person plus the polite second person *usted/ustedes*, which triggers third person agreement) can still be expressed through the subjunctive (9)/(10). Additionally, the infinitive can be used to issue an imperative to an unspecified third person (11).

(9) a. ¡Que coja él el metro!
that take.SUBJ.3SG he the subway"
"I order him to take the subway!"

b. * John$_i$ said: "Call his$_i$ mom".

c. * Juan$_i$ dijo llama a su$_i$ madre.
Juan said call.IMP to his mother

b. ¡Que cojan ellos el metro!
that take.SUBJ.3PL he the subway"
"I order them to take the subway!"

(10) a. ¡Coja usted el metro!
take.SUBJ.3SG you.POL the subway"
"Sir, take the subway!"

b. ¡Cojan ustedes el metro!
take.SUBJ.3PL you.POL the subway"
"Sirs, take the subway!"

(11) ¡Coger el metro!
take.INF the subway
"Someone take the subway!"

However, as examples (12) and (13) show, neither alternative is applicable to first person addressees, even though the subjunctive paradigm does have a first person morphology, and other kinds of root infinitives accept first person subjects unproblematically — cf. (14), from Etxepare & Grohmann (2005:130). The only way to issue an order to oneself is by embedding it under an explicit promissive predicate (i.e., *I promise/pledge to* ϕ).[4] This suggests that the impossibility of first person addressees is an inherent feature of Spanish imperatives, rather than a by-effect of a morphologically defective paradigm.

(12) * ¡(Que) coja yo el metro!
that take.SUBJ.1SG I the subway
"I pledge/promise to take the subway!"

(13) * ¡Coger yo el metro!
take.INF I the subway
"I pledge/promise to take the subway"

(14) ¡¿Comprar yo eso a propósito?!
buy.INF I that on purpose
"Me willingly buy that?!"

4 There are a few aphorisms, such as the first half of (i), in which the subjunctive is used to create a promissive-like meaning. As these cases are clearly not productive, I will not say anything about them.

(i) ¡Ande yo caliente y ríase la gente!
walk.SUBJ.1SG I hot and laugh.SUBJ.3SG the people
"I won't submit to peer or social pressure" (lit. "let me behave funny and let others laugh at it")

As expected if they are a class of imperatives, RIs exhibit the same restrictions. First of all, third person addressees are possible, though somewhat uncommon. [5] Note that, unlike what happens in regular imperatives, it is not necessary to resort to the subjunctive here. This is because, unlike the imperative paradigm, the infinitive is not restricted to second person subjects.

(15) A: Andrés se queja de que la tortilla que has hecho no
Andrés CL complains of that the omelet that have.2SG made not
sabe bien.
tastes good
"Andrés is complaining that the omelet you cooked doesn't taste good"

B: ¡Pues haberla hecho él!
so have.INF.CL made he
"He should have cooked it himself, then!"

However, as Bosque (1980) noticed, equivalent examples with first person subjects are unacceptable.

(16) A: La tortilla que ha hecho Andrés no sabe bien.
the omelet that has made Andrés not tastes good
"Andrés's omelet doesn't taste well"

B: * ¡Ya te digo! ¡Haberla hecho yo!
already CL say have.INF.CL made I
"No shit! I should have cooked it myself!"

Here it is important to emphasize that the impossibility of first person subjects is not a generalized property of root infinitives, as example (14) above shows. Rather, the ban on first person subjects in RIs must be related to a different factor — by hypothesis, the fact that they are a subtype of imperatives.

2.2 Additional arguments

2.2.1 Speech act variability

A well-known property of imperatives is that they don't always express commands. On a rough level, some of them have universal force (directives) whereas others have existential force (permissions). The following pair (from Grosz 2011) illustrates this distinction.

(17) *Parent to child right before starting a road trip:*

5 Bosque (1980) originally claimed that RIs do not allow third person subjects. However, Biezma (2010) has reversed Bosque's claim by showing that such RIs are actually attested in corpora.

We're leaving. *Go to the restroom!* Otherwise you'll have to go in 15 minutes.
[≃ you must go to the restroom]

(18) *Train conductor to worried passenger 20 minutes before train departs:*

That's ok. Go ahead and *go to the restroom*. We aren't leaving before 8pm.
[≃ you may go to the restroom]

The following examples show that RIs can exhibit the same ambiguity.

(19) *During a road trip, child needs to answer the call of nature. Overstressed parent replies:*

Si tienes ganas de mear, te aguantas. ¡Haber ido al baño
if have.2SG need of pee.INF CL hold.2SG have.INF gone to.the restroom
antes de salir!
before of leave.INF
"If you need to pee, that's not my problem!. You should have gone to the restroom before we left!"

(20) *Passenger tells train conductor that he rushed to the platform because he thought he was going to miss the train. As a consequence, he couldn't go to the restroom. Conductor replies:*

Hombre, no hacía falta que se apresurara usted tanto, que
man not was necessary that CL rush.2SG.POL you.POL so much that
no vamos a salir hasta las 8. Haber ido al baño con
not go.1PL to leave until the 8 have.INF gone to.the restroom with
tranquilidad.
calm.
"There was no need to rush, sir, we weren't going to leave until 8pm anyway. You could have taken your time and gone the restroom"

Beyond the necessity/possibility ambiguity, imperatives can also encode other, more specific speech acts like instructions, invitations, threats, etc (see Kaufmann 2012:ch. 1 for extensive illustration). RIs also exhibit a comparable range of readings. Consider the following example, which illustrates a retrospective scolding/recrimination.

(21) *Scenario: I bake a batch of cookies and then leave the house for some time. While I am out, my flatmate eats the whole batch except for one single cookie. Upon returning and discovering the result of his gluttony, I tell him:*

¡Haberte comido la última también, tragaldabas!
have.INF.CL eaten the last too glutton
"Why didn't you eat the last one too, you pig?"

RIs can also express retrospective invitations and suggestions. Suppose that I am talking to a friend who lives in a different part of town. The following is a felicitous conversation.

(22) A: El martes tuve que ir a tu barrio a hacer unos
the tuesday had.1SG that go to your neighborhood to do some
recados.
errands
"On Tuesday I was running errands around your neighborhood"

B: ¡Pues haberte pasado por mi casa a tomar algo,
so have.INF.CL gone through my house to have something,
hombre!
man
"Dude, you should have dropped by my place to have a drink!"

Finally, RIs can also be used to issue retrospective dares and threats. Suppose that you discover that a coworker has been badmouthing you behind your back. Upon learning of his actions, you can corner him and say the following:

(23) ¡Haberme dicho todo eso a la cara, gilipollas!
have.INF.CL said all that to the face asshole
"You didn't dare say that in front of me, asshole!"

In this respect, it is also important to examine Biezma (2010, 2011) claim that RIs and regular imperatives differ in the fact that RIs are necessarily tied to desires — i.e., in an RI, but not in a regular imperative, the prejacent proposition has to be a wish or desire of the speaker, the hearer, or both. She offers the following example to illustrate the behavior of regular imperatives: she comments that "B's utterance shows that she has no desire to turn on the lights. Neither is there an assumption that A wants to turn on the lights". Still, as Biezma points out, B's last utterance is felicitous.

(24) *Scenario: A is working on her computer and hasn't noticed that it has already gone dark outside (she is working on the computer and does not need additional light). B walks into the room.*

A: Hi! I've been working with the computer light and didn't even notice that it's already dark!

B: Should I turn on the lights?

A: Sure, turn on the lights. I don't care.

Biezma further claims that such examples are infelicitous with RIs, but this seems incorrect. In (21), the eating of the last cookie doesn't seem to be a desire of either the speaker or the addressee (specifically, it is not difficult to construct a scenario in which the addressee felt satiated after eating nearly all of the cookies and therefore didn't feel like eating the last one). Consider also the following variation of a different example that Biezma (2011) offers. Clearly, staying at home wasn't among A's wishes, as he states he went out. On the other hand, B is disinterested in the topic and bored by A's monologuing, so her reply can hardly count as a wish for A to have stayed at home either.

(25) *Scenario: day after a big game; A, a huge soccer fan, is yapping non-stop about his activities the previous evening; B, who doesn't care about soccer at all, is getting bored with A's monologue.*

A: Ayer salí a ver el partido en un bar, pero no pude porque
yesterday went.out to watch the game in a bar but not could because
todos estaban a reventar.
all were to burst
"Yesterday I went out to watch the game at a bar, but I wasn't able to because all of them were bursting with people"

B: ¡Pues haberlo visto en casa, pero deja ya de dar la lata
PRT have.INF.CL watched at home but stop.IMP already of give the tin
con el partido!
with the game
"Well, then you should have watched it at home! And now just please stop talking about the damn game!"

The fact that RIs exhibit this range of speech act variability points to their status as a subclass of imperatives.

2.2.2 Speech act concordance

This is the counterpart of the previous property. Portner (2007:356) observes that the speech act variability of imperatives is suspended if there are other imperatives in the same stretch of discourse. In this situation, all the imperatives receive the same kind of reading. He illustrates this property with the following scenario: suposse that I am going out of town for a business meeting. Before I leave, my boss tells me the following.

(26) a. Be there at least two hours in advance!
b. Then, have a bite to eat.

Portner claims that "if (26a) was taken as an order, (26b) is bizarre. You have to take it as an order too, and your boss must be crazy to order you around at that level of detail. Of course it makes sense to interpret (26b) as a suggestion, but then you have to interpret (26a) as a suggestion too". Note that this is a property of imperatives rather than a generalized restriction on speech act sequencing, as an equivalent discourse with overt operators is acceptable.

(27) a. I order you to be there at least two hours in advance.
b. Then, I suggest you have a bite to eat.

RIs show the same restriction as (26), which further supports the hypothesis that they are a class of imperatives. In the following example, both sentences have to be interpreted as either orders or suggestions; a mixed reading is not acceptable.

(28) ¡Haber llegado con dos horas de antelación! ¡Quizás haber tomado
have.INF arrived with two hours of advance perhaps have.INF had
algo!
something
"You should have arrived two hours in advance! Then perhaps you should have had a snack."

As with imperatives, this restriction is lifted if one uses overt modal operators, suggesting that it is not a restriction on speech act sequencing.

(29) ¡Deberías haber llegado con dos horas de antelación! ¡Quizás hubieras
should.2SG have arrived with two hours of advance perhaps had.2SG
podido tomar algo!
could taken something
"You should have been there two hours in advance! Then, perhaps you could have had a snack.

2.2.3 Epistemic uncertainty

Kaufmann (2012:163ff) observes that imperatives are subject to an *epistemic uncertainty* requirement — that is, it is felicitous to utter an imperative ϕ! only if the speaker believes both ϕ and $\neg\phi$ to be potential future situations. In Kaufmann's words, "if the speaker is sure that ϕ is going to happen (or will not happen) then issuing an imperative ϕ is infelicitous". As an illustration:

(30) a. # Take the subway! But you aren't going to take the subway.
b. # ¡Coge el metro! Pero no vas a coger el metro
take the subway but not go.2SG to take the subway
"Take the subway! but you aren't going to take the subway"

RI exhibit a similar effect. Note that we can't say that the speaker must be uncertain of whether ϕ happened or not, because a speaker who utters an RI already knows that ϕ did not happen. Rather, what the speaker is saying is that, from the perspective of some past point, it was still uncertain whether ϕ was going to happen or not (cf. Mastop 2005 for a similar point). If, even from that perspective, the speaker is sure as to whether ϕ is going to happen, the RI in question is infelicitous.

(31) # ¡Haber cogido el metro! Pero ya sabía que no
have.1SG taken the subway but already knew.1SG that not
ibas a haberlo cogido.
went.2SG to have taken.CL
"You should have taken the subway! But I already knew you weren't going to."

2.2.4 Agentivity requirement

If we utter an imperative ϕ!, the felicity of the utterance usually requires that the addressee be capable of deliberately performing actions that cause ϕ to happen. If we build an imperative on a predicate that prototypically takes a theme or an experiencer subject, then that predicate has to be coerced into an agentive reading. As an illustration, the following examples can only be interpreted as implying that boredom is something that one can actively induce on oneself.[6]

(32) a. Get bored!
b. ¡Abúrrete!
bore.IMP.CL
"Cause/allow yourself to get bored!"

The same type of coercion arises in RIs.

(33) ¡Haberte aburrido!
have.INF.CL got.bored
"You should have caused/allowed yourself to be bored!"

Similarly, neither regular imperatives and RIs are felicitous with weather predicates, which are by definition non-volitional and non-agentive. Examples like the following are only acceptable in contexts where weather elements are anthropomorphized (e.g., fairy tales).

6 Theresa Biberauer (p.c.) points out that the addressee must be, if not a deliberate agent, at least a "willing undergoer". This seems necessary to account for examples like *Die!*, the prominent reading of which is not that the addressee must kill himself, but rather that he must not actively resist whatever would cause his death.

(34) a. # ¡Llueve!
rain.IMP
"Rain!"

b. # ¡Haber llovido!
have.INF rained
"You should have rained!"

2.2.5 Coordination with declaratives

Kaufmann (2012), amongst others, observes that the coordination of an imperative and a declarative clause typically has a modal subordination reading — i.e., the declarative is interpreted as a consequence of carrying the imperative out. After Kaufmann, I call this class of sentences *Imperative and Declarative*, or *IaD*.

(35) a. Study hard and you will pass the exam.
[= You must study hard! If you do, you'll pass the exam]

b. Estudia duro y aprobarás el examen.
study.IMP hard and pass.FUT.2SG the exam
"You must study hard! If you do, you will pass the exam"

RIs can also appear as the first conjunct of an *IaD*, with a concomitant tense change in the second conjunct.[7]

(36) Haber estudiado duro y habrías aprobado el examen.
have.INF studied hard and would.have passed the exam

7 Somewhat unexpectedly, disjunction with a declarative (*IoD*, again following Kaufmann's terminology) is not possible with RIs, even though it is allowed with regular imperatives.

(i) a. ¡Estudia duro o suspenderás el examen!
study.IMP hard or fail.FUT.2SG the exam
"Study hard! Otherwise, you'll fail the exam."

b. * ¡Haber estudiado duro o habrías suspendido el examen!
have.INF studied hard or would2SG have failed the exam
"You should have studied hard! Otherwise, you would have failed the exam."

However, the unacceptability of the following examples shows that this is not a restriction on RIs, but rather a generalized restriction on disjunction of two past counterfactual expressions. I will not attempt to provide an analysis of the deviance of these cases.

(ii) a. * You should have studied hard or you would have failed the exam!

b. * ¡Deberías haber estudiado duro o habrías suspendido el examen!
should.2SG have studied hard or have.COND.2SG failed the exam
"You should have studied hard or you would have failed the exam!"

"You should have studied hard! If you had, you would have passed the exam"

The examples above illustrate what Kaufmann calls Type I IaDs. There exists also a Type II, illustrated below. Unlike in Type I, in Type II we are not commanding the addressee to comply with the imperative — rather, we are commanding her to *not* comply with it, lest some undesirable consequences ensue.

(37) a. Neglect your studies and you'll never find a decent job.
[= Don't neglect you studies! If you do, you'll never find a decent job.]

b. Descuida tus estudios y nunca llegarás a encontrar un
neglect.IMP your studies and never end.up.FUT.2SG to find a
trabajo decente.
job decent
"Don't neglect your studies! If you do, you'll never manage to find a decent job"

As expected, RIs can also be first conjuncts in Type II IaDs.

(38) Haber descuidado tus estudios y ya verías como no
have.INF neglected your studies and already would.see.2SG how not
habrías encontrado un trabajo decente.
would.have found a job decent
"It's a good thing you didn't neglect your studies! If you had, I bet you that you would have never found a decent job"

2.3 Interim summary

Table 1 below summarizes the parallelisms between regular imperatives and RIs. On the basis of these results, I believe it is justified to treat RIs as a subclass of imperatives, as Bosque (1980) originally proposed.

3 Additional properties of RIs

3.1 Temporal interpretation

I have stated above that RIs have a past counterfactual meaning. To clarify what I mean by this, I am going to adopt the characterization of past counterfactuality in Condoravdi (2002:62), which she refers to as "backwards-then-forwards shifting modality".

(39) *Backwards-then-forwards-shifting modality*
ϕ is true at $\langle w,t \rangle$ if:

	IMPERATIVES	RIs
have a truth value	no	no
can be embedded	no	no
allow first person subjects	no	no
speech act variability	yes	yes
speech act concordance	yes	yes
epistemic uncertainty	yes	yes
necessarily agentive subjects	yes	yes
first conjunct of IaDs	yes	yes

Table 1 properties of imperatives and RIs

a. there exist w', t', t'' such that the following three conditions hold:
   i. $t' \prec t$
   ii. $t' \prec t''$.
   iii. $w' \in \bigcap f(w,t')$, for some conversational background f.
b. ϕ is true at $\langle w', t'' \rangle$ and false at $\langle w, t \rangle$.

In words, in a past counterfactual construction, the modal does not take the present of the actual world as its input; rather, it takes a point in the past of the actual world, and then returns a set of possible worlds lying on the future of that past point. Importantly, and as Condoravdi (2002:75) notes, "there is no restriction that the relevant state of affairs obtain before the time of utterance". The following two examples (adapted from Biezma 2010) show that RIs can denote something that should counterfactually have happened in our future.

(40) *Scenario: I buy a cake from the bakery. As I return home, my housemate breaks the news that tomorrow the bakery in question is having a 50% discount on all cakes. When I start lamenting how much money I could have saved, my housemate replies:*

¡Haber comprado la tarta mañana!
have.INF bought the cake tomorrow
"You should have bought the cake tomorrow!"

(41) *Scenario: you are about to make your first soufflé and you would like John, soufflé expert, to help you. You know he'll be away until next Tuesday, but decide not to wait and the result is a fiasco. Sarah comes into the kitchen and sees the obviously unsuccessful soufflé. As you start explaining what happened, she replies:*

¡Haber hecho el soufflé el martes que viene!
have.INF made the soufflé the tuesday that comes
"You should have made the soufflé next Tuesday!"

Note that the counterfactual reading is obligatory. As the following example shows, RIs cannot be used to express epistemic necessity.

(42) * Has llegado a tiempo. ¡Haber cogido el metro!
have.2SG arrive to time have.INF taken the subway
"You are on time. Therefore, you must have taken the subway"

Similarly, RIs do not support a future perfect reading, i.e., they cannot be used to indicated that some event is required to be completed at some point in our future.

(43) *Scenario: a report on the project we are working on is due by the end of the week. You volunteer to write it up, but I want to emphasize that it is really essential that the report be submitted in time. I exhort:*

¡Haber terminado el informe antes del fin de semana!
have.INF finished the report before of.the weekend
"Be done with the report before the weekend!" (intended)

3.2 Expressive semantics

Bosque (1980:417–418) observes that RIs have a limited discourse distribution. They may only be used in three contexts, the first of which being "after the addressee excuses himself trying to avoid a reprimand he deserves", which Bosque illustrates with the following example:

(44) A: Siento mucho llegar tan tarde.
be.sorry.1SG lots arrive so late
"I'm sorry I'm so late"

B: ¡Haber salido antes de casa!
have.INF left earlier from home
"You should have left home earlier!"

Second, RIs can also be used "to suggest that the listener has missed or failed to use some particular option in a previous situation". The following is the example that Bosque provides.

(45) A: Ayer me encontré a María por la calle.
yesterday CL found to María on the street
"Yesterday, I came across María on the street"

B: ¡Haberla invitado a la fiesta!
have.INF.CL invited to the party
"You should have invited her to the party!"

Finally, RIs can also be used "to express some kind of scolding for having or not having done something after the speaker's words suggest to the addressee that he is in some way responsible for it". As above, the following is the example Bosque provides as an illustration.[8]

(46) A: ¡Hay que ver lo mal que va el país!
must that see the bad that goes the country
"I can't believe the country is doing so badly!"
B: ¡No haber votado a UCD!
not have.INF voted to UCD
"You shouldn't have voted for UCD!"

Biezma (2010, 2011) summarizes the usage restrictions of RIs by saying that they "are pretty rude" and that they "carry a sense of obviousness that can be paraphrased in English by *duh!*". A more verbose description might go as follows. A modal construction like (1) is the default way of expressing past counterfactuality; it simply conveys the meaning that the current world would be a better one if certain past events had unfolded differently. An RI like (2) has the same descriptive content, but with an additional shade of meaning pertaining to the speaker's attitude towards the addressee, namely:

(47) *Expressive meaning of an RI*
From the speaker's perspective, the addressee had a reasonably good opportunity to have taken an alternative course of action that would have led us to a better world. The fact that the addressee failed to take this course of action is seen by the speaker as particularly unwise or unreasonable.

The first sentence of (47) applies to regular imperatives as well as to RI. Both classes of sentences are felicitious only if the speaker considers that the addressee is reasonably capable of complying with it (e.g., if I'm playing basketball with an out-of-shape, five-foot-tall friend, *Dunk it!* can only be interpreted sarcastically, not as an actual imperative; if my friend is instead a seven-foot-tall collegiate player, a command/request interpretation is unproblematic). It is the second sentence of (47)

8 Background information for (46): UCD (Unión de Centro Democrático) was the governing party in Spain from 1977 until 1982. At the time of publication of Bosque (1980), UCD's approval ratings were quickly declining, due mainly to the economic crisis affecting the country. This decline would eventually result in the resignation of president Adolfo Suárez in 1981, a landslide electoral defeat in 1982, and the party's permanent dissolution in 1983.

that holds of RIs but not to regular imperatives. In a nutshell, a speaker who utters an RI is effectively saying that the fact that the current world is a suboptimal one is the addressee's fault, because the addressee should have known better. Neither regular imperatives nor modal constructions are restricted in this way; more accurately, regular imperatives and modal constructions may receive this kind of interpretation, but, unlike RIs, this is not a necessity.

RIs that are not commands also exhibit these shades of meaning; consider, for instance, the retrospective invitation in (22), repeated below as (48). B's utterance implies that he believes (a) that A had the time to drop by for a drink; and (b) that A should have been aware of this fact and have acted consequently (i.e., B considers the fact that A did not stop for a drink a social *faux pas*).

(48) A: El martes tuve que ir a tu barrio a hacer unos
the tuesday had.1SG that go to your neighborhood to do some
recados.
errands
"On Tuesday I was running errands around your neighborhood"

B: ¡Pues haberte pasado por mi casa a tomar algo,
PRT have.INF.CL gone through my house to have something,
hombre!
man
"Dude, you should have dropped by my place to have a drink!"

Similarly for the permissive RI in (20), repeated as (49): here, the conductor is conveying (a) that the addressee had ample time to visit the restroom; and (b) that the addressee should have been aware of how much time was left until departure (e.g., because train departure times are prominently displayed throughout the station).

(49) *Passenger tells train conductor that he rushed to the platform because he thought he was going to miss the train. As a consequence, he couldn't go to the restroom. Conductor replies:*

Hombre, no hacía falta que se apresurara usted tanto, que
man not was necessary that CL rush.2SG.POL you.POL so much that
no vamos a salir hasta las 8. Haber ido al baño con
not go.1PL to leave until the 8 have.INF gone to.the restroom with
tranquilidad.
calm.
"There was no need to rush, sir, we weren't going to leave until 8pm anyway. You could have taken your time and gone the restroom"

As an aside, note that these two RIs are not necessarily interpreted as rude, contrary to what Biezma (2010) claims (see above). By uttering an RI, the speaker is

expressing dissatisfaction or disagreement with the addressee's past actions. The perceived level of rudeness of an RI is arguably depends on a variety of factors, e.g., the actual meaning of the RI, the context in which it is uttered, the depth of the speaker's dissatisfaction, and others.

3.3 Preference for linguistic antecedents

The final notable property of RIs, noted both in Bosque (1980) and Biezma (2010, 2011) is that they typically cannot be discourse initial utterances. In this respect, RIs differ from regular imperatives, which can be discourse-initial utterances without any problem. Specifically, Biezma (2011) provides the following example to illustrate this point.

(50) *Scenario: You are about to make you first soufflé and you would like John (soufflé expert) to help you, but you think he will be away until next Tuesday. You decide not to wait and the result is a fiasco. Sarah, who knows all this, comes into the kitchen and sees the obviously unsuccessful soufflé. Before you can say anything, she tells you:*

¡Haber hecho el souflé el martes!
have.INF made the soufflé the Tuesday
"You should have made your soufflé on Tuesday!"

However, this restriction should be viewed as a tendency rather than an absolute. As (51) shows, given a sufficiently informative non-linguistic context, RIs are felicitous discourse-initial utterances.

(51) *Scenario: during a soccer match, two players break the offside trap and are left two-on-one against the opposing goalkeeper. Player A is carrying the ball; it is obvious to everyone that if he passes it to Player B, then B will be able to score unopposed. Instead of doing so, A attempts to dribble the goalkeeper and ends up ruining the scoring chance. Enraged, B shouts at him:*

¡Habérmela pasado, joder!
have.INF.CL.CL passed dammit
"You should have passed me the ball, dammit!"

4 The modal analysis of imperatives

4.1 Summary of the basic aspects

As already mentioned, Grosz (2011) and Kaufmann (2012) both propose that imperatives contain a phonetically null modal operator IMPMOD. Kaufmann (2012:86–

87) offers the following prose definition this operator, which makes it clear that she conceives of it as a standard Kratzerian modal.

> I propose that imperatives contain a modal operator that is interpreted as human necessity with respect to a modal base f and an ordering source g. The wide variety of functions/readings is then to be explained in terms of choices for f and g. [...] An imperative ϕ! is interpreted as a function that maps a world w to the truth-value 1 if the worlds in $\bigcap f(w)$ that verify as much of $g(w)$ as possible (the $g(w)$-best worlds in $\bigcap f(w)$) are ϕ worlds.

The modal operator in question is formally defined as follows (Kaufmann 2012:101). Note that this definition already includes two time-related lambda terms: t is the utterance time, which is bound by a tense morpheme in T^0, and t' is the event frame, which is contextually determined.

(52) $[\![\textsc{ImpMod}]\!]^c = \lambda f \lambda g \lambda t' \lambda P_{\langle i,st\rangle} \lambda t \lambda w.(\forall w' \in O(f,g,t,w))[P(t')(w')]$.

a. IMPMOD is defined only if it is not the case that $t' \prec t$ (the event frame t' does not strictly precede the evaluation time t).[9]

b. If defined,

i. $O(f,g,t,w) = \{v \in \bigcap f(t,w) \mid \forall z \in \bigcap f(t,w) : z \leq_{g(t,w)} v \rightarrow v \leq_{g(t,w)} z\}$

ii. $\forall v,z \in W : v \leq_{g(w)} z$ iff $\{p \mid p \in g(w) \wedge z \in p\} \subseteq \{p \mid p \in g(w) \wedge v \in p\}$

9 Kaufmann considers an alternative entry for IMPMOD based on Condoravdi's (2002) proposal that modals expand the evaluation time forward, opening up an interval that extends into the future. Formally:

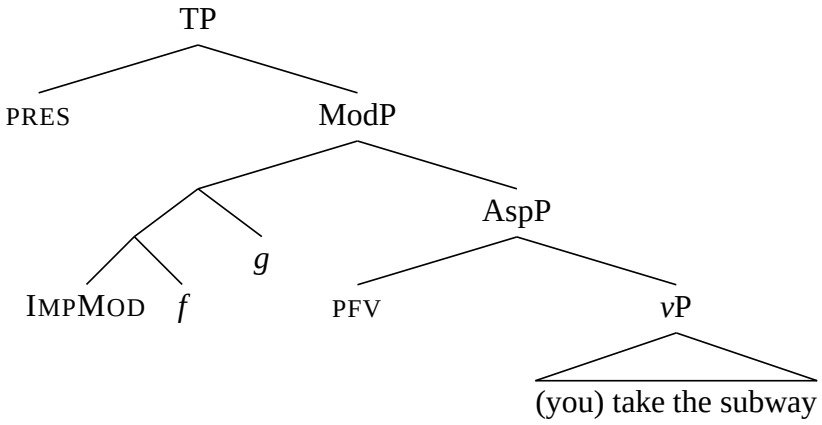
(i) $[\![\textsc{ImpMod}]\!]^c = \lambda f \lambda g \lambda P_{\langle i,st\rangle} \lambda t \lambda w.(\forall w' \in O(f,g,t,w))[P([t,\_))(w')]$

However, Kaufmann rejects this proposal on the basis of examples like (ii), in which the evaluation of the imperative has to partially take place in the past of the utterance time. She writes (p. 97): "assume that (ii) is issued at a time t such that Cécile has already been in Greece for a week at t and is to stay there for one more week. Intuitively, the total amount of calls you give her should be computed for the entire time, not just for the week starting from t. That is, if you have already called her twice, you may only call her once more". As she points out, the formulation in (i) derives the unavailable reading in which only calls placed in the future of t count towards the maximum of three. Hence the need for clause (52a), which allows part of the event frame to precede the evaluation time.

(ii) Don't call Cécile more than three times while she is in Greece!

The tree structure for a regular imperative like *Take the subway!* is given in (53) below, and the denotations of the nodes immediately after (interested readers are referred to chapter 3 of Kaufmann 2012 for a much more detailed exposition).[10] In prose, the aspectual (perfective) operator PFV turns *v*P into a constituent of type $\langle i,st\rangle$ (a function from intervals into propositions) so as to enable composition with IMPMOD. The structure up to the ModP node denotes a set of sets of worlds in which the event of you taking the subway has taken place. Above ModP, PRES binds the time variable, causing the worlds in question to lie (at least partially) in the future of the utterance time. More concisely, we are contemplating possible future worlds in which you take the subway. So far, the semantics of imperatives is analogous to that of standard modal expressions, just as Kaufmann intends.

(53) *The compositional semantics of an imperative*



(54) a. $[\![\ v\text{P}\ ]\!]^c = \lambda e\lambda w.\textsf{you-take-subway}(e)(w)$

b. $[\![\ \text{PFV}\ ]\!]^c = \lambda P\lambda t\lambda w\exists e[\tau(e) \subseteq P(e)(w)]$

c. $[\![\ \text{AspP}\ ]\!]^c = \lambda t\lambda w\exists e[\tau(e) \subseteq t \wedge \textsf{you-take-subway}(e)(w)]$

d. $[\![\ \text{IMPMOD}\ ]\!]^c = \lambda f\lambda g\lambda t'\lambda P_{\langle i,st\rangle}\lambda w.(\forall w' \in O(f,g,t,w))[P(t')(w')]$

e. $[\![\ \text{ModP}\ ]\!]^c = \lambda t\lambda t'\lambda w(\forall w' \in O(f,g,t,w))$
$[\exists e[\tau(e) \subseteq t' \wedge \textsf{you-take-subway}(e)(w')(t')]$
defined if it is not the case that $t' \prec t$

f. $[\![\ \text{PRES}\ ]\!]^c = \textsf{now}$

g. $[\![\ \text{TP}\ ]\!]^c = \lambda w.\lambda t'(\forall w' \in O(f,g,\textsf{now},w))$
$[\exists e[\tau(e) \subseteq t' \wedge \textsf{you-take-subway}(e)(w')(t')]]$
defined if it is not the case that $t' \prec \textsf{now}$

10 A note of clarification: in semantic representations throughout this article, lexical items in the object language are given in the object language in question and typeset in a regular font; lexical items in the metalanguage are given in English irrespective of the object language and are typeset in a sans serif font.

On the assumption that the world variable w corresponds to the current world w_0, and that the event frame can be existentially bound,[11] the last line of this derivation can be rewritten as in (55). In prose, there is a time interval t', which lies at least partially in the future of utterance time, such that, in every world that is accessible from $\{w_0, \mathsf{now}\}$ (with accessibility being in turn dependent on the specific choices for f and g), the event of the addressee taking the subway takes place during t'.

(55) $[\![\text{ TP }]\!]^c = \exists t'(\forall w' \in O(f, g, \mathsf{now}, w_0))$
$[\exists e[\tau(e) \subseteq t' \wedge \mathsf{you\text{-}take\text{-}subway}(e)(w')(t')]]$
defined if it is not the case that $t' \prec \mathsf{now}$

Despite its parallelism with regular modals, IMPMOD is exceptional in one important respect — namely, in the fact that it can only be interpreted performatively, and never descriptively (truth-conditionally). This behavior contrasts with that of regular modals, which typically allow both performative and descriptive interpretations. This restriction is necessary to account for the fact that imperatives lack a truth value (section 2.1.1). Kaufmann (2012:151–163) attributes it to imperatives accepting only a certain class of conversational backgrounds, *viz.*, those that the speaker is an authority on. This is formalized as the presupposition that

> either the social status of the speaker with respect to the hearer allows him to issue an imperative that is meant to guide the actions of the latter, or the speaker possesses some rational authority with respect to an issue that he is authorized to give advice on.
> *[Kaufmann 2012:157]*.

She claims that, as a consequence of this presupposition, the imperative does not qualify as an assertion, and therefore it cannot be added to the Common Ground. Therefore, no truth value can be assigned to it either. I will come back to this issue in section 6.1 below; for the time being, I will simply assume without further comment that the lack of truth value of imperatives can be derived in some way.

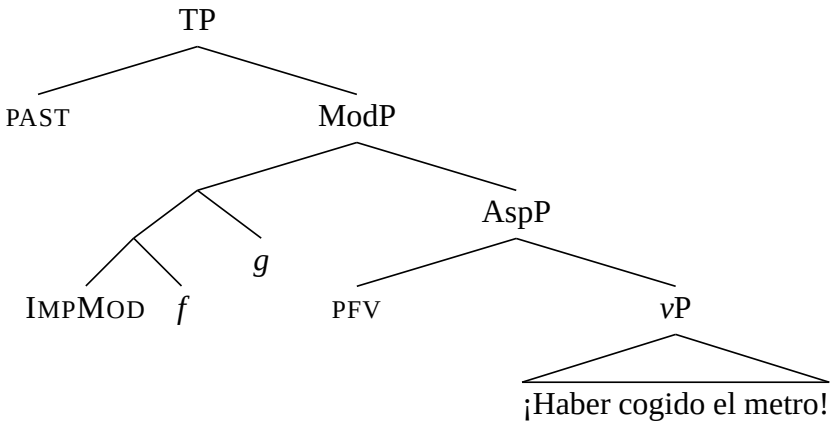
4.2 Extension to RIs

Assume that the above characterization of imperatives is essentially correct. If so, the semantics of RIs is straightforward, at least on an intuitive level. Everything reduces to ensuring that the possible worlds in question do not lie on the future of the utterance time, but rather on the future of some point in the past of the utterance time. In other words, in an RI, the time of evaluation of IMPMOD shifts from

11 The event frame can be explicitly declared through a time adverbial, e.g., *Take the subway at 3pm!*. In the absence of such an adverbial, I assume that the value of t' is contextually determined.

the present to the past of our world, so that we end up contemplating alternative presents rather than alternative futures (cf. (39) in section 3.1). The difficulty lies on expressing this intuition as a formal semantic representation. The implementation I pursue here only requires a minimal change from (53), namely, the substitution of the PRES morpheme in (53) by PAST, as in (56). As verb movement is arguably irrelevant for the semantics of this construction, I am ignoring it here; interested readers are referred instead to Rivero & Terzi (1995) and Zagona (2002). In (57a), earlier should be taken as an abbreviation of the reader's favorite way of defining a point in the past of the utterance time. As shown in (57b), this change derives the correct result.

(56) *The compositional semantics of an RI*



(57) a. $[\![\text{ PAST }]\!]^c = \text{earlier}$

b. $[\![\text{ TP }]\!]^c = \lambda w.\lambda t'(\forall w' \in O(f,g,\text{earlier},w))$
$[\exists e[\tau(e) \subseteq t' \wedge \text{you-take-subway}(e)(w')(t')]]$
defined if it is not the case that $t' \prec \text{earlier}$

c. $[\![\text{ TP }]\!]^c = \exists t'(\forall w' \in O(f,g,\text{earlier},w_0))$
$[\exists e[\tau(e) \subseteq t' \wedge \text{you-take-subway}(e)(w')(t')]]$
defined if it is not the case that $t' \prec \text{earlier}$

Aside from its simplicity (it only requires replacing PRES with PAST), this proposal also abides by Iatridou's (2000) generalization that past counterfactuality requires two separate morphemes with a past semantics — more specifically, these morphemes have to have what Iatridou calls an *exclusion feature*, which can range over either times or worlds. In RIs, one of them is the aspectual operator PFV and the other is PAST. Iatridou's generalization also offers some insight into occasional claims in the literature that RIs are, in principle, impossible. For example, Ninan (2005:20) argues that "if p is a proposition about the past, then [the addressee] can't

be reasonably expected to make *p* true, since we can't bring about past states of affairs"; Hacquard (2006:43) writes that "putting an obligation on the addressee after the fact is pointless"; and Portner (2009:194) claims that sentences like *Have sat down before now!* are infelicitous because "one cannot impose a requirement pertaining to the past". The reasoning behind such claims goes as follows: as Ninan notes (see also references therein), imperatives are equivalent to modal sentences with a performatively interpreted *must* (58). However, *you must have* sentences can only be interpreted epistemically, not past counterfactually (59). Given the equivalence in (58) and the unavailability of the reading in (59b), one might want to conclude that imperatives cannot receive a past counterfactual interpretation either.

(58) Take the subway! $\simeq$ You must take the subway!

(59) You must have taken the subway!
  a. *Epistemic:* as far as I know, you took the subway.
  b. * *Counterfactual:* you should have taken the subway, but you didn't.

Given the existence of RIs (and assuming that Bosque 1980 and me are correct in classifying them as a type of imperatives), the conclusion that past counterfactual imperatives are impossible is incorrect (in fact, if Kaufmann 2012 is correct in characterizing imperatives as modal expressions, i.e., functions into possible worlds, then there is no a priori reason why past counterfactual imperatives should not exist). However, consider now this argument from the perspective of Spanish. Example (59) is accurately translated as (60); as its English counterpart, (60) may also be interpreted only epistemically. In order to derive a past counterfactual reading, it is necessary to either use the conditional (*deberías*) or the past (*debiste*) form of the modal, which are conventionally translated into English as *should* (61)/(62).[12] Crucially, both the past and the conditional forms of the modal contain a past morpheme (namely, *-i-*) that is absent in (60).

(60) ¡Debes haber cogido el metro!
  must.2SG have taken the subway
  "You must have taken the subway!"
  a. *Epistemic:* as far as I know, you took the subway.
  b. * *Counterfactual:* you should have taken the subway, but you didn't.

12 There are some semantic differences between these two forms, which I am going to deliberately ignore here. For example (62) allows a pluperfect epistemic reading ("as far as I know, you had taken the subway") besides the past counterfactual reading, but (61) does not. Note that, in Iatridou's system, a pluperfect reading also requires two past morphemes, although it is not clear why some constructions are pluperfect/counterfactual ambiguous and others are not.

(61) ¡Deberías haber cogido el metro!
must.COND.2SG have taken the subway
"You should have taken the subway!"
a. * *Epistemic:* as far as I know, you took the subway.
b. *Counterfactual:* you should have taken the subway, but you didn't.

(62) ¡Debiste haber cogido el metro!
must.PAST.2SG have taken the subway
"You should have taken the subway!"
a. * *Epistemic:* as far as I know, you took the subway.
b. *Counterfactual:* you should have taken the subway, but you didn't.

Iatridou's proposal is that it is this additional past morpheme that allows a past counterfactual reading in (61) and (62) but not in (60). In other words, (60), and by extension (59), cannot have a past counterfactual reading because they lack an additional past morpheme. Following this line of reasoning, the availability of a past counterfactual reading in RIs strongly suggests that they must also contain a past morpheme (just like (61) and (62)), albeit a silent one. This is the PAST morpheme that I have introduced above, and which is analogous to the silent PRES morpheme that Kaufmann (2012) postulates for regular imperatives.

4.3 Evaluation and interim conclusion

In section 4.2, we have seen that the past counterfactual reading of RIs arises from the interaction between PAST and IMPMOD. This is clearly a good result. Despite this virtue, though, this analysis is defective in that it doesn't cover any other property of RIs. In particular, it doesn't offer any insights into why RIs have an expressive meaning (section 3.2) or why they can't generally be discourse-initial utterances (section 3.3). These properties don't hold of regular imperatives, and they don't follow only from a shift in the evaluation time of the modal.

However, it is instructive to examine why the modal analysis has exactly these shortcomings. The underlying cause is simple: IMPMOD, as defined in Kaufmann (2012), is meant to be a standard Kratzerian modal, and as such it only contributes quantification over possible worlds. Things like speaker attitudes and discourse restrictions are not part of its lexical semantics, so they have to stem from some other source.[13] From this, we can infer that a modal analysis is not sufficient to account for RIs. Either it has to be supplemented with an account of speaker attitudes and

13 In principle, it would be technically possible to encode these factors into the lexical entry of IMPMOD. However, this solution would conflict with Kaufmann's base assumption that IMPMOD has the same semantics as a regular overt modal. For this reason, I will not pursue this possibility.

discourse restrictions independent of the lexical semantics of the modal, or replaced wholesale by a different analysis that covers all the relevant properties of RIs.

In the remainder of this article, I will defend the first option. As I already mentioned at the end of section 4.1, Kaufmann already accepts that the semantics of imperatives have to be supplemented with some pragmatic reasoning — most prominently, a presupposition of authority that prevents imperatives from being understood as assertions. In the next section, I will argue that the pragmatic system we need is the one developed in Portner (2005, 2007), whose core idea is that imperatives are not added to the Common Ground, but rather to the To-Do List, a discourse component that tracks commitments imposed on participants in the conversation. The To-Do List, along with its associated machinery, provides a basis to understand why RIs have the pragmatic and discourse properties mentioned above, as well as why regular imperatives don't.

Importantly, Portner's analysis cannot replace Kaufmann's wholesale because, as I will show in section 5.3.2, it fails to derive the past counterfactual reading of RIs. I will argue that this aspect still needs to be derived in the semantics proper, in the manner suggested earlier in this section. These conclusions, if correct, entail that a proper treatment of RIs (and, by extension, of imperatives in general) require a combination of Portner's and Kaufmann's analyses.

5 The discourse analysis of imperatives

5.1 A brief summary of Portner (2005, 2007)

The hypothesis underlying Portner (2005, 2007) is that the morphosyntax of imperative clauses doesn't contain any modality-related elements. In order to derive the imperative meaning, Portner assumes an articulate structure for the conversation space, and then proposes that the illocutionary force of any given utterance is a function of which specific subcomponent it is filed under. He explains his proposal thus:

> The Common Ground is a set of propositions representing the information that is mutually presupposed by participants in a conversation (Stalnaker 1978). The canonical function of declaratives is to add the proposition they denote to the Common Ground. Parallel to this, others have proposed that interrogatives contribute to another discourse component, what Ginzburg calls the 'Question Under Discussion Stack' (Ginzburg 1995a,b, Roberts 1996). Along the lines of Lewis (1979), Han (1998), Potts (2003) and Roberts (2004), Portner (2005) proposes that imperatives are interpreted as contributing to a third discourse component, the To-Do List.

Portner proposes that the specific subcomponent each utterance is filed under depends on its semantic type. Propositions (declaratives) are entered in the Common Ground (*CG*), while sets of propositions (questions) go into the Question Under Discussion Stack (*Q*). To distinguish imperatives from other kinds of utterances, he proposes that they are properties that hold of specific participants in the conversation (we will return to this assumption later on). As a consequence, each participant has his or her own To-Do List (*T*), which details what he or she is committed to doing. Portner (2005) takes the subject of the imperative to be a logophoric pronoun bound by a contextual operator, so that it always refers to whoever is the addressee in a particular context. He notates this as $[\lambda x.x = \mathsf{addressee}_C]$, but in the interest of readability I will abbreviate it to AD. These assumptions result in the following semantics for imperatives.

(63) $[\![\text{Sit down!}]\!] = \lambda w.\mathsf{sit\text{-}down}(\text{AD})(w)$

In further explaining the function of the To-Do List, Portner (2007:356–357) writes the following.

> The To-Do List functions to impose an ordering on the worlds compatible with the Common Ground, and this ordering determines what actions an agent is commited to taking. [...] The Common Ground and To-Do List are both formally and intuitively parallel to the modal base and ordering source, respectively, in Kratzer's semantics for modals. In Kratzer (1981), the modal base delimits the set of possible worlds which are relevant to the interpretation of a modal, while the ordering source orders them according to some standard (e.g., laws, desires, etc.). This is just what the Common Ground and To-Do Lists do at the public, mutually presupposed discourse level. The set of worlds compatible with the Common Ground are those which will be treated as candidates for reality within the interaction, and the To-Do List of each individual will rank those worlds according to how successful that individual is in bringing about what he or she is committed to bringing about.

Definition (64), from Portner (2007:358), formalizes the ranking function alluded to in the last part of the quote above. Note that this definition, in consistency with (63), presupposes that the objects filed in the To-Do List are functions from worlds into truth values.

(64) *Partial ordering of worlds*
For any $w_1, w_2 \in \bigcap CG$ and any participant i, $w_1 <_i w_2$ iff for some $P \in T(i)$, $P(w_2)(i) = 1$ and $P(w_1)(i) = 0$, and for all $Q \in T(i)$, if $Q(w_1)(i) = 1$, then $Q(w_2)(i) = 1$.

Complementing (64), Portner (2007:358) also provides condition (65) to ensure that the addressee's actions bring us into one of the high-ranked worlds.[14]

(65) *Agent's Commitment*
For any participant i, the participants in the conversation mutually agree to deem i's actions rational and cooperative to the extent that those actions in any world $w_1 \in \bigcap CG$ tend to make it more likely that there is no $w_2 \in \bigcap CG$ such that $w_1 <_i w_2$.

With this much in place, the next step is to define a mechanism that, when fed an imperative, results in the creation of a suitable set of worlds. To this end, Portner (2007:371ff) posits a series of *parametrized selection functions* (collectively referred to by the variable h), which come in the various flavors usually attributed to non-epistemic modality (deontic, bouletic...); some of them are given in (66) below. Note that they take a set of properties or propositions because they not only need to apply to imperatives (which Portner takes to be properties), but also to performatively interpreted modal clauses (which are propositions). Given a world w, an individual x (which for the purposes of this article will be the addressee), and the set of propositions or properties Π that results from applying a given conversational background to w,[15] a parametrized selection function $h(w,x,\Pi)$ selects a subset W of Π where, for every $p \in W$, either $h(p(x)(w)) = 1$ if p is a property, or $h(p(w)) = 1$ if p is a proposition. In other words, a parametrized selection function defines the set of sets of worlds where the addressee has the obligation (or the desire, or the permission, or...) to do something.

14 As an aside, note that the formulation of (65) allows for the addressee to be judged as a rational/cooperative agent even if the prejacent of the imperative is not actually accomplished. For example, a coach can tell one of his athletes *Run the Berlin marathon in under 3 hours!*. This athlete can train hard for months and become fit enough to run that fast. However, on race day some external circumstance (e.g., an injury in the early part of the race) makes him fail short of his goal. We would agree that, although he did fail to finish in under three hours, his actions were in fact cooperative.

15 Portner (2005, 2007) is not explicit about where this conversational background is located. Given his base assumption that the morphosyntax of imperative clauses doesn't contain any modality related elements, one can only conclude that conversational backgrounds must be an independent part of the discourse component. I return to this issue in section 6, where I follow Kaufmann (2012) in assuming that conversational backgrounds in imperatives are morphosyntactically expressed as *f* and *g* morphemes.

(66) *Parametrized selection functions (Portner 2007:372)*
For any individual x, world w, and set of properties or propositions Π:

a. $\textsf{deontic}(w,x,\Pi) = \left\{ p \in \Pi : \left[\begin{array}{ll} & p \text{ expresses an obligation of } x \text{ in } w \\ \textit{or} & p(x) \text{ expresses an obligation of } x \text{ in } w \end{array} \right] \right\}$

b. $\textsf{bouletic}(w,x,\Pi) = \left\{ p \in \Pi : \left[\begin{array}{ll} & p \text{ expresses a desire of } x \text{ in } w \\ \textit{or} & p(x) \text{ expresses a desire of } x \text{ in } w \end{array} \right] \right\}$

c. similarly for $\textsf{teleological}(w,x,\Pi)$, $\textsf{circumstantial}(w,x,\Pi)$, etc.

Having defined parametrized selection functions, Portner then proposes that imperatives trigger a context update along the following lines:

(67) *The pragmatic function of imperatives*
The canonical discourse function of an imperative clause $\phi!$ is as follows, where C is a context of the form $\langle CG, Q, T, h\rangle$ and AD is the addressee:

a. $C + \phi!$ is defined if $h(w, \text{AD}, T(\text{AD}))$ is defined for every $w \in \bigcap CG$.

b. Provided that it is defined, $C + \phi! = \langle CG', Q, T', h\rangle$, where:

i. T' is just like T except that $T'(\text{AD}) = T(\text{AD}) \cup \{[\![\phi!]\!]\}$; and

ii. $CG' = CG \cup \{\{w \in \bigcap CG$: for any set of properties Π, if $h(w,\text{AD},\Pi)$ is defined, $[\![\phi!]\!] \in h(w,\text{AD},\Pi)\}\}$.

Condition (67a) ensures that an imperative is felicitous only if the Common Ground contains a salient world w and addressee AD (with the concomitant To-Do List T) that the imperative can be interpreted relative to. Assume that this much is satisfied. If so, the update function in (67b) can be better visualized as the following algorithm, triggered by the utterance of an imperative clause $\phi!$

(68) *Interpretation of an imperative*
An imperative $\phi!$ is uttered.

i. Update the addressee's To-Do List by adding to it the property denoted by the imperative. According to (63), $[\![\phi!]\!] = \lambda w.\phi(\text{AD})(w)$.

ii. Update the Common Ground by doing the following:

a. Select a parametrized selection function h out of the set in (66).

b. Define a set W of propositions or properties by deriving $h(w,x,\Pi)$, where x is the addressee, w is a salient world in the Common Ground, and Π is the set of propositions or properties that result from applying a conversational background to w.

c. Add W to the Common Ground. This updated Common Ground (CG') will function as a modal base.

iii. Use the To-Do List as an ordering source and rank the worlds in $\bigcap CG'$ according to function (64). The result is that the worlds in $\bigcap W$ are ranked higher than the worlds in its complement set within $\bigcap CG'$.

iv. By condition (65), the addressee is committed to taking actions that ensure that the actual world becomes one of the worlds in $\bigcap W$. If the addressee fails to carry out the necessary actions, she will be considered an irrational/uncooperative agent.

In prose, when we utter an imperative, we are not just adding the relevant property to the addressee's To-Do List: we are also expanding the Common Ground with a set of sets of worlds that are *h*-accessible from some salient world *w* originally in the Common Ground (typically, this will be the current world). This update, in conjunction with (64) and (65), results in the meaning of the imperative. As the reader can verify, Portner's theory of imperatives contains the basic ingredients of a modal construction (conversational backgrounds, modal base, ordering source). In this respect, it is similar to the modal analysis discussed in the previous section. Portner's innovation is that these ingredients are not encapsulated in an actual modal operator (as Kaufmann 2012 proposes), but are rather distributed among various discourse components.

5.2 Extension to RIs

If RIs are, as I have argued, a class of imperatives, they should receive the same derivation that Portner (2005, 2007) proposes for regular imperatives. The only difference ought to be the inclusion of a mechanism that shifts the time from which the set of possible worlds is constructed to some point in the past. In Portner's system, the relevant set of worlds is created by parametrized selection functions, so this is the component that needs to be affected. As a first step to formalize this intuition, I augment the definition of the functions in (66) and (67) above so that the first argument of the parametrized selection function is not just a world variable, but rather a world-time pair of variables.

(69) *Parametrized selection functions, time-aware version*
For any individual x, world-time pair $\{w,t\}$, and set of properties or propositions Π:

a. $\mathsf{deontic}(\{w,t\},x,\Pi) = \left\{ p \in \Pi : \left[\begin{array}{ll} & p \text{ expresses an obligation of } x \text{ in } \{w,t\} \\ \textit{or} & p(x) \text{ expresses an obligation of } x \text{ in } \{w,t\} \end{array} \right] \right\}$

b. $\mathsf{bouletic}(\{w,t\},x,\Pi) = \left\{ p \in \Pi : \left[\begin{array}{ll} & p \text{ expresses a desire of } x \text{ in } \{w,t\} \\ \textit{or} & p(x) \text{ expresses a desire of } x \text{ in } \{w,t\} \end{array} \right] \right\}$

c. similarly for $\mathsf{teleological}(\{w,t\},x,\Pi)$, $\mathsf{circumstantial}(\{w,t\},x,\Pi)$, etc.

(70) *The pragmatic function of imperatives, time-aware version*
The canonical discourse function of an imperative clause $\phi!$ is as follows, where C is a context of the form $\langle CG, Q, T, h\rangle$ and AD is the addressee:

a. $C + \phi!$ is defined if $h(\{w,t\}\ \text{AD}, T(\text{AD}))$ is defined for every $\{w,t\} \in \bigcap CG$.

b. Provided that it is defined, $C + \phi! = \langle CG', Q, T', h\rangle$, where:

i. T' is just like T except that $T'(\text{AD}) = T(\text{AD}) \cup \{[\![\phi!]\!]\}$; and

ii. $CG' = CG \cup \{\{\{w,t\} \in \bigcap CG$: for any set of properties Π, if $h(\{w,t\},\text{AD},\Pi)$ is defined, $[\![\phi!]\!] \in h(\{w,t\},\text{AD},\Pi)\}\}$.

Given these definitions, the difference between regular imperatives and RIs boils down to the value of the time variable t. In a regular imperative, we want t to be the utterance time, so that we can define a set of sets of worlds that are h-accessible from w at the present time. In contrast, in an RI, we want t to be some point in the past of the utterance time, so that we can define a set of sets of worlds that are h-accessible from that past point. Note that, although the technical implementation is different, the underlying intuition is the same as in section 4.2.

The following is the derivation for our baseline RI, using a modification of the algorithm in (68) that takes into account the time-aware functions in (69). Here I am simply presenting the mechanics of this hypothesis. Certain important consequences of the derivation will be discussed in section 5.3 below.

(71) ¡Haber cogido el metro!
have.INF taken the subway
"You should have taken the subway!"

i. Update the addressee's To-Do List by adding the property $\lambda w.$take-the-subway$(\text{AD})(w)$ to it.

ii. Update the Common Ground by doing the following:

a. Choose a selection function h to interpret (71). For the sake of the exercise, assume that [$h =$ deontic].

b. Define a set W of properties by deriving deontic$(\{w,t'\},\text{AD},\Pi)$, such that $\{w,t'\}$ is a salient world-time pair in the Common Ground (where [$t' =$ earlier]) and Π is the set that results from applying a conversational background to $\{w,t'\}$. The worlds in $\bigcap W$ are deontically accessible from $\{w,t'\}$, and the property [take-the-subway(AD)] is true in every $w' \in \bigcap W$.

c. Add W to the Common Ground, creating an updated Common Ground CG'.

iii. Rank all the worlds in $\bigcap CG'$ according to the algorithm in (64). The result of this is that the worlds in $\bigcap W$ (where the addressee complies with the obligation, imposed at an earlier time, of taking the subway) are ranked higher than the worlds in its complement set within $\bigcap CG'$.

iv. By condition (65), the addressee was committed, at the time that $\bigcap W$ was computed, to taking actions that ensure that the current world becomes one of the worlds in $\bigcap W$.

5.3 Evaluation

5.3.1 Virtues

There are three things that we want this analysis to account for — namely (i) the past counterfactual reading of RIs; (ii) their expressive semantics; and (iii) the impossibility of using them as discourse-initial utterances. Moreover, the analysis also ought to account for why regular imperatives don't exhibit these properties. I will discuss these in turn.

First of all, and as has already been mentioned above, the past counterfactual reading arises from the fact that the time variable that the parametrized selection function takes as part of its input is shifted to a point in our past (step (71iib)). Therefore, the worlds in $\bigcap W$ are all possible worlds lying in the future of that past point. This conforms to the characterization of past counterfactuality in (39). In contrast, in a regular imperative, the time variable corresponds to the utterance time, and therefore the relevant possible worlds lie in our future. I return to the details of this particular step in section 5.3.2 below, as it is less innocent than I have made it appear.

Second, the difficulty of using RIs as discourse initial utterances stems from the fact that the $\{w, t'\}$ pair that is inputted to h needs to be taken from the Common Ground, as per condition (70a); if the Common Ground contains no such pair, or if it is not salient enough, h is undefined. As a consequence, RIs are felicitous only if previous discourse (or, less commonly, a salient non-linguistic event, as in (51)) has resulted in there being a suitable variable pair in the Common Ground for h to take as its input. In contrast, regular imperatives don't suffer from this restriction because h may take as its input the current world at the time of utterance, which are (by assumption) a salient part of the Common Ground.

Finally, the expressive meaning of RIs (and the absence thereof in regular imperatives) arises from step (71iv). In a regular imperative, condition (65) requires the addressee to take actions that bring us into one of the high-ranked worlds; if the addressee doesn't act appropriately, she will be considered uncooperative and/or irrational. Crucially, the addressee's actions (or lack thereof) take place in the speaker's

future; therefore, at the time of uttering an imperative, the speaker doesn't have the information that will allow a judgement of the addressee's (un)cooperativeness. In other words, (65) is a tool to judge the addressee's actions as cooperative/rational (or not so) but, in the case of a regular imperative, this judgement cannot be computed at the time of utterance.

Things are different with RIs. Because the time of evaluation has been shifted to the past, the high-ranked worlds lie in the future of the relevant past point. This subinterval includes a significant portion of the speaker's past, which affords the benefit of hindsight. From the speaker's perspective in the present, it is possible to judge whether the addressee's past actions have been directed towards complying with the retroactively issued obligation. Note that this doesn't contradict Epistemic Uncertainty (section 2.2.3). From the perspective of the past, complying with imperative and not doing so are both possible courses of action for the addressee. It is only from the speaker's perspective in the present that it is possible to tell that the addressee did not comply. As a consequence, at the time of utterance, the speaker is already able conclude that the addressee was an uncooperative/irrational agent. In other words, RIs are a means for a speaker to express dissatisfaction with the addressee's past actions.

5.3.2 Problems

Despite the advantages discussed in the previous subsection, a pure discourse analysis has various shortcomings related to the manner in which it deals with the contribution of tense and aspect. Attentive readers might have noticed that the property that is added to the addressee's To-Do List in (71i) doesn't include any representation of time. Consider the consequences if it did: given that, by Portner's assumptions, imperative clauses don't contain any modal elements, a PAST morpheme in the morphosyntax of an RI could not affect the time from which the set of possible world is constructed; rather, it could only affect the time of the prejacent event. That is, the property that would be added to the To Do List would be $[\lambda w.\textsf{take-the-subway}(\textsc{ad})(\{w, \textsf{earlier}\})]$: a function that takes as its input worlds where the addressee has taken the subway at a time prior to the utterance time. This would incorrectly rule out RIs where the event in question should have counterfactually happened in the future of the time of utterance. As an illustration, consider examples (40) and (41) from section 3.1, repeated below as (72) and (73).

(72) *Scenario: I buy a cake from the bakery. As I return home, my housemate breaks the news that tomorrow the bakery in question is having a 50% discount on all cakes. When I start lamenting how much money I could have saved, my housemate replies:*

¡Haber comprado la tarta mañana!
have.INF bought the cake tomorrow
"You should have bought the cake tomorrow!"

(73) *Scenario: you are about to make your first soufflé and you would like John, soufflé expert, to help you. You know he'll be away until next Tuesday, but decide not to wait and the result is a fiasco. Sarah comes into the kitchen and sees the obviously unsuccessful soufflé. As you start explaining what happened, she replies:*

¡Haber hecho el soufflé el martes que viene!
have.INF made the soufflé the tuesday that comes
"You should have made the soufflé next Tuesday!"

At this point, the conclusion seems to be that the morphosyntax of RIs may not contain a PAST morpheme, lest a proper subset of RIs is incorrectly ruled out. One problem with this conclusion, though, is that it violates Iatridou's (2000) quite robust generalization that past counterfactuality requires two morphemes with past semantics. Additionally, a more serious problem arises — namely, that there is no formal connection between the past counterfactual reading of RIs and their morphosyntax. In section 5.2 above, we saw that if the value of the time variable in the input of the parametrized selection function can be shifted to the past, then a past counterfactual reading obtains. This is clearly, a good result. However, it is not clear how this is actually achieved. As mentioned above, we want to modify the time from which the set W is computed. Since W is the output of a parametrized selection function h, we want the interaction to happen there — i.e., we want to force h to select a $\{w, \mathsf{earlier}\}$ pair from the Common Ground. However, this cannot be directly because, as discussed above, RIs do not contain a PAST morpheme that shifts the time variable to the past. The net result is that h may take a $\{w, \mathsf{earlier}\}$ pair from the Common Ground, if one is available, but this selection does not follow from the presence of perfect morphology in the RI. In order to capture this link within Portner's base assumptions, one would have to define an additional condition to this effect. One way of doing this is by redefining selection functions as follows:

(74) *Condition on parametrized selection functions (to be rejected)*
Deontic: if the imperative has perfect morphology, then $\mathsf{deontic}(\{w, \mathsf{earlier}\}, x, \Pi)$.
Otherwise, $\mathsf{deontic}(\{w, \mathsf{now}\}, x, \Pi)$.
Similarly for bouletic, teleological, etc.

This solution is technically feasible but theoretically suboptimal. Ideally, the presence of perfect morphology in the RI should be directly correlated with the selection of a $\{w, \textsf{earlier}\}$ pair directly, rather than through the mediation of a condition like (74).

6 Towards a hybrid analysis

6.1 Preliminaries

The conclusion of section 4 was that Kaufmann's (2012) modal analysis of imperatives can capture the past counterfactual reading of RIs straightforwardly. However, as it stands, it doesn't offer any insights into the other two notable properties of RIs, *viz.*, their expressive meaning and the restrictions on discourse-initial usage. On the other hand, Portner's (2005, 2007) discourse analysis can cover the latter two properties. It can derive a past counterfactual reading too, but it fails to establish a formal link between this reading and the characteristic morphosyntax of RIs. However, the reader might have noticed that these two analyses are not necessarily mutually exclusive. Kaufmann's (2012) analysis is based on standard compositional semantics, whereas Portner's (2005, 2007) analysis takes the output of compositional semantics (i.e., a set of propositions or properties) and manipulates it in the discourse component. This difference suggests a divide-and-conquer strategy.

More specifically, Kaufmann's (2012) analysis requires an additional condition enforcing a performative, rather than descriptive, interpretation of imperatives (cf. section 4.1). Otherwise, imperative clauses would have a truth value, contrary to fact. It is unlikely that this effect can be made to follow from the compositional semantics of imperatives. Kaufmann (2012:151ff) herself assumes that the relevant condition is best stated in pragmatic terms — namely, as a presupposition on the class of conversational backgrounds that IMPMOD can take. The net effect of this presupposition is that imperatives cannot be added to the Common Ground, which derives their lack of a truth value. Kaufmann doesn't specify which discourse component imperatives are added to, but something like the To-Do List (i.e., something that keeps track of the commitments imposed on the addressee by other conversation participants) seems appropriate.

This characterization of imperatives is, however, not entirely consistent with Portner's (2007) proposals. As discussed in section 5.1, Portner postulates a set of parametrized selection functions, which take a set Π of properties or propositions and return a subset W of properties or propositions that represent the addressee's obligations, desires… In other words, parametrized selection functions take a syntactic structure that lacks modality-related subconstituents (as per Portner's assumptions about the morphosyntax of imperatives) and infuse some modality into it.

When discussing the source of Π, Portner comments that "*w* is a world compatible with the Common Ground and Π is the result of applying a conversational background to *w*". Where is this conversational background located? Kaufmann's answer is straightforward: imperatives come with silent f and g morphemes analogous to those of regular modal sentences, which are the syntactic manifestation of conversational backgrounds, and which derive the relevant flavor of modality for each sentence (cf. von Fintel & Heim 2010 for discussion). But then, if the modal flavor of imperatives can be compositionally derived, it is not clear why it needs to be derived a second time in the discourse component by means of a parametrized selection function. Below, I propose to do without parametrized selection functions, so that the output of compositional semantics is fed directly to the To-Do List.

6.2 A sample derivation

I begin by repeating here Kaufmann's (2012) semantics for regular imperatives discussed in section 4.1.[16] As in regular modal sentences, the specific flavor of modality in an imperative follows from the choices one makes for f and g. For the sake of the argument, I will assume that we are dealing with deontic necessity, but this will obviously be a point of variation among individual imperative clauses.

(75) ¡Coge el metro!
take.IMP the subway

(76) $[\![(75)]\!] = \exists t'(\forall w' \in O(f,g,\mathsf{now},w_0))$
$[\exists e[\tau(e) \subseteq t' \wedge \mathsf{you\text{-}take\text{-}subway}(e)(w')(t')]$
defined if it is not the case that $t' \prec \mathsf{now}$

The next step is to feed this expression to the To-Do List. As mentioned above, this is going to require some amendments to Portner's update function, given in (67) above. To begin with, note that Portner defines a context C as a 4-tuple of the form $\langle CG, Q, T, h\rangle$, with h being the set of parametrized selection functions that define the modality flavor of imperatives. However, I have argued above that the modality flavor of imperatives is derived compositionally through the contribution of the f and g morphemes. This eliminates the need for parametrized selection functions as an independent subcomponent of C. Thus, C is redefined as a triple $\langle CG, Q, T\rangle$. At this point, we can define a felicity condition analogous to the one in (67a), i.e.,

16 As Kaufmann pounts out, this semantics entails that RIs and regular imperatives are propositions, contrary to Portner's (2005, 2007) identification of imperatives as properties. However, note that Portner (2007) also argues that the To-Do List also accepts performatively-interpreted modal sentences, which are propositions. Therefore, if the To-Do List can accept propositions, there is no drawback in characterizing regular imperatives too as propositions.

an imperative $\phi!$ is felicitious if the Common Ground contains a salient world-time pair $\{w,t\}$ and addressee AD that $\phi!$ can be interpreted relative to.

(77) *Felicity of imperative clauses*
Given an imperative clause $\phi!$, a context C of the form $\langle CG, Q, T\rangle$, and an addressee AD, $C+\phi!$ is defined if $\phi(\{w,t\}, \text{AD}, T(\text{AD}))$ is defined for some salient world $\{w,t\} \in \bigcap CG$ and some salient addressee $\text{AD} \in \{w,t\}$.

Assume that this much is satisfied. If so, the following update function ensures that the output of compositional semantics is passed on to the To-Do List.

(78) *To-Do List update*
If $C+\phi!$ is defined, then $C+\phi! = \langle CG, Q, T'\rangle$, where T' is just like T, except that $T'(\text{AD}) = T(\text{AD}) \cup \{[\![\phi!]\!]\}$.

Note that this function is largely a reformulation of Portner's (67b-i). Here, however, I am differing from Portner in assuming that the update function only affects the addressee's To-Do List. The Common Ground remains as it was before the imperative was uttered. Recall that Portner's (2007) base assumption is that, while imperatives have a modal meaning, they do not have any modality-related morphemes. Hence, modality has to be derived entirely outside morphosyntax and compositional semantics, by using the Common Ground and the To-Do List as the modal base and the ordering source, respectively. This is no longer true in the analysis I am proposing, given that the morphosyntax of imperatives does contain the modality-related morphemes *f* and *g*, and a modal meaning can be derived through standard compositional semantics (cf. section 4). Consequently, it is sufficient to update the To-Do List alone, as a means to keep track of the commitments assigned to the addressee.

So far, we have defined the way in which imperative clauses add a commitment (properly, a set of worlds modally accessible from the current world) to the addressee's To-Do List. In order to complete the derivation, it is necessary to define an additional condition that requires the addressee to carry out the necessary actions to turn the actual world into one of the worlds defined by the commitment. This is exactly what Portner's (2007) Agent's Commitment (65) does. Here, I offer a reformulation that achieves the same effect.

(79) *Agent's commitment*
For any participant i and commitment $P \in T(i)$, the participants in the conversation mutually agree to deem i's actions rational and cooperative to the extent that those actions help make the current world become one of the worlds in P.

In example (75), the commitment that we place in the addressee's To-Do List is the set W of worlds that are deontically accessible from the current world at the utterance time, such that in every $w' \in W$ the addressee takes the subway within the contextually defined time interval t' that lies on the future of the utterance time. Condition (79) requires the addressee to deliberately carry out the actions necessary to turn the world into one of the worlds in the To-Do List — e.g., going to the station, buying a ticket, and so on. If the addressee fails to carry out said actions, she will be considered irrational or uncooperative. Importantly, as mentioned in section 5.3.1, this evaluation cannot be made at the moment the imperative is uttered, as we cannot see into our future. Consequently, a speaker cannot conventionally use a regular imperative to express a feeling of disatisfaction or disapproval with respect to the addressee's actions.

Consider now the derivation of an RI. As discussed in section 4.2, an RI differs from a regular imperative in that the time of evaluation of the modal is shifted to some point in the past of the utterance time, so that the event frame is located in the future of that past point. I repeat here the semantics for the baseline RI in (2), assuming that the world of evaluation is the actual world w_0 and that the event frame variable is existentially closed.

(2) ¡Haber cogido el metro!
have.INF taken the subway
"You should have taken the subway!"

(80) $[\![(2)]\!] = \exists t'(\forall w' \in O(f, g, \textsf{earlier}, w_0))$
$[\exists e[\tau(e) \subseteq t' \wedge \textsf{you-take-subway}(e)(w')(t')]$
defined if it is not the case that $t' \prec \textsf{earlier}$

As is the case with regular imperatives, the update function (78) adds this expression to the addressee's To-Do List. Similarly, condition (79) requires the addressee to carry out whatever actions are necessary to turn the current world into one of the worlds in (80). However, the fact that the speaker is retroactively imposing a commitment on the addressee entails that RIs and regular imperatives will behave differently in at least two points (cf. sections 3.2, 3.3, and 5.3.1). First, an imperative is felicitous if there is a salient world-time pair in the Common Ground that it can be interpreted relative to. In regular imperatives, this is the current world w_0 at the time of utterance now. By hypothesis, $\{w_0, \textsf{now}\}$ is always salient, therefore discourse-initial regular imperatives are felicitous. In contrast, the relevant world-time pair in an RI is $\{w_0, \textsf{earlier}\}$ — the current world at a time in the past of the utterance time. Given that there is a myriad of points in the past of the utterance time, it follows that an RI is felicitous only if previous discourse or a non-linguistic event establish a salient point in the past of the utterance time. In the absence of this

information (typically observed with RIs in discourse-initial position and without an accompanying non-linguistic event), RIs are judged as infelicitous.

Second, as noted above, a regular imperative imposes a commitment at the time of utterance; since we cannot see into our future, it is not possible for the speaker to determine, at the time of utterance, whether the addressee abides by the Agent's Commitment condition (79) or not. However, in an RI, the time of evaluation of the modal is shifted, so that the commitment applies at a point in the past of the utterance time. As a consequence, the event frame is going to comprise a significant subinterval of the speaker's recent past, and so the speaker will be aware that the addressee has not, in fact, complied with the commitment. Since the addressee has already failed to satisfy (79) at the time of utterance, her past actions are deemed irrational or uncooperative. As discussed in section 5.3.1, this is the source of the feeling of disatisfaction or disapproval typically associated with RIs.

6.3 Conclusions and outlook

As the discussion in the previous subsection has shown, an approach to imperatives that incorporates insights from both the covert modal analysis and the discourse analysis can capture the cluster of properties that characterize RIs. Specifically, the covert modal analysis accounts for the past counterfactual meaning of RIs, whereas the discourse analysis accounts for their expressive meaning and discourse restrictions. This, however, requires a significant weakening of the discourse analysis of imperatives, at least as presented in Portner (2005, 2007). To begin with, if we accept that the derivation of past counterfactuality in RIs requires the presence of a covert modal in the syntactic structure, then Portner's hypothesis that imperatives at large have no modality-related morphemes is obviously incorrect. In other words, the modal meaning of imperatives has to be derived compositionally, in the same way as the modal meaning of sentences with an overt modal. This is a significant result.

In turn, the conclusion that imperatives at large contain a covert modal suggests that parametrized selection functions should be eliminated as an independent discourse subcomponent. The role of these functions in Portner's work is to introduce a certain flavor of modality in clauses that don't contain modality-related morphemes. However, if one follows Grosz (2011) and Kaufmann (2012) in assuming that imperatives come with a covert modal IMPMOD that is largely analogous to a standard Kratzerian modal, then the presence of parametrized selection functions in the discourse component is redundant at best. Similarly, given that the presence of IMPMOD already derives the modal flavor of imperatives through standard compositional semantics, it is not necessary to use the Common Ground and the To-Do List as the modal base and the ordering source, respectively. What remains from

Portner, Portner's (2005, 2007) analysis is (i) the idea that imperatives, along with performatively interpreted modal sentences, are filed under a separate discourse component (the To-Do List); and (ii) and Agent's Commitment condition (79) that requires the addressee to perform whatever actions are necessary to turn the current world into one of the worlds in the To-Do List.

7 Alternative analyses of RIs

The analysis I have developed in this article relies on the assumption that RIs are a class of imperative clauses. I have provided ample justification for this assumption in section 2. The purpose of this section is to examine two potential alternative analyses where RIs are not imperatives. In the first one, which was already examined and discarded in Bosque (1980), RIs are past modal counterfactuals like (1) that have undergone a process of modal ellipsis similar to the process of auxiliary ellipsis attested in various languages. In the second one, developed by Biezma (2010, 2011), RIs are a type of reduced optative clauses. Showing that these analyses are not plausible is important because, if it turned out that RIs are not a class of imperatives, then the central theoretical argument of this paper would collapse. However, as we will see, both analyses exhibit a number of problems and shortcomings which suggest that they are incorrect.

7.1 RIs are not elliptical modal counterfactuals

Given that modal past counterfactuals and RIs have a similar meaning, one might be tempted to posit that RIs are derived through a process of modal ellipsis, parallel to the processes of auxiliary ellipsis attested in various Germanic languages (in what follows, elided constituents are rendered in a light grey font). As an illustration, consider the following Early Modern German example (Breitbarth 2005:1), where the presence of an elided auxiliary is inferred from the fact that the lexical verb *ausstehen* 'to suffer' appears in the perfect participle form *außgestanden*.

(81) die grosse Noth, welche sie in dem Schmalkaldischen Krieg
the big misery which they in the Schmalkaldian war
außgestanden [haben]
suffered have
"the big misery that they suffered in the war of Schmalkalden".

Applying this analysis to (2) gives us the following structure.

(82) ¡ [Deberías] haber cogido el metro!
should.2SG have.INF taken the subway
"You should have taken the subway"

This analysis is somewhat similar to the one I have proposed, in that RIs contain a silent modal element. The relevant question is whether the modal element in question is an inherently silent IMPMOD (as Kaufmann 2012 proposes) or an elided version of the overt *deberías*. As Bosque (1980) already noted, there are good reasons to assume that the latter option is incorrect. To begin with, there is the fact that RIs and modal counterfactuals are not actually fully equivalent to each other. As already noted above, RIs introduce an additional shade of meaning regarding the attitude of the speaker towards the hearer (section 3.2 for details), but modal past counterfactuals don't. Second, modal counterfactuals are felicitous discourse-initial utterances, but RIs are typically not (section 3.3). Additionally, RIs cannot be embedded (section 2.1.2) or have first person subjects (section 2.1.3), but these restrictions don't apply to modal counterfactuals. These differences cannot be attributed to auxiliary ellipsis, on the assumption that auxiliary ellipsis is strictly a PF process that doesn't affect narrow syntax or LF.

Furthermore, Spanish doesn't otherwise have a process of auxiliary ellipsis, so postulating one just for RIs is unjustified. Additionally, auxiliary ellipsis (in the languages that have it) behaves in a very different way. To begin with, it is largely restricted to embedded clauses (van Riemsdijk 2002:184, Breitbarth 2005:11), whereas RIs are root clauses. Furthermore, it largely targets *have* and *be* auxiliaries, and very rarely modals (Breitbarth 2005:4).[17] In contrast, in Spanish (as noted in Bosque 1980:417), one would have to restrict auxiliary ellipsis to target only modals, and specifically, only those modals with a root reading. As the following pair shows, it is not possible to use an RI to express epistemic modality, even when the corresponding overt modal sentence is unobjectionable.

(83) a. Has llegado a tiempo. Debes haber cogido el metro.
have.2SG arrived to time must.2SG have taken the subway
"You are on time. (Therefore,) you must have taken the subway"

b. # Has llegado a tiempo. Haber cogido el metro.
have.2SG arrived to time have.INF taken the subway
"You are on time. (Therefore,) you must have taken the subway"

In conclusion, an analysis of RIs based on modal deletion faces too many problems to be considered seriously. Rather, the modal in RIs must be the inherently silent IMPMOD.

17 For illustration, consider Breitbarth's (2005) corpus of Early Modern German, which contains 2446 instances of auxiliary ellipsis; out of these, only ten (0.41%) correspond to ellipsis of a modal.

7.2 RIs are not reduced optative clauses

In recent work, Biezma (2010, 2011) has proposed that RIs are not a subclass of imperatives, but rather a reduced version of optative clauses, whose full versions are exemplified in (84) for both English and Spanish. Before starting, bear in mind that the Spanish optatives that I discuss here are somewhat different in form from those in Biezma's work — specifically, she introduces optatives with *sólo si*, literally *only if*. While this collocation can introduce an optative, it is ambiguous between the optative reading and the bidirectional implication reading (*if and only if*), with a number of speakers (including myself) preferring the latter.[18] To avoid any potential confounds, I will use the alternative collocation *si tan sólo* (literally *if so much only*), which is unambiguously optative.[19]

(84) a. If only you had taken the subway!

b. ¡Si tan sólo hubieras cogido el metro!
if so much only had.2SG taken the subway
"If only you had taken the subway!"

Biezma's hypothesis is that RIs are reduced counterparts of *si tan sólo* optatives. The absence of the conditional complementizer is the consequence of conditional inversion, as exemplified in the following English pair in (85).[20]

(85) If you had taken the subway... → Had you taken the subway...

Note that Biezma's contention is not that RIs are derived from *si tan sólo* optatives through conditional inversion.[21] Rather, she proposes that Spanish has two kinds of optatives, a full version (*si tan sólo* optatives) and a reduced version (RIs). One of the differences between the two kinds is that, while *si tan sólo* optatives can appear both in the inverted and non-inverted forms, RIs may only appear in the inverted form. However, there are good reasons, both theoretical and empirical, to

18 In fact, only a very small minority of hits in a Google search for exact *sólo si* strings can potentially be interpreted as optatives. To the extent that the surrounding context clarifies their usage, the intended reading of this string in most of the hits is clearly bidirectional implication.

19 Note also that *si tan sólo* is overtly consistent Rifkin's (2000) generalization that the optative reading requires *only* to be under the scope of *if*. In contrast, the optative reading of *sólo si* requires scope reversal, which might be why a number of speakers find this reading marked.

20 Interestingly, Bennis (2001) also argued that similar sentences in Dutch (see example (99a) in section 8.1) are also reduced optative clauses. Nonetheless, Mastop (2005:73ff) provides evidence that this is not so, and that the relevant sentences should be analyzed as RIs similar to the ones discussed here.

21 This is for good reasons. Among other things, if RIs were derivationally related from *si tan sólo* optatives, one would have to postulate that conditional inversion has the ability to turn a finite verb into an infinitive. This would be highly stipulative.

doubt that *si tan sólo* optatives and RIs are just different instantiations of the same construction. In other words, what I am going to argue in this section is that, if one wishes to treat RIs as optative clauses, then one needs to classify them as an independent subtype of optatives, morphosyntactically unrelated to the *si tan sólo* type and subject to a different set of restrictions.

One immediate difficulty of Biezma's analysis has to do with the process of conditional inversion that, by hypothesis, underlies all RIs. Consider first the situation with regular optatives. Rifkin (2000) shows that conditional inversion in *if only* optatives is allowed only in those languages that also allow inversion in regular conditionals. Therefore, if RIs necessarily exhibit conditional inversion, then we would expect Spanish to exhibit inversion in regular conditionals too. In this respect, Biezma (2010) writes: "a survey shows that [conditional inversion] is perfectly common in rural areas in Castille [...] but less used in urban areas, although speakers from urban areas recognize the construction as part of a rural dialect".[22] Given this variation, we would expect the availability of RIs to correlate with the availability of conditional inversion. However, this is not so: an informal survey among 12 speakers from the Basque Country and Catalonia reveals that they all find RIs fully grammatical while judging inversion in regular conditionals as degraded (this is also my judgement). This asymmetry suggests that RIs and *si tan sólo* optatives are independent constructions. Otherwise, one would have to stipulate that Rifkin's generalization holds only for full optatives — i.e., conditional inversion can apply to reduced optatives regardless of whether it can apply to regular conditionals and full optatives.

Beyond this typological issue, a reduced optative analysis faces various additional empirical problems. These problems reduce to the fact that, by grouping *si tan sólo* optatives and RIs as variants of the same construction, Biezma (2010, 2011) analysis predicts that their distributions ought to be similar. In reality, though, the distributions of these two classes of clauses are only partially overlapping. In other words, there exist *si tan sólo* optatives without a corresponding RI, as well as RIs without a corresponding *si tan sólo* optative. Note that the problem is not that these asymmetries exist: in principle, they could be derived from an reduced optative analysis of RIs supplemented with some additional restrictions. The actual problem is that, as we will see below, these asymmetries follow straightforwardly if one assumes that RIs are a subclass of imperatives. In contrast, an analysis where RIs

22 This characterization contradicts Iatridou & Embick's (1993) classification of Spanish as one of the languages that do *not* allow conditional inversion. Although they do not cite any sources, one can imagine that their data came from speakers for whom conditional inversion is not possible. However, a number of speakers that I have surveyed volunteered comments that support Biezma's claim — namely, that while they themselves find conditional inversion ungrammatical, they recognize it as characteristic from rural dialects in the central part of Spain.

are reduced optatives raises the question of why they exhibit a series of properties inherent to imperatives.

Consider first the case of RIs without a corresponding *si tan sólo* optative. First of all, an RI can function as a consequent to a preceding regular conditional antecedent, but a *si tan sólo* optative cannot. Note that this problem doesn't arise if RIs are treated as imperatives, as imperatives can function unproblematically as conditional consequents.

(86) a. * Si querías haber llegado a tiempo, ¡si tan sólo
if wanted.2SG have arrived to time if so much only
hubieras cogido el metro!
had.2SG taken the subway
"If you wanted to have arrived on time, if only you had taken the subway!"

b. Si querías haber llegado a tiempo, ¡haber cogido el
if wanted.2SG have arrived to time, have.INF taken the
metro!
subway
"If you wanted to have arrived on time, you should have taken the subway!"

(87) Si quieres llegar a tiempo, ¡coge el metro!
if want.2SG arrive to time take.IMP the subway
"If you want to arrive on time, take the subway!"

Second, recall example (21) from section 2.2.1, repeated here as (88): the speaker bakes a batch of cookies and then leaves the house for some time. While she is out, her flatmate eats the whole batch except for one single cookie. Upon returning and witnessing the result of his binging, she can (sarcastically) tell her flatmate:

(88) ¡Haberte comido la última también, tragaldabas!
have.INF.CL eaten the last too glutton
"Why didn't you eat the last one too, you pig?"

In contrast, a *si tan sólo* optative is infelicitous in this context. The reason for the observed infelicity is that optative clauses are restricted to the expression of wishes and hopes (Palmer 1986), therefore (89) can only be interpreted as the speaker genuinely wishing that her flatmate had eaten the last cookie too.

(89) # ¡Si tan sólo te hubieras comido la última también, tragaldabas!
if so much only CL had.2SG eaten the last too glutton
"If only you had eaten the last one too, you pig!"

To complete the paradigm, consider the felicity of a regular imperative in a comparable context.

(90) *Context: the speaker bakes a batch of cookies and then leaves the house for some time. Upon returning, she catches her flatmate in the proces of eating the cookies, with only one left to go. Enraged, she tells him:*

¡Ya que estás, comete la última también, tragaldabas!
now that are.2SG eat.IMP.CL the last too glutton
"Since you are at it, go ahead and eat the last one too, you glutton!"

The same contrast obtains with the retrospective dare/threat given in (23), repeated below as (91a).

(91) a. ¡Haberme dicho todo eso a la cara, gilipollas!
have.INF.CL said all that to the face asshole
"You didn't dare say that in front of me, asshole!"

b. # ¡Si tan sólo me hubieras dicho eso a la cara, gilipollas!
if so much only CL had.2SG said that to the face asshole
"If only you had said that in front of me, asshole!"

c. ¡Dime todo eso a la cara, gilipollas!
say.IMP.CL all that to the face asshole
"Say that in front of me, asshole!"

Third, as shown in subsection 2.2.5, an RI can appear as the first conjunct of an IaD sentence, just like a regular imperative. In contrast, a *si tan sólo* optative cannot. A *si tan sólo* optative can induce a modal subordination reading on a subsequent declarative clause, but only if they are uttered as independent, uncoordinated sentences (93).

(92) a. ¡Haber estudiado duro y habrías aprobado el
have.INF studied hard and would.have.2SG passed the
examen!
exam
"You should have studied hard! If you had, you would have passed the exam."

b. * ¡Si tan sólo hubieras estudiado duro y habrías
if so much only had.2SG studied hard and would.have.2SG
aprobado el examen!
passed the exam
"If only you had studied hard and you would have passed the exam!"

(93) ¡Si tan sólo hubieras estudiado duro! Habrías aprobado el
if so much only had.2SG studied hard would.have.2SG passed the
examen.
exam
"If only you had studied hard! (Then) you would have passed the exam!"

Consider now the reverse case, i.e., *si tan sólo* optatives without a corresponding RI. First of all, there is the fact *si tan sólo* optatives have a non-past counterfactual version (what Iatridou 2000 calls a *future less vivid*), but RIs do not. Example (94a) can only receive an impersonal imperative reading ("Someone take the subway!"), as discussed in Biezma (2008).[23] The non-past version of an RI is a regular imperative.

(94) a. * ¡Coger el metro!
take.INF the subway
"You should take the subway!" (intended)

b. ¡Si tan sólo cogieras el metro!
if so much only took.2SG the subway
"If only you took the subway!"

Second, RIs require their subject to be a volitional agent, and therefore are ungrammatical with weather predicates and other non-agentive or non-volitional predicates. As shown in section 2.2.4, RIs pattern with imperatives in this respect. *Si tan sólo* optatives, on the other hand, are not subject to this restriction.

(95) a. * ¡Haber hecho bueno!
have.INF made good
"The weather should have been good"

b. ¡Si tan sólo hubiera hecho bueno!
if so much only had.3SG made good
"If only the weather had been good!"

23 Interestingly, the Hungarian equivalent of (94a) is grammatical (i). This is relevant because the Hungarian construction is arguably not an imperative, but an actual *if-less* optative clause (cf. É. Kiss 2011). This analysis is supported by the fact that (i) exhibits the same verbal morphology as regular counterfactual conditional antecedents. If Spanish RIs were reduced optative clauses, then we would expect, by analogy with Hungarian, that (94a) should be acceptable.

(i) Járnál haza idejében!
came.COND.2SG home in time
"If only you came home in time!"

Third, RIs cannot have first person subjects, in the same way as imperatives (cf. section 2.1.3). As in the previous case, *si tan sólo* optatives are not restricted in this way.

(96) a. * ¡Haber cogido el metro (yo)!
have.INF taken the subway I
"I should have taken the subway"

b. ¡Si tan sólo hubiera cogido el metro (yo)!
if so much only had.1SG taken the subway I
"If only I had taken the subway!"

Fourth, a *si tan sólo* optative allows embedding of a possibility modal under the auxiliary, but an RI does not. As in the previous cases, regular imperatives are also incompatible with overt possibility modals (in fact, overt modals tend to lack morphologically imperative forms; the form *puede* in (98), while morphologically well-formed, is actually judged as degraded).

(97) a. ¡Si tan sólo hubieras podido coger el metro!
if so much only had.2SG could taken the subway
"If only you had been able to take the subway!"

b. * ¡Haber podido coger el metro!
have.INF could taken the subway
"You should have been able to take the subway!"

(98) * ¡Puede coger el metro!
can.2SG.IMP take the subway
"Be able to take the subway!"

Finally, there is the fact that *si tan sólo* optatives, *qua* conditional antecedents, are embedded clauses — in a conditional structure, the consequent is the root clause and the antecedent is a clausal modifier subordinated to the consequent (Kratzer 1986). If RIs are analyzed as reduced conditional antecedents with a covert consequent (as Biezma 2010, 2011 does), then they would also have to be classified as embedded clauses. However, this conclusion would conflict with the generalization (section 2.1.2) that, in the same way as imperatives, RIs cannot appear as embedded clauses.

I conclude, therefore, that RIs cannot be treated as a reduced form of *si tan sólo* optatives. If they are optatives at all, they must be an independent type of optatives morphosyntactically unrelated to the *si tan sólo* type and exhibiting a significantly different range of properties. I do not think, however, that this would be a viable line of analysis. As noted above, RIs share a large number of properties with regular imperative clauses. Therefore, one cannot claim that RIs are a subclass of optatives

without also claiming that imperatives clauses at large are also a subclass of optatives. This kind of claim would require an unwarranted expansion of the definition of optativity.

8 Known issues

8.1 Typology of RIs

The analysis of RIs I have proposed here is relatively simple, in that it only requires an analysis where imperatives are compositionally analogous to modal sentences (*pace* Kaufmann 2012) plus the postulation of a PAST morpheme in T^0. Consequently, one would expect RIs to be quite common crosslinguistically, but in reality this is not so. Spanish is the only language I am aware of that exhibits infinitival RIs. If we cast our net a bit wider to include finite RIs, then we find Dutch (Mastop 2005) and Syrian Arabic (Palmer 1986), both cited in van der Wurff (2007). Specifically interesting for the purposes of this paper is Mastop's (2005:73ff) observation that, in Dutch, the obligation expressed by the RI is seen as holding at the point in time where an option was possible, rather than at the time of utterance — i.e., Dutch RIs have exactly the same past counterfactual meaning as Spanish RIs (note that, as I did for Spanish in section 7.2, Mastop explicitly argues against Bennis's 2001 proposal that Dutch RIs are reduced optative clauses).

(99) a. Was toch thuisgebleven!
you.were PRT home-stayed
"You should have stayed at home!" *[Dutch]*

b. kənt ko'!
you.were eat.IMP
"You should have eaten!" *[Syrian Arabic]*

Additionally, Patrick Grosz (p.c.) points out that examples like the following are productively attested in Austrian German. The status of these examples in Standard and Northern German is subject to a great deal of idiolectal variation, though. Especially interesting in this respect is (100c), which was found on a hand-written sign placed on the fence of a private garden in Vienna (the verb *hätt's* is a contraction of *hättets*, the Bavarian/Viennese realization of second person plural morphology; its equivalent in Standard German is *hättet*). Unlike (100a) and (100b), this example can't be alternatively interpreted as an inverted *if only* optative (cf. section 7.2 for a discussion of this hypothesis); rather, it only accepts an RI interpretation.

(100) a. Warum bist du schon zurück? Wärst du ruhig länger auf der
why are you already back were.2SG you PART longer at the
Party gebleiben!
party stayed
"Why are you back so soon? You should have stayed longer at the party!

b. Du brauchst dich gar nicht zu wundern! Hättest du halt
you need.2SG you.ACC at.all not to wonder had.2SG you just
eben auf mich gehört!
plain at me listened
"Don't be so surprised! You should have listened to me!"

c. An den Blumendieb: Blumenabschneiden auf fremden Parzellen ist
to the flower.thief flower.cutting from alien gardens is
Diebstahl! Hätt's euch selbst was angebaut!
theft had.2PL you.PL.DAT self something grown
"To the flower thief: cutting flowers from other people's gardens is theft! You should have grown something yourselves!"

However, a quick survey reveals that RIs are rare. As various colleagues have confirmed to me, RIs do not exist in typologically close Romance languages (e.g., Portuguese, Catalan, French, or Italian), nor in a variety of other European languages (English and Standard German being the more prominent ones). Although the crosslinguistic scarcity of RI is somewhat troubling for the proposal in this paper, I am not in a position to speculate on this issue.

8.2 Stative predicates

Biezma (2010) observes that, unlike regular imperatives, RIs allow stative predicates. To the extent that the (a) examples can be acceptable, the predicates must be interpreted inchoatively rather than statively.

(101) a. * ¡Sabe inglés!
know.IMP English
"Know English!"[24]

b. ¡Haber sabido inglés!
have.INF known English
"You should have known English!"

24 It is not clear to me what the singular imperative of *saber* 'to know' is. *Sabe* is the regular form, but *saber* is an irregular verb, so one could also expect the alternative *sé* to be possible.

(102) a. * ¡Comprende el teorema fundamental del cálculo!
understand.IMP the theorem fundamental of.the calculus
"Understand the fundamental theorem of calculus!"

b. ¡Haber comprendido el teorema fundamental del
have.INF understood the theorem fundamental of.the
cálculo!
calculus
"You should have understood the fundamental theorem of calculus!"

The fact that RIs allow stative readings whereas regular imperatives do not does not follow from anything I have said. For the time being, it will remain as an unsolved problem.

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