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► **To cite this version:**

Anne Reboul. Reference, agreement, evolving reference and the theory of mental representations. *Studia linguistica in honorem Lilianae Tasmowski*, Unipress, pp.601-616, 1999. halshs-00003806

HAL Id: halshs-00003806

<https://shs.hal.science/halshs-00003806>

Submitted on 2 Feb 2005

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Reference, agreement, evolving reference and the theory of mental representations

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1. Introduction

In two influential papers published in the *Journal of Semantics*, Liliane Tasmowski-De Ryck and Paul Verluyten (1982, 1985) proposed a unified theory of pronouns and agreement, based on French examples. Their hypothesis was that linguistic control applied uniformly on all pronouns. It thus came into direct contradiction with the most commonly accepted classification at the time, that is Evans' (1985), according to which pronouns can be:

- i. used to refer to an object which is either present in the situation or salient;
- ii. used to corefer with another referential expression in the same sentence;
- iii. used as variables bound by a quantifier phrase;
- iv. used with a quantifier phrase as antecedent, without being bound by it.

Tasmowski-De Ryck and Verluyten's aim in both papers was to show that even the first category of pronouns, which are generally considered as pragmatically controlled (whereas the second and third category are considered as linguistically controlled), do in fact fall under linguistic control. To do this, they gave a great number of examples in French, where agreement is «irrational» in as much as gender is not linked to the sex or absence of sex of the referent, but is arbitrarily assigned. They showed that, even in the first case, agreement is not free, i.e. it is controlled by the lexical name corresponding to the category to which the referent belongs. In their second paper, they tried to answer objections which showed that in some cases, there is agreement which seems to be pragmatically controlled, notably when an individual is identified through a function name (generally masculine) and then designated by a feminine pronoun, referring to its actual sex.

In this paper, I would first like to point out the importance of both these papers by Tasmowski-De Ryck and Verluyten (hereafter, *T-DR & V*) and to insist on the fact that though one can be dissatisfied with the solution proposed, the problems remain to this day and no theory of reference can be considered satisfying which does not address them. Thus, the papers are as important now as they were when they were first published some fifteen years ago and are likely to remain so for a long time. I will begin by giving an outline of a general theory of reference, which attempts to give a unified theory of pronouns, but which takes the alternative way, that is the pragmatic control hypothesis¹. I will then show how it can answer the questions raised in T-DR & V's papers and show that it can also account for a class of rather bewildering examples, generally referred to by the name of *evolving*

¹ I take *pragmatic control*, however, in a slightly different sense than T-DR & V did.

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reference. I will conclude with an outline of how that theory of reference should be allied to a general theory of discourse interpretation in the theoretical framework of Relevance Theory.

2. *Reference and mental representations (MR)*

There are, roughly, three main schools as far as reference resolution is concerned, and, this, by the way, means that what is meant by *reference resolution* is not the same thing in all cases □

1. Reference is entirely controlled by linguistic means² and *reference resolution* only means choosing the right antecedent.
2. Reference is only controlled by pragmatic means and *reference resolution* means identifying the object in the world which the speaker intended to refer to.
3. Reference is controlled both by pragmatic and linguistic means and *reference resolution* means either just identifying the right antecedent and/or identifying the right referent.

I would like first of all to point out that there are quite a lot of ambiguities in the three-part distinction proposed above: letting aside the discursive interpretation of linguistic control, which just is not clear enough to account for anything, we are left with syntactic control, i.e. binding. It is notorious that binding, though it can account for some reference resolution (reflexives and reciprocals), cannot account for much else³. Thus it does not seem possible to account precisely for what it is that would be meant by advocates of the first approach. There also is a big ambiguity in the notion of pragmatic control: for instance, in their papers, what T-DR & V meant by pragmatic control seems to be the fact that the production of a referential expression is triggered by the perception of the object to which the speaker refers. This would certainly not be any clearer than the linguistic control hypothesis in its discursive version. It has to be seen that the distinction between linguistics and pragmatics has changed considerably in the fifteen years which have elapsed between the publication of the first paper by T-DR & V and now.

I will not describe the evolution of pragmatics through the whole so-called “post-gricean” school and mainly through Relevance Theory (Sperber & Wilson

² There are, again, three possibilities □ linguistic control is syntactic and amounts to binding; linguistic control is discursive and amounts to discursive principles (a rather poorly defined principle of coherence is usually invoked); linguistic control may be either syntactic or discursive.

³ Despite Fiengo & May (1996)'s highly ingenious account of binding and resolution of third person pronouns, it is now generally (and rightly, I think) admitted among generative syntacticians that pronouns, apart from reflexives and reciprocals are not syntactically bound through c-command (see Chomsky 1995).

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1986/1995, hereafter *S & W*)⁴. Nowadays, the difference between **pragmatic control** and **linguistic control** would read in the following and highly simple way:

- ◆ things are under linguistic control when absolutely no information apart from that given in the surrounding discourse is necessary to produce or interpret them;
- ◆ things are under pragmatic control when information which was not given in the surrounding discourse is necessary to produce or interpret them.

What I would like to plead for, in this section, is the hypothesis that reference resolution always implies conceptual representations which may be either concepts in the usual sense (**generic** concepts which define categories) or what we⁵ have called *mental representations* (henceforward, *MR*), that is **specific** concepts which function (just as do generic concepts) as a kind of hinge between language and the world, their role being to allow for the identification of a referent (an object in the world), if there is one. Hence, referring expressions (hereafter, *RE*) are never resolved directly on another linguistic phrase: they are always resolved *via* a *MR*. I will not plead for that hypothesis here for reasons of space⁶. Rather, I will give an outline of TMR and show how it can answer the questions rightly asked in T-DR & V's papers.

3. *The Theory of Mental Representations*

TMR can be conceived either as a formal apparatus conceived mainly with the aim of allowing the construction of an automatic device for reference resolution in man-machine dialogue or as a specification of Relevance Theory for referent assignment. I will adopt here the second view.

I will not describe Relevance Theory (henceforward, *RT*), which should by now be part of the general culture of any linguist worth his or her salt. I will only recall those elements which make it clear why TMR can be seen as a specification of RT. In RT, it is considered that utterance interpretation is done in two steps and by two different devices: there is first a **linguistic treatment**⁷ which yields what S & W call the *logical form* of the utterance and then a **pragmatic treatment** which yields the complete interpretation of the utterance, including its implicatures. One of the originalities of RT lies in the fact that, according to S & W, the linguistic treatment is not enough to account for the truth-conditional content of the utterance. In other

⁴ For a general presentation of pragmatics, see Moeschler & Reboul 1994, and for an historical view, see Reboul & Moeschler 1998.

⁵ The Theory of Mental Representations (henceforward, *TMR*) has been developed in the CERVICAL Project, financed by the GIS Sciences Cognitives (France), which gathered linguists and computer scientists from the CRIN (CNRS) and the LIMSI (CNRS) under my responsibility from october 1996 till october 1998.

⁶ But see Reboul 1989, Reboul 1994, Reboul 1996, Reboul submitted, Reboul et al. 1997..

⁷ *Linguistics* being taken here in its traditional sense, as implying phonology, syntax and semantics.

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words, the logical form may not be, and generally is not, a full-blooded proposition, which could, at least in principle, be evaluated in terms of truth-values. RT thus distinguishes between the logical form of the utterance, which may be fully propositional or less than fully propositional and the propositional form of the utterance. It claims that in most cases determination of propositional form, given logical form, is a matter of pragmatic enrichment of logical form, this implying, among other things, reference assignment.

Thus TMR aims to complete RT on the specific issue of enrichment of logical form where reference assignment is concerned. It postulates that reference assignment is never entirely done at the linguistic level⁸, though there are linguistic contributions to reference assignment, as we shall see below. It makes the strong hypothesis that reference assignment goes through MRs.

What are MRs or rather what is their composition? They are structured representations which gather heterogeneous informations, visual, spatial, linguistic and encyclopaedic. Their composition is a complexification of the composition attributed by RT to concepts in general: this included an **address** under which can be found a **logical entry** (indicating the logical relations between the concept and other concepts), an **encyclopaedic entry** (enabling the individual to determine the extension of the concept if any) and a **lexical entry** (indicating the counterparts of the concept in one or more natural languages). The composition of MR includes an **address** (generally indicated as [*@x*]) which is a means of access, a **logical entry**, an **encyclopaedic entry** (gathering both informations inherited by default from the concept to which the object concerned belongs and informations specific to the object), a **visual entry** (indicating how the object looks like and the modifications in its appearance if any), a **spatial entry** (indicating the intrinsic orientation of the object, its spatial relations to other objects in the same space and its movements) and a **lexical entry** (indicating both the REs actually used, as well as those which could be used). The visual and spatial entries are addition to the composition of concepts given in RT and their necessity can be explained by the fact that we think that the operations on MRs can be triggered by perception as well as by discourse⁹.

The operations on MRs are the following:

- ⇒ **creation**, whereby a new MR is created by default inheritance of the encyclopaedic entry of the concept to which the corresponding object belongs, as well as by addition of specific information if any is available;
- ⇒ **modification**, whereby new information is added to an existing MR¹⁰;

⁸ This much should not be controversial: language does not in and of itself include referential links to objects in the world.

⁹ TMR includes an entirely graphic formalisation, squarely in the fashionable “boxology” of today (see Kamp & Reyle 1993, Asher 1993, among others). For reason of space, I will not indicate how this graphic formalisation works, but see Reboul et al. 1997.

¹⁰ This should be subject to the usual rules against internal contradiction. The same applies to fusion.

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⇒ **fusion**, which occurs when it is found that two existing MRs correspond to the same object: all the information in one of them is then transferred in the other, the first one being destroyed.

⇒ **duplication**, whereby an existing MR is used to build a new one (this is very similar to creation, apart from the fact that the information tapped comes from a MR, rather than from a generic concept);

⇒ **grouping**;

⇒ and **extraction**.

We will discuss more precisely below (see § 5) the two last operations which are the most widely used.

4. Differentiation

The main idea behind TMR is based on the notion of **differentiation**. The notion of differentiation can best be defined through two examples:

(1) *Un homme et une femme* entrèrent. Ils allèrent s'asseoir au fond du bar.

(A man and a woman entered. They sat down at the far end of the pub)

(2) Jean avait *neuf billes*. Il les a laissés tomber. Il n'en a retrouvé que huit. La dernière avait roulé sous le canapé.

(John had nine marbles. They fell down. He only found eight. The last one had rolled under the sofa)

I am mainly interested in the REs in italics, i.e. *Un homme et une femme* in (1) and *nine marbles* in (2). From a strictly linguistic point of view they both are plurals. Yet, in TMR, they must be treated in different ways, this difference being induced by differentiation. In the first case, there are two individuals, of whom we not only know that they are different, but have been told in which way they are different (one is a male and the other a female). In the second case, there are nine individuals (the marbles), of which we know that they are different, but among which we cannot distinguish in the absence of any other information. In the first case, there is *differentiation*, while in the second case, there is not: we can **differentiate** between the two individuals described in (1), but we cannot **differentiate** among the nine individuals described in (2). In other words, the notion of differentiation is an epistemic one and I will describe it in more details.

Reference is based on both **identification** (the capacity to isolate an object among other objects) and **identity**, notably **identity through time**. The principles on identity have remained stable since Leibniz who was the first to formulate them explicitly. We will begin with two of them¹¹:

1. Leibniz's law

If A and B are identical, then everything that is true of A is true of B.

$[A \equiv B \Rightarrow (f) (fA \equiv fB)]$

¹¹ Borrowed from Ishiguro (1990, 17).

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2. Identity of indiscernibles

If everything that is true of A is true of B and vice versa, and hence if there is no discernible difference between A and B, then A is identical with B.

$$[(f) (fA \equiv fB) \Rightarrow [A \equiv B]]$$

It should be clear that these two principles are only valid in the hypothesis of an omniscient mind and at a given time. We will come back below to changes through time. The fact that Leibniz's law and the Identity of indiscernibles are subject to the restriction of omniscience, though it is quite acceptable in a metaphysical approach, is not admissible in an epistemic one and TMR, being a cognitive approach, self-evidently has to take epistemic access to information into account. In other words, it cannot rely on Leibniz's law or Identity of indiscernibles as they stand and this is what the notion of differentiation comes in through four relations between differentiation, difference and identity

- A. differentiation \Rightarrow difference
- B. identity \Rightarrow \neg differentiation
- C. difference $>$ differentiation
- D. \neg differentiation $\square >$ identity

Note, however, that though implications A and B will generally be verified, they are far from being uniformly true¹². C and D are true: as in the case of the nine marbles, it can be known that two or more objects are different without that implying that they can be differentiated; and, conversely we can be unable to differentiate between two different objects, which does not imply that they are one and only one object. Summarily, what this means is that, just as it should be, TMR is a realist model of what reference assignment could be, errors included.

To conclude on differentiation, differentiation is what allows some operations on MRs, such as, for instance, creation, fusion and duplication¹³. As we will now see, it also has a role to play in the two last operations on MRs, that is *grouping* and *extraction*.

5. Grouping and extraction

Let us come back to examples (1) and (2), reproduced below as (3) and (4):

- (3) (a) *Un homme et une femme* entrèrent. (b) Ils allèrent s'asseoir au fond du bar.
(*A man and a woman entered. They sat down at the far end of the pub*)
- (4) (a) Jean avait *neuf billes*. (b) Il les a laiss   tomber. (c) Il n'en a retrouv   que huit. (d) La derni  re avait roul   sous le canap  .

¹² They should more be seen as *ceteris paribus* implications.

¹³ Though, in some cases, knowledge of difference without differentiation may be enough. I will not say anything more about it here.

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(John had nine marbles. They fell down. He only found eight. The last one had rolled under the sofa)

As said above, in (3) there is, and in (4) there is not, **differentiation** among the individuals respectively designated by the plural REs. In most linguistic accounts of plural REs, this might not make any difference. In TMR, however, it does and we have proposed two different accounts of plurals, depending on differentiation or absence thereof among the objects designated through plural REs. Let us begin by (3).

In (3a), two individuals are introduced, a man and a woman, for whom two different MRs must be created¹⁴, [*@man*] and [*@woman*]. However, the RE which refers to them is a complex RE, including a coordination. Coordination of REs both yields a new RE and triggers **grouping**. Grouping is an operation which takes two MRs (hereafter *parents-MRs*) and yields a third one (hereafter, *child-RM*) which corresponds to the grouping of the parents-MRs. In the case of (3), the coordinated REs thus triggers a third MR, [*@man@woman*]. This MR entertains a specific logical relation (of which more below) with its parent-MRs. The plural pronoun *ils* in (3b) is resolved through [*@man@woman*].

(4a) triggers the creation of a MR corresponding to the nine marbles, [*@marbles*]. It is on this MR that the clitic plural pronoun *les* in (4b) is resolved. However, (4c) provides what was lacking before, that is a means of differentiating among the nine marbles: eight are found by John, while the ninth is not. This triggers another operation which can be seen as more or less the reverse of grouping: *extraction*. From the MR [*@marbles*] (parent-MR), two new MRs (children-MRs) are built, one which corresponds to the eight marbles found, [*@8marbles*], and one which corresponds to the remaining marble, [*@1marble*]. It is on this last MR that the RE *la dernière*, in (4d) is resolved¹⁵. Just as in the case of (3), there is a logical relation between the parent-MR and the children-MRs.

This relation is common both to groupings and extractions. It is the relation of *partition*. Partition is an operation in set-theory, which has the following characteristics □

- a) it delimitates subsets inside a given set;
- b) the subsets originating from partition do not intersect one another;
- c) the nul set is not a set originating from partition.

To finish with groupings and extractions, I should point out that one and the same MR can be the subject of numerous operations of grouping and extraction.

¹⁴ They will be represented through their respective addresses, in a way which is customary in TMR.

¹⁵ This MR, [*@1marble*], should not be available for pronominal reference. I will discuss this below (see § 6).

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6. Domains of reference

There is, however, a remaining problem¹⁶. Given that MR creation can be triggered by both discourse and perception, this implies that, at a given moment, a given individual will have access to potentially innumerable different MRs, among which he will have to search for the “good” MR, i.e. the one which corresponds to the object that the speaker intended to designate. This would in fact render TMR ineffectual. To solve this problem, we have proposed the notion of *domain of reference* (henceforward, *DR*). A DR is a subset of all the MRs which have been created at a given time. It can gather only a restricted number of MRs, which we have put at seven¹⁷. The DR has quite a few of the properties of the context in RT, among which the fact that it is not given but constructed, and, in the case of the DR, constructed for the interpretation of each new RE. The question then is: how is the DR constructed? The easy and obvious answer is, of course, though the principle of relevance. However, I would like to say more here and to indicate a few *semantic constraints on relevance*¹⁸ which bear on the construction of DRs.

There are two types of linguistically encoded constraints that bear on the construction of DRs:

1. procedural constraints linked to the type of RE used;
2. conceptual constraints derived from the meaning of the RE used.

I will take for granted the distinction *procedural/conceptual content* and quickly illustrate how DRs are constructed from the example of two types of REs, definite descriptions on the one hand and non-pronominal demonstrative NPs on the other hand. In his thesis, Gaiffe (1992) argued that REs such as *the N (the black cat)* are resolved in a set Q of objects of which one is N while all the others are not (in which there is only one object which is both black and a cat). Similarly, REs such as *this/that N (this/that black cat)* are resolved in a double-barrelled process in a set Q of objects of which some (more than one) are N while others are not and in a subset N of Q, which includes only those objects in Q which are N. In the case of *the N*, the “good” object is the only object which is N in Q. In the case of *this/that N*, the “good” object is the only object which bears the further property P¹⁹ among the objects in N.

In terms of TMR, this means that the DR is constructed on the basis of the restrictions indicated above and corresponds respectively to the Q set (for definite descriptions) or to the N set (for the non-pronominal demonstrative NPs). It is, however, not a set of objects, but a set of MRs, or, more precisely of address of MRs, MRs themselves being rather unwieldy objects, given the amount of

¹⁶ Well, let us face it: **at least, one** remaining problem.

¹⁷ Following Miller (1956).

¹⁸ To borrow from the title of a book by Blakemore (1987).

¹⁹ P can be the property of being salient or of having been the object of gesture of demonstration (in Kaplan (1988)'s terminology).

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informations which they may come to represent. Let us come back to example (4), reproduced below as (5A):

- (5) A. (a) Jean avait *neuf billes*. (b) Il les a laissé tomber. (c) Il n'en a retrouvé que huit. (d) La dernière avait roulé sous le canapé.

(John had nine marbles. They fell down. He only found eight. The last one had rolled under the sofa)

- B. (a) Jean avait *neuf billes*. (b) Il les a laissé tomber. (c) Il n'en a retrouvé que huit. (d) */?Elle avait roulé sous le canapé.

(John had nine marbles. They fell down. He only found eight.*/?It had rolled under the sofa)

Depending on how strict one wants to be, clause (d) in (5B) is either unacceptable or merely difficult to accept. It can be interpreted, though it certainly is not standard French or English. This can be explained in TMR through the notion of DR. As pointed out above (5A/B \bar{c}) triggers an operation of extraction at the end of which two new MRs have been created, [$\bar{8}$ marbles] and [$\bar{1}$ marble]. The last one, [$\bar{1}$ marble], is created on the basis of an inference: given the information in (5A/B \bar{c}), we infer the existence of a ninth marble which has been lost in the preceding events. We claim that third person pronouns, such as *elle* in (5B \bar{d}), are characteristically solved directly on one of the MRs available in the DR. The rules of construction for a DR which will be used for third person pronoun solving state that no MR which correspond to an object whose existence was inferred (as opposed to mentioned or perceived) can belong to the DR. The fact that such REs as *elle* in (5B \bar{c}) can be interpreted though their use is not standard means that the referent assignment process failed and that a new DR had to be constructed which included [$\bar{1}$ marble]. However, this construction of a second DR for the same pronoun is not the standard procedure: it is a remedial strategy.

This leads me to one last point: though third person pronouns are standardly resolved directly on one the MRs in the DR, there is more latitude for other types of REs and though the informations given above on the construction of the DR for definite descriptions, for instance, were formulated as if this were also the case for definite descriptions, this is far from true. In fact, definite descriptions are probably resolved either directly on of the MRs in the DR, or, more frequently, indirectly on a MR to which access is given through one of the MRs in the DR, through its logical relations with other MRs, following an operation of grouping or extraction, or through relational encyclopaedic information given through the events in which the corresponding object was a participant. This will become clear in the next section which describes the treatment of events in TMR.

7. The representation of events in TMR

There are two main reasons to represent events in TMR:

- A. Events can be designated by REs (*the battle of Trafalgar, the coronation of the queen, etc.*) and, given that a basic principle in TMR is that REs are resolved on MRs, events must have MRs corresponding to them.

B. Objects can be designated through present or past states (*the green door/the door that was red*) and these states are the consequence of various events.

As MRs are supposed to be identifying (i.e. ideally, they should lead to the identification of an object in the world), it is interesting to know what the identity conditions for events are:

Identity conditions for an event

1. its nature (whether, for instance, it is a walking, a riding, a driving of a car, a riding on a plane, etc.);
2. its spatio-temporal settings;
3. its participants;
4. its causes and consequences
5. its place in the event sequence and its sub-events if any.

We have adopted Asher's ontology of states and events (1997), according to which an event is determined by its *pre-state* and its *post-state* (i.e. the state the object was in before the event and the state which was produced by the event) and a state is determined by its *pre-event* and its *post-event* (i.e. the event which produced it and the event which will change or destroy it).

Given the above, we propose a partly redundant representation of the informations corresponding to the identity conditions of events. The first proposal amounts to MRs for events, without the visual or spatial entries and with the nature, participants, spatio-temporal setting and subevents (ordered according to the time sequence) indicated in the encyclopaedic entry. We also propose that the consequences of the event (the new state(s) produced by it) should be indicated in the encyclopaedic entry of the object(s) concerned. This entails that most of the specific information concerning the object will be temporally structured, i.e. ordered, with the succeeding states interspersed with the address of the event which provoked them. Let us examine example (6):

- (6) (a) La porte était grise. (b) Un peintre l'a peinte en rouge.
(*The door was grey. A painter painted it red.*)

This example should trigger the creation of three MRs (supposing that none was available for the door), [*@door*], [*@painter*] and [*@painting*]. (6a) supposes that the specific information in [*@door*] mentions the state |grey|. (6b) triggers the creation of two new MRs, [*@painter*] and [*@painting*], the first indicating in its specific information that the painter was the agent in [*@painting*], the second indicating in its specific information that the participants are [*@painter*] (the agent) and [*@door*] (the patient). (6b) also triggers a modification in the specific informations in [*@door*], which now include the event [*@painting*] as well as the state resulting from it, |red|. Thus the specific informations in [*@door*] include: |grey| → [*@painting*] → |red| (where the arrows indicate succession).

What about events following each others and how are such things represented in TMR? There are in fact two possibilities, which depend on the actual description of the succession of events, using grouping or using extraction:

- (7) A. (a) Jean est allé à New York. (b) Après une terrible tempête, (c) l'avion atterrit. (d) Les passagers descendirent.

(*John went to New York. After a violent storm, the plane landed. The passengers came down*)

- B. (a) Après une terrible tempête, (b) l'avion atterrit. (c) Les passagers descendirent.

(*After a violent storm, the plane landed. The passengers came down*)

(7Aa) triggers the creation of an event-MR²⁰, [@journey]. (7Ab) triggers an operation of extraction on that MR, which yields a new event-MR, [@storm]. (7Ac) triggers again an operation of extraction on [@journey], which yields again a new event-MR, [@landing]. (7Ad) finally triggers a last operation of extraction on [@journey], which yields yet a new (and final) event-MR, [@descent]. The three children-MRs are not temporally ordered independently of their parent-MR. Rather, their temporal sequencing is indicated in the encyclopaedic entry of their parent-MR (of which they are subevents) as follows: [@storm] □→ [@landing] → [@descent]. This leads us to a basic rule regarding events: event-MRs can only be temporally ordered if they are subsumed under a general event. This may mean either an explicitly described event as in (7a) or a grouping as we will see now.

Let us take (7B). In (7B), we have three events, similar to [@storm], [@landing] and [@descent] above. We do not, however, have [@journey], though we still want to keep the information regarding the temporal sequence of these events. We thus make an operation of grouping on [@storm], [@landing] and [@descent], yielding a new event-RM, [@E]. The three subevents [@storm], [@landing] and [@descent] are temporally ordered as indicated above in the encyclopaedic entry of [@E].

I will not have anything to say here about how temporal sequencing is determined²¹.

8. Back to the problem of agreement

I will not discuss now the solution proposed by T-DR & V in their original papers. Rather, I will examine some of their examples and show how they can be accounted for in TMR:

- (8) John and Mary are walking and they suddenly see a rattlesnake. John says either (a) or (b):

(a) "Fais attention, il mord sans prévenir"

(*Watch out, it bites without warning*)

(b) "Fais attention, ils mordent sans prévenir"

(*Watch out, they bite without warning*)

²⁰ We will only consider event-MRs in the commentary on both (7A) and (7B).

²¹ However, see Reboul et al. (1997), Ter Meulen (1995), Moeschler et al. (1998), among other things.

As T-DR & V point out, (8a) can be interpreted as involving either specific or generic reference, while (8b) can only be interpreted as involving generic reference and, according to them, it means that, in their generic interpretation, the pronouns cannot be under pragmatic control, but only under linguistic control. Let me first insist on the fact, outlined above (see § 2), that the pragmatic/linguistic control distinction used fifteen years ago is not identical with the one I use, where pragmatic control would include a good deal of what T-DR & V called linguistic control. So, what can TMR say about (8a) or (8b)?

Let us begin with (8a) in its specific interpretation. Both John and Mary have seen the rattlesnake and both have created a new MR for it [*@rattlesnake*]. This new MR can go into the DR and the pronoun is, rather naturally, resolved on it. (8a) in its generic interpretation is not much more complicated: creating a new MR²² implies access to the generic concept and, in the generic interpretation, the information that rattlesnakes bite without warning is merely added to the content of the generic concept. The same goes for (8b). What is interesting is that the generic concept is salient in both these cases because it has been accessed and used to construct the MR [*@rattlesnake*] and this can spell out the rather fuzzy notion which T-DR & V called *pragmatic control*.

Let us now come to agreement and contrast (8a) (in its specific interpretation as, as will be seen below, the generic/specific distinction is not relevant here) with (9):

- (9) (John and Mary are walking and they suddenly see a viper. John says:
(a) “Fais attention, *elle* mord sans prévenir”
(*Watch out, it bites without warning*)

The difference between (8a) and (9), of course, is in the different gender of the third person pronoun, *il* in (8a) and *elle* in (9). In French the expression *serpent à sonnettes* (*rattlesnake*) is masculine, while the word *vipère* (*viper*) is feminine. How does John determine, given what he sees, in one case a rattlesnake and in the other a viper, that he should use respectively the masculine and the feminine pronoun? The perception of the rattlesnake or of the viper triggers access to the corresponding generic concept, which, in its turn, allows the construction of the MR. Both the generic concept and the MR have lexical entries which indicate the words or expressions which can be used to designate the corresponding objects. Thus, given that information, it is no great feat to determine through morphological derivation the gender of the third person pronoun to be used. Indeed, this account is very near to that proposed by T-DR & V (1982 □ 331) which indicates that a perceived or salient object pragmatically controls an (absentee) linguistic antecedent which linguistically controls a pronoun²³. What I suggest is that a perceived or salient object triggers the construction of a MR, which includes

²² Whether through discourse or perception.

²³ The same schema is reproduced in a slightly different form in their (1985).

linguistic information, which (linguistically) controls the pronoun. I would however take issue with the notion of *absentee antecedent*²⁴.

Let me now turn to the second batch of examples, those in which the pronoun has an explicit antecedent but where the gender of the pronoun is not that of the antecedent :

- (10) Le nouveau ministre a dit qu'il/elle prendrait les mesures nécessaires.
(*The new minister promised that he/she would take the necessary measures*)

In this case, T-DR & V tend to favour linguistic control rather than conceptual control of the pronoun, though they recognise that they have no empirical argument, but merely a model-internal one, to wit they advocate linguistic control for pronouns without antecedent and keeping that position allows for a uniform account of pronouns. I would like to point out that, given TMR, there is no reason to give up a uniform account of pronouns. In cases such as (10), what happens is that the MR corresponding to the new minister is accessed, contains in the encyclopaedic entry the information that the new minister is a woman, which means that the lexical entry has incorporated the lexical entry from the generic concept [woman], and hence the information (via morphological derivation) that a feminine pronoun can be used to refer to that individual. Indeed, TMR can also explain why the use of the feminine or masculine pronoun will be preferred depending on the predicate which follows: if it gives personal information, the preference will be for the feminine pronoun (as it relates to the individual rather than the function), whereas when it gives non-personal information either pronoun will be acceptable. This brings us to a last point: TMR is as much a theory of access as it is a theory of reference resolution, because reference resolution entails not only access to conceptual representations such as MRs, but also access **between** MRs, as is shown by cases of indirect reference²⁵.

9. Conclusion

To conclude, I would like to say that the system presented above can not only account for reference resolution and for agreement, but that it can also account for evolving reference. Let us just take a quick look to the standard example of evolving reference²⁶:

- (11) (a) Take a plump, lively chicken. (b) Kill *it*, (c) prepare *it* for the oven, (d) cut *it* into four pieces (e) and roast *it* in the oven with thyme for an hour.

(11) is a good example of why substitutive accounts do not work for so-called discourse anaphora²⁷. How could we account for it in TMR? Well, (11a) would

²⁴ I have done elsewhere. See Reboul (1994).

²⁵ See Nunberg (1978), Fauconnier (1984).

²⁶ Borrowed from Brown & Yule (1983).

²⁷ Try substituting *a plump, lively chicken* to all the clitics in (11)!

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trigger the creation of a new MR [*@chicken*]²⁸. The specific information in that new MR would then be modified with each new described event. However, just as the object, for all its modification, still is the same object (whether or not it should still be considered a chicken, see Reboul (1997)), the MR still is the same MR. It still incorporates in its lexical entry the name *chicken* which was originally used, and which, until another description is provided, still controls the pronouns used.

To conclude, in this paper, I wanted to pay a well-deserved homage to Liliane Tasmowski-De Ryck by providing an alternative, but not contradictory, account of examples which she examined, in collaboration with Paul Verluyten, fifteen years ago. I would also like to say that Liliane Tasmowski-De Ryck has the rare and nice characteristic of being someone with whom it is profitable not only to agree but also to disagree. Her work on reference has thus been a constant inspiration to me.

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²⁸ I will only indicate here the modifications which the described events produced in the specific entry of [*@chicken*] and not the creation of the corresponding event-MRs.

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