Brands of Perfects: Semantics and Pragmatics

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1. Goals and assumptions of the paper

This paper aims at proposing a detailed account of the semantics and pragmatics of perfects (and in particular of the French *passé composé*) within the SDRT framework. We take this framework to be the ideal candidate for dealing with such issues resorting to the semantics/pragmatics interface.

We will try and substantiate the idea that tenses are associated with implicatures, which have a direct impact on their contribution to discourse structure. We will notably show that these implicatures arise in the context of an ongoing semantic evolution, and how they can be integrated within the economy of the SDRT framework.

1.1 Assumptions concerning lexical aspect

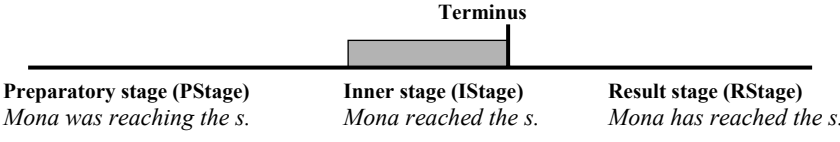
In this paper, we assume that the (disambiguated) lexical aspectual representations (from which eventuality entities are construed) comprise one or several *stages*, each stage describing a specific sub-eventuality. We consider that three types of stages should be distinguished (cf. Figure 1):

(i) INNER STAGES are 'core' stages ascribed to all eventuality types (cf. Smith's (1991) 'developments'); they are selected by unmarked uses of the past progressive or of the simple past, and when they are non atomic (roughly, non punctual), by *begin* and *start*; if an eventuality is telic, the inner stage includes its terminus (culmination)[1];

(ii) PREPARATORY STAGES are causal stages instantiated for some types of atomic (punctual) telic eventualities; they are selected under prospective readings of the past progressive (cf. *John was winning the race*); moreover, they are peripheral to the stage structure ('detachable' from it, cf. Smith, 1991), having a presuppositional status (they remain valid under negation and modality; thus *John did not win* (*the race*) entails the validity of a preparatory stage);

(iii) RESULT STAGES are ascribed to all eventuality types, with some structural differences between them (cf. Caudal (2005) for details); they can be described by sentences in the perfect.

Figure 1: Stage structure for predicative structure *Mona – reach the summit*



1.2 Semantics and pragmatics of tenses

Determining the nature of the aspectual contribution of tenses is a crucial task which we must undertake prior to our study of perfects. We base our definition of this contribution on the notion of aspectual viewpoint (Smith 1991), which captures what part of an eventuality is focused on and therefore asserted by the speaker. In addition to this, we also make use of morpho-syntactically controlled coercion operators (de Swart 1998, Bonami 2002) in case the sentential input does not match the aspectual viewpoint operator at play.

[1] Going against a current trend in the literature, cf. e.g., Kamp & Reyle (1993), we do not take terminuses (i.e., final points of inner stage) to be stages, because tenses cannot focus exclusively on them.

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We follow Caudal & Roussarie (2005) in taking for granted that the aspectual content of tenses is crucially connected with illocutionary force (this idea being itself related to Smith's (1991) analysis of aspectual viewpoints). Thus it is a cross-linguistic fact that tenses associated with so-called imperfective viewpoints (in the sense of Smith 1991) are also frequently used to refer to counterfactuals or hypotheticals (see e.g., the counterfactual readings of the French *imparfait*), while aorist-like tenses such as the French *passé simple* cannot accept similar readings (cf. Caudal, Vetters & Roussarie, 2003).

1.1 Components of the theory and the semantics/pragmatics interface

The formal model proposed here is based on recent versions of the SDRT framework. It includes a discourse semantic module (i.e., an explicit compositional dynamic semantics) containing speech act tokens π, related by discourse relations – which are taken to be speech act types (cf. Asher & Lascarides 2003); following Asher & Lascarides (2003) and Asher & Roussarie (2004), we will dub this module the *Logic of Information Content* (LIC for short).

In addition to this compositional semantics, we also make use of a *Logic of Information Packaging* (LIP for short) which is concerned with computing discourse relations (among other things). We intend to distinguish here between two kinds of implicatures associated with tenses : discourse structure relevant vs. discourse irrelevant implicatures. We will show that perfects differ both with respect to their semantics and their discourse-relevant implicatures. Finally, we will shortly contrast our approach with that defended in Portner (2003).

2. The aorist/perfect distinction and brands of perfects

2.1 Perfects vs. aorists

We take perfects and aorists to differ both pragmatically and semantically. In short, we define perfects as resultative viewpoint tenses, and aorists as perfective viewpoint tenses.

Assertive utterances in some 'canonical' perfect involve the presence of a result stage within the compositional semantics (i.e., LIC; in this sense, perfects express resultativity); the presence of result stages within the compositional semantics seems to license causally-reverse discourse relations (such as the *Explanation* relation in (1)). On top of this, non-canonical types of perfects can make an inner stage accessible to the component of the theory computing discourse relations (LIP), as we will see later.

(1) The Bismarck has sunk (π_1). The British fleet shelled it (π_2).

On the contrary, assertive utterances in some 'pure' aorist tense involve the presence of an inner stage within the compositional semantics (LIC). They also cause a result stage to be accessible within the LIP, so that 'narrative' discourse relations (e.g., *Narration*) can bear on the associated speech act referent – indeed, since both an inner stage and a result stage are accessible within the LIP, a transition can be constituted between them. Note however that such tenses bar causally-reverse discourse relations. Thus the French *passé simple* (PS henceforth) is incompatible with a reverse causal order in discourse (2a), whereas the French perfect (*passé composé*, PC henceforth) accepts it in (2b).

(2) a. *La maîtresse gifla* (PS) *mon fils.* ??*Il arriva* (PS) *en retard.*
b. *La maîtresse a giflé* (PC) *mon fils. Il est arrivé* (PC) *en retard.*
('The teacher slapped my son in the face. He was late.').

2.2 Brands of perfects : degrees of aoristicization

It is common wisdom that perfects exhibit very different distributional and interpretative properties across languages, see e.g., Nedjalkov (1988), Giorgi & Pianesi (1997), Pancheva (2003). We intend to show that several fairly distinct brands of perfects can be formally characterised in terms of the semantics/pragmatics interface, depending on how close they are to aorists. Indeed, according to Nedjalkov (1988), perfects are born and die along the lines of a universal cycle. The cycle begins with

stative forms, evolving into resultative statives, which are gradually grammaticized as flexional affixes (that is, perfects), describing some result state (their semantics is essentially resultative at this point). If perfects keep on evolving, the next step is usually about acquiring aoristic properties. Perfects become notably compatible with narratives based on temporal succession, and with past temporal modifiers (although morphologically speaking, they remain some kind of present tense, or at least some kind of stative resultative form). Eventually, they can die as perfects and become full-fledge aorists (cf. the Latin *perfectum*, which gave birth to the French *passé simple*).

In order to characterize the degree of aoristicization of perfects, we will focus (i) on their ability to combine with past time temporal adverbials such as *yesterday* or *at four* (ii) on their ability to occur within 'narrative' discourses (cf. the *Narration* discourse relation in SDRT). We take these two properties to be one of the most central distinctions between 'pure' perfects and perfects having moved towards aorists; and the conjunction of these two criteria has not been examined in any work we are aware of.

2.3 The case of the passé composé

An interesting and striking property of the evolution of the French *passé composé* is that it became compatible with narratives based on temporal succession a long time before it started combining with past time temporal modifiers. Thus, while the PC became compatible with narrative discourses (cf. (3)) as soon as the 12th century, it rejected *hier* ('yesterday') and other past time temporal modifiers until the 17th century (cf. Caudal & Vetters 2003).

(3)

Sun destre guant a Deu en puroffrit;	'His right-hand glove, to God he offers it;
*Seint Gabriel de sa main l'**ad pris**.*	Saint Gabriel from his hand took (***take***-PC) it.
Desur sun braz teneit le chef enclin;	Over his arm his head bows down and slips,
*Juntes ses mains **est alet** a sa fin.*	Joining his hands, he finished (***finish***-PC) his life.
Deus tramist sun angle Cherubin,	God sent him down His angel cherubin,
E seint Michel del Peril;	And Saint Michael, we worship in peril;
Ensembl'od els sent Gabriel i vint.	And by their side Saint Gabriel alit;'
	(*The song of Roland*, 176.15, lines 2389-2395)

In other words, the PC went through at least three distinct phases as a tense :

(i) till the 11th century, it remained a pure resultative perfect, very much like the English *perfect* ; in other words, it rejected past time modifiers, and could not convey temporal succession between events ;
(ii) from the 12th century to the 17th century it was compatible with temporal succession but not with past time modifiers ;
(iii) from the (late) 17th onwards, it accepted both narrative discourses and past time modifiers.

The transformation of the *passé composé* (PC) into a tense accepting past time modifiers has been only recently demonstrated. For instance, *hier* ('yesterday') has been shown to appear almost exclusively within sentences in the *passé simple* (PS) until the 17th century. By the end of the 18th century, it had become fully compatible with the *passé composé* (cf. Liu 2003).

Following Caudal & Vetters (2003), we want to argue here that this stage (ii) in the evolution of the PC can only be accounted for if one carefully distinguishes between the semantics and the pragmatics of this tense. If discourse relations are determined at the semantics/pragmatics interface and the compatibility with temporal modifiers at the syntax/semantics interface, then one is forced to conclude that the pragmatics of the PC evolved before its semantics did. And indeed, from a diachronic point of view, the idea that pragmatics prepares the ground for semantics sounds appealing. To put it short, the early old French PC (as in (i)) semantically described result stages (anchoring them in the present) but allowed for resultative (pragmatic) inferences about inner stages; in middle and classical French (cf. (ii)) it still described result stages but could be pragmatically associated with transitions between inner and result stages (i.e., (past) transitions are inferred) – it was so to speak a 'pragmatic'

aorist. Finally, it became (cf. (iii)) both a perfect and an aorist in post-classical French, semantically speaking (the PC is now compatible with both resultative and transitional readings; it can temporally anchor both inner and result stages).

We assume in what follows that narrative discourse relations such as *Narration* require in their precondition that a transition be computable at the semantics/pragmatics interface. In their turn, transitions can be computed iff. an inner stage and a result stage are both accessible at the same interface, with the additional requirement that some change-of-state must obtain between them.

2.4 Three brands of perfects

Capitalizing on this data and generally on these tests, three brands or types of perfects can be identified. While we do not claim that these types are cross-linguistically universal, we believe that they are frequently realized. Their semantic and pragmatic properties are summarized in Figure 2 (assuming that the ability to occur within narrative discourses requires special pragmatic factors).

Figure 2 : The semantics and pragmatics of brands of perfects

	Brand of perfect	**Past time modifiers**	**Narrative discourses**
Type 1	Canonical perfect	*	*
Type 2	Non-canonical perfect with aoristic pragmatics	*	OK
Type 3	Perfect with a partly aoristic semantics	OK	OK

Instances of perfects of type 1 comprise the modern English Present perfect, the French *passé composé* before the 12th century ; instances of type 2 comprise the *passé composé* between the 12th and 17th century ; and instances of type 3 comprise the classical and post classical *passé composé* (i.e., after the 17th century).

It is rather clear that English present perfect cannot really accept narrative uses (4), except in certain dialects of English (cf. Engel & Ritz, 2000, Fryd, 1998), and it is a well known fact that it rejects past time temporal modifiers.

(4) ??Yannig **has left** (π_1). (Then) Mona **has arrived** (π_2). (*Narration*(π_1,π_2))

To summarize, type 3 differs semantically from type 1 and 2 ; whereas type 1 differs pragmatically from types 2 and 3. We will now try and provide an analysis for these three brands of perfects.

3. On the treatment of the perfect as *resultative* tense

As indicated above in section 2.3, there are two essential kinds of data on which we would like our account to be underpinned, namely the compatibility or incompatibility of perfects with (i) past time modifiers and (ii) narrative discourses. Compatibility or incompatibility with past time modifiers is accounted in a very straightforward manner in our theory: the inner stage will be accessible to such modifiers if and only if some perfect (e.g., PC in modern French) introduces the inner stage within the compositional semantics AND treats it as past. Otherwise, these modifiers are ruled out. Compatibility or incompatibility with narrative discourses is a more subtle issue, particularly when it comes to the apparent divorce between semantics and pragmatics in the type 2 of perfects (interestingly, none of existing formal accounts – including Portner's (2003) – pays any attention to this very issue).

In order to ascertain the importance of these empirical foundations for a formal theory, we'll review (section 3.1) and discuss (section 3.2) existing accounts of the perfect before presenting ours.

3.1 A survey of the existing accounts of the perfect

From a formal point of view, existing approaches to perfects, particularly approaches to the English perfect, fall into two broad classes :

(i) works advocating an extensional treatment of perfects, which are considered to be (result) state-denoting forms (see e.g. Parsons 1990, Kamp & Reyle 1993, de Swart 1998, de Swart & Molendijk 2002) ;

(ii) works advocating an intensional treatment of perfects, which are considered to be property denoting forms (see e.g. Kratzer 2000, Portner 2003).

Other important criteria for classifying existing approaches include whether they trace back the differences between all the contextual uses of perfects to the semantic and/or to the pragmatic component of the theory.

The pragmatic approach is best illustrated by McCoard (1978), Declerck (1991), Klein (1992, 1998) and, most recently, Portner (2003). These accounts rely on a unique, 'light' semantics for the perfect, but only Portner (2003) offers a detailed treatment of how the main interpretations of the perfect are derived. Moreover, Portner proposes a modal pragmatics for the perfect (again, along with a rather vacuous semantics). So one can claim that there exists no account of the perfect based on an aspectuo-temporal analysis at the semantics/pragmatics interface. This is precisely the solution we intend to explore here.

As in Portner (2003), many facts related to the interpretation or distribution of perfects are here explained in pragmatic terms. However, as we will show in section 3.2, our analysis departs from Portner's (2003) in three important respects : we argue that (i) the aspectuo-temporal semantics of perfects is far less vacuous than the one Portner ascribes at least to the English (present) perfect[2] and that (ii) this semantics is centrally connected with the notion of aspectual viewpoint – according to us, perfects express some kind of resultative viewpoint; and (iii) we take discourse relation issues to be of paramount importance in the study of perfects, whereas Portner (2003) ignored them, dismissing them as being complex contextual phenomena (again, at least in the case of the English perfect).

3.2 Portner (2003) and the notion of resultativity

While Portner's (2003) analysis essentially used some modal pragmatic mechanisms in order to account for much of the present perfect's interpretation and distribution, we want to claim that all 'resultative' perfects (such as the English perfect) have a rich aspectuo-temporal semantics, dominated by the notion of 'resultativity', on top of a rich pragmatic dimension. We believe that the burden of interpretation should be more evenly shared between semantics and pragmatics than was proposed in Portner's (2003) analysis.

Let us first examine our claim that perfect expresses a *resultative* viewpoint, namely a viewpoint focusing on a result stage. The role of resultativity in the semantics of the perfect has been questioned to a certain extent by Porther (2003). Portner's objections against standard result-state based theories can be summarized as follows: these theories fail to account for (i) the observed compatibility or incompatibility of the perfect with certain type of temporal adverbials, (i.e., the present perfect rejects *yesterday* but accepts *only recently*, cf. *Mona has arrived only recently*), (ii) asymmetries with the past perfect in that respect (the past perfect accepts a wide range of past temporal modifiers), (iii) the so-called 'lifetime effect' of the perfect[3], and (iv) the inability of result state-based theories of the perfect to account for a wider kind of 'resultative' meaning for that tense. We will show in the remnant of this paper that our theory can (notably) account for (i), (ii) and (iii). We will deal with (iv) in this section, for it is a crucial issue: Portner concedes with (iv) that a wider conception of resultativity is compatible with his account of the perfect – namely, as long as one does not claim that the 'resultative meaning' of

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[2] Portner (2003:460) thus claims that *The truth-conditional contribution of the perfect is temporal in nature. This aspect of its meaning is more limited than has been previously supposed, however, and crucial contrasts like that between continuative and non-continuative readings are not based in the meaning of the perfect, or in an ambiguity, but follow from independently needed principles.*

[3] Portner (2003) argues that a contrast such as ??*Einstein has visited Princeton* vs. *Princeton has been visited by Einstein* cannot be easily captured by result state-based theories of the perfect. According to him, they also fail to explain why (c) *Guthenberg has invented the art of printing* is somewhat odd. Portner's explanation is based on McCoard's (1978) 'extended now' analysis : (c) is out because Guthenberg's invention is somehow too far ago ; it cannot be part of the 'extended now' interval. Portner's analysis of (c) can be transposed here, because our analysis combines a resultative facet with the notions of current relevance and 'extended now interval'.

the perfect is to be understood exclusively in terms of *result states*, but rather as a much more general kind of result.

To illustrate (iv), Portner notes that sentences in the perfect such as (6b) or (5) do not require any present result state to be available.[4] According to Portner, (5) points out to some sort of prediction about the likelihood of large asteroids hitting the Earth, and does not need to refer to a proper 'result state', but to an epistemic result so to speak (i.e., the speaker's prediction is based on knowledge of the history of previous impacts). Similarly, in (6b), it is not *per se* the result (state) of Mary having read *Middlemarch* which makes her an expert in Eliot's style, but rather some causal inference made between the result state of having read *Middlemarch* and some state of being such an expert – and indeed, the latter state is by no means a 'result state', although it is a consequence of Mary having read *Middlemarch*.

(5) The Earth has been hit by giant asteroids before (and it probably will be again).

(6) a. A : We need to get an explanation of George Eliot's style. Who can we ask ?
b. B : Mary is smart and she has read Middlemarch. So we can ask her.

Inoue (1979) and Portner (2003:471 sqq., 501 sqq.) argue that sentences in the perfect can be seen as predications about a 'topic' inasmuch as topics can be seen as a set of questions one seeks to answer. For instance, according to Portner,

(5) is about answering an implicit, presupposed question, i.e., *Is the Earth in danger of being hit by giant asteroids* ?, while (6b) answers an explicit question. In a nutshell, Portner considers the meaning of the present perfect to consist essentially in the combination of a weak temporal content (some requirement about current relevance, in fact) with such an implicit question and an epistemic component of meaning. Portner's (2003) position is in fact a rather subtle one.

Although we do not endorse Portner's (2003) analysis, our conception of resultativity does not fall under Portner's (2003) or Inoue's (1979) criticisms because we claim that the resultative meaning of perfects is derived from contextually determined predications, combined with the notion of 'extended now' interval (thus partly following Portner's and Inoue's line of thought).

By using the term 'resultativity', we do not refer to any such a thing as 'affectedness' or mere 'result state'; that is, like Portner, we do not view resultativity as a result state predication over an affected argument NP (typically a patient). We view it as a particular way of mobilizing lexical semantics (stage structures in fact) as well as contextual reasoning in order to identify an eventuality discourse referent within the current context which corresponds to a predication over of some argument NP within a sentence in the perfect. For instance, if I say

(7) My son has thrown a ball onto the roof. (inspired from Parsons 1990)

this utterance may refer to an extremely large number of contextually construed eventuality referents, more of less loosely connected with the aspectual lexical content of this sentence (it could about my son having proved that he could throw a ball onto the roof, or any of the actual consequences for him (cf. Parsons's (1990) notion of 'consequent state') – such as me expressing anger about my son – and which somehow are still presently relevant about a thematically salient argument NP). Therefore, the resultative content of the *perfect* should not be restricted to so-called result states (i.e., the relevant resultative eventuality for a sentence such as *Mona killed Yann* need not be about Yann's being dead).

In our view, resultavity involves some contextually and presently relevant eventuality referent (i.e., pertaining to Mc Coard's (1978) 'extended now interval') having a connection[5] with a result state

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[4] Portner specifically claims that the (present) perfect is epistemic in nature. According to him, the perfect used in (5) conveys the idea that the Earth *can* be struck again by such asteroids. Portner places this kind of epistemic modality at the root of the interpretation of the perfect. We do not adhere to this analysis ; in our view, *before* and the parenthetical largely contribute to ascribing such an interpretation to the perfect in (5). We find it hard to come by a similar epistemic interpretation in most cases, particularly in the absence of linguistic markers contributing to creating such a reading (cf. *before*). One wonders for instance what kind of epistemic modality could be associated with a sentence such as *John has died*. Clearly, this cannot mean that John *can* die again.

[5] It seems in fact that the 'actual' result state is always part of some causal chain that extends up to the presently, contextually relevant discourse referent. Thus, if we consider a sentence like 'my son has thrown a ball onto the

which existed at some point in the past. This eventuality referent is construed by a discursive reasoning process, on the basis of aspectual lexical information, as well as contextual and world knowledge. In short, we treat perfects as establishing a semantic relation between a result stage descriptor and an eventuality referent whose semantic nature and extent (or granularity) notably varies with contextual factors. This step is necessary in order to account for the so-called 'lifetime effects' of the English perfect. Thus (8a) is rendered infelicitous by the fact that Einstein has been long dead; the lexical aspectual information about his having visited Princeton cannot be used in order to determine any of his presently, contextually relevant properties. This is not so with (8b) since Princeton still exists.[6]

(8) a. ??Einstein has visited Princeton.
b. Princeton has been visited by Einstein.

For the sake of simplicity, we will simply refer to these contextually-built results as result stage referents, or just result stages. The precise procedure required in order to construe them will not be discussed here – we leave this aside as a matter for future investigations.

3.3 Perfects, implicatures and the semantics/pragmatics interface

We consider that 'pure' perfects (like the English *present perfect* or the PC in early old French) express a resultative aspectual viewpoint anchoring the result stage in some extended sort of present, while 'aorist-like' perfects (like the modern PC) express more complex aspectual viewpoints, anchoring not just one but two stages (namely, they also anchor the inner stage in the past). We take aspectual viewpoints to assert certain stages semantically, possibly treating others as implicatures (Grice 1975), some of them becoming available at the semantics/pragmatics interface in order to establish rhetoric relations. Although the idea that implicatures could be used in order to model the interpretational behaviour of tenses has been present in the field at least since Comrie (1985) and Dahl (1985) (see also Levinson (2000:95-96)), it has never been seriously pursued, let alone formally implemented. We will try and bridge this theoretical gap here.

4. An analysis within the SDRT framework

Our treatment of perfects is couched within the SDRT framework, since it is dedicated to the interpretation of discourse at the semantics/pragmatics interface. We will show in this section that in SDRT terms, our account of perfects at the semantics/pragmatics interface should make it possible to account for the possibility or impossibility of establishing certain discourse relations between an utterance in the perfect and its discourse context (such as *Narration* relations), since section 3 made it clear that this kind of data is essential in order to build up a theory of perfects.

4.1 Semantics vs. Pragmatics : capitalizing on the LIP/LIC architecture

As mentioned above, pragmatics and semantics are interfaced in SDRT by means of two distinct – but connected – logical components, that is, two reasoning modules. The first of these two components, the *Logic of Information Content* (LIC), is a standard dynamic predicate logic within which discourse

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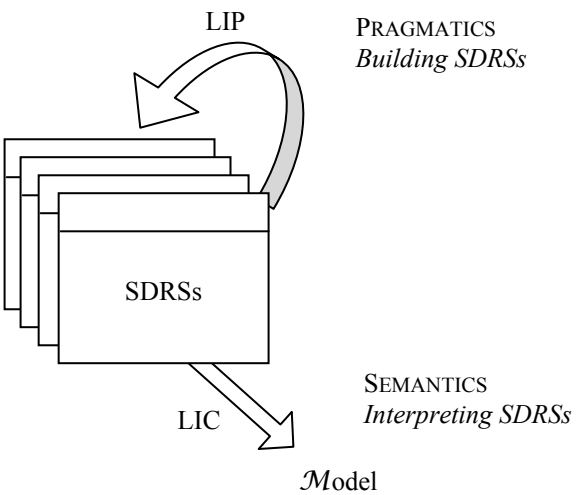
roof', although the state of the ball being on the roof may be well over now, some of its consequences (e.g., my anger about my son, or my son being capable of throwing balls onto the roof) can extend up to the present time. The point with the present perfect is that the entity about which these consequences are predicated should be currently 'available' (e.g., alive, in the case of a living entity).

[6] As noted by Inoue (1979), though, the very same example can be uttered felicitously in a specific context ; namely if *A* asks 'Which Nobel Laureates have visited Princeton ?', then *B* can answer 'Let's see, Einstein has, Friedman has…'. As suggested by Inoue, the issue is not whether Einstein as a person still exists, but whether Nobel Laureates in general still exists – i.e., whether Nobel Laureates are not an extinct 'species'. It is unclear to us whether the complex notion of 'topic' proposed by Inoue (1979) and Portner (2003) in order to account for such examples is really necessary. Indeed, in this case, Einstein is not considered as an ordinary individual human being (unlike in (8)) ; he is an element belonging to a group with a semantic type of its own – and this typing certainly affects the way we can make Einstein 'currently relevant'.

structures (namely SDRSs) are interpreted relatively to a model. Truth conditions are computed within this component. The second component, the *Logic of Information Packaging* (LIP), is non monotonic; it only shallowly accesses the information content from the SDRSs, so as to make it decidable. SDRSs and discourse relations are contextually computed and inferred in the LIP, since this component implements the pragmatic (implicature-like) principles underlying discourse processing (which consists in building discourse representations, see Asher & Lascarides (2003) for a detailed implementation; see also Figure 3 for a graphic illustration).

Figure 3 : Logic of Information Packaging vs. Logic of Information Content



We would like to show along these lines that some parameters of the meaning of tenses primarily resort to the model-theoretic interpretation, and hence pertains to the LIC, whereas some other parameters merely pertain to discourse coherence, and play a role only within the LIP. Formally, these different contributions are organized as follows : LIC-sensitive information is encoded as DRS conditions, whereas LIP-sensitive information is encoded as markers on speech act referents (π).

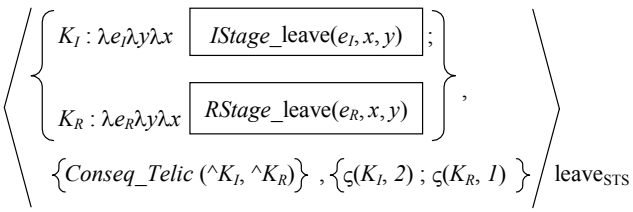
Basically, we will expose our account, starting with mainly LIC-related issues (section 4.2) before moving gradually to more LIP-related issues (section 4.3).

4.2 Implementing the analysis at the semantics/pragmatics interface :

Stage structures encode lexical aspectual information. Several eventuality descriptors are lexically associated with verbs. This model of lexical aspect (couched in a DRT-style semantics) involves four types of objects: (i) eventuality discourse referents, (ii) stages (which are eventuality descriptors, treated as sub-DRSs), (iii) abstract aspectual relations between stages (spelling out their causo-temporal connections), and (iv) salience ascriptions to stages (each stage receiving a salience degree via a salience ascription function ς).[7] Event discourse referents (noted $e_1,\ldots,e_n$) primarily express spatio-temporal coordinates. Since stages are modelled using sub-DRSs, stage relations are DRS conditions; they are second order predicates of the form *Relation*($\hat{}K_1$, $\hat{}K_2$). The aspectual lexical information encoded within the lexical entry for *leave* is given below in Figure 3 ; inner stages are noted *IStage*, result stages are noted *RStage* ; *Conseq_Telic* is a telic stage relation. Note that in the case of *leave*, the truth conditions for the result stage can thus be understood as 'x is not in y'.

[7] In short, stage salience expresses some specific kind of lexical aspectual information which interacts later in the semantic composition with the aspectual impact of adverbials and tenses. See Caudal (2005) for details, and a discussion of the empirical arguments supporting the introduction of stage salience.

Figure 4: Stage structure for *leave*

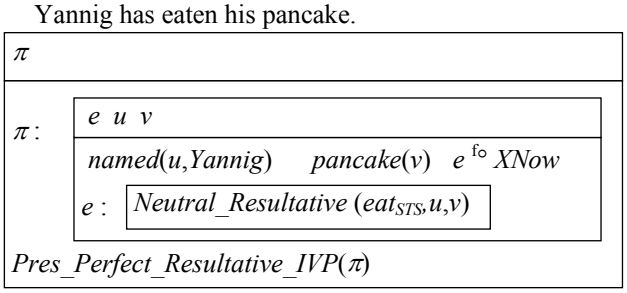


We take the perfect to express a resultative viewpoint introducing result stages within the compositional semantic component of the theory. (10) represents the formal treatment of (9), where the discourse referent *e* reifies the aspectuo-temporal interpretation of an utterance (it is properly described by the DRS following the semi-column on its right hand-side; cf. de Swart 1998 for this use of DRS as eventuality descriptors). The condition *e* f° *XNow* indicates that eventuality *e* overlaps with the left part of the 'extended now' (*XNow* for short) interval (cf. Mc Coard 1978) – the right hand-side of *XNow* cannot temporally overlap with *e*.[8] Finally, the *Neutral_Resultative* aspectual viewpoint function (i.e., the aspectual contribution of the perfect) selects a result stage from a stage structure eat_{STS} (i.e., the aspectual contribution of a tenseless sentence), applies it to entities *u* and *v* (i.e. *RStage_eat*(*e*,*u*,*v*)), and integrates it within the compositional semantics – so that (10') is semantically equivalent to (10).

Associated with the simple present perfect, *Neutral_Resultative* is aspectually sensitive insofar as it makes sure the lexical entry matches the aspectual criteria imposed by this tense – i.e., that a dynamic, atelic stage structure cannot contribute its result stage (cf. ??Yannig has swam).

(9) Yannig has eaten his pancake.

(10)



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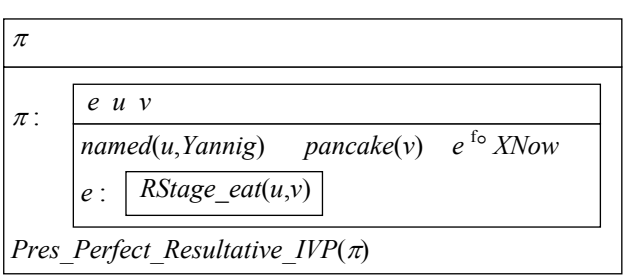


Pres_Perfect_Resultative_IVP is an illocutionary viewpoint operator associated with the simple present perfect. It blocks discourse relations such as *Narration* within the LIP because it does not make the inner stage available for computing discourse relations (we take *Narration* to involve both an inner and a result stage).

[8] This condition partly accounts for the asymmetries observed between the present perfect and the past perfect with respect to past time modifiers (cf. section 3.2): in contrast, the past perfect would be associated with condition *e* < *Xnow*, thus locating the result stage in the past. Moreover, we take the past perfect to be an aspectuo-temporally ambiguous form (i.e., it can also focus on the inner stage – it can introduce both types of stages within its compositional semantics), because it includes a past tense morpheme. As a consequence, this tense can associate past time modifiers either with an inner stage or with a result stage.

Note in passing that we adhere to Portner's (2003) idea that some of the temporal effects of the English simple or progressive perfect (e.g., its 'special' temporal effects with certain types of eventualities) follow independent pragmatic principles resorting to the domain of aspect. Specifically, Portner claims that the temporal contrast between *He has left* (where the inner stage must be past) and *He's been sick* (*lately*) (where the inner stage can be either past or present) has nothing to do with a temporal semantics associated with the perfect morphemes, but rather is due to the temporal underspecification of the present morpheme, which causes independent pragmatic principles to apply. This fits nicely with the idea defended here that the present perfect does not anchor the inner stage anywhere, semantically speaking, thus leaving this task to purely pragmatic principles.

4.3 Accounting for types 1, 2 and 3 of perfects

The real challenge for any formal account of perfects is of course to explain the semantic and pragmatic differences between types 1, 2 and 3 of perfects. Clearly the main shift within the semantic content of the *passé composé* occurred between types 2 and 3.

Indeed, type 1 (cf. (11)-(12)) and type 2 perfects (cf. (13)-(14)) possess a (by and large) common semantics. It excludes inner stages from the compositional semantics, and locates result stages with respect to the 'extended now interval' by means of condition e fo *XNow*, which indicates that the eventuality described by a sentence in a type 1 perfect at least overlaps with the left part of *XNow*.[9]

Type 1, whose semantics is represented in (12) and (12'), is associated with a resultative viewpoint function *PCResultative*($audire_{STS}$, u) (i.e., *PCResultative* applies to stage structure $servir_{STS}$ and entity u), selecting the result stage *RStage_audire*(e,u) – so that (12) and (12') are semantically equivalent.

(11) 'Del corps asaz l'avez audit' ('You've heard enough about his body')
(*Vie de Saint Léger*, 235.1 ; Xth century)

(12)

π	
π :	e u
	u=*you* e fo *XNow*
	e : *PCResultative*($audire_{STS}$, u)
Present_Resultative1_IVP(π)	

(12')

π	
π :	e u
	u=*you* e fo *XNow*
	e : *RStage_audire*(u)
Present_Resultative1_IVP(π)	

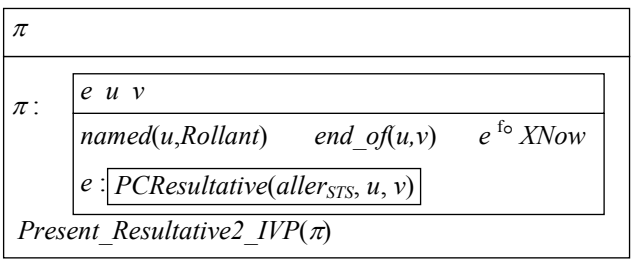
In (14), which represents an instance of type 2, the very same aspectual viewpoints function *PCResultative*($aller_{STS}$, u, v) selects the result stage DRS *RStage_aller*(e,u,v) within the stage structure $aller_{STS}$ of the verb *aller* ('to go'); it is thus semantically equivalent to (14'). The role of *PCResultative* is thus preserved across types 1 and 2. However, these two types of perfects differ with respect to the kind of illocutionary viewpoint function which they comprise. Type 1 is associated with the

[9] Note that according to us, sentences such as *Mona has left only recently* are acceptable because *only recently* bears on the result stage realized by entity e, and locates it with respect to *XNow* (it indicates that this stage is not located very far from the left part of *XNow*). We do not take *only recently* to bear on the inner stage, as suggested by Portner (2003); cf. our discussion of resultativity in section 3.2. This answers one of Portner's (2003) arguments against resultativity-based approaches to perfects.

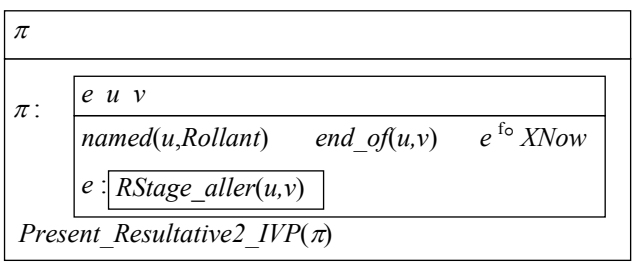
Present_Resultative1_IVP function, whereas type 2 is associated with the *Present_Resultative2_IVP* function. This has consequences for the way both types behave at the semantics/pragmatics interface, as we will see below.

(13) [Rollant] est alet a sa fin. ('Rollant has died')
(*Chanson de Roland*, 176.18 ; 12th century)

(14)



(14')



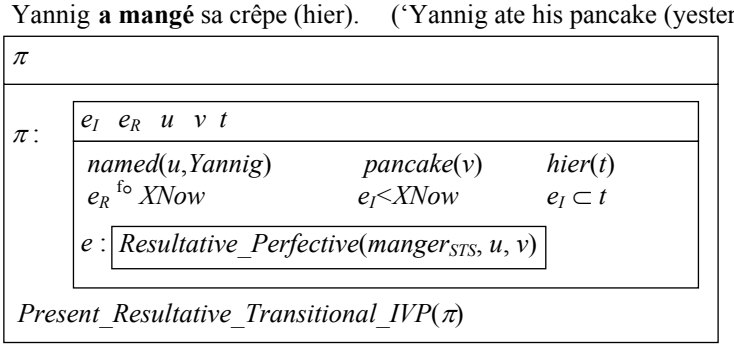
Finally, type 3 (exemplified in (15)-(16)) specifically introduces both the inner and result stage within the compositional semantics, thus differing from types 1 and 2. This renders the inner stage available for temporal modification (moreover the condition e_I<*XNow* in (16) makes it necessary for these temporal modifiers to be past). It also allows the computations of discourse relations requiring inner stages at the semantics/pragmatics interface, such as *Narration*.

In contrast to the representation of a type 2 example in (14), a complex aspectual viewpoint function applies in (16). Called *Resultative_Perfective*, this function yields two stages and a stage relation between them when applied to the stage structure $manger_{STS}$, namely the inner stage DRS K_I = *IStage_manger*(e_I, *u,v*), the result stage K_R = *RStage_manger*(e_R, *u,v*) and the stage relation *Conseq_Telic*(K_I,K_R). As a result, (16') is semantically equivalent to (16) : the aspectual interpretation of (15) implies two distinct eventuality referents, namely e_I and e_R. Note that while condition e_I<*XNow* forces the inner stage to be temporally anchored in the past, thus allowing only past time modifiers to bear on this stage, condition e_R fo *XNow* anchors the result stage at least partly in the 'extended now' interval. This double temporal anchoring accounts for the ambivalent temporal properties of the modern *passé composé*, which is both past and present.

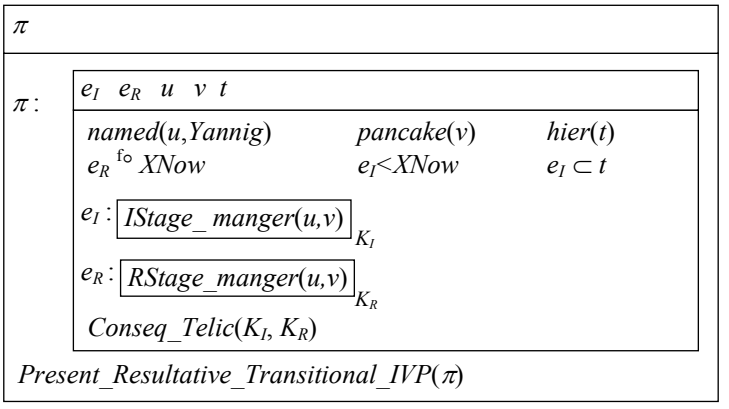
In addition to these semantic differences, type 3 also possesses a specific illocutionary viewpoint function, namely *Present_Resultative_Transitional_IVP*, which behaves differently both from *Present_Resultative1_IVP* and *Present_Resultative2_IVP*.

(15) Yannig **a mangé** sa crêpe (hier). ('Yannig ate his pancake (yesterday)'.)

(16)



(16')



To sum it up, while type 3 perfects stand out as semantically distinct from the other two types of perfects, type 1 and type 2 perfects mainly differs with respect to the semantics/pragmatics interface. The latter difference boils down to the nature of the illocutionary functions which appear in (12)-(12') and (14)-(14') (i.e. (*Present_Resultative1_IVP* vs. *Present_Resultative2_IVP*).

In the case of type 1 perfects, the *Present_Resultative1_IVP* function does not license discourse reasoning within the LIP (i.e., within the semantics/pragmatics interface) about inner stages. However, this does not rule out the possibility for the interpreter to infer the occurrence of inner stages on the basis of other reasoning procedures. Our point here is merely that in perfects of type 1, inner stages are neither part of the truth-conditions (as shown in (12)/(12') and (14)/(14')), nor available within the LIP. Therefore, no such a relation as *Narration* can be construed – we take *Narration* to require a transition between an inner stage and a result stage in its preconditions.

In sharp contrast, the *Present_Resultative2_IVP* function has an altogether different role in the case of type 2 perfects, since it licenses LIP reasoning about inner stages. This aspect of its contribution is associated with rule (17). This rule actually provides the pragmatic and discursive interpretation of the illocutionary viewpoint function. It is a non-defeasible entailment which guarantees that when the illocutionary viewpoint function *Present_Resultative2_IVP* applies to some speech act referent π, then the inner stage underlying π is valid within the LIP.

Technically speaking, (17) is to be understood as follows : whenever a discourse constituent (or a speech act) π is presented under the *Present_Resultative_IVP2* illocutionnary viewpoint, then[10] the inner stage lexically related to the main eventuality referred to in π holds. We note this inner stage $K_I(\pi)$.[11]

[10] We take the inference associated with this rule to be monotonic rather than non-monotonic, thus fitting an important defining characteristics of conventional implicatures. The point for us is that this inference does not seem to admit defaults : in principle, it could be blocked if the *passé composé* in post 12th century Old French were subject, say, to lexical constraints (corresponding to lexical remnants of its pre-12th century uses). For instance, one could imagine that certain verbs may not allow for the inference to hold, and require a purely resultative interpretation. Verbs like *partir* ('leave'), which are resultative insofar as they essentially express the beginning of a result state would be likely candidates for such constraints. But since we have been unable to identify any such lexical constraints, we take this inference to be monotonic, and to correspond to a conventional implicature.

[11] Formally, K_I can be defined in terms of functional composition from the general structure of discourse representation (i.e., SDRS) and of the lexicon. In SDRT, each speech act referent π labelling a sentence is mapped to a DRS (representing the semantic content of the sentence). In this DRS, it is possible to access the predication holding about the main eventuality (see Asher 1993 for the definition of the *main-eventuality* function). Recall that the predication is of the form e: $\underline{Aspectual\_ViewPoint}(verb_{STS}(u_1,u_2,...))$, where $verb_{STS}$ stands for the stage structure appearing within the lexical entry of the verbal head. Function K_I retrieves the specified inner stage from the stage structure $verb_{STS}$ (that is, *IStage_aller*(u,v) in (14)-(14')). In other words, we assume that *via* a function K_I, one can retrieve the appropriate inner stage descriptor related to the main eventuality referent in π, and we note this inner stage $K_I(\pi)$.

Such a conclusion can be drawn only within the LIP; it makes $K_I(\pi)$ available for computing discourse relations such as *Narration*.

(17) Rule about type 2 perfects and the semantics/pragmatics interface :
$Present\_Resultative2\_IVP(\pi) \rightarrow K_I(\pi)$

Note that perfects of type 3 do not require any such a rule – by incorporating both the inner and the result stage within the compositional semantics, they can establish either resultative or narrative discourse relations, since both types of stages are simultaneously accessible when discourse relations are computed at the semantics/pragmatics interface. Figure 5 summarizes the results of our analysis of perfects at the semantics/pragmatics interface.

Figure 5: Brands of perfects and the semantics/pragmatics interface

	Type 1	*Type 2*	*Type 3*
Compositional Semantics	Result Stage	Result Stage	Result + Inner Stages
Accessible within the LIP	Result Stage	Result + Inner Stages	Result + Inner Stages

And again, the absence of a similar rule in the case of the English present perfect, or in the case of the *passé composé* in early old French does not block every inference about inner stages – but there is no way one can exploit such an inference in order to structure discourse.

4.4 Discussion : do tenses really convey implicatures ?

Before concluding this paper, we would like to raise one final question. One could wonder at this point whether the rule given in (17) really is what we claim it to be. This rule implements the pragmatic contribution of certain types of perfects, and we have characterized it as an implicature. The proposal is acceptable as long as one agrees that the effect of (17) is not truth-conditional (cf. our treatment of past time modifiers in sections 2, 3 and 4.3). Now clearly, (17) does not describe a conversational implicature as it fails to fulfill the standard properties assigned to this class of implicatures: the inference drawn by (17) is neither cancelable nor non-detachable, nor genuinely calculated (since it is intrinsically and directly triggered by the tense morpheme, and conventionally attached to the lexical semantics of the verb). On the contrary, it seems to display the specific features of conventional implicatures.[12]

Whether or not every implicature associated with tenses is conventional as a rule is an issue we will not clarify here, although it is a legitimate question to ask. For instance Caudal et alii's (2003) analysis of the French *imparfait* as triggering some sort of defeasible pragmatic inference[13] suggests that

[12] Actually one could even wonder whether the inference in rule (7) does not resort to the domain of presupposition, given that it is common wisdom that most conventional implicatures are in fact presuppositions (cf. Karttunen & Peters, 1979). If it turns out to be the case, then our account should be slightly modified in order to fit the treatment of presuppositions within the SDRT framework, cf. Asher & Lascarides (1998). However, it seems rather clear that we are not dealing with a presuppositional phenomenon, e.g. because the inference of the inner stage in (17) can hardly survive the negation of a sentence in the perfect. In 12th century French, the negation of a sentence in the perfect (e.g., *Rollant est alet,* 'Roland has left') does not render true an equivalent sentence using an aorist (e.g., *Rollant alat*, 'Roland left').

[13] The issue is whether the French *imparfait* has a monotonic or non-monotonic behaviour at the semantics/pragmatics interface. It seems to be non-monotonic, insofar as the so-called 'imparfait narratif' (a reading equivalent to the interpretation of an aorist-like tense such as the *passé simple*) can be infered in certain contexts, and then defeased by additional contextual information. Thus a sentence like '*Une heure plus tard, Mona partait*' normally translates as 'An hour after that, Mona left', and according to Caudal et al. (2003), the pragmatic interpretation ascribed to the *imparfait* is comparable to that of the *passé simple*. But if we expand this context slightly, this interpretation can be cancelled : '*Une heure plus tard, Mona partait, quand soudain Yann arriva'* translates as 'An hour after that, Mona was leaving, when suddenly Yann arrived'. In that case the *imparfait* is not longer interpreted as a 'narrative imparfait', and it is no longer equivalent to the *passé simple*.

it might be associated with some kind of cancelable implicature, therefore possibly a conversational implicature. Regardless of whether this is the case or not, the most important thing is that this facet of the contribution of tenses is not truth-conditional – it is therefore at least implicature-like. A more conservative option would be to call implicatures rules such as (17), without specifying whether they are conversational or conventional; we leave this issue open for future research.

5. Conclusion

To put it in a nutshell, the central idea underpinning our analysis is that the illocutionary viewpoint functions associated with perfects create (or do not create) the appropriate conditions for discourse relations (e.g., *Narration*) to be established within the Logic of Information Packaging (LIP). This effect of illocutionary viewpoints does not pertain to the truth conditions of discourse ; it merely reflects the fact that certain implicatures associated with tenses have become so to speak 'conventionalized', in so far as they are breaking the ground for possible future semantic evolutions. This explains why this apparently strange divorce between the semantics and the pragmatics of the French *passé composé* took place between the 12th and the 17th century – the pragmatics was reflecting an ongoing evolution of the *passé composé* towards a more aorist-like semantics.

From the point of the view of the theory, our proposal boils down to the following : although many implicatures could be drawn from linguistic material (and in this case, perfect tenses), only some of them make their way into the semantics/pragmatics interface (i.e. the LIP) – those which are somehow 'discourse relevant'. Such a strategy is both cost-effective and linguistically motivated (discourse-relevant implicatures reflect some change in language use and generally are the hallmark of an ongoing conventionalization).

Our main perspectives for further research concern the possibility of generalizing this analysis. We intend to apply to additional tenses the idea that illocutionary viewpoints express discourse relevant implicatures. For instance, an important observation for the perfect/aorist distinction has been set aside in the course of this paper, namely that the French *passé simple* (PS) exhibits a strikingly complementary property of perfects of type 1. While the latter are incompatible with narrative discourse relations (i.e., relations complying to causal order), the *passé simple* is known to reject causally-reversed discourse relations :

(18) a. *La maîtresse a grondé* (PC) *mon fils. Il est arrivé* (PC) *en retard.*
b. ??*La maîtresse gronda* (PS) *mon fils. Il arriva* (PS) *en retard.*
'The school mistress scolded my son. He arrived late.'

We believe that this fact, when contrasted with some properties of the brands of perfects studied here (old French PC or the English present perfect rejecting causally-ordered discourse relations, and post 12th century PC allowing for both types of discourse relations) calls for a related treatment. It seems that the nature of the available discourse relations (i.e., involving a causal / reversed causal order) with tenses in general, and not just perfects, is an issue with the semantics/pragmatics interface and implicatures associated with tenses. If this hypothesis is correct, the presence of an inner stage (endowed with a perfective viewpoint) within the compositional semantics of such tenses, along with the existence of appropriate rules concerning the semantics/pragmatics interface (i.e., implicatures arising from illocutionary viewpoints), should make it possible to establish narrative discourse relations possible while blocking (in the case of the *passé simple*) or licensing (in the case of post-12th century *passé composé*) resultative discourse relations. In short, aorists should be analysed in a complementary way from perfects – and it seems only natural considering that perfects and aorists generally have more or less complementary distributions.

Therefore, the inference by which the 'narrative imparfait' reading is achieved might not be a conventional implicature, since it is cancelable.

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