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What room for viewpoints?

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1 Introduction

In this paper, I study the semantic properties of the French discourse marker *de ce point de vue*, analogous to *in this respect*, *in/under/from this perspective* and *from this angle*. Intuitively, *de ce point de vue* (DCPV) signals that it introduces a certain perspective on a situation. In a configuration of the form *A* DCPV *B*, where *A* and *B* are propositions, it conventionally implicates that *B* is true or makes sense under the perspective associated with *A*. The empirical description of section 2 shows that, as a sentential adverb, DCPV has two main uses. Either it relates the speech act it introduces to a set of propositions (a viewpoint) without imposing specific constraints on this relation or it combines with a consequence discourse relation. In the latter case, DCPV cannot introduce *non-factual* speech acts, whose propositional content is true or false independently of any perspective. In section 3, we explore the notion of non-factuality and propose that it is a special form of non-monotony with conflicting default assumptions. In section 4, I investigate the use of DCPV as a VP-adverb and conclude that it indicates that the VP-action was carried out from a certain perspective. The upshot of the paper is the distinction between non-factuality and other, similar, dimensions such as modality or standard non-monotony.

2 Description of *de ce point de vue*

DCPV is the anaphoric demonstrative version of the construction *de* Det *point de vue* (lit. 'from' Det 'point of view'). Although nothing essential hinges on this point, I prefer to consider the expression as related to a construction rather than the result of a standard compositional process between the preposition *de* and a well-identified sense of *point de vue*. First, if *point de vue* is taken to be synonymous to *perspective*, as in *adopter une perspective* / *un point de vue* ('to adopt a perspective / a viewpoint'), it is unclear why we have a difference such as *de ce point de vue* / ??*cette perspective*. Second, if *point de vue* is taken to denote a (punctual) place, as in *Nous avons atteint le point de vue à sept heures* ('We reached the viewpoint at seven'), it is unclear why it is possible to adopt, endorse, etc. a *point de vue* since one does not 'espouse a place'. As noted in Porhiel (1997), the construction can take nominal complements or adjectival modifiers: *du point de vue de Marie* ('from the point of view of Mary'), *d'un point de vue philosophique* ('from a philosophical point of view').

Semantically, DCPV occurs as a sentential adverb or a VP-adverb. The difference is illustrated in (1). (1b) is clumsy because sentence-initial DCPV is preferably interpreted

as a S-adverb connecting two propositions. However, the proposition that EU's policy had been previously investigated does not clearly satisfy the semantics constraints on DCPV, as we will see in section 2.2. In this paper, I focus on the sentential use, turning only briefly to the VP-adverb in section 4. Whenever possible, I construct parallel examples with *in this respect* (ITR). Although I do not rate the English glosses, it can be observed that ITR patterns like DCPV in many cases.

(1) a. 40% des émissions de CO2 sont provoquées par les produits pétroliers. Si l'on examine de ce point de vue la politique de l'Union européenne [...][1]
'40% of CO2 emissions are caused by fossil fuel products. If we consider EU's policy in this respect ...'

b. ? 40% des émissions de CO2 sont provoquées par les produits pétroliers. De ce point de vue la politique de l'Union européenne avait été examinée.
'40% of CO2 emissions are caused by fossil fuel products. In this respect, EU's policy had been investigated.'

2.1 Consequence and non-consequence environments

The central observation about DCPV is exemplified in (2).

(2) a. L'avion de Marie n'a pas décollé à l'heure, DCPV ses vacances ont mal commencé.
'Mary's plane didn't take off on time, ITR her vacations started poorly.'

b. ??L'avion de Marie n'a pas décollé à l'heure, DCPV elle a été en retard à son rendez-vous.
'Mary's plane didn't take off on time, ITR she was late for her appointment.'

When DCPV is fine in an environment E, general purpose consequence discourse markers such as *donc* (≈ *therefore*) or *alors* (≈ *so*) are often appropriate in E. Consequence relations can connect various types of speech acts; in particular, they can introduce interrogatives expressing doubt, perplexity or genuine ignorance, see Jayez (2002). For instance, the act conveyed by the interrogative in (3) is presented as following from the situation: since the speaker admits that he cannot be a champion, he wonders what his best choice is. DCPV, too, can introduce interrogatives with an equivalent interpretation. In (3b), the speaker presents his question as a consequence of the first proposition, which also constitutes the perspective under which the speaker raises the question.

(3) a. Je n'ai pas les capacités pour atteindre le niveau rêvé, par conséquent : est-ce que je préfère arrêter totalement ou est-ce que je préfère quand même réaliser des performances qui me sont possibles?[2]
'I don't have the abilities to reach the level I dreamt of. So, do I prefer to stop everything or do I still prefer to deliver the performances that are within my abilities?'

[1] Adapted from a French text at `http://www.lagauche.com/lagauche/article.php3?id_article=1138`.

[2] Excerpt from a French text about hockey at `http://www.editionhockey.com/ed16halle.htm`

b. Je n'ai pas les capacités pour atteindre le niveau rêvé. DCPV est-ce que je préfère arrêter totalement?
'I don't have the abilities to reach the level I dreamt of. ITR do I prefer to stop everything?'

However, there are two reasons to doubt that DCPV is only a consequence discourse marker. First, in some examples, the existence of a consequence interpretation is not sufficient. E.g., the odd example (2b) is fine when DCPV is replaced by a consequence discourse marker, see (4).[3]

(4) L'avion de Marie n'a pas décollé à l'heure, donc/alors/du coup elle a été en retard à son rendez-vous.
'Mary's plane didn't take off on time, therefore/so/as a result, she was late for her appointment.'

Second, the consequence interpretation is sometimes unclear or optional, whereas DCPV is perfectly natural. The question in (5a) is motivated by a goal that one can infer from the first sentence, i.e. to gain a better understanding of restructuring. However, whether it is a consequence of the goal is difficult to decide. (5b) exhibits the frequent 'domain-based' use of DCPV. The complete text revolves around the problem of electronic document indexing. The Gallica project consists in digitizing the documents of the French National Library. Since Gallica archives are pdf images, it is impossible to apply standard text-processing searching facilities to them. The author of (5b) acknowledges this lack and expresses his ignorance as to the policy of the parallel European project. The author's ignorance is relevant to a goal that can be inferred from the first sentence, namely to bring information on the topic of indexing facilities. The author expresses his current possible contribution to this goal. I return to this case in the next section under (8).

(5) a. La troisième séance sera consacrée à l'analyse du phénomène des restructurations. DCPV, comment replacer la période que nous vivons dans un contexte historique ?[4]
'The topic of the third session will be the analysis of economic restructuring. ITR, how should we appreciate the current period in an historical context?'

b. L'absence d'indexation du texte est effectivement une seconde lacune [...]. DCPV, j'ignore sur (*sic*) le projet de bibliothèque numérique européenne s'oriente vers une solution de type gallica.[5]
'The absence of text indexing is indeed another missing feature. ITR, I don't know whether the digital library European project moves towards a Gallica-style solution.'

[3]The glosses offered for the consequence discourse markers are particular to this example and are not intended to provide general equivalents.

[4]Excerpt from a French text at `http://72.14.207.104/search?q=cache:VP-0Y40Az0IJ:www.insee.fr/fr/ppp/sommaire/imet95-96a.pdf`

[5]Excerpt from a French text at `http://frederic-rolin.blogspirit.com/archive/2006/01/10/gallica-pepites-et-deceptions-dans-le-domaine-juridique.html`

The examples reviewed so far suggest that a propositional structure *A* DCPV *B* is subject to two constraints.
1. DCPV signals that *B* is relevant to at least one proposition A' connected with *A* or that A' is relevant to *B*.
2. In addition, the nature of *B* depends on whether DCPV corresponds to a consequence relation or not. In the former case, DCPV is sensitive to the factual character of the proposition it introduces, as shown by the contrast in (2). Whereas the proposition that Mary was late can describe a fact, that is, an objective state of affairs whose existence is independent of the perspective we adopt, the proposition that her vacations started poorly sounds rather like a judgement or evaluation. In certain cases, DCPV introduces sentences that do not directly express judgements but rather conversationally implicate them. For instance, the speaker of (6) expresses the wish that political programs concern many citizens instead of just being the preserve of political parties. He then asks a rhetorical question, whose implicature can be paraphrased as 'strong presidentialism has diverted people from getting engaged into politics'.

(6) DCPV, est-ce que la question clé n'est pas celle de la présidentialisation installée du régime sous lequel nous vivons depuis 1958?[6]
'ITR, is not the main question that of the steadily presidentialist regime under which we have been living since 1958?'

In the next section, I rephrase (1) and (2) more accurately.

2.2 Respects and relevance

In order to analyse DCPV, I introduce the descriptive notion of a *respect*. A respect is a viewpoint that a speaker adopts to draw a certain conclusion or to refer to a domain of relevance. Respects are felt as contrastive. For instance, a proposition is true or relevant in virtue of being considered under a particular perspective. It might be false or irrelevant under another, different, perspective.

To circumscribe this notion we need two ingredients, an ontology which determines the pieces respects are made of and their modes of coherence, a dependency relation which determines the connection between the respect and the proposition or speech act introduced by DCPV.

Respects are relative to discourse agents. For an agent *a*, a respect is a set of eventuality-descriptions and attitudes or plans ascribed to *a* and presented as related to another proposition. Attitude statements express the beliefs, desires and intentions of the agent, like in so-called 'BDI-models' (see Woolridge (2000) for an overview). Plans correspond to the skills and know-hows of agents. Formal models of plans connect them to intentions and beliefs in a complex way that I will not discuss here, see Lochbaum (1998). Respects are often structured as domains (mathematics, philosophy), dimensions of evaluation (beauty, quickness) or agents as sources of attitudes, see PPs like *du point de vue des mathématiques* 'from the point of view of mathematics', *du point de vue de*

[6] Excerpt from a French text at `http://espacesmarxbordeaux.apinc.org/IMG/html/BN262_Bordeaux.html`.
The left context can be paraphrased by 'To be possible, social change requires that citizens themselves be involved in the elaboration of political programs '.

l'efficacité 'from the point of view of efficiency' or *du point de vue de Marie* 'from the point of view of Mary' (Porhiel 1997).

(7) Let $i(A)$ denote a speech act with illocutionary force i and propositional content A. For an agent a, a *respect* relative to a speech act $i(A)$ is a set P of propositions that satisfies the following three conditions.
   1. The propositions in P describe eventualities or express the fact that a entertains a certain attitude towards a propositional content or the fact that a believes she has a plan for a certain goal.[7]
   2. P is (i) the set of implicatures of a unique proposition A' or (ii) represents the attitudes and plans attached to a common theme, domain, event, dimension of evaluation or agent.
   3. In case (2.i), $i(A)$ is a non-factual consequence of P. In case (2.ii), $i(A)$ or the propositional content of the attitude expressed in A is related to at least one of the elements of P by a relevance relation.

The notion of relevance I use is that of Merin (1997, 1999).

(8) **Merin's relevance** A is *positively* (*negatively*) *relevant* to B just in case updating the context with A raises (lowers) the probability of B. A and B are relevantly related whenever A (B) is relevant to B (A).

What complicates the picture is that, according to (7.3), relevance may involve only the propositional content. For instance, in (5b) the proposition that the absence of text-indexing facilities is unwelcome has relevance to the proposition that the European project adopts a gallica-style solution.

In certain cases, the notion of respect is intuitively clear. For instance, in (2a), the proposition that Mary's plane was delayed is a respect that licenses the conclusion that her vacations started poorly. Similarly, in (9a), the information state that corresponds to the domain of philosophy is a respect. A domain is not just a *space* (Nunberg 1978, Fauconnier 1984) nor a *medium* (Ross 1988). Loosely speaking, spaces and media are set of propositions that have a certain spatio-temporal unity. For example, (the representation of) a film, a novel, a play are spaces/media. In general, spaces/media are different from domains because they have no thematic unity,[8] although they can contain respects. For instance, an expression like *du point de vue de ce film* ('from the perspective of this film') usually makes reference to opinions expressed in the film and ascribed to the author.

It is an open question whether one can subsume domains, spaces/media and other 'frames' under one unifying category, see Charolles (1997) for French. Giving an objective status to the notion of thematic coherence is notoriously difficult (Gliozzo 2005) and I will use the notion as a conceptual black-box in this paper. In many cases, the propositions that constitute the respect are not explicit but only hinted at by a previous sentence, as in (9b). The preferred interpretation is that, if one takes into account the set of propositions found in metaphysics, the book *Non-Metaphysical Metaphysics* is

[7] In Lochbaum (1998), plans that are the objects of beliefs are called *recipes*.

[8] In this connection, one may also note that spaces/media do not contain plans or attitudes of the speaker, although they can contain plans and attitudes of the characters.

outstanding.

(9) a. Philosophically, God is perhaps not free.
b. J'ai beaucoup étudié la métaphysique, DCPV *Non-Metaphysical Metaphysics*, de S. Brightbrains, est remarquable.
I have studied metaphysics much, ITR *Non-Metaphysical Metaphysics* by S. Brighbrains is outstanding.

The constraint on the S-adverb DCPV is expressed in (10). I assume that, being a demonstrative expression, DCPV is subject to the accessibility preferences on anaphoric demonstratives for binding to and accommodation of its possible antecedents, see Diessel (1999) for an overview and Kleiber (2003) for a recent analysis for French.

(10) When DCPV is a S-adverb, DCPV $i(A)$ is appropriate iff there is an accessible respect relatively to $i(A)$.

Condition (7.3) mentions non-factuality. However, the notion has not been defined yet. It is investigated in the next section.

3 Non-factuality

In this section I consider the consequence interpretation. A respect involved in a consequence interpretation will be called a C-respect.

3.1 Attitudes and modal bases

In many cases, the odd examples that contain factual propositions are not improved by adding a modality.

(11) ?? L'avion de Marie n'a pas décollé à l'heure. DCPV elle (doit être/sera probablement/sera peut-être) en retard.
'Mary's plane didn't take off on time, ITR she (must be/will probably be/will perhaps be) late.'

However, when rating examples like (12), certain speakers have mixed feelings.

(12) a. % L'avion de Marie n'a pas décollé à l'heure. DCPV peut-être qu'elle sera en retard.
'Mary's plane didn't take off on time, ITR maybe she will be late.'
b. % L'avion de Marie n'a pas décollé à l'heure. DCPV il est probable qu'elle sera en retard.
'Mary's plane didn't take off on time, ITR it is probable that she will be late.'

Moreover, examples like (13) sound much more natural. The intended interpretation can be paraphrased by 'the fact that many families chose a shanty town *of their own will* makes it probable that they hoped to be rehoused more efficiently'.

(13) Beaucoup de familles ont choisi de s'installer dans le bidonville de leur plein gré. DCPV il est probable qu'elles ont été attirées par des promesses de reloge-

ment.[9]
'Many families chose to settle in the shanty town of their own will. ITR it is probable that they were attracted by promises to rehouse them.'

Finally, C-respects may be paraphrased by DCPV, *on peut donc dire que* ('ITR, one may then say that').

(14) L'avion de Marie n'a pas décollé à l'heure, DCPV on peut donc dire que ses vacances ont mal commencé.
'Mary's plane didn't take off on time, ITR one can then say that her vacations started poorly.'

So, I have to account for the fact that DCPV (i) is anomalous when it introduces a factual piece of information and (ii) can occur more felicitously in certain attitudinal contexts.

Under the consequence interpretation considered in this section, being a C-respect is a relational notion, since C-respects are defined 'with respect to' non factual-propositions that constitute their conclusions. So, being the premise of a consequence is not equivalent to being a C-respect. For instance, in (2b), the proposition that Mary's plane was delayed is not a C-respect since the conclusion is factual. What kind of relation could 'being a C-respect' correspond to? A straightforward answer is that a C-respect is a modal viewpoint, as in Kratzer's (1981) approach.

In Kratzer (1981), it is proposed that modal doxastic and deontic utterances exploit *modal bases*, i.e. sets of worlds, and ordering relations on modal bases. To wit, $w' \leq w$ means that w' is preferred over w along the dimension (epistemic, doxastic, etc.) with respect to which the worlds in W have been chosen.[10] Let us call a pair $(W, \leq)$, where W is a set of worlds and $\leq$ a partial order on W, a *modal viewpoint*.

One could then analyse (2a) as follows. There is a modal viewpoint such that the proposition that Mary's plane was delayed 'entails' that her vacations started poorly. Entailment is best conceived as in preferential systems of conditional logic in the manner of Lewis (1973).[11]

Returning to (2a), if definition (i) of footnote 11 applied to it in a model m, del-plane > poor-stvac would be true in m iff for every world w where del-plane is true there is some $w' \leq w$ such that del-plane > poor-stvac is true at w' and downward. What kind of preference relation is appropriate in this case? A simple answer is: any relation such that del-plane > poor-stvac is true in all the most preferred worlds, that is, a relation

[9] Adapted from a French text at `http://www.coe.int/T/DG3/RomaTravellers/documentation/fieldvisits/MisRapportvaldemingomez_fr.asp`.

[10] $w' \leq w$ is often paraphrased by 'w' is at least as normal as w'.

[11] More explicitly, one may define a preferential entailment relation > along the lines of (i).

(i) Let $m = (W, \leq)$ be a modal viewpoint. $p > q$ is true in m iff for every w where p is true, there is a world w' such that (i) $w' \leq w$, (ii) $p \wedge q$ is true at w' and (iii) for every world w'' such that $w'' < w'$, $p \Rightarrow q$ is true at w''.

The intuition behind this kind of definition is that if p is true somewhere in W, there must be a world at least as normal as the world where p is true and such that $p \Rightarrow q$ is true there and down through the world sequence. In other terms, one can always reach a point where $p \Rightarrow q$ becomes irreversibly more normal than $p \wedge \neg q$. Note, however, that, like in other systems based on classical logics, (i) does not exclude possibly irrelevant conditional truths like T > T or F > T/F, where T is any tautology and F any contradiction.

which presents the connection between the two propositions as more normal than any situation where the first proposition is true and the second false. For instance, this may be the case if the speaker adopts the common sense[12] rule that an unpleasant circumstance negatively taints the event of which it is a part.

Let us now compare (2a) and (2b). One might argue that the latter is odd because (i) DCPV requires that the sentence it introduces be interpreted from some modal viewpoint and (ii) the proposition that Mary was late for her appointment has an 'objective' quality and is not true or false from any particular perspective.[13] If this explanation is correct, the semantics of DCPV turns out to be rather simple: DCPV expects a point of view.

But consider (11). Intuitively, the modal viewpoint concerns what the speaker considers plausible. w' is more normal than w ($w' < w$) if it conforms to the speaker's standards of plausibility better than w does. It is then unclear why DCPV is not appropriate in that context. One might argue that, although modal viewpoints are amenable to a uniform representation, they still differ in nature. E.g. doxastic and evaluative attitudes possibly point to different viewpoints. Although this hypothesis is not implausible, it raises two problems. First, the contrast between (11) and (13) remains unexplained. Second, the alleged difference is very vague and has to be substantiated for its explanatory value to be assessed.

To sum up, there is nothing in the notion of modal viewpoint that allows us to characterise non-factual propositions in a simple way. Therefore, C-respects cannot be reduced to modal relations.

3.2 C-respects and *qua* objects

A more promising line of explanation is provided by Fine's (1982) analysis of *qua* objects. A *qua* object is a pair of the form <*d*,*F*>, read '*d qua F*', where *d* is an entity, the 'base' and *F* a (possibly complex) property, the 'gloss'. For instance, an expression like *a statue of Goliath* refers to a certain amount of matter (the base) and exhibits a gloss that describes the shape of the statue (its similarity to Goliath). This analysis leads to the question of a possible dependency between glosses, a notion made explicit in Fine's subsequent work. E.g., the statue is beautiful 'in virtue of' having a certain shape, not 'in virtue of' weighing one ton. (2a) sounds similar, since it is in virtue of the gloss 'Mary's plane was delayed' that the gloss 'Mary's vacations started poorly' makes sense. One could then propose that DCPV marks a dependency between descriptions.

However, this is not a sufficient criterion, because one can easily construct odd examples that exhibit an obvious dependency, see (15). Yet, 'ABC has two equal angles in virtue of the nature of the objects that are isosceles' is a valid proposition in Fine's (2000) system.

(15) ??Le triangle ABC est isocèle, DCPV il a deux angles égaux.
'The triangle ABC is isosceles, ITR it has two equal angles.'

[12] In this paper, I use 'common sense' in a deliberately loose way, to refer to non-mathematical rules in general, including social, religious and causal beliefs as well as proverbs.

[13] In fact, this point is open to discussion. One might argue that a very short delay does not count as a delay even if, strictly speaking, it is a delay, see Lasersohn (1999) on this problem.

Admittedly, the dependency shown in (15) is very strong since it coincides with mathematical necessity. If a triangle is isosceles, it *must* have two equal angles, whatever perspective one adopts. This suggests that DCPV might perhaps be more natural in the presence of a weaker dependency. This possibility is not supported by the facts. First, replacing necessary connections between propositions by plausible ones is not sufficient, as evidenced by (16).

(16) ??Jean est fatigué, DCPV il va aller dormir.
'John is tired, ITR he is going to sleep.'

Second, even weaker relations do not license DCPV. For instance, the proposition that ABC is a triangle is positively relevant to the proposition that ABC is isosceles. In contrast, the proposition that ABC is a chair or a horse is negatively relevant to the proposition that ABC is isosceles. (17) shows that exchanging plausibility for positive relevance does not improve the sentences.

(17) ??ABC est un triangle, DCPV il pourrait être isocèle.
'ABC is a triangle, ITR it might be isosceles.'

In general, in a structure *A* DCPV *B* where *B* is a consequence of *A*, DCPV is appropriate only if it exists at least one common sense rule that presents *A* as a sufficient condition for *B*. This constraint is not satisfied in (17). To be isosceles, a polygon must be a triangle or a tetrahedron but it is not enough that it is a triangle, or a tetrahedron or either a triangle or a tetrahedron.

A similar observation holds for propositions that describe actions. If Mary turns the key into the keyhole, she may be said to have (un)locked the door. In that case, DCPV sounds inappropriate, unless we imagine that there are several respects in which a door can be closed.[14] Symmetrically, if Mary just picks up the key, in order to close the door, DCPV is again infelicitous. In the former situation, the consequence relation is too strong, whereas it is too weak in the latter. The distinction between the two cases corresponds to the difference between *generation* and *enablement* (Pollack 1986, 1990). An action A_1 generates an action A_2 when executing A_1 coincides with executing A_2. A_1 enables A_2 if A_1 contributes to executing A_2 but, in addition to executing A_1, it is necessary to do something else in order to achieve the result of A_2.

(18) a. % Marie a tourné la clef dans la serrure, DCPV elle a fermé la porte.
'Mary turned the key into the keyhole, ITR she closed the door.'
b. ??Marie a pris la clef, DCPV elle a fermé la porte.
'Mary picked up the key, ITR she closed the door.'

3.3 Taking stock

What did we learn so far? First, that C-respects are not reducible to modal viewpoints in the sense of Kratzer's modal base theory (section 3.1). Second, that C-respects are neither entailments (strong consequence relations) nor preconditions or enablements (weak consequence relations). Third, that they are grounded in common sense rules.

[14] Olivier Bonami (p.c.) pointed out that, for instance, a door could be 'closed' because it is locked but 'open' because it is off the latch or ajar.

The contribution of the notion of *qua* object is more difficult to appreciate. Although Fine's approach is too liberal to capture C-respects, it embodies an important intuition, namely that we draw inferences on the basis of *partial* views of an object. In the next section, I propose an analysis that aims at calibrating this intuition in a more explicit setting.

3.4 Analysing C-respects

I start from the idea that DCPV is out whenever it introduces a factual proposition, whose truth does not depend on a particular perspective. Moral, aesthetic, intellectual, emotional judgements are qualifications, i.e. they involve perspectives. So, DCPV fits particularly well into contexts where speakers express judgements of that kind.

In this respect, DCPV is analogous to the *trouver que* verb studied by Ducrot (1975). Ducrot noticed that *trouver que* cannot naturally introduce a factual proposition.

(19) a. Je trouve que Jean est bête.
'I find that John is stupid.'
b. ??Je trouve que Jean est venu.
'I find that John came.'

However, to make the intuition more precise, one has to substantiate the notion of 'factual proposition'. A particularly pressing question is whether factual propositions and facts are one and the same thing.

3.5 Factuality and facts

There is a large amount of literature on 'facts' (see Ginzburg and Sag (2000), Jayez and Godard (1999), Kratzer (2002) for recent work and references therein). But the entities characterised as 'facts' cut across the present distinction. E.g., according to Ginzburg and Sag (2000), *remember* takes a fact-denoting clause. Under this assumption, if facts and factual propositions were the same, one would expect that non-factual *that*-clauses be anomalous with *remember*, an assumption which is not verified, as evidenced by the possibility of (20b).

(20) a. John remembers (the fact) that Mary was late.
b. John remembers (the fact) that Mary's vacations started poorly.

One might object that such environments do not (always) select phrases that denote *metaphysical* facts, but rather phrases that can denote entities that constitute the denotation of words like *fact* in English or *fait* in French. Generally speaking, the status of *that*-clauses and, more generally, of substitution tests is complex and I am not going to delve into this problem here (see Godard and Jayez (1999), King (2002), Moffett (2003), Moltmann (2003, 2004)). Whatever the correct analysis of 'facts' might be, examples like (20) show that factual and non-factual *that*-clauses can be complements of *the fact*. So, what is required is that we make clear the notion of factual proposition and the rest of the paper is an attempt in this direction.

3.6 Factual propositions

In pretheoretical intuition, propositions that assert the existence of a perceptible event or assign mathematical properties to an object are factual. We consider a mathematical proposition to be factual because its truth can eventually 'stabilise', that is, when one has produced a set of mathematically acceptable justifications for a proposition, the latter cannot be defeated by other, subsequent, justifications.

For empirical judgements, the situation is far from clear. Suppose that, during a police investigation, a witness declares that he saw John getting in his car at time t. The witness is sincere, but it subsequently turns out that it was Sam, masquerading as John, who actually got in the car at t. Whereas the proposition that John got in his car at t depends on the evidence we have, it is interpreted as factual, as shown by the oddness of (21).

(21) **Context** : John is tall, bald and owns a CSSP05 sweat
??Le témoin a vu un homme grand, chauve, avec un sweat CSSP05, monter dans sa voiture à huit heures, DCPV John est monté dans sa voiture à huit heures.
'The witness saw a tall, bald man with a CSSP05 sweat, get into his car at 8, ITR John got into his car at 8.'

One may describe the example in two opposite ways. On the one hand, since people have to revise their beliefs to accept that it was Sam, not John, who got in the car, it seems that there is new evidence that *contradicts* the former. Thus, the consequence ('John got in his car at 8') cannot be withdrawn without there being a contradiction at some stage. On the other hand, one might retort that empirical judgements are *always* unstable. Even the most accurate physical observation relies on the assumption that the experiment apparatus is working smoothly at the moment of the observation. Considerations of this kind form one of the themes of Wittgenstein's *On Certainty* (Wittgenstein (1969)). Wittgenstein claims that all judgements, including the results of mathematical proofs, are in principle open to discussion, since they depend on particular behaviours, which might be faulty. However, he does not draw the conclusion that all categories of judgements are one and the same. We consider mathematical results and most perceptions to be 'beyond reasonable doubt', although they are not or we cannot prove they are.

Suppose that we adopt Wittgenstein's perspective that there is no 'absolute' certainty.[15] Can we still make a difference between judgements like 'John got into his car' or 'Mary was late for her appointment' and 'Mary's vacations started poorly'? Are factual propositions more 'robust' than non-factual ones? Perceptual judgements may be revised, that is, they can change if information is added. In other words, in issuing such judgements, we can prove wrong. If Mary's plane was delayed and in addition she broke her leg and had her bags stolen, there is little doubt that her vacations started poorly. So, our figment is not really shakier than in the case of direct perception. A similar observation holds for mathematical conjectures. A mathematical conjecture can never be proved, hence never become a 'fact'. Yet it is considered to be factual, more factual than the robust judgement that Mary's vacations started poorly.

However, this does not entail that factual and non-factual propositions are alike in

[15] Or, maybe more accurately, that the notion of absolute certainty does not make sense.

every respect.[16] They might not differ as to their certainty. But they still differ as to their definitional properties. In most cases, we can tell what would count as a proof of a factual proposition,[17] even if we have no idea about how the proof could be achieved. Mathematical definitions are crisp, not fuzzy: if one has a proof that x is a polygon and that it has three angles, one has thereby a proof that x is a triangle. Whether and how it is possible to have a proof that x is a polygon or has three angles is beside the point. Similarly, if one has a proof that Mary saw someone who looked like John at t and a proof that she is not mistaken, one has thereby a proof that John was where Mary saw him at t. It is not so for C-respects. If one has a proof that Mary's plane was delayed, one has not *ipso facto* a proof that her vacations started poorly. One has only a proof that her vacations started poorly *under a certain perspective*. What is crucial is the mode of dependency between premises and conclusion. As noted by Olivier Bonami (p.c.), this applies to measures. For instance if John is taller than 6 feet, I can say that 'in this respect' he is tall, meaning that I consider some threshold inferior or equal to 6 feet to be the threshold of tallness (see Cresswell (1976)).

This short discussion suggests that non-factual propositions have two properties. They are rule-like and relativized to C-respects. As rules, they cannot be (strong) implications. For instance, a delayed plane cannot entail in a strong sense that one's vacations start poorly. Rather, non-factual propositions derive from nonmonotonic inferences, i.e. inferences that can be cancelled by subsequent information. In addition, non-factual propositions depend on their 'premises', the propositions that have been used to derive them. This allows one to entertain 'contradictory' views on the same entity. In a nutshell, if the notation $p_1 \dots p_n \vdash q$ stands for the fact that q is derivable from the premises $p_1 \dots p_n$, the difference between factual and non-factual propositions can be represented informally as in (22). When q is factual, it is simply derivable from some premises (22.1). When q is not factual, it is derivable (i) through a nonmonotonic relation ($\mid\!\sim$) and (ii) in relation to the premises, as suggested by the notation $(p_1 \dots p_n : q)$. Formally, propositions of the form $(\Sigma : p)$ and $(\Gamma : p)$ count as different, which ensures that $(\Sigma : p)$ and $(\Gamma : \neg p)$ are not contradictory.

(22)
1. $p_1 \dots p_n \vdash q$ — q is factual
2. $\begin{cases} p_1 \dots p_n \mid\!\sim (p_1 \dots p_n : q) \\ p'_1 \dots p'_k \mid\!\sim (p'_1 \dots p'_k : \neg q) \end{cases}$ — q is non-factual

3.7 Preferential systems

A natural choice for representing non-factuality inferences is a nonmonotonic system. Monotony and nonmonotony are properties of consequence relations, that is, relations between sets of formulae. Following standard usage, I note consequence relations by $\vdash$. If Φ and Ψ are sets of formulae, $\Phi \vdash \Psi$ means intuitively that Ψ is a consequence of Φ.

[16] See Diamond (1991) on this point and related issues in Wittgenstein's philosophy.

[17] This does not entail that we are able (i) to characterise all the possible things that would count as a proof of a factual proposition or (ii) to determine whether a given piece of behaviour complies with our criteria for being a proof of the proposition.

(23) **Monotony** A consequence relation $\vdash$ is monotonic iff, for every Φ and Ψ, if $\Phi \vdash \Psi$ then $\Phi \cup \Phi' \vdash \Psi$ for any Φ'.

A nonmonotonic consequence relation does not satisfy monotony. Noting $\mid\!\sim$ such relations, we have.

(24) **Nonmonotony** A consequence relation $\mid\!\sim$ is nonmonotonic iff there exists Φ and Ψ, such that $\Phi \mid\!\sim \Psi$ and, for some Φ', $\Phi \cup \Phi' \not\mid\!\sim \Psi$

There is a huge variety of nonmonotonic systems, for instance default logics, autoepistemic logics, preferential models, etc., see Brewka (1991) for an overview. However, recent work (Kraus et al. (1990), Friedman and Halpern (1995, 2001), Friedman et al. (2000)) shows that most systems can be parametrised in the framework of *preferential systems*, defined in terms of preference relations, (following Lewis (1973) and Shoam (1987)). In addition to providing a standard of comparison, the preferential systems cast a bridge between nonmonotonic logic and conditional logics, as used in formal semantics, for instance in Kratzer-like modal approaches.

Following Friedman and Halpern (2000:section 6), I introduce the notion of a *plausibility structure* for first-order statistical conditional logic. Intuitively, a plausibility structure looks like a probability structure, but it assigns a rank within an ordered set instead of a numeric value to the measurable sets. Statistical conditional logic avoids some of the pitfalls of first-order modal conditional logic. The syntax is that of first-order logic augmented with the condition (25).

(25) If A and B are first-order formulae and X a set of variables, $A \rightsquigarrow_X B$ is a formula, called a *default*. If $\delta = A \rightsquigarrow_X B$ is a default, A is the *antecedent* of δ and B its *consequent*.

The intuition behind (25) is that $\rightsquigarrow_X$ acts as an operator binding the variables in X. For instance, $P(x,y) \rightsquigarrow_{\{x,y\}} Q(x,y)$ means that most x's and most y's satisfying P also satisfy Q, $\exists x(P(y) \rightsquigarrow_{\{y\}} P(x))$ means that, for some x, most y's that satisfy P are such that $P(y)$ entails $P(x)$, etc. Defaults $A \rightsquigarrow_X B$ and $A \rightsquigarrow_Y B$ where X and Y can be obtained from each other by variable renaming are considered to be equivalent.

(26) Let us assume that we work in a first order language with a countably infinite set of variables. A first-order statistical plausibility structure **PL** is a quadruple (U, I, D, Pl), where:
1. U is a set (the domain of individuals),
2. I is a first-order interpretation function,
3. D is a partially ordered set with a top $\top$ and a bottom $\bot$,
4. Pl is a plausibility measure of the form $\wp(U^{\aleph_0}) \rightarrow D$ that satisfies:
   . $\mathsf{Pl}(\emptyset) = \bot$, $\mathsf{Pl}(U^{\aleph_0}) = \top$,
   . If $X \subseteq Y$, $\mathsf{Pl}(X) \leq \mathsf{Pl}(Y)$.

The intended meaning of (26.4) is that Pl assigns a rank to each set of assignment functions from variables of the language to elements of U. These functions are represented by countably infinite sequences of elements of U. Any n-ary relation can be represented as a set of assignment functions whose only the first n elements are considered. E.g., the relation $\{\langle a,b,c\rangle, \langle c,d,a\rangle\}$ is the set $\{g : (g(x_1) = a \wedge g(x_2) = b \wedge g(x_3) =$

$c) \vee (g(x_1) = c \wedge g(x_2) = d \wedge g(x_3) = a)\}$. So, any member A of $\wp(U^{\aleph_0})$ is a set of k-ary relations for $k \in \mathbb{N}$. From a probabilistic or 'plausibilistic' point of view, $A \subseteq B$ means, for each $k \in \mathbb{N}$, that it is at least as likely to find a k-sequence from B than a k-sequence from A.

For classical expressions, the satisfaction conditions are standard. For defaults, we have (27). The constraint can be roughly paraphrased as follows: $A \rightsquigarrow_X B$ is true in a structure whenever either no plausible assignment of values to X satisfies A or it is more plausible to find an assignment on X that satisfies A and B than an assignment on X that satisfies A and $\neg B$.

(27) Let g be an assignment function and $g \approx_X g'$ note that g and g' differ from each other at most on the set X, $\mathbf{PL}, g \models A \rightsquigarrow_X B$ iff either:
1. $\mathsf{Pl}(\{g' : g' \approx_X g \wedge \mathbf{PL}, g' \models A\}) = \bot$ or,
2. $\mathsf{Pl}(\{g' : g' \approx_X g \wedge \mathbf{PL}, g' \models A \wedge B\}) > \mathsf{Pl}(\{g' : g' \approx_X g \wedge \mathbf{PL}, g' \models A \wedge \neg B\})$.

If A and B are closed formulae, for $A \rightsquigarrow_X B$ to be true it is necessary that A be false or A and B be true, so $\rightsquigarrow_X$ coincides with material implication. This is as expected, since $\rightsquigarrow$ is meant to express *rules* on classes of objects or eventualities, not isolated facts. For instance, a possible representation for the vacations example (2a) involves a rendering of 'generally, when a plane is delayed (e) at the beginning of e', e' starts poorly'.

$$\textit{del-plane}(e) \wedge \textit{st}(e, e') \rightsquigarrow_{\{e,e'\}} \textit{poor-st}(e, e')$$

The classic 'Tweety' example illustrates the possibility of combining potentially conflicting rules within consistent theories. *tweety* is a constant symbol.

$$\begin{aligned} T = \quad & \{\textit{penguin}(\textit{tweety})[r_1], \forall x(\textit{penguin}(x) \Rightarrow \neg \textit{fly}(x))[r_2], \\ & \forall x(\textit{penguin}(x) \Rightarrow \textit{bird}(x))[r_3], \textit{bird}(x) \rightsquigarrow_{\{x\}} \textit{fly}(x)[\delta]\}. \end{aligned}$$

By r_1 and r_3 we obtain $\textit{bird}(\textit{tweety})[r_4]$. By r_1 and r_2, we obtain $\neg \textit{fly}(\textit{tweety})$. If most birds fly, there is no contradiction between this fact and the fact that Tweety, being a penguin, cannot fly.

3.8 Adding non-factuality

What happens if we have the following two defaults?

(28) $A_1(x) \rightsquigarrow_{\{x\}} B(x)[\delta_1]$
$A_2(x) \rightsquigarrow_{\{x\}} \neg B(x)[\delta_2]$

Suppose that δ_1 and δ_2 are true in a model $\mathbf{PL}$. Let us note $[\![A]\!]$ the set of assignment functions g such that $\mathbf{PL}, g \models A$. Assume that $[\![A_1(x)]\!]$ and $[\![A_2(x)]\!]$ are different from $\bot$. Then, we have:

$$\mathsf{Pl}([\![A_1(x) \wedge B(x)]\!]) > \mathsf{Pl}([\![A_1(x) \wedge \neg B(x)]\!])$$
$$\mathsf{Pl}([\![A_2(x) \wedge \neg B(x)]\!]) > \mathsf{Pl}([\![A_2(x) \wedge B(x)]\!])$$

Consider $[\![A_1 \wedge B]\!]$. If it is empty, then $\mathsf{Pl}([\![A_1 \wedge B]\!]) = \bot$ and $\mathbf{PL} \not\models \delta_1$. So, $[\![A_1 \wedge B]\!] \neq \emptyset$. For the same reason, $[\![A_2 \wedge \neg B]\!] \neq \emptyset$. If $[\![A_1 \wedge B]\!] \cap [\![A_2 \wedge \neg B]\!] \neq \emptyset$, there exists a g such that $\mathbf{PL}, g \models B(x) \wedge \neg B(x)$, a contradiction. Therefore, $[\![A_1 \wedge B]\!] \cap [\![A_2 \wedge \neg B]\!] = \emptyset$.

Whereas this conclusion is formally acceptable, it cannot provide a basis for viewpoints and C-respects. After all, justifying two opposite conclusions by adopting two different perspectives is the rule rather than the exception. Nonmonotonic logic requires that, in such cases, we have some kind of arbitration, for instance that we choose among rules or extensions. However, the very idea of arbitration between rules is alien to our intuitive notion of perspective. In order to allow for non-trivial interpretations of cases like (28), I propose a simple extension of statistical conditional logic.

The reason why (28) is problematic is that no individual can satisfy $B(x) \wedge \neg B(x)$ in the same model. To circumvent the problem, I modify the first-order language by adding 'relativized' formulae of the form $A : B$, 'B under the perspective A'. If A and B are well formed formulae of L, the language under consideration, $A : B$ is also a well-formed formula of L.

To make ':' behave like a type operator, we need the following conditions.

(29) $(A : B) \Rightarrow (A : B)$ is valid. $(A : B) \vee (A : B')$ and $\neg(A : B)$ are respectively equivalent to $(A : B \vee B')$ and $(A : \neg B)$.

One can easily show that, if B and B' are equivalent, so are $(A : B)$ and $(A : B')$.

If $A \rightsquigarrow_X B$ is a default, its corresponding *respect-default* or *R-default* is $A \rightsquigarrow_X (A : B)$. The idea I pursue is to look at C-respects in terms of *justification*. The term 'justification' is used in proof-theory. There, the general idea is that one can reason about statements of the form 't is a proof of A' or 't is a justification for A', $t : A$ in symbols, see for example Artemov and Nogina (2005), Fitting (2005).

With viewpoints, the intended meaning is only partly similar. Suppose we have two conflicting defaults $A \rightsquigarrow_X B$ and $A' \rightsquigarrow_X \neg B$. They can be translated into two R-defaults $A \rightsquigarrow_X (A : B)$ and $A' \rightsquigarrow_X (A' : \neg B)$. If A and A' are compatible relations, there is a plausibility structure that satisfies the two R-defaults for the same individuals.

In general, compatibility between defaults cannot be determined by defaults alone. For instance, the fact that no bird is a fish is more sensibly expressed by a rigid rule $\forall x(\mathit{bird}(x) \Rightarrow \neg \mathit{fish}(x))$. More interestingly, in the context of the following set of expressions, the two defaults δ_1 and δ_2 are conflicting, because the rule r_1 entails that the consequents of δ_1 and δ_2 exclude each other.

(30) $\mathit{del\text{-}plane}(e) \wedge \mathit{st}(e, e') \rightsquigarrow_{\{e,e'\}} \mathit{poor\text{-}st}(e, e')[\delta_1]$
$\mathit{nice\text{-}weather}(e) \wedge \mathit{st}(e, e') \rightsquigarrow_{\{e,e'\}} \mathit{nice\text{-}st}(e, e')[\delta_2]$
$\forall e, e'(\mathit{nice\text{-}st(e,e')} \Rightarrow \neg \mathit{poor\text{-}st}(e, e'))[r_1]$

For compatibility issues, we need to consider sets of closed formulae and defaults, aka theories. A *theory* is a pair (T, Δ), where T is a set of first-order closed formulae and Δ is a set of defaults. I first introduce three auxiliary definitions to speak about sets of conflicting defaults.

(31) Let (T, Δ) be a theory. Two defaults $A \rightsquigarrow_X B$ and $A' \rightsquigarrow_X B'$ in Δ are *conflicting* if $T \models \neg(B \wedge B')$. A set of defaults $\Delta' \subseteq \Delta$ is *B-conflicting* if, for some default δ of the form $A \rightsquigarrow_X B$ in Δ, Δ' is the minimal set that contains δ and all defaults of Δ that conflict with δ.

We can organise Δ into a set of conflicting sets as follows.

(32) $conf(\Delta) = \{\Delta'_B : B$ occurs as a consequent of a default in $\Delta \wedge \Delta'_B$ is $B-conflicting\}$.

(33) If Δ is a set of defaults, $vp(\Delta)$ is the result of replacing each pair of conflicting defaults $A \rightsquigarrow_X B$ and $A' \rightsquigarrow_X B'$ in Δ by their corresponding R-defaults $A \rightsquigarrow_X (A : B)$ and $A' \rightsquigarrow_X (A' : B')$. $vp(conf(\Delta))$ notes the result of applying vp to each member of $conf(\Delta)$.

(34) Let (T, Δ) be a theory where Δ contains conflicting defaults. It admits of a *vp-solution* iff there exists a plausibility structure **PL** such that:
1. **PL** satisfies $(T, vp(conf(\Delta))$,
2. for every $\Delta' \in vp(\mathbf{conf}(\Delta))$, **PL** assigns at least one identical sequence of individuals to every subset of compatible antecedents in Δ'.

(34) define a vp-solution as a plausibility structure that satisfies the R-default version theory and guarantees that conflicting defaults can be satisfied by the same individual(s). For instance, the system in (30) gives rise to the theory in (35). This theory can be satisfied by a model which assigns intersecting domains to *del-plane*, *nice-weather* and *st*.

(35)

T	$\{\forall e, e'(nice\text{-}st(e, e') \Rightarrow \neg poor\text{-}st(e, e'))[r_1]\}$
$vp(conf(\Delta))$	$\left\{\left\{ \begin{array}{l} del\text{-}plane(e) \wedge st(e, e') \rightsquigarrow_{\{e,e'\}} (del\text{-}plane(e) \wedge st(e, e') : poor\text{-}st(e, e'))[\delta_1] \\ nice\text{-}weather(e) \wedge st(e, e') \rightsquigarrow_{\{e,e'\}} (nice\text{-}weather(e) \wedge st(e, e') : nice\text{-}st(e, e'))[\delta_2] \end{array} \right\}\right\}$

The approach sketched here captures the partial character of evaluative judgements by incorporating justifications into the consequent. Similarly, Fine's treatment of *qua* objects and independent but related suggestions (Attardi and Simi (1995), Moore (1999), Varzi (1997)) underline the interplay between partiality and inconsistency.

3.9 DCPV and non-factuality

If (T, Δ) is a theory, I write $(T, \Delta) \vdash A$ to indicate that A can be derived from (T, Δ) by the axioms of plausibility logic.[18] As usual, $T \vdash A$ means that A can be monotonically derived from A.

In a theory, B is non-factual if and only if (i) there is no way to derive a rigid implication of the form $A \Rightarrow B$ and (ii) each default with B as a consequent is balanced by a conflicting default.

(36) Let (T, Δ) be a theory. B is non-factual with respect to (T, Δ) iff:
1. there is no A such that $T \vdash A \Rightarrow B$ and $A \Rightarrow B$ is not a tautology,
2. if $(T, \Delta) \vdash A \rightsquigarrow_X B$ for some A and some appropriate X, for some B', $(T, \Delta) \vdash A' \rightsquigarrow_X B'$ and B and B' are incompatible.

Definition (36) excludes the cases where B is a rigid consequence and also those where there is no conflicting default.

(37) In the context of a theory (T, Δ) and under a consequence interpretation, where C is the C-respect, DCPV $i(A)$ is appropriate only if $i(A)$ is non-factual with respect to $(T \cup \{C\}, \Delta)$.

[18] The relevant axiom system is know as $\mathbf{C}^{stat}$, see Friedman et al. (2000:section 7).

Mathematical objects do not naturally enter a C-respect relation, as seen for (17), because they possess exact definitions, a fact which violates (36.1). To repeat, what (36) captures in such cases is the existence of a definitional structure, no the existence or possibility of a verification. A mathematical conjecture may never be proved. It is still definitionally clear. In general, empirical sets of nonmonotonic sufficient conditions do not correspond to definitions but rather to observations-conclusion pairs. Insofar as the observations are correct and there are no conflicting observations, the conclusion is considered to be 'proved' ('beyond reasonable doubt' in a particular context). So, whereas empirical judgements are, in principle, always open to revision, they can, again in principle, be stabilised.

3.10 Modals

The differences noted in section 3.1 have not been explained yet. Suppose that modals like *probably* or *possibly* trigger conventional implicatures, in contrast to modal clauses (*it is* ADJ$_{mod}$ *that* S), which trigger assertions, and that this difference is reflected in the mode of update. It has been noted (Jayez 2006) that conventional implicatures cannot combine with the asserted content of another proposition through certain discourse relations or discourse markers. For instance, following Potts (2005), I assume that expressives are conventional implicature triggers. In (38a), the consequence relation cannot link the implicature that John is stupid and the assertion that he ruined the speaker's party. So, (38a) is not equivalent to (38b).

(38) a. I don't like John because the stupid guy ruined my party.
b. I don't like John because the guy is stupid and he ruined my party.

If parentheticals are implicature triggers, they do not combine with the asserted content of another proposition. Instead, it is the asserted content of the proposition which combines with the asserted content of the other proposition. If the former is factual, DCPV is predicted to be infelicitous. In contrast, modal clauses express alethic judgements of the speaker and, as judgements, are compatible with DCPV.

However, this straightforward explanation conflicts with the analysis offered in Jayez and Rossari (2004), henceforth JR, where it is proposed that certain modal adverbs, including *probably* or *possibly*, do *not* trigger conventional implicatures. Instead, they are part of the asserted content, in contrast with other, truly parenthetical, adverbials like *heureusement* 'fortunately', *paraît-il* 'I hear' or *selon/d'après NP* 'according to NP', which contribute implicatures.[19] In the context of the present discussion, this analysis predicts that there should be a difference between *probably* and *fortunately*, a prediction which is incorrect in view of examples like (39).

(39) a. The meeting was a real mess. In this respect, it is a good thing that John was not there.
b. The meeting was a real mess. ??In this respect, John, fortunately, was not there.

[19] Potts (2005) independently made the same proposal for certain parentheticals.

JR argue that, in the case of modal adverbs, the modality is part of the asserted content because it interacts with denials and rejections, in contrast with other parenthetical adverbs. For instance, B1's answer in (40) can be interpreted as a direct rejection of A1's assertions. In contrast, B2's answer cannot be interpreted as meaning 'it is unfortunate because John is going to crash the new car'. JR argue that assertions and answers target the update of the common ground. In a nutshell, whenever a speaker asserts that A, she proposes that the common ground be updated with A; when she rejects an assertion that A, she indicates that she refuses the proposed update. (40A2,B2) suggests that a sentence *fortunately* S does not target an update with 'it is fortunate that'.

(40) A1 – John has probably got a new car
B1 – No, it's not very likely; he has run out of money
A2 – Fortunately, John has got a new car
B2 – No, he's going to crash that one too
[**context**: John is a very unsafe driver, with a lot of accidents; B2 thinks that he should not drive at all]

In order to take into account observations (39) and (40), I propose to modify JR's analysis as follows. Let us assume, for simplicity, that we work in a framework where (i) updates are eliminative, as in most dynamic semantics theories, including JR's approach, and (ii) we have only two agents, s, the speaker, and h, the hearer. Modal adverbs like *probably* give rise to conventional implicatures, like other parentheticals and unlike *it is* ADJ_{mod} *that* S constructions. More precisely, when s utters *probably* A, she asserts that A is probable at every world of the common ground and implicates that she believes A to be probable. I need to introduce some machinery in order to explain the difference between assertion and implicature in that case. Recall that the common ground is usually defined as the set of propositions that every agent believes and believes that every other agent believes and that every other agent believes that every other agent believes, etc.

(41) $CG(s,h) = \{A : Bel_s A \wedge Bel_h A \wedge Bel_{x_1} \ldots Bel_{x_n} A$ for every finite sequence $x_1 \ldots x_n$ where $x_i = s$ or h for $i = 1 \ldots n)\}$

Let W be the set of doxastic alternatives of w for an agent. I consider only alternatives that satisfy the modal ground, that is, I assume that every world in W satisfies every proposition in $CG(s,h)$. For simplicity, I assume that doxastic alternatives are plausibility structures.[20] The definition of a probability operator is then elementary.

(42) $\mathsf{Prob}\ A$ is true at w iff $\forall w_i \in W(\mathsf{Pl}_i(A) > \mathsf{Pl}_i(\neg A))$.

In an eliminative update framework there are two possibilities for an update with a proposition of the form $\mathsf{Prob}\ A$. Either we suppress the worlds where $\mathsf{Prob}\ A$ is false or we suppress the worlds w that violate (42). More formally,

(43) Let W be a non-empty set of worlds.

[20] An additional assumption would be that doxastic alternatives are ordered, as in Kratzer's modal bases, and that probability is expressed with respect to the ordering relation. Nothing essential depends on the present choice.

1. $W \dot{+} A = \{w_i \in W : w_i \models A\}$.
2. $W \dot{+}_{prob} A = \{w_i \in W : \mathsf{Pl}_i(A) > \mathsf{Pl}_i(\neg A)\}$

The dynamic difference between *probably* S and *it is probable that* S is spelt out in (44). For simplicity, I ignore here the recursive aspect of updates, that is, their propagation along all the finite vectors mentioned in (41).

(44) a1. The assertive update associated with *It is probable that* S is a standard update of the form $+\mathsf{Prob}\ A$, where A is the proposition expressed by S.
a2. The implicative update is null.
b1. The assertive update associated with *probably* S is of the form $\dot{+}_{prob}A$, where A is the proposition expressed by S.
b2. The implicative update is of the form $\dot{+}Bel_s\mathsf{Prob}\ A$.

If (44) is correct, the reason why (11) is anomalous is simply that the update concerns factual propositions, in contrast to (12) and (13), where the update concerns a modalized proposition. Turning to (40), I observe that the contrast between *probably* and *fortunately* is also induced by the nature of update. Whereas *probably* triggers an update of the general form $\dot{+}_M A$, *fortunately* triggers a standard update of the form $+A$ and implicates that s believes that A is unfortunate.

However, I still have to clarify the status of reportive/evidential parentheticals. Consider *according to* NP. A rejection of *According to* NP, S is preferably interpreted as a rejection of S, see (45).

(45) A – According to Mary, John has ruined her party
B – No, that's impossible!
[**Preferred interpretation**: John did not ruin Mary's party]

Yet an assertion that 'according to a given source, S' is felt as weaker than an assertion that S or that *fortunately*, S. It has been noted (Palmer 1986) that evidentials are in principle distinct from modals: whereas a modal expresses a degree of (un)certainty, an evidential codes an information source.[21] If this distinction is appropriate, it follows that an assertive update with an evidential must be weaker than an update with a modal. In (46), I propose that the assertive update associate with *according to* NP consists in keeping all the worlds where, if the source NP is reliable, the proposition is true. A refutation of a form *according to* NP, S can consist in attacking A, the proposition expressed by S, i.e. in proposing that every world where A is true be cancelled.

(46) a. The assertive update associated with *According to* NP, S consists in eliminating every point where the proposition that the source NP is reliable is true and A is false.
b. The implicative update is an update with the proposition that s believes that the source believes that A.

[21] Mushin (2001) proposes the general category of *epistemological stance* to subsume different items or constructions. However, she draws a distinction between *inferential* stance and *reportive* stance, which may be considered as akin to Palmer's distinction for my current purpose.

(46) does not entail that the speaker believes A, a property which is consonant with the contrast between (47a), where the speaker is committed to the truth of A, and (47), where she is not.

(47) a. ??John probably ruined Mary's party but it's impossible.
b. According to Mary, John ruined her party but that's impossible.

More work is needed to determine whether this treatment can be extended to other non-modal parentheticals, like *I hear*.

4 Extension to other cases

As noted in section 2, DCPV can be a VP-adverb.

(48) Les divers aspects de l'identité sociale ne sont pas considérés des caractéristiques individuelles mais plutôt des concepts qui se recoupent. Il est donc important d'examiner de ce point de vue tous les facteurs qui pourraient contribuer à sa situation sociale.[22]
'The various aspects of social identity are not considered as individual features but rather as interacting concepts. Therefore, it is important to investigate under that perspective any factor that might influence one's social situation.'

The text invites researchers on social identity to investigate the various factors involved, keeping in mind that facets of social identity are interacting concepts and not features of particular persons. When pursuing this idea, a researcher should evaluate and analyse every situation under the given perspective. However, this does not entail that all her assumptions, proposals and observations should be a *consequence* of the perspective. When there is a consequence relation, the VP-adverb is compatible with a non-factual proposition. Yet, the consequence paraphrase mentioned in section 3.1 is inappropriate; in (49), substituting 'In this respect, one can then say that the secretaries have examined the following texts' does not make much sense.

(49) Tous les membres [...] ont considéré qu'il serait utile de procéder à un examen de l'ensemble des textes [...] du point de vue de la forme et de la langue. Le secrétariat a donc examiné, DCPV, les textes ci-après [...][23]
'All the members considered that it would be useful to evaluate all the texts from the viewpoint of form and language. Therefore, the secretaries have examined in this respect the following texts . . . '

I propose that, when it is not a VP-adverb, DCPV signals that the agent who carries out the action described by the VP evaluates the modalities and results of her execution with respect to the perspective that DCPV points to. In the terms of Merin's notion of relevance (Merin 1997, 1999), there is some positive or negative relevance between certain propositions that define the respect and certain propositions that describe the execution.

[22] Excerpt from a Canadian-French text at `http://72.14.207.104/search?q=cache:jZCQSJXlnP8J:www.onpea.org/fr/events/conferenceproceedings/conference04fr/26davieshalliday.pdf`

[23] Excerpt from a French text at: `http://unesdoc.unesco.org/images/0007/000753/075313fo.pdf`.

(50) Let P be a set of propositions, that expresses a perspective and S a sentence of the form X VP DCPV, where DCPV is adjoined to VP and refers to P and X VP expresses an action. Let P' be a description of the complex event referred to by X VP. DCPV signals that:
$\exists p, p'(p \in P \wedge p' \in P' \wedge$ (p has positive relevance to $p' \vee$
p' has positive or negative relevance to p).

It is unlikely that the viewpoint has negative relevance to an aspect of the VP-event, since, normally, the event is controlled by an agent who takes the viewpoint into account.

Unsurprisingly, the PP-construction *du point de vue de* NP (DPVD), illustrated in (51), is not essentially different from the two cases studied so far. (51a) is similar to consequence examples with a sentential DCPV and can be accounted along the lines of (37). (51b) resembles examples like (5) and (6) and follows from the general constraint in (10). The set of propositions which constitutes the domain of colour is relevant to the proposition that the speaker finds a style. (51c) is analogous to the VP-adverbial cases described above.

(51) a. Du point de vue de la couleur, ce tableau est raté.
'From the point of view of colour, this painting is a failure.'
b. Du point de vue de la couleur, mon envie était de trouver un style.[24]
'From the point of view of colour, I wanted to find a style.'
c. Dans ce rapport, l'immigration est abordée du point de vue de l'entreprise.[25]
'In this report, immigration is considered under an entrepreneurial perspective.'

DPVD is not just a topic-introducer, contrary to what the English gloss of (51b) might suggest. (52) shows that DPVD cannot freely replace topic-shifters like *quant à* or *en ce qui concerne* ('as concerns/regards', 'concerning/regarding').

(52) a. En ce qui concerne la voiture, je ne sais pas ce qu'elle a.
'Concerning the car, I don't know what the problem is with it'
b. ?? Du point de vue de la voiture, je ne sais pas ce qu'elle a.
'From the car's perspective, I don't know what the problem is with it'

As with DCPV, the NP complement of DPVD NP must denote an abstract quality, a trope,[26] an agent, etc., in short, entities which can be considered as dimensions of evaluation or, more generally, of attitude expression towards an evaluative clause. A car is hardly a dimension, so (52) is predicted to be very strange. When there is neither an evaluation by the speaker nor a relevance relation, the result is also infelicitous.

(53) a. Du point de vue de la couleur, Monet est supérieur.
'As concerns colour, Monet is better.'

[24] Excerpt from a French text at `http://www.auracan.com/Interviews/Bluehope/Bluehope2.html`
[25] Excerpt from a French text at `http://www.institut-entreprise.fr/index.php?id=586`
[26] In the sense of Campbell (1990). Tropes are particular manifestations or instantiations of abstract properties. Whiteness is an abstract property. The particular whiteness of a specific sheet of paper is a trope.

[Evaluation by the speaker]

b. Du point de vue de la couleur, Monet espérait résoudre définitivement le problème.
'As concerns colour, Monet hoped to find an ultimate solution to the problem.'
[a proposition to which the domain of colour is relevant]

c. ?? Du point de vue de la couleur, j'ai besoin de deux tubes de rouge.
'As concerns colour, I need two red paint tubes.'

Finally, let me note that, when *point de vue* is a *nom prépositionnel* ('prepositional noun'), in the terminology of Danon-Boileau and Morel (1997), it is similar to the S-adverb DCPV. The VP-adverb use is less natural. However, the usages seem unstable.

(54) a. Point de vue couleur, ce tableau est raté
'As to colour, this painting is a failure'

b. Point de vue couleur, je souhaite trouve un style
'As to colour, I wish to find a style'

c. ?J'ai examiné le tableau point de vue couleur
I examined the painting as to colour

This suggests that *point de vue* is more restricted than DCPV and DPVD and is not entirely parallel to other 'prepositional nouns', like *côté* 'side' or *question* (Le Querler (2003)).

5 Conclusion

In this paper, I have shown that DCPV has essentially three types of use. As a S-adverb, it can introduce a non-factual consequence of a certain perspective or a speech act/ proposition relevantly related to the perspective. As a VP-adverb, it expresses the perspective under which an action described by the VP is controlled by the agent. I have devoted much space to the discussion of non-factuality, which proves difficult to characterise. The connection between consequence and non-factuality is found with several discourse markers, for instance *sous cet angle* 'under this angle', *dans cette perspective* 'in this perspective', *dans cette optique* 'in this view', etc. and is certainly not a trick of fate. To assign its place very precisely, a deeper understanding of its similarities and differences with information sources and domains is necessary. This is a task I must leave to future work.

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