

Aspectual viewpoints, speech act functions and discourse structure

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Introduction

Most current formal theories of discourse incorporate some insight concerning the contribution of aspect to discourse structure, and many draw upon Hans Kamp's analysis of the aspectual contribution of tenses, as well as Vlach's notion of tenses as aspect-shift operators (cf. Vlach 1981). Thus, Kamp & Rohrer (1983) argue that the French *imparfait* acts as a 'stativizer', mapping non-stative event types onto stative ones. Moens & Steedman (1988), Kamp & Reyle (1993) as well as Asher (1993), Lascarides & Asher (1993), de Swart (1998) defended or developed related views, amounting to treating tenses as aspect-shift operators. Another, concurrent view on the aspectual contribution of tenses can be found in early works on aspect in Romance languages (e.g., Guillaume 1929), and has been recently revived in the formal community by Smith (1991). It consists in treating the aspectual contribution of tenses in terms of *viewpoint*, expressing the speaker's perspective on the course of events. It does not reduce the aspectual content of tenses to aspect-shift or coercion operators ; they are not content with changing the internal structure of events, they *add* information of a new kind to it. Assuming that a viewpoint approach to aspectual semantics should be favoured (see Caudal 2000 for arguments supporting this position), the main goal of our paper will be to treat tenses as *illocutionary viewpoint functions* constraining rhetorical relations, and thereby interacting with discourse structure. Our formal analysis will be couched within the SDRT framework (cf. Asher 1993, 1999, Asher & Lascarides 1994, 1998, 2001, Lascarides & Asher 1993). In SDRT, discourse constituents (formerly *propositional content*, labelled by terms called *K*) are labelled by terms called π , to which rhetorical relations (which pertain to discourse structure) are applied. Under this new speech-act perspective, the π labels are to be viewed as *speech act referents* (SARs) and rhetorical relations as relational speech act functions (cf. Asher & Lascarides 2001).

1. Why tenses should count as *speech act functions*

We regard aspectual viewpoint as some specific type of speech act information, capable of interacting with discourse interpretation *via* discourse relations – for indeed, according to Asher & Lascarides (2001), discourse relations themselves are (relational) speech acts.

2. Empirical observations and general intuitions

Examples such as (1) support this speech-act approach : the aspectual content of the English progressive sometimes causes this tense to receive a 'testimonial' interpretation (demonstrated by the impossibility to translate *are seeing* into French save by a lexical item reflecting the evidential flavour of the progressive such as *constater*) ; it causes the speaker's viewpoint to be immersed into the situation. And crosslinguistically speaking, it has been noted that strong connections exist between aspectual interpretation and evidentiality (cf. Guentchéva 1996) – so-called *constatives* or *inferentials* are often perfect or resultative

morphemes, while *testimonials* often are progressives. Moreover, this speech-act approach to the aspectual semantics of tenses fits well with the viewpoint approach defended above : viewpoints should be treated as speech-act devices because they express the speaker's *stance* towards an eventuality he/she wants to refer to, whereas aspect-shift operators are devices pertaining to the realm of propositional content.*

- (1) *What we **are seeing** is that during the recession and the downturn the people who lost the jobs were young people.* (Hansard corpus)
*Nous **constatons** que ceux qui ont perdu leur emploi pendant la période de ralentissement économique sont les jeunes.*

More compelling evidence can be found in French for treating tenses as illocutionary force markers. Thus, each French tense usually cannot appear in certain types of speech acts. (2) shows that the *imparfait* cannot appear in jussive speech acts (requests, orders, suggestions), even within reportive jussive contexts ('reported orders/requests', cf. (2c)-(2d)), whereas the French present can be interpreted more less like an imperative (cf. (2a)-(2b)).

- (2) a. *Pars,* *maintenant.*
Go-IMPER. 2ps. now.
 'Go, now'.
 b. *Tu pars,* *maintenant.* (deontic value possible)
You go-PRES. 2ps. now
 'Off you go, now.' / 'You must go now'
 c. **Tu partais* *maintenant.* (deontic value impossible)
You go-IMPARF. 2ps. now
 d. ??(*Il_i lui a dit qu'*) *il_j partait* *maintenant.* (indirect speech)
 (*He_i him tell-PERFECT 3ps. that*) *he_j go-IMPARF 3sg. now.*

More interestingly, the French *passé simple* (simple past) cannot occur in hypothetical speech acts, while the *imparfait* can (compare (3) and (4)). Whenever the *passé simple* occurs within a *si P, Q* construction, it must receive a non-hypothetical, real reading (e.g., concessive, cf. (5)). So what would be the illocutionary force of those two tenses ? (6) seems to suggest that the *passé simple* can occur in non-assertive speech acts (namely questions). However, it has been suggested (see e.g. Groenendijk & Stockhof 1982) that questions are in fact akin to assertions inasmuch they can be regarded as denoting sets of propositions (namely, the set possible answers) (those two authors argue that questions can be represented using some kind of lambda-expression). It seems that in fact, the speaker uttering a question does so using the illocutionary force he thinks will be attached to an answer – namely an assertion. Therefore, we will regard questions as some special variant of assertions.

- (3) *Si Yannig venait,* *Mona partirait.*
If Yannig come-IMPARF. 3ps., Mona leave-CONDITIONAL
 'If Yannig comes, Mona will leave'.

* Although Carl Vettors (Université du Littoral / Côte d'Opale, France) does not appear as one of the authors of this paper, he has greatly influenced it in the course of a long collaboration. Errors or misconceptions, however, remain ours.

- (4) **Si Yannig vint, Mona partirait.*
If Yannig come-S.PAST 3ps., Mona leave-CONDITIONAL
- (5) *S'il fut souvent cruel, il lui arriva d'être généreux.* (Leeman 2001)
If he be-PAST 3ps. often cruel, he happen-PAST 3ps. to be generous
'Although he was often cruel, he happened to be generous (a couple of times).'
- (6) *Hannibal traversa-t-il les Alpes avec ses éléphants ?*
Hannibal cross-S.PAST 3sg. interr. clitic 3sg. Alps with his elephants ?
'Did Hannibal march across the Alps with his elephants ?'

Now in addition to being unable to appear in hypotheses, it seems that the *passé simple* cannot occur in any kind of non-assertive speech act (requests, for instance, are ill-formed if they involve an utterance in the *passé simple*). We will therefore argue that the proper illocutionary content of this tense is an *assertion*.

But how come aspectuo-temporal markers can express illocutionary force ? It is a crosslinguistic fact that tenses expressing an imperfective viewpoint can be used in hypothetical contexts (this is the case in Romance and in many typologically unrelated languages). Conversely, it is also a crosslinguistic fact that tenses expressing a perfective viewpoint (and we do not consider the English *simple past* to qualify as such a tense ; cf. Caudal 2000 and Caudal & Vetter 2002b) are incompatible with non-assertive speech acts. Our intuition is the following : tenses describing changes-of-states (and this is the case for perfective viewpoints ; the *passé simple* always involves a transition of some kind) are inherently assertive because changes-of-state are the hallmark of assertion – speech acts that necessarily *affect* our beliefs about the state of the world ('something happened'). Conversely, tenses associated with imperfective viewpoints do not describe changes-of-state ; they rather capture some kind of (at least transitory) 'permanence' of the state of the world. Moreover, imperfective viewpoints focusing on some internal subpart of a situation, they do not allow us intrinsically to see the whole situation. This absence of consequences, together with this 'partial visibility' effect, accounts for the ability of imperfective tenses to be involved into hypotheses, potentials and generally conditionals – they describe things that 'may or may not be'. The *imperfective paradox* (cf. Dowty 1977, 1979) is the best intuitive justification for our analysis : from a sentence in the *imparfait*, nothing necessarily follows. Let us consider now how a detailed analysis and formal treatment could be proposed to substantiate those rather intuitive claims.

2. General theoretical purpose

Given that we intend to couch our formal treatment of those phenomena within the SDRT (*Segmented Discourse Representation Theory*, Asher 1993, Asher & Lascarides 1998, 2001), a problem arises at this point. Indeed, according to new developments within the SDRT framework, speech acts should be contributed by *rhetorical relations* ; since discourse relations are used to introduce new utterances within the discourse context, it is only natural that they should be endowed with an illocutionary force. Asher & Lascarides (2001) note that in fact, all speech acts are intrinsically *relational* ; e.g., one does not simply assert the content of an utterance, one asserts it *in relation* to some other clause, etc. Consequently, one would not expect items such as tenses to have some kind of illocutionary force, since they seem not to pertain *per se* to the realm of rhetorical relations – or more precisely, the theory does not take this possibility into account, and should therefore be extended if not amended.

The general purpose of the treatment proposed will be to compositionally determine as soon as possible the illocutionary content of an utterance (and more specifically the illocutionary force

conveyed by tenses), and draw early, useful inferences about speaker's beliefs or intentions. It goes against the position defended in Asher & Lascarides (2001), where illocutionary force and speakers' beliefs or intentions enter the interpretative picture relative late (for the former) or very late (for the latter). This point clearly appears in the standard SDRT flow of information, which is the following (\approx noting nonmonotonic logical consequence, and \sqsupset monotonic logical consequences) :

content plus assumptions of which utterances are connected rhetorically \approx particular rhetorical relations \sqsupset semantic consequences \approx cognitive states.

Since SDRT considers that speech types are realised by rhetorical relations, it follows that the contribution of illocutionary markers is not evaluated before discourse attachment via discourse relations. We believe that the modular architecture adopted in recent works within the SDRT framework is a desirable thing, but we would like to relax it, so as to leave room for opportunistic, early computations, based on 'distributed' linguistic clues. The point made by Asher & Lascarides to justify the information flow given above is that one does not want to go into general reasoning about beliefs and intentions *early*, because such reasoning is not very cost-effective. Yet one should not preclude the possibility of doing some partial reasoning about beliefs and intentions, in particular on the basis of strong linguistic cues. λ -SDRT will make this move possible, by allowing us to 'abstract' from full-fledged representations, introducing unsaturated representations suitable for partial information.

We take the aspectuo-temporal content of tenses as an essential source for such illocutionary content ; we believe it to express *illocutionary viewpoints*, constraining or rather pre-determining what kind of type of speech act can be applied to a particular utterance. We thereby compositionally reduce the search space when computing the correct rhetorical relation.

In other words, we claim that certain types of tenses can favour certain types of DRs by virtue of their aspectuo-temporal content, which is in fact either the true source of their illocutionary force, or strongly related to it. A trivial consequence of this hypothesis is that we predict that tenses whose illocutionary force is underspecified will appear in a greater number of discourse relations than semantically more specific tenses – we will see later that in the case of French tenses, this prediction is indeed borne out.

3. Formal treatment proposed

4. Aspectuo-temporal model assumed : stage structure

We are assuming in this paper a formal model of aspect (and of the interaction between the aspectual content of lexical and grammatical morphemes) proposed in Caudal & Roussarie (2000) and Caudal (2000). It is commonly assumed at least since Moens & Steedman (1988) that eventualities (here called *situations*, following Smith 1991) should be decomposed into *stages* (cf. also Kamp & Reyle 1993). We consider that three types of stages should be distinguished :

- i) *inner stages* are ascribed to all situation types; they are their 'core' stages, i.e., what Smith (1991) calls *developments* ; if a situation is telic, the inner stage includes its terminus (culmination¹) ; they are selected by unmarked uses of the *past progressive* or *simple past*, and if non atomic (non punctual), by *begin* and *start*;

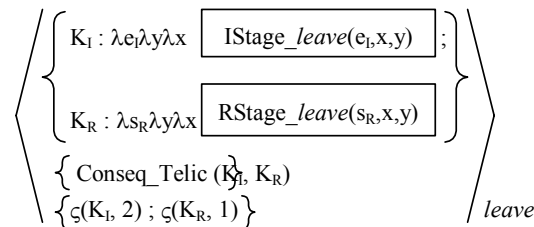
¹ We will not regard terminuses (final points of inner stage) as stages because tenses cannot focus on them isolatedly, going against a current trend in the literature ; cf. e.g., Kamp & Reyle (1993).

- 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 result situations ascribed to all eventuality types, with major differences between telic and atelic ones ; they can be described by sentences in the *perfect*.

It is argued here (following Caudal & Roussarie 2000 and Caudal 2000) that several eventuality descriptors should be lexically associated with verbs, thus constituting a richer lexical basis for aspect calculus. Related views are defended in Higginbotham (2000), which treats verbs as descriptors of lists of eventualities².

Our model of lexical aspect (couched in a DRT-style semantics) involves four types of objects :(i) *event discourse referents* (EDR), (ii) stages (which are situation 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* ; we will not discuss this issue here, for it is irrelevant to our purpose). EDRs (noted e_1, \dots, e_n) primarily express spatio-temporal informations, and make it possible to establish coreference relations between situations (cf. Danlos 1999). Since stages are modelled using sub-DRSs, we must slightly modify the model of (S)DRT by treating the (second order) aspectual predicates between stages (of the form *Relation* (K_1, K_2)) as DRS conditions. The aspectual content of lexical entries is represented by a triplet $\langle S, R, D \rangle$ comprising a set of stages S , a set of stage relations R between the elements of S , and a set of salience ascriptions D . Figure 1 gives the corresponding aspectual lexical entry for *leave* (*IStage* notes an inner stage descriptor, *RStage* a result stage descriptor ; K_R notes a result stage sub-DRS, K_I an inner stage sub-DRS ; following a standard DRT convention, e notes a dynamic EDR, while s notes a stative EDR ; finally, ζ is the salience-ascription function which will not be discussed here – but see Caudal 2000 for further details).

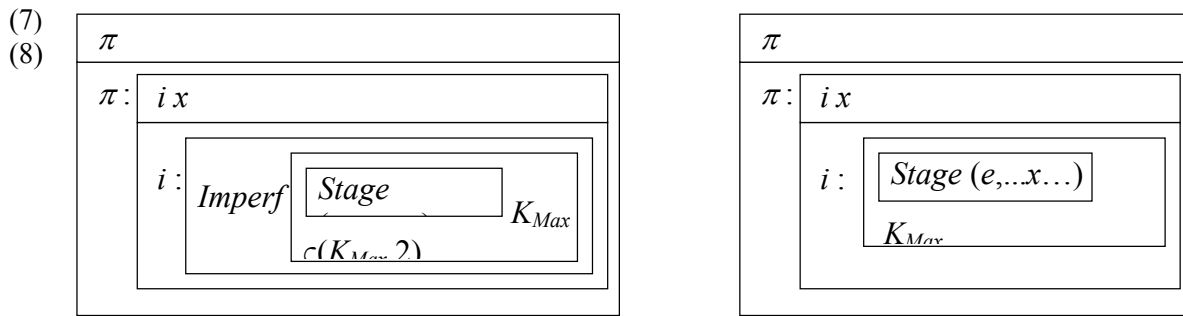
Figure 1 : stage structure for *leave*



The aspectual interpretation of an utterance is built up using grammatical aspectual information (namely *aspectual viewpoints*, as proposed in Smith 1991) and contextual information. Our standing for a viewpoint approach (as opposed to a 'type shift' or 'coercion' approach, as defended in de Swart 1998, or Moens & Steedman 1988) is directly mirrored in

² Such a view contrasts with that defended e.g. in Pustejovsky (1995). This author argues that situation structures can be modelled using ordered *part-of* relations. For arguments against this view, see Asher (1993) and Caudal (2000).

the way we model lexical aspectual information ; viewpoints will ‘pick up’ (or rather ‘focus on’) a stage referent, depending on a number of factors (syntactic, semantic and sometimes pragmatic) which we will not discuss here for want of place (but see Caudal & Roussarie 2000 and Caudal 2000). We are illustrating below the general method for constructing full fledged aspectual interpretations with imperfective (7) vs. perfective (8) viewpoints (K_{Max} notes the ‘focused’ stage, usually the inner stage in those cases). The DRS-subordination used in (7) but not in (8) reflects the *intensional* nature of imperfective viewpoints (following Dowty’s treatment of the progressive), vs. the *extensional* nature of perfective viewpoints – it was inspired by de Swart’s treatment of the progressive (cf. de Swart 1998) (it renders inaccessible the ERD corresponding to the entire inner stage ; thus, *Yannig mangeait sa crêpe* cannot describe the same situation as *Yannig mangea sa crêpe*).



We take *imperf* to be an aspectual viewpoint function mapping a stage (sub-)DRS K onto another (sub-)DRS K' such as $e_{K'} \subseteq e_K$ (i.e., K' describes an event variable which is temporally included into the event variable e described by K).

Central to the present investigations are the abstract aspectual relations we just introduced. Note first that although the treatment of lexical aspectual information is related to that proposed in Asher & Pustejovsky (1998), contrary to those authors, we do not assume that stage relations are discourse relations, but specific lexical entailment relations of aspectual nature. We will present two of them in this paper : *Consec_Telic* (which relates inner stages to result stages within telic lexical entries) and *Consec_Atelic* (which relates inner stages to result stages within atelic lexical entries). A flavour of their semantics is given by the following temporal axioms :

- (9) $Consec_Telic(\langle U_1, \{...P(e_1)...\} \rangle, \langle U_2, \{...Q(e_2)...\} \rangle) \rightarrow e_1 < e_2$
 (10) $Conseq_ATelic(\langle U_1, \{...P(e_1)...\} \rangle, \langle U_2, \{...Q(e_2)...\} \rangle) \rightarrow e_1 <^\circ e_2$

with $<^\circ$ expressing ‘left overlap’ (namely, if a_1 and a_2 are temporal instants corresponding to the boundaries of the temporal trace of e_1 , and b_1 and b_2 correspond to the boundaries of e_2 , then $e_1 <^\circ e_2$ roughly³ entails $a_1 < b_1 < a_2 < b_2$, assuming that $<$ expresses temporal ordering between instants). These relations will be used to generate pragmatic *entailments* from aspectual interpretations. Thus, we want to get the entailment given in (11) :

³ We will not discuss any further the semantics of $<^\circ$, but it should be clear that in fact *Conseq_Atelic* must guaranty that any subpart of an inner stage must *always* entail the validity of the corresponding result stage. Thus *Yannig was cold* always entails *Yannig has been cold*, even if we ‘view’ only a tiny subpart of Yannig’s state.

(11) *Yannig left. δ Yannig was absent for a while (and maybe he still is).*

Conseq_Telic predicts that if a telic inner stage is entirely introduced into the knowledge (or belief) base of the speaker & hearer, then they will also believe that the associated result stage is true. In contrast, *Conseq_Atelic* predicts that the same will hold true of a part of an atelic inner stage (namely, I don't need to see all of Yannig's sickness to infer that he has been sick). Those entailments will prove essential when trying to model the interpretative effects of tenses, as well as their illocutionary force ; such entailments clearly partake of the *intentions* of speakers (we assume with Searle 1969 that one of the most important illocutionary functions of assertive sentences is to *convey information*).

5. Introducing SDRT and λ -SDRT

Since we will make use in this paper of a formal extension to the SDRT framework proposed in Roussarie & Amsili (2002), namely λ -SDRT, we must now give the reader a brief introduction to these formalisms.

The 'invention' of SDRT was motivated by a number of semantic and pragmatic phenomena in discourse that could not be treated in a satisfying manner by dynamic semantic models such as DRT (*Discourse Representation Theory*, Kamp & Reyle 1993). To put it in a nutshell, SDRT can be viewed as an extension to DRT consisting in the addition of a new hierarchical level to the theory, allowing discourse structure to be represented by means of rhetorical relations. SDRT analysis procedure (whereby representations as constructed) can be summarized as follows : each basic discourse constituent receives a semantic representation (namely a *Discourse Representation Structure*, DRS) via a DRT compositional semantic mechanism. Then, instead of being directly merged with context as in standard DRT, each constituent is exploited by a nonmonotonic glue language (*Discourse Interpretation in Commonsense Entailment*, DICE, cf. Asher & Lascarides 1998) which updates the representation of discourse by inferring appropriate rhetorical relations. Within the SDRT framework, a discourse structure is called *SDRS* (Segmented DRS) and it embeds logical forms for sentences (i.e. DRSs) by tagging them with labels π_1, π_2 , etc.

Several works have already proposed parsing algorithms reconciling Montagovian compositional mechanisms (lambda-calculus) with DRT (cf. Asher 93; Bos *et alii* 1994, Blackburn & Bos 1999). Compositional analysis in DRT (i.e. λ -DRT) maps each syntactic constituent onto a 'bit' of DRS that will eventually represent a whole sentence. Such a partial, unsaturated DRS is in fact a λ -DRS, that is, formally speaking, a DRS prefixed with a λ -abstract. The final representation of a sentence can be obtained by successive β -reductions, λ -DRSs being combined in accordance with syntactic order.

Within the SDRT framework, the representation of a simple sentence is a SDRS, which in fact encapsulates the corresponding DRS by tagging it with a speech act referent term π . Thus, if in DRT a sentence is associated with a DRS K , then its SDRS will have the following form given in (12).

(12)

π
$\pi : K$

The objective of λ -SDRT is to allow grammar to produce SDRSs such as (12) directly, by means of a compositional analysis. Although we do not wish to go into the details of the formal implementation of λ -SDRT (cf. Roussarie & Amsili 2002), let us indicate nevertheless that the representation for discursive constituents in a sentence will be computed using λ -SDRSs, which are in fact grammatical constructors for formal representations of speech acts.

Generally, the semantic contribution of a syntactic constituent X in discourse will be schematically (and minimally) a π -predicational SDRS, cf. (13).

$$(13) X : \lambda\pi \begin{array}{|c|} \hline \pi \\ \hline \pi : K \\ \hline \end{array}$$

That is, X contributes to constituting the propositional content of speech act π^4 . The underlying idea is the following : in classical λ -calculus (Montague style) or in λ -SDRT each ‘syntactic’ constituent is a partial function that contributes *per se* to forming a semantic proposition ; similarly, we consider here that using a particular part-of-speech normally contributes to constituting a speech act (in short, a word or a morpheme is used to construct speech acts). Variable π remains lambda-abstracted as long as no constituent of the sentence (or a node of the syntactic tree) to be parsed comes and binds it by specifying the illocutionary status that can be associated with the speech act which is being constructed (e.g., assertion hypothesis, presupposition...). Elements capable of binding π terms correspond to π -partial SDRSs, having the form $\lambda P.P(\pi_0)$.

We will not review any further the formal properties and empirical justifications of λ -SDRT here, but note that the treatment proposed in those pages certainly count as one supporting such an extension as λ -SDRT. We will notably make use of the λ -SDRT formalism to represent lexical entries for tenses.

6. Representing tenses as *illocutionary viewpoints* (IVP)

We consider that the illocutionary contribution of tenses is already at the foundation of the notion of *aspectual viewpoint* defended in Smith (1991). Indeed, Smith (1991) argues that tenses ‘make visible’ at least part of the internal structure of a situation, by means of assertion. In other words, the function of tenses is to contribute an *aspectual illocutionary operator*, whose effect is to render ‘visible’ (in fact, to introduce both in the speaker and in the hearer knowledge or belief base) at least part of a situation. We will therefore generalize over the term proposed by Smith, and propose to call the illocutionary force contributed by tenses *illocutionary viewpoints* (IVP for short). Lexical entries for IVPs will be modelled as in (14).

$$(14) \quad \lambda\pi : \begin{array}{|c|} \hline \\ \hline \pi : K \\ \hline Tense_IVP(\pi) \\ \hline \end{array}$$

7. The imparfait / passé simple system

8. The French *passé simple* : an assertive illocutionary viewpoint

We noted above that the PS can never occur in non-assertive contexts, and that its illocutionary content is probably an assertive one. The lexical entry we propose for the *passé simple* is given in (15) :

⁴ Or rather, to use a Searlian terminology, X contributes to representing the propositional act that composes π .

(15) $\lambda\pi$:

π	
$\pi: K$	
$Perf_IVP(\pi)$	$\pi < n$
$Assertion(\pi)$	

(15) captures the following illocutionary properties of the *passé simple* : (i) it contributes a perfective viewpoint ($Perf_IVP(\pi)$) ; (ii) it is associated with a past speech act ($\pi < n$)⁵; (iii) it is assertive ($Assertion(\pi)$). Since data concerning the *passé simple* are fairly uncontroversial in the literature and globally unproblematic, we will focus on the analysis of the *imparfait*.

9. The *imparfait* : an underspecified IVP

We will treat the various uses of the *imparfait* in a unified way by assuming that this tense acts as an underspecified *illocutionary viewpoint function*. Since it seems that the French *imparfait* is not necessarily stative (cf. de Swart 1998), while its narrative uses can only arise in *narrative* contexts, it can be argued that its main function is to create a discursive background - a function which can be overridden in certain contexts. Indeed, it seems that out of context, the *imparfait* systematically contributes a *Background* relation.

Specifically, we claim that under its standard imperfective viewpoint reading (cf. Smith 1991), the *imparfait* is in fact the unmarked, *non-salient* member of the *passé simple / imparfait* system, triggering (in a compositional but defeasible way, using aspectual viewpoint information) the *Background* discourse relation, cf. (16). Assuming that inference rules associated with discourse relations can be language specific, we define *Background* for French using illocutionary rules that depart from those used for English within the DICE framework (cf. Lascarides & Asher 1993), where *Background* can only be triggered by the presence of a state.

- (16) *Marie mangeait.*
 ‘Marie was eating’.

πx							
π :	<table border="1"> <tr> <td>$u e$</td> <td></td> </tr> <tr> <td>Marie(u)</td> <td></td> </tr> <tr> <td>e-eat(u)</td> <td></td> </tr> </table>	$u e$		Marie(u)		e-eat(u)	
$u e$							
Marie(u)							
e-eat(u)							
	$Background(x, \pi)$ $x = ?$						

In order to account for this privileged link between the *imparfait* and *Background*, we claim that *Background* (like all rhetorical relations) brings together several pragmatico-semantic functions. In our view, it retains its standard SDRT temporal role (namely it entails temporal overlapping), but conveys in addition a speech act function expressing the speaker’s stance

⁵ Rather than a merely non-actual one (cf. $\neg(\pi n)$). How this more specific interpretation is achieved will not be explained here for want of space, but it is closely related to the fact that standard aspectuo-temporal uses of the *imparfait* occur in assertive contexts (typically within the scope of some *Background* discourse relation). Being undoubtedly actual, it must be past (condition $\pi < n$ is more specific than $\neg(\pi n)$, and therefore ‘overrides’ it).

towards his/her utterances (the underlying analysis is related to the *discussion / narration* opposition in Weinrich 1964).

We represent this salience feature as a generalization over the ability of speech acts (i.e., discourse relations) to cause discourse to ‘move forward’ in Reichenbach’s sense. Note that it can be argued that salience is a particular type of speech-act function (it is a *speech referent property* rather than a *relation between speech act referents*, unlike discourse relations). So that if we posit that imperfective viewpoints ascribe the *NonSalient* property to speech act referents, whereas perfective viewpoints don’t (and indeed tenses expressing changes-of-state are aspectually salient), then it follows that viewpoints are also speech act functions (they are *non-relational speech act functions*). In other words, the *imparfait* will select *Background* as a default discourse relation because it requires a speech act referent to be non salient, and therefore to enter an appropriate type of discourse relations / speech act. We propose the following additional axiom facilitating the computation of *Background* :

$$(17) \quad \langle \tau, \alpha, \beta \rangle \wedge \text{NonSalient}(\beta) > \text{Background}(\alpha, \beta)$$

We argue that the lexical entry for the French *imparfait* should be (18), where *Imperf_IVP* represents an imperfective illocutionary viewpoint (IVP), *NonSalient*(π) a non-salient illocutionary act (‘unmarked illocutionary force’), and the condition $\neg(\pi \circ n)$ represents an inactual temporal anchoring (namely, π cannot overlap (\circ) with the now ‘index’ (n), although it may be past or futurate/potential).

$$(18) \quad \lambda \pi : \begin{array}{|l} \pi \\ \hline \pi : K \\ \text{Imperf_IVP}(\pi) \quad \neg(\pi \circ n) \\ \text{NonSalient}(\pi) \end{array}$$

10. *Imparfait*, transitionality, (a)tylicity and conversational implicatures

An essential asset of the SDRT framework (cf. Asher & Lascarides 1994, 1998, Lascarides & Asher 1999) is its ability to integrate a thorough *cognitive modelling* of linguistic interpretation processes into a general, modular semantic and pragmatic theory. We will rely on this modular architecture to model the interpretative effects of tenses (and in particular of related implicatures), and their interaction with speech act types (i.e., discourse relations).

Our core aspectual hypothesis about the *imparfait* is that this tense never describes transitions (although sentences in the *imparfait* can acquire a transitional flavour when inserted into an appropriate context ; but we claim that is a contextual, interpretative effect, rather than an intrinsic part of the semantics of the *imparfait* ; cf. Caudal & Vettors 2002a,b). Thus, sentence (19) (‘standard’ *imparfait*) can only be translated using the past progressive out of context, but must be translated using a simple past when inserted into a narrative context (as in (20), an instance of so-called ‘narrative’ *imparfait*) (\$ indicates translations that should be ruled out).

- (19) *Maigret descendait l’escalier.*
 ‘Maigret was walking down the staircase.’
 \$‘Maigret walked down the staircase.’

(20) *Quelques instants plus tard, Maigret descendait l'escalier, traversait le salon aux meubles disparates, gagnait la terrasse ruisselante des rayons déjà chauds du soleil.* (Simenon, *La nuit du carrefour*, Livre de Poche 2908, p. 61)

'A moment later, Maigret walked (\$was walking) down the staircase, went (\$was going) across the dining-room and its ill-assorted furniture, and then reached (\$was reaching) the terrace, which was dripping with the sun's first hot rays.'

From this contrast, Caudal & Veters (2002a,b) concluded that the *imparfait* does not contribute a perfective viewpoint, but that it is not incompatible with the *interpretative* effects of perfective viewpoints (it is interpretatively nonmonotonic). The intuition is the following : given some extralinguistic knowledge base, speaker knows that Maigret must have finished walking down the stairs before crossing the dining-room. Therefore, he/she infers that *Narration* holds between the two related utterances, and he introduces into his belief base the interpretative effects normally associated with utterances in the *passé simple*. Thus, the so-called *narrative imparfait* offers the most striking evidence of the importance of interpretative effects. It also suggests that the illocutionary force of the *imparfait* is both rather 'light' and defeasible, since contextual information can easily override its 'background', imperfective interpretative effects. In other words (19) shows that the aspectuo-temporal (and illocutionary) content of the *imparfait* is not absolutely indeterminate (the imperfective reading is the only one available) whereas (20) shows that it is underspecified and nonmonotonic enough to allow for some reinterpretation at the semantic/pragmatics interface.

Another set of important and related observations involves entailments (conversational implicatures, in fact) similar to those given in (11) above, cf. (21)-(22) :

(21) *Yannig était malade + courait (quand je l'ai aperçu).*

'Yannig was sick + running (when I saw him)'.

1. δ Yannig may be sick + running or not now.

2. δ *Yannig has been sick+ running.*

(22) *Yannig mangeait sa crêpe.*

1. δ *Yannig may be eating his pancake or not now.*

2. \therefore *Yannig has eaten his pancake.*

It is essential to note that while both telic and atelic utterances allow for the implicature of either completion or non-completion of the described situation at the time of speech ('now', cf. entailments 1 in (21) and (22)), only atelic utterances allow for straightforward accomplished implicatures (cf. entailments 2) (putting aside the possibility of a *perfect progressive* for a telic sentence, which receives in fact a non-accomplished reading). This suggests two things : first, entailments 1 stress the 'meronomic' value of the imperfective viewpoint expressed by the *imparfait* ; *prima facie*, I can assume that Yannig may not have finished eating his pancake precisely because I didn't *see* the whole inner stage (and therefore cannot claim I know Yannig finished eating his pancake) ; these temporal entailments are side-effects of the aspectual value of the *imparfait*. Second, that only atelic lexical entries will be able to introduce a result stage within the belief base of the speaker & hearer when used in the *imparfait*. This point will prove to be essential when analysing very peculiar uses of the *imparfait*.

11. Axioms for the illocutionary forces of the French perfective and imperfective IVPs

Drawing on the previous sections, we can now propose the following axioms about IVPs in French, opposing *perfective* and *imperfective* IVPs, in order to model their interpretative effects. We will focus on the difference between the *imparfait* and the *passé simple* (which are known to constitute a coherent past system), in terms of their respective interpretative effects and illocutionary force.

12. Grammatical illocutionary & aspectual axioms

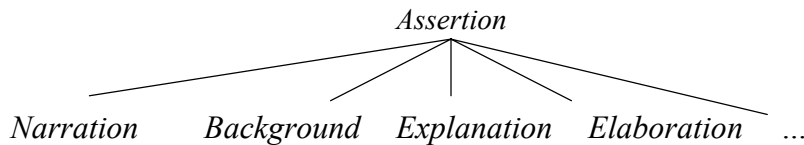
Following Searle (1969), we assume that while perlocutionary acts are an optional part of the communicative content/function of an utterance, it is always endowed with an *illocutionary force*. Expressing information can even be regarded as the sole ‘minimal’ perlocutionary function of an utterance. Thus, we believe that when speaker A utters speech act π as an assertion, he/she primarily fulfils an ‘informative’ goal’ ; by committing him/herself to the veridicality of some proposition, he/she introduces it in the linguistically available database containing his/her beliefs (and makes it plain to hearer that such are his/her beliefs), and also wants this belief to be shared by hearer. As proposed in Asher & Lascarides (1994, 2001) and Lascarides & Asher (1999), we assume that *cognitive modelling* modules are part of the architecture of the SDRT framework to represent speaker’s and hearer’s beliefs at the semantics/pragmatics interface. $\mathcal{B}_{Agent(\pi)} \varphi$ indicates that proposition φ (typically a DRS) is part of the belief database of the Agent of speech act π . We therefore claim that the general axiom holds about assertions (where B represents hearer of speech act π , $>$ stands for nonmonotonic inference, as opposed to \rightarrow , which stands for monotonic inference, and $Assertion(\pi)$ indicates that speech act referent π is involved in an assertive speech act type, i.e. an assertive discourse relation) :

- (23) $Assertion(\pi) > \mathcal{B}_{Agent(\pi)} (K_\pi) \wedge \mathcal{I}_{Agent(\pi)} \mathcal{B}_B (K_\pi)$
 (‘Whenever a speaker asserts π , he believes in the propositional content of π (noted K_π) (assuming sincerity), and it is part of his/her intentions that hearer should share his belief’)

Assertion can be regarded as a (unary) *speech act typing* predicate, based on some ISA hierarchy for speech act types such as the one given in Figure 2. *Assertion* is thus a supertype for *Narration*, *Background*, etc. This hierarchy can be formally specified *via* axiom (24) on speech act types :

- (24) $\langle \tau, \alpha, \beta \rangle \wedge Assertion(\beta) \leftrightarrow [Narration(\alpha, \beta) \vee Background(\alpha, \beta) \vee Explanation(\alpha, \beta) \vee Elaboration(\alpha, \beta) \vee \dots]$

Figure 2 : *Assertion* and the ISA hierarchy of speech act types



Crucially, axiom (23) underlies our entire argumentation – it underlies for instance the axioms concerning the illocutionary effects of perfective and imperfective IVPs in French given in (25)-(27) :

- (25) **Perfective IVP is assertive :** $Perf_IVP(\pi) \rightarrow Assertion(\pi)$
(26) **Illocutionary aspectual effect of the perfective IVP :** $Perf_IVP(\pi) > \mathcal{B}_{Agent(\pi)}(K_{I\pi})$
(Agent of speech-act normally believes that the inner stage DRS is true)
(27) **Illocutionary aspectual effect of the imperfective IVP in assertive contexts :**
 $Imperf_IVP(\pi) \wedge Assertion(\pi) > \mathcal{B}_{Agent(\pi)}(Imperf(K_{I\pi}))$
(Agent of speech act normally believes that some DRS constructed from the inner stage DRS is true)

The combination of axioms (24) and (25) guarantees that utterances in the *passé simple* can only occur in a subset of all the possible discourse relations, thereby minimising the cost of computing appropriate rhetorical relations. Note also that the absence of any axiom comparable to axiom (27) for French imperfective IVPs reflects the fact that they do not have a strong illocutionary force, contrary to perfective IVPs (whose illocutionary effects are even monotonic). Indeed, the illocutionary contribution of French imperfective IVPs are both nonmonotonic and underspecified (this accounts for the variety of uses associated with the *imparfait*, as we will see) ; cf. section 10 above, where we showed that the aspectual interpretative effects of the *imparfait* were both nonmonotonic and underspecified (see examples (19)-(20)), while assuming that the aspectuo-temporal content of tenses underly their content as IVPs. The axioms we just proposed can help us understand how this connection between aspectuo-temporal content and illocutionary function (or interpretative effects) is achieved.

Let us move now to some related lexical aspectual axioms ; these axioms make use of the *Conseq_Telic* and *Conseq_Atelic* aspectual relations.

13. Related lexical aspectual axioms

The following lexical axioms apply depending on whether a lexical entry describes a telic or atelic situation :

- (28) **Beliefs concerning telic lexical entries :**
 $\mathcal{B}_{Agent(\pi)}(K_{I\pi}) \wedge Conseq_Telic(K_{I\pi}) > \mathcal{B}_{Agent(\pi)}(K_{R\pi})$
(if Agent of speech act believes that the inner stage of a telic situation is true, then normally he/she also believes that the corresponding result stage is true)
(29) **Beliefs concerning atelic lexical entries :**
 $\mathcal{B}_{Agent(\pi)}(Imperf(K_{I\pi})) \wedge Conseq_Atelic(K_{I\pi}) > \mathcal{B}_{Agent(\pi)}(K_{R\pi})$
(if Agent of speech act believes that some DRS describing some subpart of the inner stage of an atelic situation, then normally he/she believes that the corresponding result stage is true)

Axiom (9) predicts the entailment given in (30), while axiom (10) predicts the entailments given in (31), but note that neither (9) nor (10) predict that entailment (32) would hold (and indeed, this entailment does not necessarily hold).

- (30) *Yannig ate his pancake. δ Yannig has eaten his pancake.*

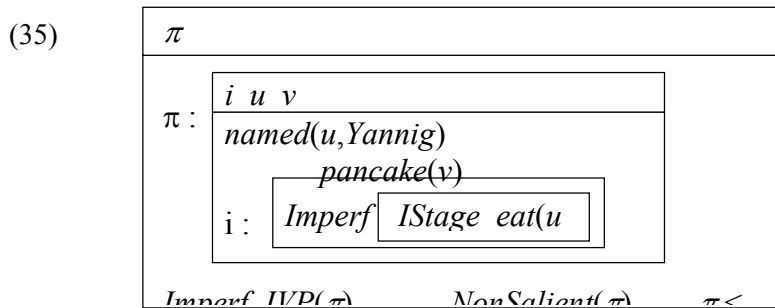
- (31) *Yannig was sick + running.* δ *Yannig has been sick +running.*
 (32) *Yannig was eating his pancake.* \therefore *Yannig has eaten his pancake.*

Armed with those axioms, we can now proceed and begin spelling out our analysis of the various uses of the *imparfait*.

14. Standard aspectuo-temporal uses of the imparfait

The standard aspectuo-temporal use of the *imparfait* is exemplified in (33)-(34) and represented in (35) ; note that instead of condition $\neg(\pi^n)$, $\pi < n$ holds ; this is due to the more specific temporal interpretation available in such an assertive context.

- (33) *Je nageais + j'étais malade.*
 'I was swimming + sick'.
 (34) *Yannig mangeait sa crêpe.*
 'Yannig was eating his pancake'.



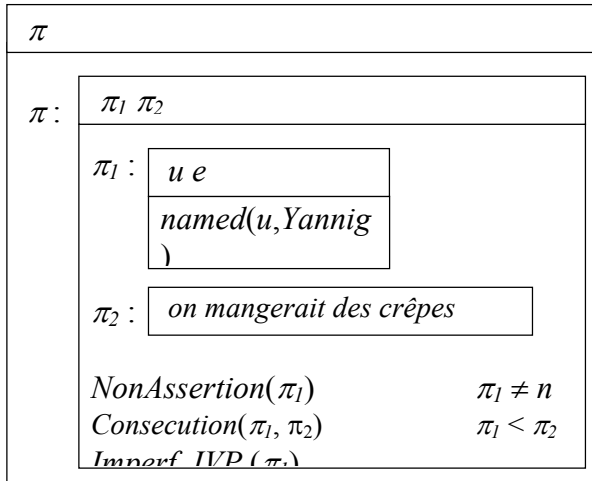
According to axioms (27) and (28) the Agent of π will not infer the validity of π 's result stages in the case of (34) because it is telic, whereas in (33), according to axiom (29), the result stages of π will be validated – given of course the insertion of π within some assertive speech act type (e.g., *Background*) triggering axiom (23).

15. Modal uses of the imparfait

Modal uses of the *imparfait* are given in (36)-(38) ; we will only treat (36) (represented in (39)) in this paper, for want of space (but see Caudal, Roussarie & Veters 2002 for a more thorough treatment of all the uses of the *imparfait*).

- (36) *Si Yannig venait, on mangerait des crêpes.*
 'If Yannig comes, we'll eat pancakes'.
 (37) *Un peu plus, et le train déraillait.*
 'If things had developed further, the train could have gone off the rails'.
 (38) - *Hé ! Hé ! Pelléas ! arrêtez ! arrêtez !*
 - *(Il le saisit par le bras.) Pour Dieu !... Mais ne voyez- vous pas ?*
 - *Un pas de plus et vous étiez dans le gouffre !...* (M. Maeterlinck, *Pelleas et Mélisandre*, 1893, pp. 72-73, Act III, Scene 3)
 'One step further, and you would have ended up in the pit !'

(39) *Si Yannig venait, on mangerait des crêpes.*



As suggested in Vairelle (1982), we consider that *si* is some sort of illocutionary marker (noted *NonAssertion*(π)) expressing non-assertion (rather than *non-validity*, as argued in Martin 1983, the issue at stake being the *veridicality* rather than *validity* of some proposition ; the speaker cannot commit him/herself to the veridicality of a *si*-proposition). Moreover, we introduce the *Consecution* discourse relation, such as *Consecution*(α, β) indicates that β is the consequent of an antecedent α (we do not take *Consecution* to stand for logical consequence, but rather some kind of general linguistic notion of consequence, semantically comparable to dynamic consequence). *Consecution* indicates that β is a temporal and/or modal sequel α (' α follows from β ') via some kind of conditional speech act (meaning roughly ' β will follow α / α is a precondition for β '). *Consecution* unifies the veridicality and temporal anchoring of π_1 and π_2 in (39) thus, if π_2 is real, then so is π_1 (cf. e.g. (5) and (40)).

(40) *Si tu arrivais en retard, il te disputait.*
 'Whenever you were late, he would tell you off'.

We believe that the non-assertive context (namely the *si*-clause) completely neutralizes the aspectual content of the *imparfait* – cf. the contrast between (41) and (42) : (41) hypothetically expresses an imperfective reading of the inner stage of a situation, whereas (42) rather describes perfectly the same situation. Indeed, hypothetical events do not occur, and since *aspectual viewpoints* are means of asserting that 'something occurred', it is clear that viewpoint information is rendered irrelevant in such a modal context ; consequently, none the interpretative axioms given in section 11 apply. Since *si* prevents axiom (23) from applying to π_1 , speaker *Agent*(π) cannot introduce K_{π_1} within his belief base, and consequently cannot introduce either any aspectual interpretation of K_{π_1} (the application of axiom (27) is prevented).

(41) *Si tu allais à Berlin, tu croiserais peut être Yannig en chemin.*

'If you went to Berlin, you might come across Yannig on your way'.

(42) *Si tu allais à Berlin, je t'accueillerais à la gare.*

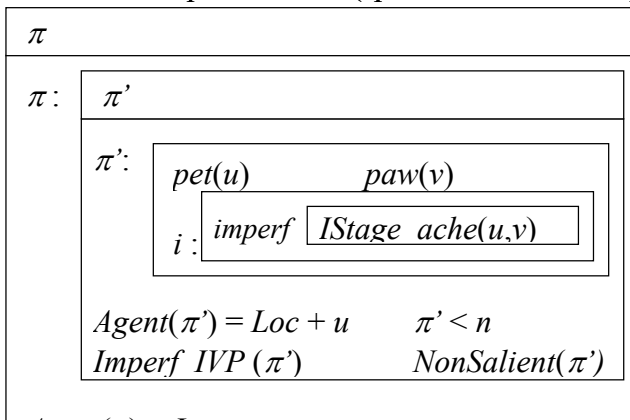
'If you went to Berlin, I would come and welcome you at the train station'.

Moreover, note that (39) also makes use of DRS subordination to capture the fact that the speaker does not commit him/herself to the veridicality of either π_1 or π_2 ; he/she merely asserts that in case π_1 came to be true, then π_2 would come to be true as well.

16. Communicative uses of the imparfait : dialogue and indirect speech

We are now moving to somewhat tricky (and highly idiomatic!) uses of the *imparfait*. So-called *free indirect speech* (FIS) *imparfait* (43) *attenuation/politeness imparfait* ('imparfait d'atténuation/de politesse') (44) *hypocoristic imparfait* ('imparfait hypocoristique') (45), *fairground imparfait* ('imparfait forain') (46) and *pre-games imparfait* ('imparfait préludique') (47) are typical members of this class of uses; an instance of formal treatment is given in (48). They all have in common that some speech act is (at least possibly in the case of free indirect speech, FIS) attributed by speaker (or whoever commits him/herself to the veridicality of such utterances; this is problematic in the case of FIS) to some other speaker. Those uses are 'dialogic' or 'conversational' in this sense. The contribution of the utterance context is a major one, and those uses are more interpretative than properly semantic.

- (43) *Il partait demain, sa décision était prise.*
 'He had made up his mind, he was leaving tomorrow.' (free indirect speech, FIS)
- (44) *Qu'est-ce qu'elle voulait la p'tite dame ?*
 Litt. 'What did you want?' (salesman attributes a request speech act to some female customer)
- (45) *Oh !, mais c'est qu'on avait très envie de faire son pipi !*
Oh, but there be-PRES 3sg. that we_i have-IMPARG 3sg very urge to do-INF one_i's wee !
 (speaker is talking to a pet or baby, attributing it a speech act expressing a strong urge to wee)
- (46) *Je voulais / venais voir mon fils.*
 Litt. 'I wanted to see my son / have come to see my son.' (= 'Please let me see my son')
- (47) *(On dira que) j'étais le voleur et (que) tu étais le policier.*
 Litt. '(Let's assume that) I am the cop and you are the robber'.
 (kids preparing a 'cops and robbers' game)
- (48) *Oh, c'est qu'on avait mal à la papatte !*
Oh, but our paw aches ! (speaker attributes a speech act to a pet animal)



Conditions $Agent(\pi') = Loc + u / \pi' < n$ expresses the fact that (i) the agent of the attributed speech act π' is in fact *both* the speaker and the subject of the embedded proposition⁶ and (ii) this speech act is past rather than merely inactual. Thus (48) could be paraphrased as ‘I am lending you my voice to express your pain’ (and this speech act was past). Indeed, axioms (27) and (29) apply : it is a fact that the pet did feel pain (the underlying proposition is atelic) (see the *unfelicitous* (49) ; this belief cannot be rejected ; compare with indirect speech in (51)), although it is impossible to tell whether it still is in pain or not. It may or may not be the case ; discourse (50) is a mere possibility.

- (49) *Oh mais c'est qu'on avait mal à la papatte !*Pourtant je doute qu'on ait vraiment (eu) mal !*
Litt. ‘Oh, but our paw aches ! *Yet I doubt we did feel pain !’
- (50) *Oh mais c'est qu'on avait mal à la papatte ! Mais maintenant avec ce joli bandage, tout va bien, ça ne fait plus mal du tout.*
Litt. ‘But now with this lovely bandage, we’re alright, it does not hurt anymore’.
- (51) *Yannig m’a dit qu’il venait – mais je doute qu’il vienne+qu’il en ait l’intention.*
‘Yannig told me he would come, but I doubt he will come / he wants to come’.

This is a typical pattern entailment associated with the aspectuo-temporal value of the *imparfait* (see section 10). In this sense, such uses are mere *conversational* variants of the more basic aspectuo-temporal use, and share the very same semantics. Axioms (23), (27) and (29) apply, thus producing the required interpretative effects.

Note that if our analysis is correct (namely that the *hypocoristic imparfait* is simply an illocutionary variant constructed from the aspectuo-temporal semantics of the *imparfait*) we also predict that *telic* utterances cannot receive an hypocoristic reading. Axiom (28) cannot apply if the *imparfait* retains its standard imperfective viewpoint semantics. This prediction is borne out, as (35a-b) shows (it only receives a standard imperfective viewpoint reading) :

- (52) a. *Oh mais c'est qu'on mangeait sa gamelle !* (hypocoristic reading blocked)
Litt. ‘We were eating our dish !’
(context : speaker is talking to some pet animal ; the eating event *must* be over, and speaker is not attributing any past speech act to the pet)
- b. *Oh mais c'est qu'on partait !* (hypocoristic reading blocked)
Litt. ‘We were leaving !’
(context : speaker is talking to some pet animal ; the eating event *must* be over, and speaker is not attributing any past speech act to the pet)

As a matter of fact, examples of so-called *hypocoristic imparfait* involve sentences describing either stative (typically expressing private states : desires, feelings (pain, joy...)) or dynamic atelic situations. Indeed, there is no point in reporting in such a way a *past* speech act if the underlying proposition cannot be true at the utterance time ; and this cannot be the case with telic sentences.

⁶ De Saussure & Stiouhl (2002) and Bres (2002), among others, also noted this ‘identity merging’ effect ; it seems to originate in the fact that hypocoristic uses of the *imparfait* arise only if speaker is lending his/her voice to a beloved being, who moreover must be unable to talk (typically a pet or a baby). This being is so dear and close to speaker that it is not distinct from him/her.

Again, note that the assertive flavour of utterances such as those does not come from intrinsic properties of the *imparfait* (no illocutionary force is attributed to π within its SDRS, except *Imperf_IVP*, which is highly underspecified) but from the discourse relation it enters (i.e., from the speech act type specified by this DR).

17. A note on the narrative *imparfait*

The current state-of-the-art of discourse representation theories would have a hard time explaining why it seems to receive a perfective viewpoint in examples such as (53), mostly because they fail to incorporate a sufficiently rich and supple aspect calculus procedure (however see Caudal & Vetters 2002a,b for an implementation bridging this gap). The SDRT framework described in works by Asher & Lascarides (see e.g. Asher 1993, Lascarides & Asher 1993) would thus predict *Background* discourse relations between π_1 , π_2 and π_3 in (53).

- (53) Quelques instants plus tard, Maigret *descendait* (π_1) l'escalier, *traversait* le salon (π_2), *gagnait* la terrasse (π_3). (Simenon, *La nuit du carrefour*, Livre de Poche 2908, p. 61)
 'A moment later, Maigret walked down the staircase, crossed the dining-room, and then reached the terrace.'

Following Caudal & Vetters (2002a,b), we consider that the so-called *narrative* use of the *imparfait*, apparently reminiscent of a perfective viewpoint, is not intrinsically part of the meaning of this tense, but rather a contextual, interpretative by-product of the application of *Narration*, triggered by other linguistic cues (see the adverbial *quelques instants plus tard*) and world knowledge (i.e., knowledge allowing us to reconstruct 'script-like' natural or predictable sequences of situations, involving transitions / temporal progression). Consequently, although axioms (27) and (28) do not apply, the proper interpretative effects are achieved by other means (in particular axioms on *transitions*, stipulating that whenever we can infer from our world-knowledge base that some change-of-state occurs, we can also infer that speaker believes that both the inner stage and result stage of $\pi_1/\pi_2/\pi_3$ occurred (we claim that transitions involve (i) an inner stage and a result stage and (ii) the *Conseq_Telic* relation). The point is that axiom (27) does not *block* such a pragmatic reinterpretation ; the semantics of the *imparfait* is so underspecified that it is compatible with transitional reinterpretations.

18. More on other French tenses

For the sake of generality, we'll briefly expose now related similar analyses for other French tenses.

19. The French *futur*

We claim that the French *futur* (furate) has the following lexical entry, as an IVP :

(54) $\lambda\pi:$

$\pi \pi'$
$\pi: K \quad \pi': K'$
$Consecution(\pi', \pi) \quad \pi' \circ$

This entry can account for a variety of uses of the *future*, both modal and temporal. Note that (54) indicates that the illocutionary force is modal/temporal, but not aspectual ; and indeed, the *futur* is aspectually underspecified, as noted elsewhere in the literature, e.g. in Smith

(1991). Thus, example (55a) either translates as (55b) or (55c). This suggests that the aspectual viewpoint associated with the *futur* (at least to some extent) indeterminate. Note that this aspectual neutrality comes as a side-effect of the embedding of speech act π' within π (this renders π' 's propositional content K_π inaccessible to higher DRSs).

- (55) a. *Quand Yannig rentrera, Mona dormira.*
 b. 'When Yannig comes back, Mona will fall asleep.' (perfective viewpoint-like reading)
 c. 'When Yannig comes back, Mona will be sleeping.' (imperfective viewpoint-like reading)

Let us review now some uses of the *futur*. A classic temporal reading of the *futur* is given in (56). (57) exemplifies an epistemic reading of the *futur*, while (58) exemplifies a deontic reading.

- (56) *L'année 2004 sera bissextile.* (context : exposition of a fact)
 'The year 2004 will be bissextile.' (factual reading / shared knowledge)
 (57) *Il pleuvra sûrement demain.* (context : prediction)
 'It will probably rain tomorrow.' (epistemic reading)
 (58) *Tu partiras demain.* (context : order)
 'You must leave tomorrow.' (deontic reading)

We take the *Consecution* relation to account for those various readings. In (56) *Consecution* applies in a temporal way between the set of present beliefs and expectations of the speaker (this set of propositions being reified by $\pi^{\bar{x}}$ in the SDR-theoretic language, and can be understood as 'all the speech acts I currently believe in' ; $\pi^{\bar{x}}$ replaces π' in the representation given in (54)) and the consequent speech act referent π . The semantics of *Consecution* is then more or less comparable with the temporal ordering operator $>$.

In (57) and (58), *Consecution* applies in a modal fashion ; it is to be interpreted as a *modal and temporal consequence*, rather than a mere temporal sequence. It seems that in the case of a deontic reading (58), π' is replaced in (54) by the set of present *intentions* rather than *beliefs* of the speaker (thus $\pi^{\bar{x}}$ corresponds in some way to $I_{Agent(\pi)}(\pi^{\bar{x}})$). We will not discuss further how this dual interpretation of *Consecution* is contextually achieved, but see Caudal, Roussarie & Veters (2002b) for details. Note that the potential status of π in (54) prevents axiom (23) from applying in a straightforward manner : predictions, requests and orders, are not *actual* beliefs, but likely beliefs or intentions.

20. The French *conditionnel* (conditional)

Assuming that the French *conditionnel* is a morphologically complex tense morpheme combining the *future* (-r-) and *imparfait* morphemes (-ai-)⁷, we assign the following lexical entry to the *conditionnel*, which capitalizes on the treatment of its two morphological components :

⁷ And it seems to be a fairly sensible assumption, as suggested in Gosselin (1999), Dendale & Tasmowski (2001), for instance.

(59)

$\lambda\pi:$	$\pi \pi'$ <hr/> $\pi:K \quad \pi':K'$ <i>Consecution</i> (π', π) <i>Imperf_IVP</i> (π')
---------------	---

(59) suggests that the *conditionnel*, like the *future*, involves a *Consecution* discourse relation between speech act referent π and some contextual antecedent speech act referent π' , such as π is viewed as (i) associated with an imperfective viewpoint and (ii) inactual. In other words, the *conditionnel* acts as a relative tense inasmuch it requires some antecedent *imparfait* – and this is indeed the case, for

Note that like the *futur*, the *conditional* leaves the aspectual interpretation of the consequent speech act referent π' indeterminate ; see examples (60)-(61) ; again, this comes as a by-product of the subordination of π' within π .

(60) *Si tu venais, Yannig partirait.*
 ‘If you come, Yannig will go.’

(61) *Yannig serait malade.*
 ‘I heard Yannig is sick / Yannig is probably sick.’

Again, we claim that treating the *conditionnel* as contributing an IVP operator makes it possible to account for its different uses (see Dendale & Tasmowski 2001 for a review and a discussion of the enormous amount of variation exhibited by this tense in context ; its interpretative effects are very diverse). We will just give a flavour of the unified treatment rendered possible by our theory of IVPs. Consider the following examples :

(62) *Selon Zaef, la passation de pouvoirs à Kandahar entre les talibans et le mollah Naqib pourrait prendre trois ou quatre jours.* (Le Monde, 7/12/01)
 ‘According to Zaef, transferring power from the Talebans to Mullah Naqid might take up to three or four days.’ (evidential and modal)

(63) *Si Yannig venait, on mangerait des crêpes.* (repeats (39))
 ‘If Yannig comes, we’ll eat pancakes’.

(64) *Il se pourrait que Yannig vienne.*
 ‘Yannig might come.’

(62) is an instance of so-called ‘evidential’ *imparfait* (see Guentchéva 1996, Dendale & Tasmowski 2001) ; the *conditionnel* is used to report somebody else’s speech act, without speaker committing him/herself to its veridicality (i.e., it may be false that this transfer of government will take up to three or four days). (63) is an instance of *conditional / hypothetical* reading of the *conditionnel*. Finally, (64) is an instance of epistemic-like reading.

The treatment of (39) outlined above indicates that the antecedent π_1 is identified in (63) with the *si*-clause, while the consequent π_2 corresponds to the utterance in the *conditionnel*. Since π_2 is embedded, it cannot be asserted (speaker does not commit himself to the veridicality of π_2 proper, but to the

relation that would connect π_1 and π_2 if π_1 came to be true)⁸. Therefore axiom (23) does not apply to any of π_2 's propositional content, and no aspectual belief is derived.

But how can such a treatment carry over to other uses of the *conditionnel* ? We believe that the antecedent π_1 is then some standard conversational antecedent.

In the case of (64), it seems to be something like a subset of 'the context of utterance' π^{Σ} . It is in fact some set of present assumptions (speech act referents) which we'll note Π_0 (Π_0 being formally a subset of π^{Σ}). It follows then from (59) that *Consecution* holds between Π_0 and speech act referent π (which corresponds to the proposition in the *conditionnel*), which again, is non-asserted. Therefore, the interpretative effect achieved by the *conditionnel* in this case can be paraphrased as follows : *'it is a possible consequence of some present assumptions of mine that the propositional content of π (namely K_{π}) is true'* ; moreover, *the antecedent assumptions are non-asserted – therefore this consecution is rather unlikely'*. And indeed, axiom (23) does not apply, so that no additional belief is inferred from utterances in the *conditionnel* ; their function is entirely hypothetical or counterfactual.

In the case of (62), the problem is rendered somewhat more complex by the involvement of some other speaker (cf. the linguistic trigger *selon*), whose speech is being in fact reported. According to us, the set of assumptions Π_0 is then attributed to this indirect speaker, rather than to the agent of the matrix speech act (associated with π). This is perfectly compatible with the non-assertive effect of DRS subordination given in (62) ; but in this case, the unlikely nature of these assumptions is attributed to their speaker-external origin (an analysis which can be paraphrased as follows : *π is unlikely because it is a possible outcome of assumptions I don't share ; I cannot guarantee assumptions that are not mine, and therefore I cannot commit myself to the validity of their consequences*). The consequence, in this case, is to be understood in terms of veridicality (thus, in (62), it amounts to saying 'if Zaaef is right to assume that P, then P is true').

Conclusion

From a SDRT-theoretic point of view, our work is innovative both in terms of compositionality and tractability. Axioms such as (24) and (25) materialize the machinery involved in narrowing down the set of potential analyses, by ensuring that sentences in the *passé simple* can only occur in certain types of discourse relations. Reducing the search space for possible rhetorical relations is all the more crucial since in recent developments within the SDRT framework (see e.g. Asher & Lascarides 2001), *Narration* ceased to be treated as a 'default' discourse relation, and the *MDC (Maximise Discourse Coherence)* principle was introduced ; it is roughly a 'coherence score' that selects the most appropriate candidate between several competing discourse relations. By ruling out early a number of irrelevant discourse relations on purely linguistic grounds, our opportunistic approach makes it possible to reduce the number of computations performed before determining the most coherent discourse relation.

From a more general linguistic point of view, our analysis is capable of capturing a variety of generalizations about the affinity between aspect, evidentiality or modality, by relating them via the notion of *illocutionary viewpoint*. It can help us understand why tenses endowed with an imperfective

⁸ Recall that the unification effect of *Consecution* mentioned arises from the fact antecedent and consequent must share their veridicality and temporal index (this explains why *si tu es fort en logique, je suis le Pape* 'if it is the case that you are good at logic, then I'm the Pope' has a 'backtracking', paradoxical flavour : it is a fact that I'm not the Pope, therefore it cannot be true now that you're good at logic) – the interpretative effect is that the apparent potentiality described in the *present* is in fact not accessible, because the consequent is counterfactual (one can gloss this interpretative effect as follows : 'the world would not be what it is if you were good at logic').

viewpoint are often used crosslinguistically to express modal values (hypothetical or irreal). We have shown that imperfective and perfective viewpoints have different speech act contributions because they are aspectually different. Thus, sentences involving perfective viewpoints are not compatible with non veridical contexts (i.e., contexts in which the speaker does not commit himself with respect to the veridicality of a proposition). We believe it to originate in the fact that perfective viewpoints express the completion of a situation and therefore commit the speaker to the veridicality of the associated proposition, whereas imperfective viewpoints don't.

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