

Partition of an entity with aspectuo-temporal operators

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Abstract

This paper studies French and English discourses which describe the partition of an entity through aspectuo-temporal operators, namely verbs such as *commencer (par) [begin by/with]* or adverbs such as *ensuite [next]*. These aspectuo-temporal operators require a linear order which can be found in the qualia structure of the entities they partition.

1 Introduction

We study French and English discourses such as (1). In (1), the four sentences describe the content of the parts of the thesis: the i th sentence describes the i th part X_i of the thesis X . However, there is no reference to these parts X_i , only the set X is referred to, first with the definite NP *the thesis*, next with pronominal anaphors. The partition of the thesis into subsets is realized by means of aspectuo-temporal operators: the verb *commencer par [begin by]* (introducing an infinitive clause) in the first sentence, the adverb *then* in the second one, the verbs *se poursuivre par [go on with]* and *se terminer par [end with]* (introducing an NP) possibly accompanied with an adverb in the third and fourth sentences.

(1) La thèse commence par décrire la problématique. Ensuite, elle présente un état de l'art. Elle se poursuit par les apports du doctorant sur le sujet. Enfin, elle se termine par un exposé des axes de recherche futurs.

The thesis begins by describing the problematic. Then, it presents a state of the art. It goes on with the contributions of the PhD student on the subject. Finally, it ends with a statement of the future areas of research.

I call these discourses "TCDs" (Table of Contents Discourses). By taking the notion of "topic" from SDRT (Segmented Discourse Representation Theory, (Asher 1993), (Asher and Pustejovsky

2000), (Asher and Lascarides 2003)), it can be said that these discourses elaborate a topic, which is the entity X itself, or, as it will be shown, a facet of X which is recorded in its qualia structure (Pustejovsky 1995).

I call *Vasp-par* verbs such as *commencer* or *terminer*, which subcategorize a complement introduced by the preposition *par*. This preposition is translated in English as *by* if it introduces an infinitive clause and as *with* if it introduces an NP.

We are going to review nouns that allow a TCD, first nouns referring to entities (Section 2), next nouns referring to events (Section 3). We will show that aspectuo-temporal operators are not restricted to the temporal domain. They require a partition of an object X (entity or event), $X = \{x_1, x_2, \dots, x_n\}$ with a linear order $x_j < x_{j+1}$ (the relation of temporal succession is just a particular case of linear order). A TCD splits the object X into subsets X_i such that every X_i groups together a succession of consecutive elements x_j .

We will study the behavior of *Vasp-par* in TCDs. We will diversify the semantic category of their subject (non-human in TCDs, but human in parallel discourses which can be the basis for a possible analysis by metonymy), and diversify their syntactic patterns (transitive and intransitive). We will show that there is no regularity at the level of lexical semantics, but that there is regularity at the level of discursive semantics.

2 Nouns referring to entities

2.1 Nouns of the mathematical domain: *list, suite, series*

The TCD in (2) is built around the noun *liste [list]*. By definition, a list involves a linear order between its elements x_j . The partition given by a TCD splits the list into subsets X_i which group together successive elements x_j . These subsets, which are the referents of the *par* complements, are ordered: X_i precedes X_{i+1} if X_i 's last element precedes X_{i+1} 's first element. In (2), the list is split

into three subsets which contain respectively three, two and one element(s).

(2) La liste (2 4 6 11 13 9) commence par des nombres pairs. Elle se poursuit par des nombres premiers. Elle se termine par un nombre impair divisible par 3.

The list (2 4 6 11 13 9) begins with even numbers. It continues with prime numbers. It ends with an odd number divisible by 3.

2.2 Nouns of the linguistic domain: *sentence, word*

The TCD in (3) is built around the noun *mot* [word]. By definition, a word is a suite of letters which can be grouped together in syllables, for example.

(3) Ce mot commence par une majuscule. Il se poursuit par deux lettres. Il se termine par une syllabe ouverte.

This word begins with a capital letter. It continues with two letters. It ends with an open syllable.

A *sentence* can be seen as a succession of words or as an information support. A TCD built with *sentence* behaves in the first case as a TCD built with *word*, in the second case as a TCD built with a noun such as *book*, which is studied in section 2.6.

2.3 Nouns referring to a time period: *century, childhood, summer, week*

For nouns referring to a time period, the linear order is the temporal order, (4).

(4) L'été a commencé par une période pluvieuse. Il s'est continué par une canicule. Il s'est terminé par un temps chaud.

The summer began with a rainy period. It continued with a heat wave. It ended with warm weather.

No Telic or Agentive role in the terminology of the Generative Lexicon (Pustejovsky 1995) is associated with any of the three types of nouns shown above. We are now going to study nouns with a Telic and/or Agentive role.

2.4 Nouns referring to a path: *river, road, street*

For a noun referring to a path, two types of TCDs are observed, as illustrated in (5) and (6). In (5), the *par* complements are concrete nouns. In (6), they denote eventualities of type "space movement", as it is the case for the predicates under the dependency of the adverbs of temporal succession. The road is partitioned into successive zones, a zone corresponding to a connex section of

road which presents the characteristic given by the predicate of space movement.

(5) La route de Mâcon à Charolles commence par une voie express. Elle se continue par un tronçon à trois voies. Elle se termine par un long tronçon pénible à deux voies.

The road from Mâcon to Charolles begins with a freeway. It continues with a section in three lanes. It ends with a long hard section in two lanes.

(6) La route de Mâcon à Charolles commence par traverser un vallon ombragé. Ensuite, elle grimpe brusquement dans une épaisse forêt. Enfin, elle termine sa course par une descente vertigineuse sur Charolles.

The road from Mâcon to Charolles begins by crossing a shaded valley. Then, it climbs abruptly in a thick forest. Finally, it ends with a vertiginous way down to Charolles.

Let us examine the qualia structure for nouns referring to a path, focusing on the Telic role¹.

2.4.1 Telic role

The Telic role for paths is presumably *prendre, emprunter* [take] in the most general case, and *walk, drive* or *navigate* in more specific cases depending on the path. These Telic roles denote process atelic events. However, a distinction should be made between a "tourist" path that walkers or drivers enjoy taking, and a "regular" path that is taken just to go from one place to another. A noun such as *chemin de grande randonnée* [hiking trail] is likely to be of the type tourist path, while a *drive-way* or *highway* is likely to be of the type regular path. A noun such as *road, street, avenue* denotes either a tourist or regular path according to the person who takes it. For example, the road from Mâcon to Charolles is a regular path for a person who lives in Burgundy, for whom the TCD in (5) is an appropriate description. On the other hand, the very same road is a tourist path for a New-Yorker girl visiting Burgundy, for whom the TCD in (6) is an appropriate description.

There is a crucial difference about telicity between the telic roles for tourist and regular paths. The Telic role for a tourist path is goal-oriented: *the person who takes it wants to do it*. The proverb *do* here is to be understood in a sense similar to that found in sentences (7), and it is a transition event-type.

(7) *During her trip in Europe, this New-Yorker girl did Paris and Roma (in a week).*

¹ A noun referring to a path may also have an Agentive role, but this role has nothing to do with our examples, and so it is not discussed.

Last winter, this mountaineer did the Mont-Blanc and the Canigou.

This handicapped person did the (hiking trail) GR 20 (in a week).

On the other hand, the Telic role for a regular path does not incorporate any notion of goal, and sentences in (8) are distinctly odd (with Fred taking – and not creating (building) – the path).

(8) *Fred did the drive-way [took]

*Fred did the (highway) A6 [took]

In (Pustejovsky, Bouillon 1995), it is argued that the coercion phenomenon involving the verb *commencer* [begin] with a direct NP complement depends on the telicity of the event which is metonymically reconstructed from the NP. The examples (9) follow their conclusion: (9a) with a tourist path NP, whose Telic role is telic, is natural, whereas (9b) with a regular path NP, whose Telic role is not telic, is odd.

(9a) Fred began the (hiking trail) GR 20 [taking and doing]

b *Fred began the (highway) A6 [taking]

A regular/tourist sense alternation can also be found with a noun such as *falaise* [cliff]. A “regular” cliff denotes a geological relief which comes from natural phenomena. So this object should *a priori* have no purpose or function at all, and so no Telic role. However, on the tourist/sport grounds, a cliff has a function: it is the object of the desire of rock climbers. As such, it has a Telic role - *escalader* [climb] - which is goal-oriented: *the person who climbs it wants to do it*. A “tourist” cliff can be the direct NP complement of *begin* (Fred began this cliff) and be the topic of a TCD: it is then viewed as a down-up path starting at the foot of the cliff and ending at its top.

The regular/tourist sense alternation is also found with the class of nouns such as *rivière, fleuve, torrent* [river, torrent, stream]. These “water paths” are natural phenomena. However they may become navigable waterways for business, sport or tourist reasons.

2.4.2 Analysis by metonymy

Parallel to the TCD in (6), one can observe the discourse (10) in which references to the road are replaced by references to the person who takes it and does it, who is called *promeneur* [walker].

(10) Le promeneur (qui emprunte cette route) commence par traverser un vallon ombragé. Ensuite, il grimpe brusquement dans une épaisse forêt. Enfin, il termine sa course par une descente vertigineuse sur Charolles.

The walker (who takes this road) begins by crossing

a shaded valley. Then, she climbs abruptly in a thick forest. Finally, she ends with a vertiginous way down to Charolles.

The discourses (6) and (10) describe the same situation, and (6) is understood as metaphoric with regard to (10). All the ingredients are thus gathered to advance the hypothesis that sentences in (6) are metonymy of sentences in (10). However, let us consider the examples in (11) found in the Gallimard guide for Morocco.

(11a) Après avoir quitté Ouarzazate, la route s’engage le long du Jebel Tiferrine, le contrefort oriental de l’Anti Atlas. Elle serpente à travers la montagne, atteint, à 1 660m d’altitude, le Tizi N’Tiniffit, puis rejoint rapidement Agdz. (page 287)

After leaving Ouarzazate, the road runs along Jebel Tiferrine, the oriental foothills of Anti Atlas. It snakes through the mountain, reaches, at 1 660m, Tizi N’ Tiniffit, then quickly joins Agdz.

(11b) En quittant l’enceinte de la Skala, la rue Derb Laalouj passe devant l’ancien consulat de France, où Charles de Foucauld séjourna en 1884, et conduit au musée Sidi Mohammed Ben Abdallah. (page 159)

When leaving the wall of Skala, the street Derb Laalouj runs in front of the former consulate of France, where Charles de Foucauld stayed in 1884, and leads to the museum Sidi Mohammed Ben Abdallah.

Incompatibilities arise when one tries to build parallel discourses in which references to the road are replaced by references to the walker who takes it. A discourse parallel to (11a) is unacceptable because of the predicate *serpenter* [snake], which can be used only with a non-human subject. A discourse parallel to (11b) is unacceptable because of the predicate *conduire* (à un endroit) [lead (to a place)], which cannot be used with a human subject without a drastic change of meaning (*lead somebody to a place*). A similar phenomenon is observed for a path of type *river*: the discourse (12b) parallel to the TCD (12a) is unacceptable because of the predicates *prendre sa source* [spring up], *s’écouler* [flow out] and *former* (un estuaire) [form (an estuary)], which cannot be used with a human subject. The TCD (12a) describes the “tracé” [“line”] of the Loire (“tracé” is the technical term used by francophone hydrographs).

(12a) La Loire commence par prendre sa source au Mont Gerbier de Jonc dans le Massif Central. Ensuite, elle s’écoule rapidement dans divers bassins d’effondrement. Enfin, elle termine sa course en formant un long estuaire sur l’Atlantique.

The Loire begins by springing up in the Mount

Gerbier de Jonc in the Massif Central. Then, it quickly flows out in different rifts. Finally, it ends by forming a long estuary on the Atlantic Ocean.

(12b) *Le navigateur qui emprunte La Loire commence par prendre sa source au Mont Gerbier de Jonc dans le Massif Central. Ensuite, il s'écoule rapidement dans divers bassins d'effondrement. Enfin, il termine sa course en formant un long estuaire sur l'Atlantique.

**The navigator who takes the Loire begins by springing up in the Mount Gerbier de Jonc in the Massif Central. Then, she quickly flows out in different rifts. Finally, she ends by forming a long estuary on the Atlantic Ocean.*

Symmetrically, one can build discourses chaining human subjects without equivalent TCD chaining subjects denoting a path. One has just to use predicates such as *grimper une paroi au péril de sa vie* [*climb a rock face at the risk of her life*] which apply to a human being but not to a path, see the pair in (13). The topic in (13a) is the "trajet" ["journey"] of the walker.

(13a) Le promeneur commence par traverser un vallon ombragé. Ensuite, il escalade une paroi rocheuse au péril de sa vie. Enfin, il ...

The walker begins by crossing a shaded valley. Then, she climbs a rock face at the risk of her life. Finally, she ...

(13b) *Ce sentier commence par traverser un vallon ombragé. Ensuite, il escalade une paroi rocheuse au péril de sa vie. Enfin, ...

**This path begins by crossing a shaded valley. Then, it climbs a rock face at the risk of its life. Finally, ...*

To put it in a nutshell, the topic of TCDs partitioning a path is the *line* of the path, while the topic of discourses with a walker subject is the *journey* of the walker. Some predicates belong exclusively to the *line* vocabulary, other ones exclusively to the *journey* vocabulary, but numerous predicates belong to both vocabularies. The descriptions of *line* and *journey* are equivalent when all the predicates belong to both vocabularies.

2.4.3 Transitive forms of *Vasp-par*

Vasp-par are used in intransitive forms without any constraint. On the other hand, the following constraints are observed for transitive forms:

- If the *par* complement introduces an infinitive clause (which is possible with *commencer* [*begin*] but not with *terminer* [*end*]), then it is impossible to observe a transitive form.
- If the *par* complement introduces an NP (which is possible with all *Vasp-par*), then:

- if the subject denotes a path, the direct object of the transitive form should refer to the *line* of the path with a head noun such as *cours* or *parcours* [*course*], see (14a).
- if the subject denotes a walker, the direct object of a transitive form should refer to her *journey* with a head noun such as *promenade* [*walk*] or *excursion* [*excursion*], see (14b).

(14a) La route termine/commence sa course/son parcours par une descente vertigineuse.

The road ends/begins its course with a vertiginous way down.

(14b) Le promeneur termine/commence sa promenade/cette belle excursion par une descente vertigineuse.

The walker ends/begins her walk/this beautiful excursion with a vertiginous way down.

These data show that if a *Vasp-par* can syntactically sub-categorize a direct object, then this complement should be coreferent to the *topic* of the discourse. Moreover, the presence of a direct object does not alter the discourse semantics *modulo* the possibility of slipping some information through modifiers in the direct object and/or through head nouns presenting the topic under a new light. As an illustration, the discourses presented in (15) (with or without a direct object for each *Vasp-par*) are all semantically equivalent (they describe the same situation) *modulo* the quantity of information. For example, if *terminer* [*end*] is used transitively, then one learns that the walk is sports.

(15) Le promeneur qui emprunte cette route commence (sa promenade) par la traversée d'un vallon ombragé. Ensuite, il grimpe brusquement dans une épaisse forêt. Enfin, il termine (cette épopée sportive) par une descente vertigineuse sur le village.

The walker who takes this road begins (her walk) with the crossing of a shaded valley. Then, she climbs abruptly in a thick forest. Finally, she ends (this sports epic) by a vertiginous way down to the village.

2.5 Nouns referring to concrete objects of 2 or 3 dimensions: *carafe*, *field*, *ground*, *table*

A path is a plane curve, projectable onto a line, that is an object of 1 dimension which can be linearly ordered. Paths are thus concrete objects which can be given a mental representation of 1 dimension. For objects of 2 dimensions referring to a surface, e.g. *field* or *ground*, or objects of 3 dimensions, e.g. *carafe* or *table*, it is impossible to build a TCD. The exceptions to this rule are observed when a mental representation of 1 dimension of such objects is made. For example,

(16a) gives both extremities of a valley perceived as a plane curve. (16b) is acceptable only if one imagines an apartment as linear, which amounts into projecting its plan onto a line.

(16a) La vallée de la Doller commence vraiment à Maseveaux, à une trentaine de kilomètres à l'ouest de Mulhouse, et elle se termine après Sewen, beau village (*Guide du Routard Alsace, Vosges, page 305*)

The valley of Doller really begins at Maseveaux, around thirty kilometres on the West of Mulhouse, and it ends after Sewen, a beautiful village....

(16b) L'appartement commence par un vestibule. Il se poursuit par le salon et la cuisine. Il se termine par deux chambres et la salle de bains.

The apartment begins with a hallway. It continues with the living room and the kitchen. It ends with two bedrooms and the bathroom.

2.6 Nouns such as *newspaper, phone book, thesis*

2.6.1 Qualia structure

A noun such as *thesis* is a sort of book, with a Telic role, namely *lire* [read] and an Agentive role, namely *écrire* or *rédigier* [write]. I admit that a book is associated with the dotted type $p \cdot i$ (Pustejovsky 1995) where p corresponds to the physical object and i to the informational content. The physical object of type p presents an intrinsic ordered partition established by the succession of pages. The informational object of type i presents also a linear order which is correlated with the page order. More precisely (but informally), the correlation is the following:

- if $i_1 < i_2$ then $p(i_1) \leq p(i_2)$, where $p(i_k)$ is a function which gives the page number where the informational content i_k appears
- if $p_1 < p_2$ then $i(p_1) < i(p_2)$, where $i(p_k)$ is a function which gives the informational content of the page numbered p_k .

The order of presentation of information corresponds to the temporal order in which the reader reads the book²:

- if $i_1 < i_2$ then $r(i_1) < r(i_2)$, where $r(i_k)$ is a function which gives the time at which a given reader reads i_k
- if $t_1 < t_2$ then $i(t_1) < i(t_2)$ where $i(t_k)$ is a function which gives the informational content that a given reader reads at t_k .

The temporal order of writing has nothing to do neither with the page order nor with the order of

the presentation of information: it drifts wherever the inspiration of the author carries it.

Let us return to the TCD in (1) repeated in (18a) below. The *Vasp-par* are in intransitive forms. The *par* complements denote "informational contents". The topic is the thesis in its informational facet i . The partition made by the aspectuo-temporal operators follows the order of presentation of information. Therefore it groups together successive pages, and the order of the partition follows the normal temporal order of reading.

2.6.2 Analysis by metonymy

One cannot build a discourse parallel to (18a) where references to the thesis are replaced by references to the reader of the thesis: (18b) does not make sense. On the other hand, one can build (18c) with references to the author of the thesis.

(18a) La thèse commence par décrire la problématique. Ensuite, elle présente un état de l'art. Puis, elle se poursuit par les apports du doctorant sur le sujet. Enfin, elle se termine par un exposé des axes de recherche futurs.

The thesis begins by describing the problematic. Then, it presents a state of the art. Next, it goes on with the contributions of the PhD student on the subject. Finally, it ends with a statement on the future areas of research.

(18b) *Le lecteur (de la thèse) commence par décrire la problématique. Ensuite, il présente un état de l'art. Puis, il poursuit par les apports du doctorant sur le sujet. Enfin, il termine par un exposé des axes de recherche futurs.

**The reader (of the thesis) begins by describing the problematic. Then, she presents a state of the art. Next, she continues with the contributions of the PhD student on the subject. Finally, she ends with a statement on the future areas of research.*

(18c) L'auteur (de la thèse) commence par décrire la problématique. Ensuite, il présente un état de l'art. Puis, il poursuit par ses apports sur le sujet. Enfin, il termine par un exposé des axes de recherche futurs.

The author (of the thesis) begins by describing the problematic. Then, she presents a state of the art. Next, she continues with her contributions on the subject. Finally, she ends with a statement on the future areas of research.

I cannot find any predicate denoting an informational content with a subject which can refer to a book but not to a human being or vice versa. Consequently, the equivalence between a TCD partitioning a book, (18a), and a parallel discourse chaining subjects referring to the author of the book, (18c), seems systematic. An analysis by metonymy of the sentences of these parallel discourses is thus possible. It leads to the following

² I ignore readers who begin a book (thriller) with the end. I also ignore readers who read several times the same passage of a book.

apparent paradox: the ordered partition of (18a) corresponds to the order or reading, not writing. Nevertheless, it is the author who determines the order of the presentation of information, and so the reading order.

2.6.3 Transitive forms of *Vasp-par*

Let us examine the transitive forms of *Vasp-par* when their subject denotes the author. The direct object should refer to the book itself, which can be designated as a *manuscript* [*manuscript*] or an *œuvre* [*work*], *The author begins/ends (the thesis / her manuscript / her work) with a criticism of Chomsky's last book*. The direct object is of type *i* and not $p \cdot i$, the book being understood in its informational meaning and not in its physical meaning. All the discourses represented in (19) (with or without a direct object for each *Vasp-par*) are semantically equivalent.

(19) L'auteur commence (sa thèse) par la description de la problématique. Ensuite, il présente un état de l'art. Puis, il poursuit (son manuscrit) par ses apports sur le sujet. Enfin, il termine (son œuvre) par un exposé des axes de recherche futurs.

The author begins (her thesis) with the description of the problematic. Then, she presents a state of the art. Next, she pursues (her manuscript) with her contributions on the subject. Finally, she ends (her work) with a statement of the future areas of research.

2.6.4 Other nouns of type $p \cdot i$

Let us examine TCDs with other nouns of type $p \cdot i$. The TCD in (20) summarizes the table of contents of the phone book. This table of contents corresponds to a partition ordered along with the page order, which is correlated to the order of presentation of information. This partition has nothing to do with the temporal order of the events associated to the phone book: it is unrelated both to its creation (Agentive role) and to its referencing (Telic role).

(20) L'annuaire commence par (donner) des informations administratives. Ensuite, il présente la liste et les adresses des professionnels. Enfin, il se termine par les plans des principales villes.

The phone book begins /with /by giving/ administrative information. Then, it presents the list and addresses of professionals. Finally, it ends with the maps of the main cities.

On the other hand, it is impossible for most newspapers to be described through a TCD³. For example, in *Le Monde* or *The New York Times*, information is presented in a heavy structured way,

but this structure is not based on a linear order. The first page shows the front-page news and the beginning of several articles, which are continued on various pages in the rest of the paper. Therefore, it is impossible to imagine a TCD for such newspapers.

To put it in a nutshell, the data observed with objects of type $p \cdot i$ such as *thesis*, *phone book* and *newspaper* show that a TCD is possible only when information is presented in a linear order. The TCD partition follows then this linear order.

Finally, some remarks on an audio CD. It is physically partitioned into a series of tracks which can be listened to in a random order, (21a). A track is partitioned into a series of pieces the order of which corresponds to the listening (Telic role) order, (21b). Parallel to the TCD in (21b), one can build a semantically equivalent discourse with subjects referring to the composer of the music, i.e. the agent of the Agentive role (as it is the case for a *thesis*), (21c).

(21a) Ce CD commence par Le Dixit Dominus de Haendel. Il continue par le Nisi Dominus. Il se termine par le Salve Regina.

This CD begins with Dixit Dominus by Haendel. It continues with Nisi Dominus. It ends with Salvo Regina.

(21b) Le Dixit Dominus commence par l'un des plus saisissants préludes du compositeur. Puis ...

Dixit Dominus begins with one of the most striking preludes of the composer. Then ...

(21c) Haendel commence (le Dixit Dominus) par l'un de ses plus saisissants préludes d'orchestre. Puis ...

Haendel begins (Dixit Dominus) with one of his most striking preludes. Then ..

3 Nouns referring to events

Event nouns involved in TCDs denote durative events which are partitioned into sub-events temporally ordered. Among durative events, a distinction can be made between *hetero-* and *homo-* meronymic events. The former are complex events made up of a series of heterogeneous sub-events. The latter are such that their sub-events are all of the same type.

3.1 Hetero-meronymic events

The TCD in (24a) is preceded by an introduction sentence (written in brackets), which explicitly introduces the topic, i.e. *Fred's yesterday evening*. This topic is elaborated in the following sentences which form the TCD. In this TCD, the subjects refer to the topic, the *Vasp-par* are in intransitive forms,

³ I thank an anonymous reviewer for drawing up my attention on this point.

and the *par* complements are NPs which describe the sub-events of Fred's evening.

The discourse (24b) is obtained from (24a) by replacing references to the topic by references to its agent. The analysis of sentences in (24a) as metonymy of sentences in (24b) can be contemplated, however it has to be noted that the former sentences do not sound as metaphoric.

(24a) (Hier, Fred a passé une excellente soirée). Cette soirée a commencé par un délicieux repas. Elle s'est poursuivie par une compétition de danse. Elle s'est terminée par un feu d'artifice.

(Yesterday, Fred spent an excellent evening). This evening began with a delicious meal. It continued with a dance competition. It ended with fireworks.

(24b) (Hier, Fred a passé une excellente soirée). Il a commencé par un délicieux repas. Il a poursuivi par une compétition de danse. Il a terminé par un feu d'artifice.

(Yesterday, Fred spent an excellent evening). He began with a delicious meal. He continued with a dance competition. He ended with fireworks.

In the transitive forms of the *Vasp-par* with a subject denoting the agent of the topic, the direct object should refer to the topic, *He began his / this evening with a delicious meal*.

The following phenomenon is worthy of interest: with a human subject, the *par* complement can refer to a concrete object, *He began / ended (his evening) with a whisky*. This is an interesting coercion phenomenon; unfortunately I have no room to discuss it⁴.

3.2 Homo-meronymic events

For a homo-meronymic event e_0 which describes an action ACT made by a human H on a concrete object X , which is noted $e_0 = ACT(H, X)$, a TCD is obtained through the following process. Suppose that X can be split into subsets X_i and that ACT_i is an hyponym or troponym of ACT . Then e_0 can be partitioned into sub-events $e_i = ACT_i(H, X_i)$ which are temporally ordered. This process is illustrated in the TCD (26a) in which the topic is $e_0 = cleaning(F, h)$ where F and h represent respectively the referents of *Fred* and *the house*. The *par* complements refer to e_i .

The discourse (26a) is semantically equivalent to the discourse (26b) chaining subjects referring to H . (26b) is equivalent to (26c) where the *Vasp-par* introduce a direct object referring to e_0 . If $ACT_i =$

ACT for all i , the *par* complements can be NPs referring to the concrete objects X_i , see (26d) which invokes a coercion phenomenon.

(26a) (Cet été, Fred a nettoyé la maison). Ce nettoyage a commencé par le dépoussiérage des meubles. Il s'est poursuivi par le lessivage des plafonds. Il s'est terminé par le brossage des moquettes.

(This summer, Fred cleaned the house). This cleaning began with the removal of dust from furniture. It continued with the washing of ceilings. It ended with the brushing of carpets.

(26b) (Cet été, Fred a nettoyé la maison). Il a commencé par le dépoussiérage des meubles. Il a poursuivi par le lessivage des plafonds. Il a terminé par le brossage des moquettes.

(This summer, Fred cleaned the house). He began with the removal of dust from furniture. He continued with the washing of ceilings. He ended with the brushing of carpets.

(26c) Cet été, Fred a nettoyé la maison). Il a commencé (son travail) par le dépoussiérage des meubles. Il a poursuivi (ce nettoyage) par le lessivage des plafonds. Il a terminé (cette entreprise) par le brossage des moquettes.

(This summer, Fred cleaned the house). He began (his work) with the removal of dust from furniture. He continued (this cleaning) with the washing of ceilings. He ended (this enterprise) with the brushing of carpets.

(26d) (Cet été, Fred a nettoyé la maison). Il a commencé par les meubles. Il a poursuivi par les plafonds. Il a terminé (cette entreprise) par les moquettes.

(This summer, Fred cleaned the house). He began with furniture. He continued with ceilings. He ended (this enterprise) with carpets.

4 Conclusion

TCDs present a partition of a referent X by means of aspectual operators, *Vasp-par* and adverbs of temporal succession. The referents X that can be partitioned are either entities to which one can associate a mental representation of 1 dimension, mainly entities of type *path*, or events partitioned into a temporal succession of sub-events. Entities of type *book* are intermediate between these two cases: the linear order in which information is presented allows us to associate a book with a mental representation of 1 dimension, which corresponds to the temporal order of reading and which follows the succession of pages.

Let us contrast the data concerning books with those concerning paths:

⁴ On the coercion phenomenon at stake in *Fred a commencé un livre [Fred began a book]*, see (Pustejovsky 1995), (Pustejovsky et Bouillon 1995), (Godard et Jayez 1993), (Kleiber 1999).

- For a path, the discourses with a human subject equivalent to a TCD are built with the agent of the *Telic* role (the walker) and they are not always possible. For a book, they are built with the agent of the *Agentive* role (the author) and they are always possible.
- For a path, the direct objects of the transitive forms for *Vasp-par* with a human subject denote the *Telic* role (the walk). For a book, they denote the book itself in its informational aspect (which can be seen as the result of the *Agentive* role).

This assessment leads to the following conclusion: the data present no regularity at the level of *lexical* semantics. On the other hand, regularities can be put forward at the level of *discursive* semantics. First, TCDs are always the elaboration of an (explicit or implicit) topic. Second, when a TCD can be put in parallel to a discourse chaining human subjects, the *Vasp-par* may have a direct object which must refer to the topic. The transitive forms are then semantically equivalent to the intransitive forms, *modulo* the quantity of information.

This study has focused on some uses of *Vasp-par*, namely those in TCDs. It should be completed by other uses, for example, those in discourses such as (44). The topic of (44a) is *Fred's desires for diner*, the topic of (44b) is *Fred's feeling for his boss*. These topics are “evolutional” referents [“référents évolutifs”, (Kleiber, 1996)] which change over the time. They contrast with the topics of TCDs which are stable referents.

(44a) Fred a commencé par vouloir aller diner dans un restaurant chinois. Ensuite, il a voulu aller chez Léon. Il a fini par opter pour une pizzeria.

Fred began by wanting to go for diner in a Chinese restaurant. Next, he wanted to go Chez Léon. He ended by deciding for a pizzeria.

(44b) Au début, Fred aimait beaucoup son chef. Mais il a fini par le detester.

At the beginning, Fred did like his boss. But he ended by hating him.

Finally, the following question is open: how to correlate the uses of aspectual verbs with a *par* [by/with] complement with other uses, such as the famous *Fred a commencé (à lire) un livre* [*Fred began (to read) a book*]?

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