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A BINARY APPROACH TO SPANISH TENSE AND ASPECT: ON THE TENSE BATTLE ABOUT THE PAST*

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ABSTRACT. The present paper aims at accounting for the Spanish Imperfecto, Perfecto, Pluscuamperfecto and the Indefinido by applying three binary tense oppositions: Present vs Past, Synchronous vs Posterior and Imperfect(ive) vs Perfect(ive). For the sixteen Spanish tense forms under analysis a binary approach leads to covering twelve of them. Their relation with the preterital forms outside the range of the three oppositions is accounted for by two surgical operations: (a) the notion of Imperfect(ive) is severed from the notion of ongoing progress by restricting it to underinformation about completion and by seeing continuous tense forms as involving a more complex semantics; (b) the notion of (non-)stative is strictly severed from interference of information coming from the arguments of a verb. These theoretical moves make the way free for a formal-semantic insight into the interaction of Spanish tense and aspect. It also paves the way for a principled distinction between completion and anteriority. Restricted to tense forms pertaining to the past, our analysis sheds light on the struggle for survival of tense forms outside the binary system.

Keywords: tense, aspect, perfecto, pluscuamperfecto, imperfecto, indefinido, completion, aorist, anteriority, stative, nonstative, discrete, continuous, progressive, terminative, durative

RESUMEN. El presente trabajo pretende describir y explicar las siguientes formas verbales del castellano: Imperfecto, Perfecto, Pluscuamperfecto e Indefinido aplicando tres oposiciones temporales binarias: Presente vs Pasado, Sincrónico vs Posterior e Imperfecto/imperfectivo vs Perfecto/perfectivo. Este acercamiento binario cubre doce de las dieciséis formas temporales del castellano analizadas. La relación entre las formas verbales que entran en el sistema binario y las formas de pretérito que no entran en el sistema se explica por dos operaciones quirúrgicas: (a) la noción de Imperfecto/imperfectivo se separa de la noción de progresivo continuo, restringiendo el valor del Imperfecto/imperfectivo a la subinformación sobre su terminación e implicando una semántica más compleja para las formas temporales progresivas; (b) la noción de (no) estatividad está estrictamente separada de la interferencia de la información aspectual procedente de los argumentos de un verbo. Estos movimientos teóricos dan vía libre a una comprensión formal-semántica de la interacción del tiempo y del aspecto en castellano. También allana el camino para una distinción argumentada entre las nociones de terminación y anterioridad. Limitado a formas verbales del pasado, nuestro análisis ilumina la batalla por la supervivencia de las formas temporales fuera del sistema binario.

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Palabras clave: tiempo, aspecto, perfecto, pluscuamperfecto, imperfecto, indefinido, compleción, aoristo, anterioridad, estativo, no-estativo, discreto, continuo, progresivo, terminativo, durativo

1. Introduction

In the literature on tense and aspect, the sentences in (1) are generally translated into English with the help of the Progressive Form or the Imperfect.

(1) a. Lucía cantaba esa aria. (Spanish)
Lucia sing-IMP that aria
'Lucia was singing/sang that aria.'

b. Jean préparait un repas. (French)
Jean preparer-IMP a meal
'Jean was preparing/prepared a meal.'

c. Ol'ga pisala pis'mo. (Russian)
Ol'ga IMP-write letter
'Olga was writing/wrote a letter.'

This raises the problem of how to account for the contrast between (1a,b) on the one hand and (1c) on the other. What is expressed by an imperfect tense form in Spanish and French is expressed by different means in (1c). Assuming a common semantic element IMP, one cannot escape from noting that IMP in (1a,b) expresses itself as a tense form and that in Russian IMP (1c) expresses itself by the absence of a perfectivizing prefix *na-* which occurs in (2), the perfective counterpart of (1c).

(2) Ol'ga napisala pis'mo.
Olga PERF-write a letter
'Olga wrote (and completed) a letter.'

'Poor tense' languages like Russian have to look for elements outside their tense system in order to express what is expressed by the tense element IMP in Romance languages, which have a 'rich tense' system.[1] Our point of departure for finding a common semantic element in the opposition between Russian perfective and imperfective aspect in Jakobson (1971a; b). For him, the perfective aspect in (2) expresses 'absolute completion' whereas (1c) is 'non-committal with respect to completion or non-completion'.

To be non-committal as a speaker with regard to what he/she says amounts to underinforming the hearer rather than to expressing something explicitly. Hence on the Jakobsonian line of thought followed in the present paper, by choosing the imperfective form *pisala* in (1c) speakers do not shed direct light on the ongoing nature of Olga's writing, but they underinform the hearers as to whether or not the event has been completed. This raises the question of whether the progressive gloss in (1c) is correct or not.

[1] The opposition between 'rich' and 'poor' is free from the usual connotations associated with these terms and is simply based on the number of tense forms recognized as such by grammarians.

Verkuyl (2017) rejects the popular analysis of the English Progressive Form in terms of one operator PROG—as in PROG(φ) on the basis of Dowty (1979), or in PROG(VP), proposed by Landman (1992); see also Lee (2007)—in favour of splitting PROG into two units: PROG for the copula and ING for the main verb. This makes it impossible to assume an IMP-operator for the Progressive Form as a whole and it excludes the assumption of translational equivalence: *cantaba* in (1a) cannot be seen as identical in meaning to its gloss 'was singing' and the same holds for the translation pairs in (1b) and (1c).[2] To posit a formal difference between 'non-committal as to completion or non-completion' (IMP) and 'ongoing' (progressive) has clear consequences for explaining the division of labour between the forms of a tense system. One of the aims of the present paper is to extend Verkuyl's analysis to Spanish. Essential for this analysis is a binary approach to tense as originally advocated in the nineteenth century by Te Winkel (1866).[3]

Section 2 opposes the Reichenbachian 3 × 3-matrix for the characterization of tense forms to the 2 × 2 × 2-table of an approach based on three binary oppositions. Section 3 gives a critical discussion of Reichenbach's two tripartitions making up the matrix. Section 4 surveys the main ingredients of a binary approach to tense. Section 5 provides the machinery for letting aspectual information interact with tense information. On the basis of that, section 6 describes the difference between progressive and non-continuous tense forms. This makes it possible to characterize in section 7 the tense forms outside the range of the three binary oppositions.

2. Ternary vs binary

2.1. Introduction

In this section, we will briefly sketch and compare two basic approaches to tense: the ternary and the binary approach. The first one is rooted in the organization of temporal structure derived from physics, the second one finds its roots in the cognitive organization of our experience with time.

2.2. The ternary tense approach

Reichenbach (1947) took the tripartition of the time axis into Past, Present and Future as the main division for a description of tense in natural language. This partition is firmly rooted in (naive) physics where the present is generally seen as identical to the floating point *n* (= now, the utterance time) splitting the past from the future. His position is hardly surprising given his training as a physicist but it is also grounded in a linguistic tradition dating back to the grammars of Greek and Latin, as described in e.g. Jespersen (1924: 254–300),

[2] Translational equivalence is assumed in e.g. Rohrer (1977), Squartini (1998), De Swart (2012) as opposed to Gvozdanovic (2012: 786) and Arche (2014).

[3] His original system has been made available in English in Verkuyl and Le Loux-Schuringa (1985) and in chapter 1 of Verkuyl (2008). In later chapters of that work, it has been formalized in the Montagovian semantic framework and extended in Borik et al. (2003), Broekhuis & Verkuyl (2014) and Verkuyl (2015, 2017). González (2003) offers a cross-linguistic binary analysis of tense and aspect in Spanish and Dutch. In these approaches, the use of operators in Prior (1967) is combined with the referential power inherent to Reichenbach's system. For a syntactic view on the binary tense system along the Te Winkelian line, see Broekhuis et al. (2015: 105–172). Verkuyl (2008) discusses Vikner (1985) and Lindstedt (1985) as binary tense approaches, the latter in detail (2008: 238-244).

and still visible in the nomenclature of didactic and academic grammars among which the grammars provided by The Real Academia Española.

Reichenbach (1947) improved on Jespersen by not assuming a direct relation between the point of speech S and the point E (standing for the eventuality predicated in a sentence) but by positing an extra reference point R mediating between S and E. In order to achieve this, he complemented his main division with a second tripartition Anterior-Simple-Posterior. Both partitions have the same sort of connectives, namely '<' (earlier than) , '≈' (simultaneity) and '>' (later than), for expressing the relations between S and R and those between R and E. This yields a 3 × 3-matrix with configurations of S, R and E, where S–R says that S is earlier than R (and R later than S) and where S,R represents simultaneity of S and R. Reichenbach uses the same connectives for the second partition. We will show in §3 that this makes his proposal unattractive for the Jakobsonian line of thought.

Applied to Spanish tense the crossing of the two tripartitions yields the matrix in Table 1. The translation of the Spanish examples shows that the matrix also covers the corresponding English tense forms. The configurations explain the difference between the Simple Past and the Anterior Present: in the latter, point R coincides with S, in the former with E. This masterly feature of Reichenbach's proposal accounts for its popularity: in *he cantado* E is "looked at" via R, where S and R are simultaneous, in *cantaba* E is "looked at" via R where R precedes S.

Table 1: Reichenbach's tripartitions applied to Spanish

	Past R–S	**Present** S,R	**Future** S–R
Anterior E–R	1. **Anterior Past** E–R–S *había/hube cantado* (*had sung*)	2. **Anterior Present** E–R,S *he cantado* (*have sung*)	3. **Anterior Future** E–S–R•E,S–R•S–E–R *habré cantado* (*will have sung*)
Simple E,R	4. **Simple Past** E,R–S *cantaba/canté* (*sang*)	5. **Simple Present** E,R,S *canto* (*sing*)	6. **Simple Future** S–R,E *cantaré* (*will sing*)
Posterior R–E	7. **Posterior Past** R–E–S•R–S,E•R–S–E *cantaría* (*would sing*)	8. **Posterior Present** S,R–E *cantaré* (*will sing*)	9. **Anterior Past** S–R–E *cantaré* (*will sing*)

For Spanish both the Imperfecto *cantaba* and the Indefinido *canté* receive the same treatment: the point of reference R precedes S and coincides with E. The same applies mutatis mutandis to the Pluscuamperfecto *había cantado* and Pretérito anterior *hube cantado* where in both cases R precedes S and E precedes R. The system itself does not differentiate between the two imperfect and the two preterite forms, so additional machinery is necessary.

2.3. The binary tense approach

The binary tense approach based on Te Winkel (1866) as formalized in Verkuyl (2008) captures the eight tense forms of Germanic languages like Dutch and English in terms of the three oppositions in (3). Each of them can be understood more formally in terms of an opposition between the parenthesized operators.

(3)	a. Present (PRES)	vs	Past (PAST)
	b. Synchronous (SYN)	vs	Posterior (POST)
	c. Imperfect(ive) (IMP)	vs	Perfect(ive) (PERF)

According to Te Winkel, the opposition between Present and Past in (3a) offers the possibility of seeing tense as providing an organizing perspective: one can see things that happened or were the case from the present point of view and one can 'go back' (anteriorly) to the past and talk about things that happened or were the case from the past (= then-present) point of view. Both Present and Past have now their own 'future' in a parallel way: present posteriority (e.g. *Yo pasearé* 'I will walk') and past posteriority (e.g. *Yo pasearía* 'I would walk'). We will make this cognitive outlook on the organization of tense systems more concrete in §4.

Te Winkel (1866) considered the eight forms generated by the three oppositions in (3) tense forms. He saw posteriority as being expressed by the presence of the auxilary *zullen* (will) and synchronicity as being expressed by its absence. In the same way, he applied the Dutch term *voltooid* 'completed' to the presence of the auxiliary *hebben* 'have' and the term *onvoltooid* 'incompleted' to its absence. Thus, his interpretation of the two terms *Perfectum* for *voltooid* and *Imperfectum* for *onvoltooid* comes very close to the aspectual opposition between *Perfective* and *Imperfective*.

We use the terms *Imperfect*(*ive*) and *Perfect*(*ive*) in order to provide room for the Jakobsonian position, the idea being that what is expressed by Perfectum in Dutch and English shares (a substantial part of) its content with what is expressed by Perfective in Russian. We will continue to speak of tense forms when we apply the third opposition to Dutch, English and Romance languages, while being open to the idea that (3c) is in fact an aspectual one and that (3b) can be argued to express a modal opposition. If so, the three oppositions would cover the whole Tense-Mood-Aspect (TMA) system and one could arguably restrict tense to the first opposition. This is in fact what we will do, but yet we will treat all the forms generated by the three oppositions as tense forms because they form a hierarchically organized structure with tense at the top of it.[4]

[4] A more practical reason is that didactic grammars and academic grammars maintain the tradition of calling the forms in Tables 1 and 2 tense forms.

Table 2: The Spanish tense system organized binarily

PRES	PAST	?
1a. **Presente** PRES(SYN)(IMP)(…V_{inf}…) *canto* (sing)	1b. **Imperfecto** PAST(SYN)(IMP)(…V_{inf}…) *cantaba* (sang)	1c. **Indefinido** ??(…V_{inf}…) *canté* (sang)
2a. **Futuro Simple** PRES(POST)(IMP)(…V_{inf}…) *cantaré* (will sing)	2b. **Condicional** PAST(POST)(IMP)(…V_{inf}…) *cantaría* (would sing)	
3a. **Perfecto** PRES(SYN)(PERF)(…V_{PastP}…) *he cantado* (have sung)	3b. **Pluscuamperfecto** PAST(SYN)(PERF)(…V_{PastP}…) *había cantado* (had sung)	3c. **Pretérito** ??(…V_{PastP}…) *hube cantado* (had sung)
4a. **Futuro compuesto** PRES(POST)(IMP)(…V_{PastP}…) *habré cantado* (will have sung)	4b. **Condicional compuesto** PAST(POST)(IMP)(…V_{PastP}…) *habría cantado* (would have sung)	
Continuous tenses:		
PRES	PAST	?
5a. **Presente continuo** PRES(SYN)(IMP)(…V_{PresP}…) *estoy cantando* (am singing)	5b. **Imperfecto continuo** PAST(SYN)(IMP)(…V_{PresP}…) *estaba cantando* (was singing)	5c. **Indefinido cont.** ??(…V_{PresP}…) *estuve cantado* (was singing)
6a. **Perfecto continuo** PRES(SYN)(PERF)(…V_{PresP}…) *he estado cantando* (have been singing)	6b. **Pluscuamperfecto cont.** PAST(SYN)(PERF)(…V_{PresP}…) *había estado cantando* (had been singing)	

Verkuyl (2008: 199-263) argued that the binary oppositions in (3) also apply to the rich tense systems of French, Bulgarian and Georgian, referring to González (2003) for a similar treatment of Spanish tense. Table 2 shows how eight of the ten Spanish non-continuous tenses and four of the five continuous tenses are covered binarily.[5] This sets the tense forms 1c, 3c and 5c in the column headed by a question mark apart as not interacting systematically with the tense forms under PRES and PAST.

[5] The Real Academia Española provides two sorts of nomenclature: (i) the traditional academic terminology and (ii) the terminology introduced in Bello (1847) by the influential grammarian Andrés Bello. The terms in Table 2 belong to (i) but following Fábregas (2015) we will use *Imperfecto* rather than *Pretérito imperfecto de indicativo*, *Perfecto* rather than *Perfecto compuesto* and *Indefinido* rather than *Pretérito perfecto simple*. The tense forms are given in the first person singular.

The richness of the Spanish tense system poses a problem: what to do with the forms not covered by (3)? Is there a fourth binary opposition for Spanish (and French) on top of the three? Or is one of the oppositions in (3) ternary rather than binary, as proposed for French in Lefeuvre (2014)? These questions will be discussed in §7. The binary tense operators in the second row of the cells 1a,b and 3a,b are central to the present paper. They will be analyzed in more detail in §4. Here it suffices to show their syntax: OP(φ). Each operator OP takes a φ to yield a φ, or in the case of PRES and PAST a φ′. The tense forms in cells 2 and 4 are outside our scope.

3. Problems with doubling two tripartitions

3.1. Introduction

In current discussions about tense and aspect, Reichenbach's system has maintained an authoritative status in spite of its many undisputed shortcomings. §3.2 gives a brief survey of the main architectural problems, i.e. problems that follow directly from the 3x3-set up. The problem we are interested in, however, is the somewhat neglected problem of the justification for doubling the connectives in the horizontal and the vertical tripartition of Table 1. In the first one, for example, R–S expresses anteriority because R is located earlier than S: R < S. The same holds for E–R in the second one: E < R. This means inevitably that the Jacobsonian line of thought is excluded on the penalty of ad hoc reparation: Reichenbach takes the relation between E and R positional. In §3.3, we will discuss recent syntactic work on the tense and aspect in which the two Reichenbachian tripartitions are included in a dyadic branching structure.[6] In §3.4, we will analyze the motivation for Reichenbach's decision to opt for a positional use of his reference point R. We will then conclude in §3.5 that he (and his followers) made the wrong choice.

3.2. Architectural problems

There are at least five sorts of architectural problems revealing the weak foundation of the 3x3-structure of the system, the more so because most of them are the same for Germanic and Romance languages even though there are considerably more tense forms in the latter than in the former. For Spanish they are:

1. There is no place for *habría cantado* 'would have sung'.
2. Cells 3 and 7 each contain three configurations; the other cells not. Fábregas (2015: 11) observes that the semantic distinctions between the three configurations in cell 3 'are morphologised in the same way once and again in the different languages of the world'.
3. The form *cantaré* 'will sing' occurs in three cells (6,8 and 9); the other tense forms occur only in one cell. Broekhuis et al. (2015) observes for Dutch that it is not clear why *will* expresses posteriority in cell 8, future in cell 6 and both posteriority and future in cell 9. The same applies to Spanis

[6] Dyadic branching in syntax has nothing to do with binary tense. *Binary* in *binary tense* concerns the tense system as a coherent whole on the basis of binary and not ternary oppositions.

4. Cell 4 contains two tense forms: the Imperfecto *cantaba* 'sang' and the Indefinido *canté* 'sang', which do not have the same semantics. Reichenbach's way out to treat the French Imparfait *chantait* (the counterpart of *cantaba*) as an extended tense as opposed to *chanta* (the counterpart of *canté*) is generally considered a dead end.
5. The nine Reichenbachian tenses cannot be derived compositionally.

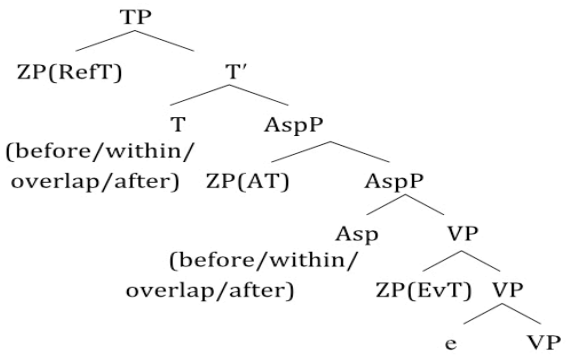
The first three problems occur also in Germanic languages. Verkuyl & Le Loux-Schuringa (1985: 240) discuss them for Dutch and English. Corblin & De Swart (2004: 249) discusses them as part of a systematic critical treatment on the basis of Vet (1981), so the shortcomings of Table 1 for Spanish do not come really as a surprise; see García Fernández (2000: 24-38).

3.3. Dyadic branching and ternary partitions

The 3x3-system has been applied in important studies on Spanish tense and aspect such as Carrasco & García Fernández (1994), Carrasco (1999), García Fernández (2000, 2004), Demirdache & Uribe-Etxebarria (2007, 2008), Arche (2014), Fábregas (2015), among others. All are well aware of the problems with Reichenbach's original framework and make use of an influential proposal to improve on Reichenbach's S,R,E-system: Klein (1992, 1995, 2009). Klein introduced the notion of topic time as a correction on Reichenbach's R. Topic time is "the time about which something is asserted (or asked)" (2009: 47) or "the time span to which the claim made on a given occasion is constrained" (1992: 535). Klein considers the tripartition Anterior-Simple-Posterior aspectual. Taken as topic time, R is to be seen as an interval anterior or posterior to E, including E or being included by E. The relation between R and E (TT and TSit in Klein's terminology) is seen as expressing aspect. However, by accepting Reichenbach's connectives, Klein and those who make use of his adaptation, also adopt Reichenbach's positional use of the reference point R "as the carrier of the time position" (Reichenbach 1947: 294).

In Demirdache & Uribe-Etxebarria (2007) and Arche (2014), the connectives of the two tripartitions pop up as heads in a projection. In Figure 1, from Arche (2014:797), the TP branches into ZP (short for ZeitPhrase (= temporal phrase)), representing S) and T′. The T′-phrase branches into T and AspP, which in its turn splits into ZP (now representing R) and AspP. The node AspP branches into ASP and VP and finally VP splits into ZP (now representing E) and VP.

Figure 1: The syntax of S, R and E



The two-place relations between S and R and between R and E are accounted for by the nodes T and Asp. For a sentence like (1a) before in T would express the two-place relation R<S, whereas within/overlap for R ≈ E in Asp corresponds to Reichenbach's comma in R,E as visible in the resulting configuration R,E–S for (1a).

3.4. Reichenbach's motivation for the positional use of point R

In order to get to the bottom of why Reichenbach opted for a positional use of R, a closer inspection of what Reichenbach said about his three points S, R and E is necessary. He did not distinguish very well between a point as a representational concept and a point as the value of an interpretation function, say a real point located on the time axis. In the second paragraph of his §51 he writes:

> From a sentence like 'Peter had gone' we see that the time order expressed in the tense does not concern one event, but two events, whose positions are determined with respect to the point of speech. We shall call these time points the point of the event and the point of reference. In the example the point of the event is the time when Peter went; the point of reference is a time between this point and the point of speech. (p. 288)

The two points italicized in the quotation are called *time points* and they are seen as temporal by Reichenbach's use of the terms *the time* and *a time*. However, the point of reference R is not always a time point in the strict temporal sense (nor an event), but it is also a representational unit in a more abstract sense. Reichenbach gives a quotation from an essay written by Lord Macaulay in which some historical reflections are made on Charles II of England, who was offered the throne in 1660 after the death of the leader of the Roundhead party Oliver Cromwell in 1658, and who was on the eve of being confronted with the Exclusion crisis in 1679:

> [**Such was England in 1660.**] In 1678 the whole face of things had changed. [**At the former of those epochs eighteen years of commotion had made the majority of the people ready to buy repose at any price. At the latter epoch**] eighteen years of misgovernment had made the [same] majority desirous to obtain security for their liberties at any risk. The fury of their returning loyalty had spent itself in its first outbreak. In a very few months they had hanged and half-hanged, quartered and emboweled, enough to satisfy them. The Roundhead party seemed to be not merely overcome, but too much broken and scattered ever to rally again. Then commenced the reflux of public opinion. The nation began to find out to what a man it had intrusted without conditions all its dearest interests, on what a man it had lavished all its fondest affection. (p. 288/289).

Macaulay's text includes the two bold-faced passages left out by Reichenbach with the help of dots between the brackets. Directly following the truncated quotation, Reichenbach continues with:

> The point of reference is here the year 1678. Events of this year are related in the simple past, such as the commencing of the reflux of public opinion, and the beginning of the discovery concerning the character of the king. The events preceding this time point are given in the past perfect, such as the change in the face of things, the outbreaks of cruelty, the nation's trust in the king. (p. 289).

It is striking to see the effect of the truncation because the whole story changes dramatically.[7] In the full quotation, Macaulay writes about two periods of eighteen years: one before 1660 (beginning with the civil war in 1642) and one after 1660 (the year connected with the first outbreak and with the downfall of Cromwell's Roundhead party in 1658). As the full quotation above shows, one cannot say that events in 1678 'are related in the simple past' and that the Past Perfect is used for events before 1678. What it reveals is that the Simple Past (*seemed*, *commenced*, *began*) is used to describe what people increasingly felt between 1660 up to and including 1678: its use is certainly not restricted to the year 1678 at all.

Reichenbach's last quotation begins with *The point of reference is here the year 1678*. This point cannot be a time point on the time axis. Reichenbach solves this problem by rounding off: all time points of the year 1678 are mapped into just one point R, and E is located before or after R or as simultaneous with R. In this way, R can be still be treated as a time point, be it at a more abstract level.

The full quotation reveals what the truncated version hides: the difference between the Past Perfect and the Simple Past covered by the full quotation is not so much the way in which they locate eventualities E as anterior to or simultaneous with R (in this case: 1678) but rather the way in which they express completion or underinformation about their completion in the same period. This has to do with the presence or absence of the auxiliary *have*. It is exactly this difference that is at issue in comparing a 3 × 3- and a 2 × 2 × 2-architecture. Klein simply expanded R into a real time interval. In so doing, he improved on Reichenbach but he inherited the so-called *positional use* of R as carrier of a time position. In this way, the line between R and E in R–E obtains the same (anteriority) status as the past line in R–S. This seems to us a dubious step.

3.5. Inclusion

Borik (2006: 174-179) provides a critical survey of Reichenbachian approaches treating E–R in terms of anteriority, such as Hornstein (1990), Klein (1995), Schoorlemmer (1995), Arefiev (1998) among others and argues convincingly that for the analysis of Russian aspect the E–R-configuration does not work well. She then appeals to an approach based on the idea that the subset relation in $E \subseteq R$ should replace the anteriority relation, mentioning Hinrichs (1981) and Partee (1984) as early proponents of that idea. Borik (2006: 179-198) makes the inclusion position concrete by adopting the framework made available by Tanya Reinhart in unpublished work and by applying this framework to Russian. Reinhart clearly rejects the positional use of R with respect to E by assuming $[_R\ E]$ as shorthand for $E \subseteq R$. Perfective aspect is then seen as the situation in which $R \cap S = \emptyset$ holds, and Imperfective aspect corresponds to $R \cap S \neq \emptyset$ or to $\neg(R \cap S) = \emptyset$. Perfective aspect in Russian occurs in two cases: (i) $[_R E] < S$, as in (2); and (ii) $S < [_R E]$, as in *Ol'ga napíshet pismo* 'Olga will write the letter'.

[7] The trimmed quotation occurs in Nerbonne (1983), Ogihara (1996) and LePore & Ludwig (2007) without reference to the full one. Googling *In 1678 the whole face of things had changed on internet* nowadays provides easy access.

Some remarks are in place here. Firstly, Reinhart and Borik do not relate S,R,E-configurations to syntax, so there is no room for compositionality. Secondly, and related, both the stipulation for Perfective and the two stipulations for Imperfective aspect have E–R so the connective $\subseteq$ of the clause $E \subseteq R$ does not play a role in deciding between Perfective and Imperfective aspect. Excluding different inclusion relations between E and R (p.179), Borik concludes that Perfective aspect is a matter of an anteriority (or posteriority) relation between R and S. Thirdly, in the analysis of the Past Perfect interpretation in Russian, Borik needs to make use of a stipulated extra point R_2 which means that for Borik anteriority again is decisive in order to deal with a Plusquamperfectum interpretation: $[_{R1}\ E_1] < [_{R2}\ E_2] < S$. The Reinhart-Borik rejection of the positional use of R is quite welcome as a correction on the use of the second tripartition. Our conclusion is, however, that Reinhart's framework does not allow Borik to make use of the Jakobsonian view on completion and the lack of information about completion. We think that the binary approach will provide the formal basis escaping from the shortcomings of the Reichenbachian configurations.

4. Binary tense

4.1. Introduction

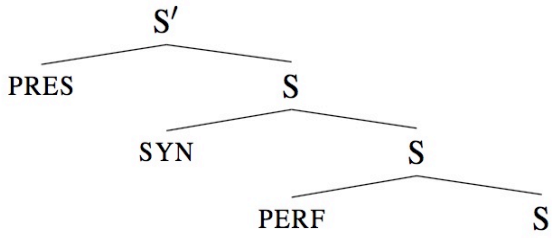
This section will briefly sketch the formal-semantic machinery conveying Te Winkel's original proposal on the basis of Verkuyl (2008). As observed in footnote 3, some modifications and extensions have been made since 2008 and these will be taken into account explicitly or implicitly. The important elements of the present sketch are: (a) the dyadic syntax necessary to obtain compositionality, discussed in §4.2, (b) the drastic transformation of the notion of present as a floating point represented by S into a present domain *i,* explained in §4.3, and (c) the attribution of a separate present domain *j* to the eventuality index *k*, elucidated in §4.4. This results in seeing tense as providing a bridge between the domains *i* and *j*. §4.5 shows how the Jakobsonian notion of completion and lack of information about completion can be formally accounted for.

4.2. Binary tense structure

Sentence (4a) is syntactically analyzed as (4b).

(4) a. Lucía ha paseado (tranquilamente por el parque del centro).
'Lucia has walked (peacefully in the central park).'
b. (PRES)(SYN)(PERF)($_S$ Lucía pasear)

Figure 2: Binary tense operators in the dyadic branching structure of (4b)



The structure underlying (4b) is made visible in Figure 2. To keep the explication simple, the dyadic branching structure in Figure 2 provides the bare minimum of sentential structure sufficient to allow for compositionality. One can easily read it as a minimalist tree as occurring in Figure 1 by adding extra projection phrases, but here the syntax is categorial in order to have a natural match with the type-logic involved.

The semantic interpretation of (4b) is from bottom to top. The bottom S in PERF(S) stands for the tenseless predication (5a).[8]

(5) a. $\lambda\alpha$[PASEAR(α)(lu)]
b. $\exists\,!i\,\exists j\,\exists k$[PASEAR($k$)(lu) $\wedge$ $k < j$ $\wedge$ $j \approx i$ $\wedge$ $i \circ n$]

As in event semantics, PASEAR expresses a two-place walking relation between the external argument lu (for *Lucía*) and the index α. Contrary to event semantics, α in (5b) is interpreted as a set of numerical values making up an interval and not as an event. This does justice to the fact that S at the bottom of Figure 2 is tenseless and (still) deprived of anything that has to do with temporality. The variable α in (5a) is replaced by k by the application of PERF to S, which results in the clause $k < j$ of (5b).[9] This clause introduces j as an index connected to k by expressing that k is completed in j. SYN contributes the clause $j \approx i$. The connective '$\approx$' connects j to i expressing that j is simultaneous to i, which makes it comparable to Reichenbach's comma, but note that k and i are not directly connected in the way E and R are directly connected in E,R.[10] PRES yields $i \circ n$, which says that the floating point n (now) is part of i. The expression $\exists\,!i$ in (5b) should be read as 'there is a (domain) i uniquely defined

[8] The tenseless lambda-predicate in (5b) is written in a type-logical notation rather than as the more usual (equivalent) $\lambda\alpha$[PASEAR(lu,α)] which expresses a two-place relation between *lu* and α. (5a) may be read as: 'the set of indices α associated with the predication 'Lucia walk' '.

[9] PERF is defined as a lambda-expression $\lambda\varphi\lambda\alpha'\exists k[\varphi[k] \wedge k \prec \alpha']$, which is of type $\langle\langle i, t\rangle, \langle i, t\rangle\rangle$, with φ of type $\langle i, t\rangle$ and the indices i, j and k of type i. Applied to (5a) it yields: $\lambda\alpha'\exists k$[PASEAR(k)(lu) $\wedge$ $k \prec \alpha'$]. Due to the Zermelo-Fraenkel axiomatization of set theory, natural numbers can be represented as sets. Thus the connective in $k \prec j$ can be seen in terms of the relation between, say, the numbers 3 and 4 taken as sets: 3 precedes 4 because 3 as a proper subset of 4 can be seen as 'completed' in 4. Seen in that light 3 $\preccurlyeq$ j means that as long as one does not know that the value of j is 4, one cannot say that 3 is completed in 4 because 3 $\preccurlyeq$ 3 is not ruled out. In §5.4, $k \prec j$ will be argued to hold for $\mathbf{R}^+$ (the set of positive real numbers including zero) and for **N** (the set of natural numbers).

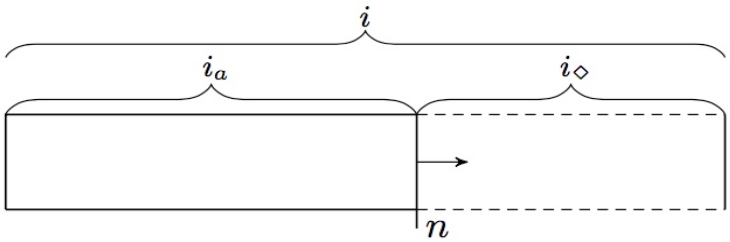
[10] SYN is defined as $\lambda\varphi\lambda\beta\exists j$[$\varphi[j] \wedge j \approx \beta$]. Applied to PERF(S), this yields $\lambda\beta\exists j\exists k$[PASEAR($k$)(lu) $\wedge$ $k \prec j \wedge j \approx \beta$].

by the nominal element *n*; see Verkuyl (2008: 47-50 for an explication of the notion of nominal element proposed in Blackburn (1994), which provides referential force to the quantifiers involved.[11]

4.3. The present domain i and the then-present domain i´

In order to fully show the contribution of PERF and SYN to the tense configurations in (4b), it is necessary to first say something more about the opposition PRES vs. PAST in (3a). The present is defined as a domain *i* including the floating point *n*, where *i* is divided into two parts by *n*, as illustrated in Figure 3.

Figure 3: The present domain i



In the original binary tense proposal of Te Winkel (1866), the floating point of speech *n* was considered to stand for the present. This idea also determines Reichenbach's view on the nature of his point of speech S.

After having applied Te Winkel's vision about n in earlier publications on binary tense, Verkuyl (2008: 75-88) broke away from the habit of taking *n* as the present, in particular from the problematic and unnatural notion of an Extended Now, as used in Dowty (1979), Von Stechow (1999), Rathert (2003), among many others. This break enables one to see the essence of tense as a way to relate the present of speaker/hearer to the present of an eventuality (we will come back to that notion shortly). This happens in the second opposition (3b). The present domain *i* as represented in Figure 3 is not floating, but determined by speaker and hearer and the *n* is floating rightwards in *i.*

At the left-hand side of n in Figure 3, i_a is the actualized part of *i,* at the righthand side $i_\diamond$ is its non-actualized part. The index $i_\diamond$ is posterior to *n*, but we follow Broekhuis and Verkuyl (2014) in taking the notion of posteriority as modal by emptying it of any form of temporality (cf. also Fábregas 2014, §10). Beyond the right side limit of *i* in Figure 3 there is nothing to be captured by language: all future is harboured in the non-actualized part $i_\diamond$ of the present domain *i*.

In order to show how the operators in (3) work together, we will include (6) and (7) in the current analysis.

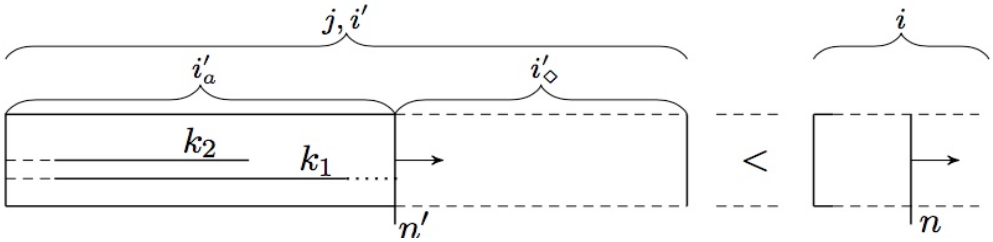
(6) a. Lucía paseaba (tranquilamente por el parque del centro).
'Lucia walked (peacefully in the central park).'
b. (PAST)(SYN)(IMP)($_S$ Lucía pasear)
c. $\exists\, !i \exists j \exists k$[PASEAR($k_1$)(lu) $\wedge$ $k_1 \leqslant j \wedge$ $j \approx \underline{i' \wedge i' < i \wedge i \circ n}$]

[11] PRES in (4b) introduces $i \circ n$ in (5b) and is of type ⟨⟨i,t⟩,t⟩. One should sharply distinguish between the use of *i* (for 'index') for the present domain and the use of *i* as a type-logical label. For the details of derivations given the syntax in (4b), see Verkuyl (2008, 2017).

(7) a. Lucía había paseado (tranquilamente por el parque del centro).
'Lucia had walked (peacefully in the central park).'
b. (PAST)(SYN)(PERF)($_S$ Lucía pasear)
c. $\exists\, !i\, \exists j\, \exists k$[PASEAR($k_1$)(lu) $\wedge$ $k_1 \prec j$ $\wedge$ $j \approx \underline{i' \wedge i' < i \wedge i \circ n}$]

The past (then-present) domain i' introduced by PAST in (6b) and (7b) is divided by n' between i'_a and $i'_\diamond$, as illustrated in Figure 4.

Figure 4: The Past and Pluperfect configurations



In (6c) and (7c), the contribution of the PAST-operator has been underlined: the clause $i' < i$ expresses an anteriority relation in the temporal sense of i' is earlier than i in real time. It requires a temporal gap between things located in i' and things located in i. This means that anteriority is a term strictly used for tense as a part of the actualization of k in real time by PAST.[12] The past domain i' has the same structure as the present domain in Figure 3 due to the parallelism inherent to a 2 × 2 × 2-architecture.

The extension of the present domain i is determined by speaker and hearer and this happens on the basis of their sharing information in the discourse they are shaping. Their present is independent of the eventualities they are talking about. It is by their choice of tense forms that they locate eventualities in a specific way. Thus a Present Perfect sentence like (4a) harbours its k in the present domain i_a of Figure 3 exactly parallel to the way in which, in the Past Perfect sentence (7a), the index k_2 is positioned in the i'_a-part of the past domain i' in Figure 4: as completed. The configuration corresponding to clause $k_1 \preccurlyeq j$ in the representation of (6a) cannot be illustrated so straightforwardly because IMP in (6b) underinforms as to whether $k = j$ or $k \prec j$ holds. This is illustrated by the dots at the right side of k_1 in Figure 4. The dashes to the left of k_1 and k_2 have a different function: they represent the possibility for the points zero of k_1 and k_2 to coincide or not with the point zero of i'_a.

*4.4. The present domain **j** of **k***

In present tense sentences, the opposition (3b) connects j with i, as in (5b); in past tense sentences, with i', as in (6c) and (7c), there being no direct relation between k and i or i'. This opens the way for seeing j as the present domain of k apart from speaker and hearer. Eventualities like Lucia's walk or our having breakfast happen independently of language. If we had breakfast this morning around nine, the breakfast itself may be seen as the present j of k but in our conceptualization we can extend j to this morning including our getting up or to

[12] Broekhuis & Verkuyl (2014) assume $n' < n$ but in the present analysis the two options do not differ.

today witness *We had a nice breakfast X*, where *j* may be modified by *X = before 9.30* or *X = this morning* or *X = today*, etc.[13] Thus the essence of tense can be seen as matching the present domain *j* of an eventuality *k* with the present domain *i* of speaker and hearer by the clause $j \approx i$, or indirectly with the then-present domain i' and the clauses $j \approx i' \wedge i' < i$ connecting to the present domain *i*.[14]

The 2 × 2 × 2-architecture of the binary system yields its indices systematically by the definitions of the operators in the binary oppositions. In (3), they introduce the domains *j* and *i* systematically, not in an ad hoc way: all indices are provided by the system itself. For a ternary system with the three points S, R and E. It is, of course, possible to extend the set {S,R,E} with a new member, say R′, as in Kamp and Reyle (1993) or with R_2 as in Borik (2006) but from an architectural point of view this sort of extension is clearly ad hoc. In the binary approach, it is possible to spread the "load" of accounting for completion and anteriority over more than one index.

4.5. Completion or possible incompletion in j

In the Past sentences (6) and (7), the completion or possible incompletion of *k* is a matter of i'. If *k* is completed in i'_a, one has k_2 in Figure 4, if not, one has k_1 with its uncertainty about completion expressed by the dots. In the case of k_1 one simply does not know whether k_1 proceeded with n' or not, in the absence of sufficient information. That makes quite a difference. The sense of completion and absence of information thereof is accounted for by $k \prec j$ and $k \preccurlyeq j$, respectively. That *k* is completed in *j* means in Present Perfect sentences that it is also completed in the actualized part i_a of *i* due the clause $j \approx i$. It follows only by inference that *k* is understood to be located as a discrete unit before the floating point *n*. In Past sentences, the completion of *k* or the absence of information about it is also expressed in *j* itself, but in this case *j* relates to the then-present domain i' which is anterior to *i*. Here the sense of completion of a Past Perfect is expressed by $k \prec j$ and anteriority is explicitly given by the clause $i' < i$.

5. The interaction of tense and aspect in Spanish

5.1. Introduction

Before treating the difference between the non-continuous and continuous tense forms, we need to first characterize the relation between Imperfecto and Perfecto because in the formal account of it, new tools need to be developed. These are part of the toolkit necessary for a compositional approach to the problem of accounting for the interaction between aspectual and tense information.[15] Therefore, we start our investigation with contrasting the sentences in (8)-(11).

[13] The domain *j* is neither the situation time (= run time) of *k* nor the topic time in the sense of Klein (1992); see Verkuyl (2008: 55-60 and passim) for a detailed argumentation.

[14] Focusing on past tense forms, we will ignore the POST-operator in (3b) referring to Broekhuis and Verkuyl (2014) for the interpretation of POST as a modal operator.

[15] The present analysis reduces the need for a distinction between subjective aspect and objective aspect along the lines of Smith (1991) to zero.

(8) a. Lucía ha cantado.
b. $\exists !i \exists j \exists k$[CANTAR($k$)(lu) $\wedge$ $k < j \wedge j \approx i \wedge i \circ$ n]

(9) a. Lucía ha cantado dos arias.
b. $\exists !i \exists j \exists k$[CANTAR($k$)(A)(lu) $\wedge$ |A| = 2 $\wedge$ $k < j \wedge$ j $\approx$ i $\wedge$ $i \circ$ n]

(10) a. Lucía cantaba.
b. $\exists !i \exists j \exists k$[CANTAR($k$)(lu) $\wedge$ $k < j \wedge j \approx i \wedge i \circ$ n]

(11) a. Lucía cantaba dos arias.
b. $\exists !i \exists j \exists k$[CANTAR($k$)(A)(lu) $\wedge$ |A| = 2 $\wedge$ $k < j \wedge j \approx i \wedge i \circ$ n]

The tense representations in (8b)–(11b) clearly cannot account for the aspectual difference between (8a) and (10a) on the one hand, which both have no overt internal argument, and on the other hand (9a) and (11a): both have an internal argument expressing a specified quantity, here represented as a set A with cardinality 2. This difference will be discussed in §5.2.

The present section aims at providing information about the index *k* below the level of the lowest S in Figure 2, down to the lexical level where a verb has an index α which is going to be replaced by *k*. So the question is: what is the nature of α as an argument of a verb at the lexical level? Our answer to this question in §5.3 provides a formal characterization of the opposition between stative and non-stative making it possible to model Jakobson's notion of completion and lack of information about completion as part of aspectual composition. In §5.4, we will briefly discuss tense and aspect representations of at the phrase level. On the basis of that it will be possible to make a principled distinction between the upper part and the lower part of Table 2.

5.2. A double sense of completion

The sentences (8a)–(11a) display the well-known aspectual opposition between the durative [–T]-sentences (8a) and (10a) versus the terminative [+T]-sentences (9a) and (11a), all featuring in the rows of Table 3.[16]

[16] In spite of the more popular use of the term *telic*, we stick to the use of *terminative*. Fundamental objections against the Aristotelian notion of *telos* 'goal' creeping in the linguistic analysis of aspectuality are made concrete in Verkuyl (2015: 142-146), which concludes with respect to the so-called Aristotle-Vendler-Dowty-tradition that Aristotle is an ill-chosen guide for the study of aspect. In the Nicomachean Ethics, for example, Aristotle uses the Greek verb *oikodomein* in the explication of the notion of complete and incomplete motion. One would expect one and the same translation in the different editions of his work, but some translate the verb terminatively as *build a house*, others duratively as *build* or as *build houses*. This should suffice to see that Aristotelian Greek is not the right tool for dealing with aspectual composition in languages with determiners, *oikodomein* being a complex verb in which *oiko-* 'home' (as in homework) cannot express quantificational force.

Table 3: Crossing tense and aspect

	PRES(SYN)(PERF)	PAST(SYN)(IMP)
[-T]	(8a) Lucía ha cantado. Lucia has sung.	(10a) Lucía cantaba. Lucia sang.
[+T]	(9a) Lucía ha cantado dos arias. Lucia has sung two arias.	(11a) Lucía cantaba dos arias. Lucia sang two arias.

The well-known aspectual litmus test says that the tenseless predication *Lucía cantar* 'Lucia sing' is durative because it cannot occur with *en una hora* 'in an hour' whereas it may occur with *durante una hora* 'for an hour'. Likewise the tenseless terminative *Lucía cantar dos arias* 'Lucia sing two arias' can occur with *en una hora* but not with *durante una hora* and if it does, by enforcing repetition. The sentences (8a)–(11a) display the well-known aspectual opposition between the durative [–T]-sentences (8a) and (10a) versus the terminative [+T]-sentences (9a) and (11a), all featuring in the rows of Table 3. The well-known aspectual litmus test says that the tenseless predication *Lucía cantar* 'Lucia sing' is durative because it cannot occur with *en una hora* 'in an hour' whereas it may occur with *durante una hora* 'for an hour'. Likewise the tenseless terminative *Lucía cantar dos arias* 'Lucia sing two arias' can occur with *en una hora* but not with *durante una hora* and if it does, by enforcing repetition.

In spite of its being durative, (8a) expresses some sort of completion and there is a double sense of completion in (9a). In the binary system, the sense of completion in (8a) in spite of [–T] and of the double sense of completion in (9a) on top of [+T] is due to the PERF-clause $k \prec j$. In the righthand column *Lucía cantaba* does not express completion by [–T] but the PAST-operator in (10a) provides an anteriority rift between the domain i', the then-present domain in which Lucia sang, and the present domain *i.* Anteriority also explains the sense of bounding expressed in *Cantaba de mala gana esa noche.* 'She sang with distaste that night'. The gap between that night and the present domain *i* provides sufficient information for overruling the underinformation of $k \preccurlyeq j$. In (11a), the tenseless predication expresses completion by [+T], but by the lack of explicit information provided by an adverbial or by the preceding context, the IMP-clause contributes uncertainty about completion in i' in spite of the gap between the present domain *i* and the past domain i'.

Essential to the proper understanding of the aspectual opposition between [+T] and [–T] and between IMP and PERF is to sort out the real contribution of the verb to the construal of aspectual information. In the tradition based on Vendler's influential philosophical essay *Verbs and times* in Vendler (1966), the verb is often treated as a verb phrase giving away that the essay is not so much about verbs (as lexical units) as it is about predicates disguised as verb phrases. One has to get to the bottom of lexical specification in order to get at the atomic level.

Semantic features such as [+T] and [–T] are quite useful in functioning as a shorthand, even when their interpretation is given informally. Verkuyl (1972, 1993) characterized the difference between the [+T]-sentence (12a) and the [–T]-

sentence (12b) in terms of a feature [+SQA] assigned to the NP *dos arias* and a feature [–SQA] assigned to the NP *arias*. The feature [+SQA] stands for 'Specified Quantity of A', where A is the head noun of the NP. The bare plural NP *arias* is [–SQA]. A semantic feature [+ADDTO] assigned to nonstative verbs is opposed to a feature [–ADDTO] assigned to stative verbs. In this way, it is possible to have an "aspectual feature algebra" illustrated in (12).

(12) a. [$_S$ Lucía [$_{VP}$ ha cantado] dos arias]]
[+SQA] [+ADDTO] [+SQA] ⇒[+T] : terminative
'Lucia has sung two arias'

b. [$_S$ Lucía [$_{VP}$ ha cantado] arias]]
[+SQA] [+ADDTO] [–SQA] ⇒ [–T] : durative
'Lucia has sung arias'

c. [$_S$ Nadie [$_{VP}$ ha cantado] dos arias]]
[–SQA] [+ADDTO] [+SQA] ⇒ [–T] : durative
'Nobody has sung two arias'

d. [$_S$ Lucía [$_{VP}$ sabe] dos arias]]
[+SQA] [–ADDTO] [+SQA] ⇒ [–T] : durative
'Lucia knows two arias'

The features turn out to be convenient in formulating an important principle guiding aspectual composition: the Plus-principle. It says that a VP (V + internal argument) and an S are terminative only in the absence of a minus-feature. In this way, [+T] is the marked aspectual value expressing completion. Sentences (8a) and (10a) are durative due the [–SQA]-specification of the covert internal argument. Sentence (12c) is durative due to the [–SQA]-specification of *nobody*, whereas (12d) is durative on account of the [–ADDTO]-feature lexically associated with the verb *saber* 'know'.

Verkuyl (1993) provided a formal-semantic account for the features in (12) in terms of the theory of generalized quantification. Verkuyl (2017) is an attempt to simplify this account with regard to the [±ADDTO]-feature. For the verb *cantar* 'sing' this means that for a proper characterization of its nonstativity, the verbal format CANTAR(α)(*y*)(*x*) is stripped from all information concerning the arguments *y* and *x* so that all information about its nonstativity is restricted to the index α, i.e. to the index that will be replaced by *k* in the course of bottom-top derivation. In that light, a search for the semantic verbal element that determines the difference between *cantar* 'sing' and *saber* 'know' without taking into account their internal and external arguments seems to be fully justified, the underlying question remaining: what is exactly the contribution of the verb to the phrase level at which the opposition between [–T] and [+T] occurs? This question will be answered in §5.3.

5.3. Down to the bottom

The formalization of the feature [±ADDTO] matches quite well with the binary approach to tense sketched earlier. It helps to understand the interaction of tense and aspect in the Spanish tense system. The first step is to associate

each individual verb without taking into account its arguments *y* and *x* with a function f_A : $\mathbf{R}^+ \rightarrow \mathbf{R}^+$ defined as:

(13) $f_A(x) = ax + b, \qquad with\ a = 1\ and\ 0 \leq b \leq 1$

The function has as its domain and its co-domain the real number system beginning with 0, in short $\mathbf{R}^+$. It anchors every verb in the system of real numbers by providing the sense of continuity. The assignment of the function f_A to a verb is to be understood in terms of providing information about the index α.

Given the definition (13), there are two relevant situations: (i) b = 0 and (ii) b ≠ 0, which are captured by two functions having the format of (13):

(14) a. $f_{id}(x) = ax + b, \qquad with\ a = 1\ and\ b = 0$
b. $f_{su}(x) = ax + b, \qquad with\ a = 1\ and\ 0 < b \leq 1$

In (14a), f_A manifests itself as the identity function f_{id} with as its range Ran_{id}. The function f_{id} models the sense of 'remaining the same' by always returning the same value *x* for *x*, In (14b), f_A is a function called f_{su} in which each original *x* is mapped to an image *y* different from *x*. Its range will be called Ran_{su}. The two functions share the same format and they share continuity in $\mathbf{R}^+$ but they diverge as to sameness and difference.

The verbs stative verb *colgar* 'hang' and the non-stative verb *pasear* 'walk' can now be distinguished as in (15).

(15) a. *colgar*: $\lambda x \lambda \alpha [\text{HANG}(\alpha)(x) \wedge \alpha = \text{Ran}_{\text{id}}]$
b. *pasear*: $\lambda x \lambda \alpha [\text{WALK}(\alpha)(x) \wedge \alpha = \text{Ran}_{\text{su}}]$

The verbs *colgar* and *pasear* express a relation between an argument *x* and an argument α which at a higher structural level is to be replaced by the eventuality index *k* contributed by PERF or IMP.

One may disagree about the intuition of modelling the opposition between stative and nonstative in terms of the two functions as defined in (14), but we think that (14b) formalizes correctly the dynamicity of nonstative verbs in the sense of accumulation as opposed to [–ADDTO] for stative verbs defined in (14a). For our purpose of accounting for Spanish tense and aspect, the two functions in (14) do what they are supposed to do due to the shared format in (13). Moreover, an advantage of assuming the same format for f_{id} and f_{su} is also that in some cases the difference between stative and nonstative is dependent on the situation. A verb like *hang*, for example, could be characterized by f_A with a restriction 0 ≤ b < 0.2, where the range accounts for a minimal non-stative b > 0-value in *The man hang in the tree* vs a genuine stative 0-value in *The picture hang on the wall*.[17]

[17] Fábregas (p.c.) points out that the difference between stative and nonstative is orthogonal to the Indefinido vs. Imperfecto distinction because even the stative version allows for an Indefinido, as in *El ahorcado colgó del árbol hasta que llegó el juez a retirarlo.* 'The hangman hung (Indef) from the tree until the judge came (Indef) to remove him'.

The index α in the stative verb *colgar* is identified as the range of the function f_{id}, i.e. the set of images. In the case of (14a), Ran_{id} is often written as $f(\mathbf{R}^+)$, but we will use the notation in (15). The range of f_{id} is a subset of $\mathbf{R}^+$ and so, in the absence of further information, α remains (aspectually) unbounded. *Colgar* is a stative verb due to the fact that its α is determined by f_{id} (*x* maps to *x*), *pasear* is nonstative due to the fact that α is the range of a function expressing the sense of change: an original *x* in the domain of f_{su} is mapped to a value *y,* where $x \neq y$. As observed in §4.2, formally α has the same status as an event-variable in an event-semantic representation, but in the lexicon itself there is no actualized time and as discussed in §4.3 temporality in the sense of actualization in (real) time enters only via the first opposition, either by PAST or PRES.[18]

Another function is called for in order to distinguish verbs like *pasear* 'walk' lexically from mutative verbs like *morir* 'die', *llegar* 'arrive', *asfixiarse* 'suffocate', *explotar* 'explode', etc. Verkuyl (2017) appeals to a generalization of the rounding off function which is used to map from real numbers to natural numbers. This generalized ceiling function *gc* rounds each *x* in its domain $\mathbf{R}^+$ off to the first natural number larger than *x* but it does away with the equidistance between natural numbers respected in the regular ceiling function *c*. Its range Ran_{gc}, also written as $gc(\text{Ran}_{\text{su}})$, is a subset of **N**.[19]

Nonstative verbs like *pasear* in (15b) differ from those in (16) due to the absence of the function composition $gc \circ f_{\text{su}}$: all indices α in (16) are equal to Ran_{gc}, where *gc* maps from Ran_{su}, a subset of $\mathbf{R}^+$, into the system of natural numbers **N**. This mapping makes the output discrete. The index α pertains to a singleton in (16a) and to a plural subset in (16b,c); for convenience, we drop the λ-operators in front of the formulas.

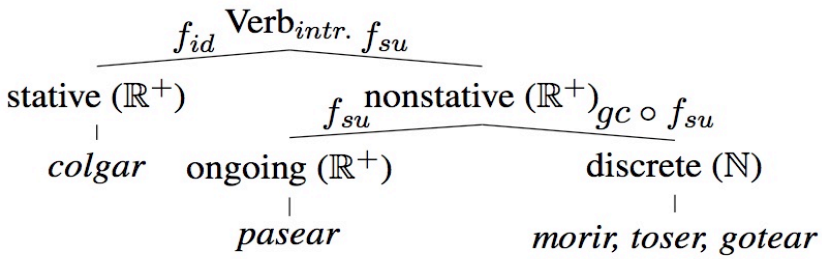
(16) a. *morir*: $\text{DIE}(\alpha)(x) \wedge \alpha = gc(\text{Ran}_{\text{su}}) \wedge |\alpha| = 1$
b. *toser*: $\text{COUGH}(\alpha)(x) \wedge \alpha = gc(\text{Ran}_{\text{su}}) \wedge |\alpha| \geq 1$
c. *gotear*: $\text{DRIP}(\alpha)(x) \wedge \alpha = gc(\text{Ran}_{\text{su}}) \wedge |\alpha| > 1$

In order to distinguish verbs like *morir* 'die' and *llegar* 'arrive' expressing uniqueness from verbs expressing repetition like *toser* 'cough', *hacer* tic-tac 'tick', *gotear* 'drip', etc., cardinality information about α is part of the lexical meaning specification. The clause $|\alpha| \geq 1$ makes it possible for *llamar* 'knock' to express that α ranges over N without any restriction, i.e. as an infinite series of knocks. Thus the lexical meaning of *llamar* `knock' provides the possibility of unbounded repetitive series of discrete elements. The frequentative meaning of *gotear* 'drip' is accounted for by $\alpha > 1$ expressing 'plural' unboundedness in **N**. The once-and-only interpretation of *morir* 'die' is a lexical property and therefore speakers believing in reincarnation must have $|\alpha| > 1$ because they think there is an infinite chain of dying and being reborn again. The index α of the verbs in (15) and those in (16) have the property of being founded in $\mathbf{R}^+$, but as shown in Figure 5, the function composition in the rightmost branch makes α discrete.

[18] We are aware of many papers on tense and aspect in tenseless languages, such as Lin (2003, 2006), discussed in Verkuyl (2008); see also Bittner (2006) and Sun (2014). In the present paper this issue falls outside the scope.

[19] Due to the function composition involved $gc(\text{Ran}_{\text{su}})$ can also be written as $gc(f_{\text{su}}(\mathbf{R}^+))$.

Figure 5: The stative/nonstative opposition at the lexical level of intransitive verbs



In this way, the lexical opposition between stative and nonstative one-place verbs is accounted for in terms of an aspectually fundamental partition. If a verb is stative, it can never contribute to terminative aspect. If a verb is nonstative, there are two possibilities: either the index of the verb remains in $\mathbf{R}^+$ or it is mapped into **N**. This pattern also holds for two-place verbs.

5.4. From the bottom to phrase structure

With this semantics as the basis, the sentences (8a)–(11a), in the present subsection renumbered as (18a) - (21a), can be given the representations in (18b) - (21b). The underlined clauses provide aspectual information interacting via *k* with the tense information in the clauses $k \prec j$ or $k \preccurlyeq$ j, the index α in the lexical entry of the verb being replaced by *k* along the line sketched in footnote 11. The nonstative verb *cantar* 'sing' has entry (17).

(17) *cantar*: SING(α)(*y*)(*x*) $\wedge$ α = Ran$_{su}$

The absence of lexical cardinality information in (17) gives away that the verb expresses unboundedness in $\mathbf{R}^+$ as long as no additional information is made available.

(18) a. Lucía ha cantado.
b. CANTAR(*k*)(lu) $\wedge$ *k* = Ran$_{su}$ $\wedge$ $k \prec j \wedge j \approx i \wedge i \circ$ n

(19) a. Lucía ha cantado dos arias.
b. CANTAR(*k*)(A)(lu) $\wedge$ |A| = 2 $\wedge$ *k* = *gc*(Ran$_{su}$) $\wedge$ 1 $\leq$ |*k*| $\leq$ |A|
$\wedge k \prec j \wedge j \approx i \wedge i \circ$ n

(18b) expresses that the index *k* is Ran$_{su}$, hence a subset of $\mathbf{R}^+$. But $k \prec j$ requires that *k* be completed in *j*. The information about *k* in (18b) is twofold: (i) *k* is to be seen as an interval in $\mathbf{R}^+$; (ii) *k* is completed in *j* in the sense of the proper interpretation of the connective $\prec$ dealt with in footnote 9. Completion in $\mathbf{R}^+$ allows for the predication itself to remain durative because there is no function composition with *gc*: there is no mapping involved from $\mathbf{R}^+$ into **N**. We will call this: $\mathbf{R}^+$-completion in *j* due to the use of *haber* 'have'.

In (19), the presence of the [+SQA]-NPs *dos arias* provides the discretizing function *gc* structurally along the lines of aspectual composition followed in Verkuyl (1993). The cardinality information provided for by *dos* 'two' is represented here by |A| = 2, where A abbreviates the internal argument NP-

information. The clause $1 \leq |k| \leq |A|$ allows for two separate occurrences of k within j or just one.[20] In (19), the terminative nature of the predication requires that k be in **N**, hence discrete and so the sense of a sort of double completion as observed for (19a) can be explained because k is discretized due to the clause $1 \leq |k| \leq |A|$ but also by the tense clause $k \prec j$ due to the presence of *haber* 'have'. A predication expresses (Jakobsonian) **N**-*completion in j* by having the clause $k = gc(\text{Ran}_{su})$ as well as the clause $k \prec j$.[21]

In (20), k is *unbounded* in $\mathbf{R}^{+}$ due to the (underlined) lexical specification (17) and the $k \leqslant$ j-clause provides the sense of underinformation about completion.

(20) a. Lucía cantaba.
b. CANTAR(k)(lu) $\wedge\ k = \text{Ran}_{su} \wedge k \leqslant j \wedge j \approx i \wedge i \circ \text{n}$

(21) a. Lucía cantaba dos arias.
b. CANTAR(k)(A)(lu) $|A| = 2 \wedge k = gc(\text{Ran}_{su}) \wedge 1 \leq |k| \leq |A|$
$\wedge\ k \leqslant j \wedge j \approx i \wedge i \circ \text{n}$

This clause does not exclude completion, however, because the lexical underinformation about k in (17) can be modified by contextual information. In sentences like *Lucía cantaba cuando llegué a casa pero entonces fuimos al cine* 'Lucia sang when I came home but then we went to the cinema', the information about leaving the house in getting to the cinema implies a choice for the $k < j$-option without the presence of *haber*. A similar sort of inference is made in the imperfective Russian sentence *Vchera Tibor igral*^{i} *sonaty Beethoven*. 'Yesterday Tibor played Beethoven sonatas', as Olga Borik (p.c.) pointed out: it is clear that Tibor must have stopped playing at some point before n.

In (21), the presence of the internal [+SQA]-argument provides for a mapping into **N**, as it does in (19). In spite of the discrete nature of k, however, the clause $k \leqslant j$ cannot warrant **N**-completion in j unless given by the context in which (21a) is being used, as in the case of (20). This point will come back in §6.2.

6. Splitting the Imperfecto and the Progressive

6.1. Introduction

In this section, a principled distinction will be made between underinformation expressed by the $k \leqslant$ j-clause of the operator IMP in Imperfecto forms like *cantaba* in (20a) and (21b) and continuity expressed by the Imperfecto continuo in *estaba cantando*. The distinction between the two tenses is based on the difference between predications having only one index and predications having two indices. It excludes any sort of equivalence between the Imperfecto and Imperfecto continuo which means that the progressive gloss of sentence (1a) is just an easy practical way of rendering its meaning rather than being allowed on theoretical grounds. We will first discuss

[20] In the case of (19a), we are bound to think of $|k| = 2$ (one-by-one) but *Lucia bought two books* does not reveal whether she bought them one-by-one or together ($|k| = 1$).
[21] The present analysis of the sentences (18a) and (19a) escapes from being classified as one of the four types of theories about the Present Perfect as distinguished in McCoard (1978), Binnick (1991); see also Ritz (2012).

the view on the Spanish Imperfecto in §6.2, in which one of its uses is seen as expressing an ongoing process equivalent to the English Progressive Form. Then we will show in §6.3 that a binary approach to tense and aspect requires that the notion of ongoing progress be separated from the IMP-notion.

6.2. The Spanish Imperfecto

As part of his systematic account of arguments sharpening the distinction between the Imperfecto and the Indefinido, Fábregas (2015: 29-41) provides an excellent survey of the three main uses of the Imperfecto generally accepted in the literature and standardly given in textbooks and research, as in González (2003).

1. a. the descriptive use.
   b. the habitual use.
2. the progressive use.

As a first step in eliminating the progressive use from this enumeration we will focus on the descriptive and habitual uses, ordered here as two sides of the same semantic coin. They are accounted for by the presence of the IMP-clause $k \preccurlyeq j$.

Looking for what the descriptive and habitual uses have in common, one thing is that one has to search outside the sentence itself in order to find the appropriate information about whether the predication applies to something non-recurrent (episodic) or to something recurrent (habit, repetition, etc.), as shown by (22).

(22) Lucía cantaba arias.
Lucia sing-IMP arias

Without further information one does not know whether Lucia sang some arias one after the other on a special occasion or whether she used to do that, say every Sunday, as explicitly mentioned in (23).

(23) Lucía cantaba arias cada domingo.
Lucia sing-IMP arias every Sunday
'Lucia sang arias every Sunday.'

The difference between non-recurrent and recurrent is in essence the distinction between token and type also applying to NPs in sentences like *The swallow is back early this year* which may be about one particular (ringed) swallow but also about the species itself. Elements responsible for a particular reading in (22) are adverbials or contextual clues in the narrative. In (23), the decisive factor is the adverbial every Sunday. In a context of reporting about Lucia's career as a singer, (22) can be easily used without an adverbial pertaining to a series of discretely organized eventualities much in the way in which (23) does that overtly, be it in a more regularly divided way.

Given IMP defined as $k \preccurlyeq j$ and given the [–T]-nature of the predication, the plurality of the sing-arias-eventualities involved in (23) is based on information about each individual k on the basis of what was called $\mathbf{R}^{+}$ in j. Multiplication of k by the quantifier in *cada domingo* 'every Sunday' thus leads to the sense of

a discretely organized series of *k*'s each of which is $\mathbf{R}^{+}$-completed in *j*. This quantification over indices, along the lines of Verkuyl (1995) makes it possible to harbour a series of durative *k*'s in one *j*.

Given the appropriate modifier, the IMP-form *cantaba* may clearly also focus on the absence of information about boundedness of *k* as shown by (24).

(24) a. Lucía cantaba esa aria (cuando me la encontré).
b. $[\text{SING}(k)(\text{A})(\text{lu}) \wedge |\text{A}| = 1 \wedge k = gc(\text{Ran}_{\text{su}}) \wedge 1 \leq |k| \leq |\text{A}| \wedge k \preccurlyeq j \wedge j \approx i' \wedge i' < i \wedge i \circ \text{n}](...)$
c. 'Lucia sang that aria (when I found her).'

Sentence (24a) expresses underinformation about whether or not the function gc applies fully, given the subordinate clause. It leaves open two possibilities because the bold-faced clause $k \preccurlyeq j$ is underinformative about whether I found her singing the aria but she did not finish it or whether I found her singing the aria and she finished it after I had found her.

The Spanish IMP-form also has a non-continuous episodic reading when the eventuality described by predication is in the background:

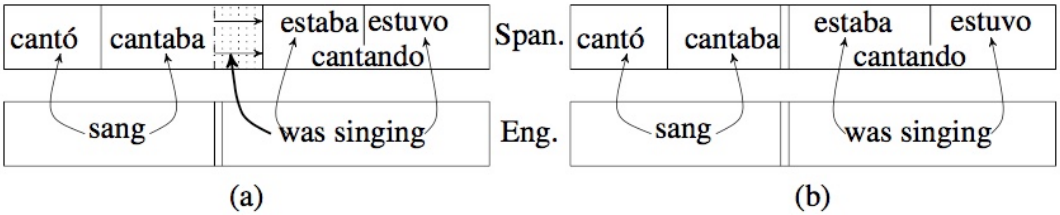
(25) Pienso que Lucía cantaba esa aria (porque estaba contenta).
'I think Lucia sang that aria (because she was happy).'

In this case, the sentence reports about the singing of Lucia as a sort of factual information but in spite of that, the predication *Lucía cantaba esa aria* in (25) does not necessarily pertain to a completed eventuality: Lucia may have stopped before the aria came to an end in that particular situation. This is due to the $k \preccurlyeq$ j-clause which prevents the full application of the *gc*-function. Note that (25) may pertain to Lucia's habit of singing that aria.[22]

The second step in removing the ongoing-interpretation from IMP is to focus on the notion of (translational) equivalence. In taking it seriously, one is bound to say that the English Progressive has two sorts of equivalence to deal with: (a) the equivalence of the English *was singing* with the Spanish Imperfecto continuo *estaba cantando*; and (b) the equivalence of *was singing* to *cantaba* in its third use. Those who hold that *cantaba* has a progressive meaning have to maintain that the English Progressive covers the dotted part of the room given to the Spanish *cantaba* in Figure 6a.

[22] The use of the Present Perfect *ha cantado* in (25) would yield a token interpretation: *Pienso que Lucía ha cantado esa aria* (*porque estaba contenta*) expresses my thoughts about one eventuality concerning Lucia rather than about a habit of hers. This difference between the Perfecto and Imperfecto is also clearly visible in Dutch where *Ik fietste veertig km in het weekend* 'lit: I biked 40 km in the weekend' is about a series of weekends in each of which I biked 40 km and where *Ik heb in het weekend veertig km gefietst* 'lit: I have biked 40 km in the weekend' pertains to just my unique 40 km drive last weekend.

Figure 6: Comparing partitions



This other way of saying that *cantaba* is penetrating into the territory of the Imperfecto continuo. In that case, the non-progressive interpretation of the English Simple Past *sang* would be a match with *cantó* and with the non-commitment-to-completion meaning of *cantaba* discussed in (20) and (21).

Figure 6 is interesting because Spanish has two forms for the progressive: one with *estaba* and one with *estuvo*. Only *estaba cantando* is a possible candidate for losing its meaning to a part of the *cantaba*-domain. There is no arrow from *was singing* into the *cantó*-domain because there is no equation *cantaba*: *estaba cantando* = *cantó* : *estuvo cantando*. In other words, *cantaba* in its so-called progressive use can never express what is expressed by *estuvo cantando*. That is odd because the Indefinido continuo is a Progressive Form, so why is it that *cantó* does not penetrate into the Indefinido continuo?

Figure 6b accounts for the cross- and intralinguistic situation better than Figure 6a. It tells that the position of *cantaba* in the Spanish tense system differs crucially from the position of *sang* in the English one. The expression of ongoing progress has obtained a far more prominent place in the division of labour between *sang* and *was singing* in English than in Spanish between *cantaba* and *estaba cantando*: Spanish has four forms that want to have a piece of the past tense cake and English has just two. In other words, Spanish speakers have a choice between underinformation about completion (IMP), boundedness (INDEF), ongoing progressive and bounded progressive, where English speakers in principle have to do with underinformation about completion (by IMP) vs. ongoing progressive. Figure 6b forms a more systematic pattern than Figure 6a, so the burden of the proof for claiming that the latter holds for Spanish lies with those who claim that *cantaba* expresses the meaning of *estaba cantando*.

6.3. The Spanish Progressive

Capitalizing on the clear differences between the Imperfecto and the Imperfecto continuo, we are now ready to explore the consequences of the fact that *estaba* in *estaba cantando* in (26a) is itself an IMP-form just like the English was in (26b).

(26) a. Lucía estaba cantando esa aria (cuando me la encontré).
b. Lucia was singing that aria (when I found her).

The leading idea is then that the present participle *cantando* of the main verb in *estaba cantando* remains tenseless in taking a gerundive inflection bringing out an 'action in progress'-meaning of *cantando* independently of the $k \preccurlyeq$ j-clause contributed by the IMP-operator of *estaba* before PAST applies.

The main proposals in the formal-semantic literature about the English Progressive in (26b) are characterized by having an operator PROG, which takes

together the semantics of *be* and *ing*: PROG = BE+ING.[23] Rather than having BE+ING as a unit, Verkuyl (2017) argued on semantic grounds that one should define ING and BE in (26b) apart from each other. The idea is simple: *be* is a verb and *sing* is a verb and lexically each has its own index, say α and β respectively. Thus the essence of the analysis of what is expressed by a Progressive Form boils down to characterizing the relation between α and β on the assumption that ING plays a role in connecting them. We will apply this idea to the Spanish Imperfecto continuo.

The first step is to define the copula *estar* 'be'. This can be done in the Montagovian way of seeing be as a transitive verb generalizing over the *be* of identity and the *be* of predication as in Montague (1974: 267).[24]

(27) $estar \rightsquigarrow \lambda\boldsymbol{P}\lambda z\lambda\alpha'(\boldsymbol{P}(\lambda y\lambda\gamma[\text{PROG}(\gamma)(y)(z) \wedge \gamma = \text{Ran}_{id}])(\alpha')$

In (27), *estar* `be' is seen as a transitive verb by expressing that the value of the external argument *z* is the same as the value of *y*, where *y* is to be replaced by the external argument of the CANTAR-predication. In this way, *estar* contributes the sense of Lucia being the one who is involved in singing an aria.

The second step is then to interpret -NDO as a relation between two predicates P and Q of type ⟨⟨e, ⟨i, t⟩⟩, each having its own index: β and α, respectively. This is represented in (28a).

(28) a. $\text{-NDO} \rightsquigarrow \lambda P\lambda Q\lambda\alpha\, \exists x\, \exists\beta[P(x)(\beta) \wedge Q(x)(\alpha) \wedge |f_A,\alpha| = |f_A,\beta|]$

b. $\text{-NDO(CANTAR-ESA-ARIA)} \rightsquigarrow \ldots\ \lambda Q\lambda\alpha\, \exists x\, \exists\beta[\text{CANTAR}\,(\beta)(A)(x) \wedge \beta = gc(\text{Ran}_{su}) \wedge |A| = 1 \wedge Q(x)(\alpha) \wedge |f_A,\alpha| = |f_{su},\beta|]$

The operator -NDO takes the tenseless VP *cantar esa aria* 'sing that aria' and yields (28b) after a number of derivational steps indicated by the dots.[25]

The idea behind the notation of the clause $|f_A,\alpha| = |f_A,\beta|$ in (28a) is the following. Each function *f* can be seen as a set of pairs ⟨*x*, *y*⟩, where *x* is an element of Dom_f and *y* is an element of Ran_f. In that perspective, f_A has a cardinality $|f_A|$ providing a number of pairs. The cardinality clause $|f_A,\alpha| = |f_A,\beta|$ requires that the cardinality of f_A associated with index α be equal to the cardinality of f_A associated with index β.

The index *k* of *estar* in (29b) originates from (27)—it replaces γ—and is identified as Ran_{id} by the clause $k = \text{Ran}_{id}$. The index β originates from (28a)

[23] Dowty (1979), Landman (1992), Portner (1998), Rothstein (2004), Hallman (2009), Sun (2014), among many others. Arche (2014: 808) comes close to splitting PROG into BE+ING in her diagram (39a) for the form *estaba coloreando* 'was coloring' where *-ing* stands for the comma-interpretation of ASP (see Figure 1), but she uses the same structure in her representation (39b) for the IMP-form *coloreaba*, in which the comma stands for an empty node.

[24] The lambda-formulas in (27), (28) and (29) below look formidable but they are only given to ensure that the present analysis is formally well-grounded. One may skip the operators before the square brackets and then simply follow the main text for information about some of the clauses between the brackets. What counts is the final line (29b), which will be translated back into English. For full-fledged type-logical derivations, see the appendix of Verkuyl (2017). Expression (28b) is of the type ⟨⟨e, ⟨i, t⟩⟩, ⟨i, t⟩⟩, *estar* is of type ⟨⟨⟨e, <i, t⟩⟩, ⟨i, t⟩⟩, ⟨e, ⟨i, t⟩⟩> yielding an expression of type ⟨e, ⟨i, t⟩⟩ in (29a).

[25] These steps concern the lambda-application involved. *Cantar* is defined as a $\beta = \text{Ran}_{su}$-verb. The specific information about the demonstrative pronoun in the internal argument NP itself is ignored.

and is taken as the range of the composite function $\mathfrak{f}_{gc} \circ \mathfrak{f}_{su}$ by the clause $\beta = gc(\text{Ran}_{su})$. The clause $|\mathfrak{f}_{id},\alpha| = |\text{fsu},\beta|$ requires that $\mathfrak{f}_{id}$ and $\mathfrak{f}_{su}$ have the same cardinality. What this means can easily be understood by observing that the domain of $\mathfrak{f}_{id}$ is the same as the domain of $\mathfrak{f}_{su}$. This makes it possible to compare their ranges. As long as $\mathfrak{f}_{id}$ operates, $\mathfrak{f}_{su}$ operates as well. The application of $\mathfrak{f}_{gc}$ to the range of $\mathfrak{f}_{su}$ remains incomplete, as long as Ran_{id} is unbounded. Without any appeal to modality, the restriction $|\mathfrak{f}_{id},\alpha| = |\text{fsu},\beta|$ prevents the index β from being completed in **N** while allowing for $\mathbf{R}^+$-completion in *j* as described in (18) and (20).

The resulting -NDO(CANTAR-ESA-ARIA) in (28b) looks now for an operator replacing the variable Q by an appropriate value. In (29a), ESTAR takes (28b). The final line of the derivation is given in (29b).

(29) a. ESTAR(-NDO(CANTAR-ESA-ARIA)) ⇝ ...
$\lambda z \lambda \alpha\ \exists x\ \exists \beta [\text{ESTAR}(\alpha)(x)(z) \wedge \alpha = \text{Ran}_{id} \wedge \text{CANTAR}(\beta)(\text{A})(x)$
$\wedge \beta = gc(\text{Ran}_{su}) \wedge |\text{A}| = 1 \wedge |\mathfrak{f}_{id},\alpha| = |\mathfrak{f}_{su},\beta|]$

b. Lucía estaba cantando esa aria ⇝ ...
$\exists!\text{i}\ \exists\text{i}'\ \exists\text{j}\ \exists\text{k}\ \exists\text{x}\ \exists\beta [\text{ESTAR}(k)(\text{x})(\text{lu}) \wedge k = \text{Ran}_{id} \wedge$
$\text{CANTAR}(\beta)(\text{A})(\text{x}) \wedge \beta = gc(\text{Ran}_{su}) \wedge |\text{A}| = 1 \wedge |\mathfrak{f}_{id},\text{k}| = |\mathfrak{f}_{su},\beta|$
$\wedge k \preccurlyeq j \wedge j \approx \text{i}' \wedge \text{i}' < \text{i} \wedge i \circ \text{n}]$

The formula in (29b) introduces a contextually uniquely defined present domain *i,* a then-present domain *i'* in the past of *i,* a domain *j* containing the eventuality *k*, where *j* synchronizes with *i'* and it introduces an index β associated with the predicate CANTAR-ESA-ARIA(*x*). Finally, it introduces the variable *x* which occurs in the two predications making up (29b). It then says that the actualization of *k* in real time coincides with Lucia being the *x* involved in singing that aria in the partial actualization of the index β in real time of i'_a, partial because the actualization is restricted to its $\mathfrak{f}_{su}$-part in $\mathbf{R}^+$.

The present analysis is not dependent on the close relationship between *estar* and the gerundive nominal discussed in (27)–(29). In (26a), it is ESTAR that acts as an operator but transitive verbs that may occur with gerundive nominals do the same: to provide an index α for the clause $|\mathfrak{f}_A,\alpha| = |\mathfrak{f}_A,\beta|$. In tenseless sentences, the value of α will have to be determined by contextual information. An -NDO-construction is to be seen as always looking for two missing indices, in the case of (28b) the one of CANTAR in CANTAR-ESA-ARIA which is replaced by the β of P(x)(β) in (28a), in the case of (29a) the index of *estar*.

By separating -NDO from ESTAR, the present analysis explains both the observation in Fábregas (2015) that sentences like **Juan estaba odiando el pastel* 'lit: Juan was hating the cake' are not well-formed (*odiar* 'hate' is not a $\mathfrak{f}_{su}$-verb) and the observation that some stative verbs are allowed to express ongoing progressivity because sometimes the difference between the stative $\mathfrak{f}_{id}$ and the non-stative $\mathfrak{f}_{su}$ assumed in (13) may be blurred, as illustrated earlier for *hang* and *own*.

Just like its English counterpart *Lucia was singing that aria* in (26b), the Spanish *Lucía estaba cantando esa aria* in (26a) expresses continuity in $\mathbf{R}^+$ and it presents this in medias res. Note that there are two clauses expressing the absence of completion: (i) $|\mathfrak{f}_{id},\alpha| = |\mathfrak{f}_{su},\beta|$ makes it impossible to express completion; and (ii) $k \preccurlyeq j$ expresses underinformation about completion. Note

also that *estaba* is responsible for the clauses $k \preccurlyeq j \wedge j \approx \mathrm{i}' \wedge \mathrm{i}' < \mathrm{i} \wedge i \circ \mathrm{n}$. It follows that the difference between *Lucía estaba cantando* and *Lucía estuvo cantando* is to be found in determining the tense clauses contributed by *estuvo*. This will be done in §7.4.

7. Tense outside the range of the three oppositions

7.1. Introduction

Returning to Table 2, the question arises of what *canté* in 1c and *estuve* in the Indefinido continuo *estuve cantando* in 5c have in common that sets them apart from the tense forms in the two columns covered binarily.[26] The best way for finding an answer is for us to see the semantics of *canté* in terms of a tense form in a fierce competition with the Imperfecto in 1b and the Perfecto in 3a in order to survive while assuming that something similar determines the relation between *estuve* in 5c and the tense forms in 5b and 6a. The next step is to look back to the common ancestor of the Romance languages, Latin, and to try and see a development in which the two trios participate so that their current semantics can be understood.

7.2. On the history of differentiating between he cantado *and* canté

Historically, two facts are essential to a synchronic description of the difference between *he cantado* and *canté*. The first is that *canté* is a tense form derived from the synthetic Latin Present Perfect *cantavi*. The second is that the use of *he cantado* as an analytic perfect tense form has entered the Spanish language after a gradual transition in which it separated as a different tense form from *canté*. These two facts are well-documented in the literature on the development of Latin into the modern Romance languages.[27] We will see this development as a change into gradually adopting the three binary oppositions in (3) as part of a binary tense system due to the increasing prominence of the present domain *i* as the primary factor in determining the proper perspective for locating eventualities.

As to the Latin Present Perfect *cantavi* it is generally assumed that it had a resultative and an aorist value. According to many scholars, its resultative part has changed into the analytic Present Perfect of Romance languages, whereas its aorist part is expressed in Romance tenses such as the French Passé Simple and the Spanish Indefinido. More concretely, *he cantado* finds its origin in *cantatum habeo* —in that order—where the originally main verb *habere* develops into an auxiliary which some centuries ago took the first position rather than staying in the original postposition (see e.g. Bauer 2006). When compared with the Latin Present Perfect, the Spanish Indefinido can be said to have lost its presentness value to the auxiliary of the Spanish Perfecto: the Latin present tense form *habeo* in *habeo cantatum* has taken over this semantic element from *cantavi* and thus can be seen as the predecessor of the Spanish *haber*, with *he cantado* as the successor of *cantavi*, on that line. As part of this

[26] The Pretérito anterior *hube cantado* in 3c has become practically obsolete so we will not include it in the discussion.

[27] Harris (1982), Vincent (1982), Pinkster (1987), Salvi (1987), Bichakjian (1988), Schwegler (1990), Bauer (2006), among others. We are indebted to Luis García Fernández for his valuable comments on a former version of the present section.

development the Latin Plusquamperfectum form *cantaveram* disappeared in the indicative of Romance languages.[28]

The aorist part of the meaning of *cantavi* in Latin has remained in the current use of *canté*, while loosing its place in a system where it participated in the opposition between PRES (*cantavi*) and PAST (*cantaveram*). What it expresses is discreteness in the sense of pertaining to a completed token eventuality rather than having the possibility to remain indifferent to the distinction between token and type as in the case of the Imperfecto; cf. Fábregas (2015: 41-50). Consequently, there is no synthetic PAST of *canté* in the present Spanish tense system in the way in which *había* in *había cantado* is the PAST of *he* in *he cantado*. The current situation is that the Pluscuamperfecto form *había cantado* functions inside the binary system as the past of *canté* outside of it, *hube cantado* having become obsolete.

In his chapter on the French tense system, Benveniste (1966) distinguishes between tense forms used in a story as a way for a speaker of presenting what happened in the past on the one hand and tense forms typically used in an interaction between speaker and hearer in a discourse on the other (p.239). In the former mode, Benveniste harbours three tense forms: the Passé Simple, the Imparfait and the Plus-que-parfait. The interactional mode (*discours* in Benveniste's terminology) uses all tense forms except the Passé Simple, the most important ones being Present, Future and Present Perfect, which are excluded from the former mode. The interactional mode is characterized by the fact that its tense forms freely occur with the French pronouns *je* 'I' and *tu* 'you', whereas the use of these pronouns is excluded in the historic mode. Benveniste uses the division between the two modes in order to characterize the essence of what enables the Passé Simple in French to maintain its own niche, namely as the tense form of the 'récit historique'.

Two remarks are in place here. The first is, that Benveniste could have been seen as fully expressing a binary perspective on Romance tense systems had he not committed himself so explicitly to the use of the tripartition between Past, Present and Future ("an incontestable division", it says on p. 237). The eight forms in Table 2 all qualify as interactional tense forms presupposing a contextually determined agreement between speaker and hearer about the present domain *i* as harbouring the eventualities talked about using a present tense form. In that sense, the Indefinido tense forms outside the binary oppositions can be seen as belonging to a different form of organizing tense information, used in storytelling of some kind.[29] Interestingly, Benveniste admits that the two modes may mix (p.242): for him the distinction between the two modes seems to be a conceptual one used to explain persistence in the struggle for survival between tense forms. The second remark is that Benveniste is right in postulating a direct connection between an eventuality in the past and some anchoring point outside the PAST-PRES-distinction.

Our contribution to a better synchronic understanding of the double process of desintegration of the Latin Present Perfect is a hypothesis based on the idea that the development of the Spanish *haber*, first as a main verb and later as an auxiliary in the tense forms with PERF in Table 2, is part of the development of

[28] As described in Penny (1993), the Spanish Subjunctive Imperfective form *cantara* can be considered to originate in *cantaveram*.

[29] Harris (1982: 43) considers its classical Latin predecessor as 'the narrative tense par excellence'.

Romance tense systems into a system in which the third binary opposition between PERFand IMP has developed periphrastically on the basis of the presence or absence of auxiliaries rather than on the basis of inflectional morphemes. The hypothesis is then that the original interpretation of PERF in the binary opposition PERF vs IMP made room for shifting from expressing the positional use of the connective involved in the aorist (as we will show shortly) to the Jakobsonian view on completion advocated in the present paper. In such a shift, the temptation to see the present as the floating point n disappears in favour of seeing the present domain *i* as containing *n*. Table 2 shows that in spite of Benveniste's "incontestable division" it is quite easy to regroup all Spanish tense forms binarily except for the Indefinido forms (see González 2003: 19–29).[30] By characterizing the Spanish tense system binarily, one obtains the means to explain the particular position of the Indefinido as a semantic outsider in a natural way.

7.3. Returning to a synchronic analysis

Given the relatively close relationship between the position of the Passé Simple in the French and the position of the Indefinido in the Spanish tense system, we will take definition (30a) of the Passé Simple proposed by Verkuyl (2008: 226) as our point of departure.

(30) a. PS =: $\lambda\varphi \exists !v \exists k[\varphi[k] \wedge k < \nu]$

b. PS =: $\lambda\varphi \exists i' \exists j \exists k[\varphi[k] \wedge k = j \wedge j \approx i' \wedge i' < n]$

c. INDEF =: $\lambda\varphi \exists !v[\varphi[k] \wedge k < j \wedge j < \nu]$

In (30a), *v* is a contextually uniquely identifed index to which *k* relates anteriorly in the temporal sense in which the term anterior is being used in the present paper. The idea behind this was to provide an anchor point *v* somewhere in the past of or equal to n to which *k* can be directly related. In this definition, all structure contributed by the three binary oppositions in (3) is absent, from which it follows that PS is to be located outside the binary system. In Spanish, direct location would work in *Lucía llegó*$_{indef.}$ *el día después de mi salida.* 'Lucia came the day after my departure', where *k* can be seen as being located anteriorly to a contextually given anchor time *n*, in this case provided by the adverbial.

Definition (30a) suffers from not accounting for the aoristic element of completion, as rightfully observed by Lefeuvre (2014). She proposed (30b) as a correction for French.[31] Crucial in (30b) is to allow for a ternary partition of the third opposition: $k \preccurlyeq j$ vs $k \prec j$ vs $k = j$. We agree with Lefeuvre in adding the index *j* to (30a) as an improvement—after all, *j* was motivated as a tense index on the ground that every eventuality *k* has its own present domain *j*—but we disagree with her proposal to use the clause $k = j$ as expressing completion.

Firstly, if *j* is synchronous to the actualized part i_a of the present domain *i,* it will have the shifting *n* as its logical righthand end. But *n* is constantly shifting rightwards and therefore *j* cannot be seen as expressing completion itself, which would be the case with $k = j$. An immediate consequence of $k = j$ would also be

[30] The same holds for French as pointed out in Verkuyl (2008: 217–230) and Lefeuvre (2014).

[31] Given the fact that Lefeuvre uses a different notation than the one used here, (30b) is the closest approximation of what she must have had in mind.

that it predicts the impossibility of a sentence with a PS to contain a temporal adverbial modifying *k* and another temporal adverbial modifying *j*. For the Spanish Indefinido this would not work, witness *Ayer por la mañana llamó Lucía durante el desayuno* 'Yesterday morning Lucia called during breakfast'. Secondly, in storytelling due to a series of sentences with an Indefinido a series of *k*'s should be allowed to share the same present *j*. This is warranted by definition (30c), not by (30b). Finally, there is a more principled reason: Lefeuvre extends the binary opposition IMP vs PERF to a tripartition IMP vs PERF vs PS. This poses the problem of how to accommodate three members of an opposition as part of a binary system.

The improvement of (30a) as proposed in (30c) is that (30c) builds in the index *j* as the present domain of *k* whereas the present domain *i* remains absent, either because the index *v* is located before *n* or equals *n*.[32] This means that if one looks at (30c) historically, one could say that the binary system in Romance languages has developed into making room for *i* as the present domain and into making a bridge between *j* and *i* in a process of making the point of perspective taken by speaker and hearer for locating eventualities more important. If (30c) is the proper general format, then one could say that this development on its way to the present binary situation is a farewell to *n* as the present tense in exchange for making room for the present domain *i* of which *n* is a part.[33]

Our journey to the bottom of *k* in §5.3 led to representations of sentences with *ha cantado* and *cantaba* in (18a)–(21a), in which aspectual information interacts with tense information. Along that line, (31b) and (32b) represent the INDEF-sentences (31a) and (32a), respectively.

(31) a. Lucía cantó.
b. $\exists!v\,\exists j\,\exists k[\text{CANTAR}(k)(\text{lu}) \wedge k = \text{Ran}_{\text{su}} \wedge k \prec j \wedge j < v]$
c. Lucía cantó durante dos horas.
'Lucia sang for two hours.'

(32) a. Lucía cantó esa aria.
b. $\exists!v\,\exists j\,\exists k[\text{CANTAR}(k)(\text{A})(\text{lu}) \wedge |\text{A}| = 1 \wedge k = gc(\text{Ran}_{\text{su}}) \wedge 1 \leq |k| \leq |\text{A}| \wedge k \prec j \wedge j < v]$
c. Lucía cantó una aria durante dos horas.
'Lucia sang an aria for two hours.'

In (31b) the index *k* is in $\mathbf{R}^+$ on the basis of lexical entry (17). Thus it expresses $\mathbf{R}^+$-completion in *j* in the sense discussed earlier. This explains the [–T] nature of the predication *Lucía cantar* 'Lucia sing' and so there is no objection for it to co-occur with *durante dos horas* 'for two hours' in (31c). It is important to observe that Ran_{su} occurring in the clause $k = \text{Ran}_{\text{su}}$ of (31b) has

[32] A possible alternative for (30c) would be: $\lambda\varphi\exists!v[\varphi[k] \wedge k \prec j \wedge j \leq v]$, but we will not discuss the pros and cons here. This also holds for the option for the rich tense system of Georgian discussed in Verkuyl (2008: 262), namely that historically a fourth binary opposition preceding the PAST-PRES-opposition might have existed, which he calls *Not-now bound* vs. *Now-bound*. This option might also be the case for Greek and Latin.

[33] Te Winkel (1866) treats *i* as a point by identifying *i* and *n* and he treats posteriority in the second opposition as temporal. With *i* as a point a positional use of the third opposition is more plausible. In that sense, the development just sketched for Romance languages might be accounted for in terms of a transition from *i* as a point to *i* as a domain.

the length of the interval designated by *dos horas* 'two hours' in the case of (31c) because the adverbial modifies the length of the interval *k.* For (32c) with a [+T]-predication the story is only slightly different but $k < j$ also requires $\mathbf{R}^{+}$-completion in *j.* We return to it at the end of §7.4.

7.4. The continuous tense forms outside the binary oppositions

The Indefinido continuo *estuve cantando* in cell 5c of Table 2 shares an important property with the two binary forms in cells 5a and 5b: the presence of the present participle *cantando*. This makes it possible to take (33a) as point of departure, where (33b) is (29b).

(33) a. Lucía estaba cantando esa aria.
b. $[\text{ESTAR}(k)(x)(\text{lu}) \wedge k = \text{Ran}_{\text{id}} \wedge \text{CANTAR}(\beta)(\text{A})(x) \wedge \beta = gc(\text{Ran}_{\text{su}}) \wedge |\text{A}| = 1 \wedge |\mathfrak{f}_{\text{id}},\text{k}| = |\mathfrak{f}_{\text{su}},\beta| \wedge k \preccurlyeq j \wedge j \approx i' \wedge i' < i \wedge i \circ \text{n}]$

With (30c) available, the estuvo-form in the Indefinido continuo of (34a) and (35a) can now be understood in terms of (34b) and (35b).

(34) a. Lucía estuvo cantando.
b. $[\text{ESTAR}(k)(x)(\text{lu}) \wedge k = \text{Ran}_{\text{id}} \wedge \text{CANTAR}(\beta)(x) \wedge \beta = \text{gc}(\text{Ran}_{\text{su}}) \wedge |\mathfrak{f}_{\text{id}},\text{k}| = |\mathfrak{f}_{\text{su}},\beta| \wedge k < j \wedge j < \nu$

(35) a. Lucía estuvo cantando esa aria.
b. $[\text{ESTAR}(k)(x)(\text{lu}) \wedge k = \text{Ran}_{\text{id}} \wedge \text{CANTAR-ESA-ARIA}(\beta)(x) \wedge \beta = gc(\text{Ran}_{\text{su}}) \wedge |\mathfrak{f}_{\text{id}},\text{k}| = |\mathfrak{f}_{\text{su}},\beta| \wedge k < j \wedge j < \nu$

A comparison between (33b) and (35b) reveals that the difference between them resides in the difference between the binary tense structure $k \preccurlyeq j \wedge j \approx i' \wedge i' < i \wedge i \circ \text{n}$ and the structure $k \prec j \wedge j < v$ outside the binary system. This runs parallel to the difference between (20b) and (31b). What (33b) and (35b) share are (i) the clauses concerning β; and (ii) the fact that *k* is defined by $k = \text{Ran}_{\text{id}}$ so that *k* can never be discretized in **N**.

The present analysis provides a possible solution for a problem raised by an observation in Menéndez-Benito (2002: 16) and discussed in Arche (2014:809) with the help of the sentences in (36).

(36) a. Lucía estuvo cantando un aria durante dos horas.
Lucia be-INDEF.3ps singing an aria for two hours
'Lucia was singing an aria for two hours.'

b. *Lucía estaba cantando/cantaba un aria durante dos horas.
Lucia be-IMP.3ps singing / sing- IMP.3ps un aria for two hours

Arche tackles the problem of accounting for the difference between (36a) and (36b) in terms of a difference in the relation between Assertion time AT and Event time ET: she supposes that in (36a) AT "is ordered within" ET and

whereas AT in (36b) overlaps the whole ET. She is not completely satisfied with this outcome and leaves the solution to further investigation.[34]

We think that the binary approach proposed in the present paper makes a plausible solution possible. For this it is necessary to extend the material with some more empirical data together with a table in which the relevant clauses of the semantic representations of the progressive forms in (36) and (37) are given.

(37) a. Lucía estaba cantando un aria durante horas.
Lucia be-IMP.3ps singing an aria for hours
'Lucia was singing an aria for hours.'

b. Lucía estaba cantando arias durante dos horas.
Lucia be-IMP.3ps singing arias for hours
'Lucia was singing arias for two hours.'

c. ?Lucía estaba cantando durante dos horas.
Lucia be-IMP.3ps singing for two hours
'Lucia was singing for two hours.'

d. Lucía estuvo cantando durante dos horas.
Lucia be-IMP.3ps singing for two hours
'Lucia was singing for two hours.'

Table 4 shows that the instruction by the clause $k \preccurlyeq j$ in the bottom row is untenable due to the information given by the other clauses.

Table 4: Explaining the impossibility for IMP to occur in (36b)

	k	β	|A|	[±T]	μ_{hour}
(37a)	$k \preccurlyeq j$	$gc(\text{Ran}_{su})$	|A| = 1	[+T]	[0,∞]
(37b)	$k \preccurlyeq j$	$gc(\text{Ran}_{su})$	|A| ≥ 1	[–T]	[0,2]
(37c)	$k \preccurlyeq j$	Ran_{su}		[–T]	[0,2]
(36a)	$k \preccurlyeq j$	$gc(\text{Ran}_{su})$	|A| = 1	[+T]	[0,2]
(36b)	$*k \preccurlyeq j$	$gc(\text{Ran}_{su})$	|A| = 1	[+T]	[0,2]

The second column shows that the four sentences with the copula *estar* all have the clause $k \preccurlyeq j$ due to IMP. The clause $k \preccurlyeq j$ holds for a relation in $\mathbf{R}^{+}$, i.e. the possible option $k \prec j$ can only be seen as $\mathbf{R}^{+}$-completion in j and not as **N**-completion due to the stativity of the copula *estar*, as explained above. This

[34] Arche uses the VP *colorear tres castillos* 'paint three castles' in (36a) and *colorear un castillo* 'paint a castle' in (36b). Unfortunately, verbs like *colorear* are aspectually quite suspicious in terms of a choice between [+T] and [–T], as pointed out by Tenny (1987). Like *dibujar* 'draw', *empujar* 'push', *lustrar* 'rub', etc. *colorear* belongs to a category of verbs escaping from the Plus-principle mentioned earlier. They need additional information to obtain a clear [+T] at the phrase level for example by complementing the VP with the adjective *azul* 'blue' (see Verkuyl (1993: 329-349) for an extensive discussion of these verbs and for a method to retain the Plus-principle). This is why we discuss the problem raised in Arche (2014) with the help of the verb *cantar*.

works out well in (37a) because the *durante*-adverbial offers a durative escape route from the [+T]-specification making a measure function μ_{hour} operative in $\mathbf{R}^+$ which yields the unbounded interval [0, ∞] and so f_{id} can operate unboundedly on the basis of $|f_{id} = f_{su}|$ without completion of β in **N**.

In (37b), the *durante*-adverbial expresses the function μ_{hour} yielding the interval [0,2]. In this case, the escape route for unboundedness is provided by the information $|\beta| \geq 1$ making it possible for f_{id} to continue in the absence of information about **N**-completion of β, much in the way in which the verb *llamar* 'knock' was analyzed in §5.4 as possibly expressing an unbounded series of knocks. Sentence (37c) is somewhat marginal. One might explain that on the ground of there being a natural tension between the clause expressing a bounding measure function, a [-T]- predication and the underinformation about completion in N expressed by $k \leqslant$ j, the option *estuvo cantando* of (34a) being available for Spanish speakers in (37d). After all, the progressive is used to report about an eventuality in medias res. This is what lacks in the clause $k \leqslant j$ and what is done by $k < j$ in (37d).

Turning now to Arche's problem concerning the difference between the progressive forms in (36a) and (36b), one can see that the $k \prec$ j-clause of *estuvo* in (36a) requires $\mathbf{R}^+$-completion in j, as discussed in our analysis of (31) and (32). This means that (36a) may be true for a situation in which she had not yet completed that aria or a situation in which Lucia was singing that aria for the fourth time as part of a still unbounded repetition in **N** analogous to (37b). In other words, (36a) escapes from expressing **N**-completion in spite of the three clauses requiring application of *gc* because $k \prec j$ ensures that (37b) captures the eventuality somewhere *in medias res* before *gc* has applied. In the case of (36b), the IMP-clause $k \preccurlyeq j$ presents 'underinformation as to incompletion (of some sort)' in the neighbourhood of three clauses expressing completion. This makes a difference with $k \prec j$ where completion in $\mathbf{R}^+$ is required and it explains why sentences like (36b) are felt as un-well-formed: there is an internal contradiction between two sorts of information.

The remaining problem is: how to account for the fact that the IMP-form *cantaba* cannot replace *estaba cantando* in (36b) but that it may do so in (37a-c) even with a similar judgment about the marginality of (37c)? Our explanation is that with regard to (36b), the clause $k \leqslant$ j, the [+T]-specification and the measure function yielding a bounded interval [0,2] express conflicting information because the [0,2]-modification requires that the [+T]-information be completed, whereas $k \leqslant j$ expresses underinformation. Again, the available (32c) *Lucía cantó un aria durante dos horas* 'Lucia sang-INDEF an aria for two hours' as an alternative for ?*Lucia cantaba un aria durante dos horas*, can be explained in terms of $\mathbf{R}^+$-completion in *j,* as was done in (35c) expressing that Lucia completed singing an aria after two hours without finishing the aria itself (keeping in mind footnote 34). As to the dubious (37c) ?*Lucía cantaba durante dos horas*, we appeal to our analysis of (31c) *Lucía cantó durante dos horas*. Here again, there is something contradictory between presenting an interval [0,2], i.e. the instruction to complete *k* at 2, and using an IMP-form with the clause $k \leqslant j$ expressing underinformation with respect to *k.* That sort of tension is absent in (31c).

7.5. Rounding off

The general picture of the two Indefinido tense forms outside the three binary oppositions is that by the clause $k < j$ they express the meaning of completion in j restricted to $\mathbf{R}^+$-completion. This differs quite substantially from what is being expressed by PERF in the binary opposition IMP vs PERF. In this way, we see that there is a crucial difference between the tense forms defined by the three binary oppositions in (3) and the Indefinido forms. We also see that the Jakobsonian notion of completion does not apply to the latter; PERF applies to **N**-completion in j, whereas IMP expresses underinformation about this form of completion. INDEF is outside the range of the opposition between PERF and IMP by simply requiring a closed interval in $\mathbf{R}^+$ before v as defined in (30c). Our historical section suggests that the current meaning of the Indefinido is due to a split between two meaning elements defining the Present Perfect in Latin.

8. On the variation between *he cantado* and *canté*

So far we have discussed the Spanish tense forms without taking into account variation. There is a general conviction that, at least in European Spanish, adverbials such as *hoy* 'today' are compatible with the Perfecto, but not with the Indefinido, as shown by the asterisk in (39) and the absence of it in (38). Adverbials such as *ayer* 'yesterday' are compatible with the Indefinido of (41) but not with the Perfecto as indicated by the asterisk in (40). In other words, the Perfecto is used in hodiernal contexts, the Indefinido in prehodiernal contexts.

(38) Hoy he leído el periódico.
'Today, I have read the newspaper.'

(39) *Hoy leí el periódico
'Today I read the newspaper.'

(40) *Ayer he leído el periódico.
'*Yesterday, I have read the newspaper.'

(41) Ayer leí el periódico.
'Yesterday, I read the newspaper.'

The reality is more complex than this, the more so when we take into account crosslinguistic and dialectal variation of the uses of the Perfecto and Indefinido in the Spanish speaking world, as discussed in Schwenter and Torres Cacoullos (2008), Hurtado González (1998), Howe (2006), Martínez-Atienza (2008) and many others. One can easily find places where (39) and (40) are fully accepted without any sort of awareness of some restriction even in the background.

The general picture is that in Latin American varieties of Spanish the Indefinido in (39) is used as the only option, not always allowed in the standard peninsular variety which uses the Perfecto in (38). Camus Bergareche (2008) points out two characteristics of the perfect in Latin America, being used in durative and iterative contexts (also reflected in Squartini & Bertinetto (2000)) but never in recent past contexts. But there is also variation within the Latin American dialects. Howe (2006), Jara Yupanqui (2011), Rodríguez & Jara

Yupanqui (2011) show that the Andean variety follows the tendency that the Indefinido is the favorite form, but the Perfecto is still present in everyday use. Moreover, there are also some regions in Spain (Canary Islands, Galicia, Asturias, Leon) which seem to behave accordingly: they take (39) as a well-formed sentence, as shown for the Canary Islands by Serrano (1995).

Hurtado González (1998) and Howe (2006) show that the Perfecto is much more used in Spain than in the rest of the Spanish speaking world. Moreover, the use of the Perfecto in some varieties in Spain seems to be undergoing the same grammaticalisation path of other Romance languages, where the Perfecto takes over the Indefinido contexts, as discussed in Howe (2006). Kempas (2008) also noted that the perfect has been extended for perfective uses (in prehodiernal contexts).

Variation in the use of the Perfecto and Indefinido does not pose a problem for the binary approach. It can even be framed in binary terms. We noticed that the Latin Plusquamperfectum *cantaveram* disappeared in Romance languages, its role being taken by what in Spanish became *había cantado*. Therefore the inevitable struggle for survival between the Perfecto and the Indefinido is between occurring as the present of the Pluscuamperfecto within the binary system and occurring as its present but from the outside of it. The difference between Perfecto and Indefinido does not appear to be unbridgeable: after all it boils down to making use of the present domain *i* or not. In the positive case, a connection between *j* and *i* is available, in the negative case *j* is positioned with regard to an arbitrarily chosen contextually identified *v*. For Peninsular Spanish, the prediction is that the Indefinido will be pushed back to a niche, as already has happened in some of its dialects (cf. Schwenter 1994, Hurtado González 1998, Howe 2006), because two past tense forms suffice. In Latin American Spanish, there are also two possibilities: either the Indefinido will adopt the semantic properties of the expelled Perfecto or it will retain its current properties and allow for a special niche for the Perfecto. In both cases, a reduction of tense forms seems to be taking place.

9. Conclusion

The aim of the present paper was to show the advantages of a binary approach to tense and aspect over a ternary approach in the Reichenbachian tradition by applying a semantic theory of binary tense and aspect to the rich Spanish tense system. The third of the binary oppositions in (3) concerns the opposition between Perfect(ive) and Imperfect(ive). We argued that Jakobson's distinction between 'absolute completion' and 'non-committal with respect to completion or non-completion' can be made concrete as part of a binary tense system. This breaks away from the Reichenbachian tripartition in which the relation between R and E is defined positionally by connectives expressing anteriority, posteriority and simultaneity.

The Jakobsonian alternative fares well in seeing tense as a way of making a bridge between the present of an eventuality and the present domain of speaker and hearer and in seeing the completion information expressed by PERF as not being dependent on a point of reference. In this way, the interpretation of IMP as underinforming follows quite naturally. The next step was to determine the relation between IMP and PROG in Spanish. With regard to problems concerning the differences between the Indefinido continuo and the Imperfecto continuo, we applied Verkuyl's thesis that PROG involves basically two indices that are

related to one another and that IMP involves only one of these two indices. This established that the progressive use should be formally eliminated from the traditional readings of the imperfective.

The transition of Latin to Romance languages may be seen in terms of a development of tense forms breaking away from the positional use of the aorist in favour of a system in which the PERF/IMP-opposition is given an new (Jakobsonian) interpretation in the light of participating in a system of three binary oppositions which enables speakers and hearers to locate eventualities in a PRES-domain *i* or in a strictly separate PAST-domain *i´*.

The development into the direction of a binary system just mentioned makes it necessary for the Indefinido to compete with two tenses inside the system: the Imperfecto and the Perfecto. One way (the defensive one) would be to find a small niche analogous to what happened to the French Passé Simple, which seems to be happening in some varieties of Spanish spoken in Spain. Another way (with more brute force) is to mimick properties of the Perfecto up to the point of synonymity as is happening in certain varieties of Latin American Spanish. This results in simply occupying the place of Perfecto tense form by taking over its role in the binary system much in a way in which a young cuckoo throws out the regular young by mimicking. Whatever will be the situation in due time, the present paper aims at pointing out that from the point of view of semantics it is the Indefinido and not the Imperfecto that falls outside the binary system regulating the interaction between Spanish tense forms. How it will fight to prolong its existence is a matter of (modal) future.

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