

Derived Nominals and Concealed Propositions*

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1 Introduction

Vendler (1967) [19] described derived nominals (DNs) like *the collapse/ing of the Germans* as ambiguous between event denoting expressions and proposition denoting expressions. DNs can combine with event-selecting predicates (1a), like *gradual*, which bona fide propositional *that*-clauses or fact-denoting expressions cannot (1c), and have event-readings. ((1a) can be paraphrased as ‘the event of the Germans collapsing was gradual’.) DNs can also combine with proposition-selecting predicates like *aware of* (2a) which always also allow finite complements (2b) and, in such cases, have propositional readings—(2a) and (2b) are synonymous. We call DNs in the latter cases Concealed Propositions (ConPs), and we defend the idea that they are analogous in important respects to concealed questions (CQs).³ Here we argue against Vendler’s Ambiguity Hypothesis (3) and defend an analysis of DNs in which they uniformly denote (or quantify over) events. In doing so, we overcome a challenge, discovered by Zucchi (1993) [20], to the unambiguous event approach, and provide an analysis to both definite and quantified DNs. We show that a copy-theoretic account overcomes the problem and aligns ConPs with concealed questions (CQs) in the analysis of Frana (2013, 2017) [4, 5].

- (1)
 - a. The collapse/ing of the Germans was gradual/sudden/fast.
 - b. #(The fact) that the Germans collapsed was gradual/sudden/fast.

- (2)
 - a. John knew/was informed /was aware of the collapse/ing of the Germans. (ConP)
 - b. John knew/was informed/was aware (of the fact) that the Germans collapsed.

- (3) The Ambiguity Hypothesis
Derived nominals are ambiguous between eventualities and propositions.

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³ One must be careful with the gerundive forms. As Vendler points out, the verbal gerunds (with an accusative-case marked object rather than *of*) are not possible as arguments of *occur* and *slow* e.g. *John’s singing *(of) the Marseillaise was slow*. ([12, p.90]). Our discussion is limited to derived nominalizations and nominal gerunds.

Depending on the selection properties of the embedding predicate, either one or the other interpretation is available (or both, if the predicate selects for both propositions and events).

2 Problems for the Ambiguity Hypothesis/Propositional Approach

2.1 The Overgeneration Problem

Zucchi raises an important empirical point against the ambiguity hypothesis. If, as argued by Vendler, DNs were ambiguous between a proposition interpretation and an event one, then we would expect that whenever a DN appears as the object of a proposition-selecting predicate, it should have an interpretation that is semantically equivalent to that of a finite clause. As Zucchi shows, this is not the case with verbs like *remember*: while (5) is compatible with a scenario in which John did not witness the event, but was simply informed about it, (4) is not. In other words, if DNs were ambiguous between denoting events and propositions, then (4) should have a reading synonymous to (5), but that reading is missing.

- (4) John remembers Mary's arrival. (Zucchi 1993)
- (5) John remembers (the fact) that Mary arrived (because he was told so).

If DNs uniformly denote events, and event-selecting *remember*, unlike proposition-selecting *remember*, carries witness requirements, then the contrast in (5) follows. The overgeneration problem extends to a range of verbs type. It is known that verbs of perception reports, like *see* or *hear*, can deliver direct or indirect perception reports, depending on the type of complement [1]. If DNs were ambiguous between proposition and event meanings, then perception verbs should deliver indirect perception reports with DNs, contrary to fact:

- (6) a. Julia saw that the package arrived from Amazon, but she didn't witness the arrival (e.g. she saw a box sitting on her doorstep)
b. John heard that the doorbell rang (his kid had to tell him).
- (7) a. Julia saw the arrival of the package from Amazon, #but she didn't witness the arrival.
b. John heard the ring of the doorbell (#his kid had to tell him).

The problem extends to other predicates which don't allow DNs to 'mimic' propositional meanings. As discussed in [11] the two sentences below are not truth-conditionally equivalent: while (8) conveys that Nora offered an explanation to the fact that Fido barked (i.e. to the question "Why did Fido bark?"), (9)

can be used to report a situation in which Nora uttered “Fido barked” in response to another question. In this case, “Fido barked” is not the thing explained (the explanandum), rather it is what Nora said in the course of explaining something else (e.g. why the burglar ran off).

(8) Nora explained the fact that Fido barked. *explanandum*

(9) Nora explained that Fido barked. *explanans*

If DNs were ambiguous between denoting events and propositions, then they should have a propositional/explanans interpretation, contrary to fact:

- (10) Why does everyone look so happy?
- a. John explained that Sally won, but not how.
 - b. John explained the fact that Sally won, #but not how.
 - c. John explained Sallys win, #but not how.

2.2 Factivity

We add another empirical point against the ambiguity analysis. Let’s start with the observation that, unlike predicates like *know* and *be aware of*, verbs like *tell* and *inform* are not factive when their complement is a *that*-clause, i.e., the proposition expressed by their complement does not have to be true in order for the whole sentence to be true. Thus, while (11a) feels contradictory, (11b) and (11c) do not.

- (11) a. Julia knew that Cicero died, #when in fact he was alive.
b. Julia was informed that Cicero died, when in fact he was alive.
c. Antonio told Cicero that Julia arrived, when in fact she hasn’t arrived.

Interestingly, when the complement of *tell* and *inform* is a DN with a ConP-reading, the sentence carries a factive commitment, as shown by the fact that the examples below feel contradictory:

- (12) a. Julia was informed of Cicero’s death, #when in fact he was alive.
b. Antonio told Cicero of Julia’s arrival, #when in fact she hasn’t arrived.

The fact that *tell* and *inform* are factive when they occur with DNs, but not factive when they occur with propositional *that*-clauses is a mystery if ConPs were propositions, as defended by the ambiguity analysis.

One might wonder whether the factivity effect observed with ConPs is due to the existence presupposition carried by the definite, projecting out of the intensional context. We have several reasons to believe that is not so. First, this would not explain the contrast between (13a) and (13b). If the markedness of (13b) were due to the fact that the presupposition of existence of the definite projects out of the intensional context, thus leading to a contradiction with the continuation, the same should be true of (13a).

- (13) a. Romeo was informed that the delivery of his love letter (to Juliet) went through, but in fact that never happened.
b. Romeo was informed of the delivery of his love letter (to Juliet), # but in fact that never happened.

Second, as noted in the literature (e.g., [9]) presuppositions that project from attitudes (14a) can be canceled as in (14b):

- (14) a. Mary believes Smith’s murderer escaped.
[presupposition: there is a unique individual who murdered smith]
b. Mary mistakenly believes that someone murdered Smith, and she believes that Smith’s murderer escaped.

If the “factivity” effect is just due to the definite we should be able to cancel it in a way analogous to (14b). That this is not true is demonstrated in (15).

- (15) Mary believes that Jocasta arrived (when in fact she hasn’t). She then told me of Jocasta’s arrival.

The implication that Jocasta arrived does not seem to be canceled here, suggesting that the factivity doesn’t come from the definite, but from something else. To conclude, if ConPs were propositions, we would not expect the lexical entries of the embedding predicate to encode different requirements (witness/factivity) for *that*-clauses and DNs, given that, at a level of semantic interpretation, these two types of syntactic complements would be mapped to the same type of semantic object, namely a proposition. If, on the other hand, ConPs were not propositions, then the observed differences would no longer be a mystery: the lexical entry of the predicate could encode different requirements, depending on the type of semantic object it composes with (a proposition vs. an event).

3 The Event Approach

3.1 Zucchi’s proposal

The challenge, then, is to understand how certain predicates can take DNs and “mimic” a propositional interpretation. Zucchi’s answer to that challenge

is that DNs uniformly denote events and they come to “mimic” propositional interpretations—to denote ConPs in our terms—by a manipulation in the entry of the selecting verb. For instance, the entry for event-selecting *inform* in (16) allows Zucchi to derive a propositional interpretation without assuming that DNs denote propositions.

- (16) a. John is informed of Marys arrival. (= J. is informed that M. arrived)
 b. $\llbracket \text{be informed of}_E \rrbracket = \lambda e.\lambda x. x \text{ is informed (OCCUR}(e))$
 c. $\llbracket \text{The event of M's arrival} \rrbracket_i \text{ is such that J. is informed that } e_i \text{ occurred}$

At the core of *be informed of_E* is still the meta-language relation *inform*, which describes a relation between individuals and propositions just in the way English CP-taking *inform* does. It is just that the proposition is derived by applying the individual event argument to the predicate OCCUR. Zucchi suggests an analogous shift for predicates like *be aware of*.

3.2 The Problem of co-extensional events

Zucchi’s analysis treats the DN complement of the verb as saturating an individual event argument. In that respect, it will be a transparent position, just like the internal argument of direct perception verbs.⁴ Recall that [1] (see also [8]) showed that we can capture the epistemic neutrality of direct perception complements on the hypothesis that they saturate an individual argument slot. That will capture the fact that replacement of extensional equivalents preserves truth in direct perception reports:⁵

- (17) a. Caius witnessed the death of Caesar.
 b. The death of Caesar is the murder of Caesar.
 c. \Rightarrow Caius witnessed the murder of Caesar.

If (17a) and (17b) are true, you have to assent to the conclusion in (17c). Verbs like *witness* select an individual event regardless of that event’s description (as

⁴ Here, we use the terms transparent/opaque in the sense of [2]: an expression is said to be transparent if its descriptive content is evaluated at the utterance world.

⁵ Barwise discusses examples in which the type of complement taken by perceptual *see*, whether a naked infinitive or a *that*-clause, disambiguates between epistemic and non-epistemic readings of the predicate, with only the former allowing for non-epistemic interpretations:

- (i) a. Ralph saw a spy hiding a letter under a rock, but thought she was tying her shoe.
 b. Ralph saw that a spy was hiding a letter under a rock, #but thought she was tying her shoe.

a death or murder), and so if the subject sees that event truth is ensured. This, of course, is not true of opaque environments. It turns out that ConPs sit in opaque environments, as shown in (18) (modeled after [13]).

- (18) a. Caius was informed of the death of Caesar.
 b. The death of Caesar is the murder of Caesar
 c. \nRightarrow Caius was informed of the murder of Caesar.

Zucchi himself discusses entailment patterns analogous to (18) as a fatal problem for his analysis. Given that Caesar was murdered, then the murder of Caesar and the death of Caesar are the same event.⁶ However, there is a possible interpretation under which (18a)-(18b) do not entail (18c). Zucchi's analysis does not give justice to such intuition:

- (19) [The actual event of Caesar's death]_i is such that Caius is informed that e_i occurred

On the other hand, if DNs could denote propositions, then the lack of entailment would follow: Caius was informed that Caesar died does not entail that Caius was informed that Caesar was murdered.

Zucchi himself discusses a hypothetical easy fix for this issue, namely to change the lexical entry of event-selecting *inform* so that it combines with a generalized quantifier. As shown below, the event descriptor is no longer quantified in, hence the entailment is no longer predicted.

- (20) Revised entry for *inform* (to be revised)
 a. $\llbracket \text{be informed of}_E \rrbracket = \lambda Q.\lambda x. x \text{ is informed (Q OCCUR)}$
 b. Caius is informed that [the event of Caesar's death] occurred

However, Zucchi shows the problem runs deeper and entailment patterns analogous to (13) can be reproduced with quantified DNs as well. A quantified DN can take wide scope in terms of its quantification force but it is still opaque on the event description. Zucchi demonstrates this with nouns quantified by *only three*.

- (21) John was informed of only three arrivals of Mary.

⁶ For people unconvinced by this premise, Zucchi offers the following example:

- (i) a. Oedipus was informed of the arrival of Jocasta.
 b. Unbeknownst to Oedipus, Jocasta is his mother. Hence, the arrival of Jocasta is the arrival of Oedipus mother.
 c. Oedipus was informed of the arrival of his own mother.

In this case though, we don't want to interpret the quantified event description in the scope of *inform* because (21) doesn't mean:

(22) J. is informed that [only three arrivals of Mary] occurred

(21) can be true if John was never told of the number of arrivals of Mary; rather, it means that for (only) these three arrivals, was he informed of them. So we want the quantificational force to scope out as shown in (23) (where X ranges over whatever semantic type *only three ...* denotes).

(23) [Only three arrivals of Mary] λX [J. is informed that [occurred(X)]]

The problem though is that this takes the event description out of the intensional scope of the matrix verb, predicting that substitution of extensional equivalents will be possible. This is not correct as we now show by demonstrating that even when the quantificational force is interpreted outside the scope of the intensional operator, the event description is interpreted inside the intensional operator, i.e. must be opaque. Zucchi himself concluded as much but we want to demonstrate this fact with examples that differ in two ways from Zucchi's original. First, we are going to use the universal *every* in what follows, since its contribution is easier to encode than numerals modified by *only*. Second, our test of opacity will focus squarely on the event description itself (as we did above with the co-extensional *death of Caesar* and *murder of Caesar*).⁷

Assume that Charlie is attending a magic show. During the show, he sees the magician make a rabbit disappear several times. Each disappearance of the rabbit actually consists of a quick jump of the rabbit inside a box, which his eyes do not register (and there were no other jumping-inside-the-box events). In this scenario, (24a)-(24b) do not entail (24c). However, given that each 'disappearing event' is also a 'jumping event'(and vice-versa), the event-analysis predicts the entailment.

- (24)
- a. Charlie knew of/was aware of every disappearance of the rabbit.
 - b. Every disappearance of the rabbit was a jumping of the rabbit inside the box.
 - c. $\not\Rightarrow$ Charlie knew of/was aware of every jumping of the rabbit inside the box.

⁷ In some examples, Zucchi contrasts *arrival of Jocasta* with *arrival of Oedipus' mother*. These are also co-extensional event descriptions, in virtue of the co-extensionality of *Jocasta* and *Oedipus' mother*. But this co-extensionality could arise by interpreting these object nominal expressions transparently (i.e. "at the utterance evaluation world"). We really need to check the event description, since generally the "main" predicate must be interpreted opaquely in opaque environments (i.e. its world argument can't be supplied by the utterance context).

We have reached an impasse. On the one hand, we have evidence against the ambiguity approach (the overgeneration problem and our argument with factivity); on the other hand, there seems to be a fatal problem with the unambiguous event-approach. To summarize the problem is the following. We need the event description to be **part of the propositional content** of the argument of the verb, to account for the failure of substitution above. But, at the same time, we want the nominalization to scope out for the purposes of its quantificational determiners.⁸

4 Toward a Solution to the impasse

In this section we propose a solution to the impasse that preserves Zucchi’s original proposal that DNs denote events, rather than propositions and, at the same time, resolves the tension between the need to QR the DN and the fact that the DN must receive an opaque interpretation. The solution extends Frana’s (2013, 2017) analysis of CQs to the domain of ConPs.

4.1 Concealed Questions

CQs are nominal arguments of (certain) question-embedding verbs that can be paraphrased as questions/propositions ([6, 15, 10, 5], a.o.). Some examples and their paraphrases are given below (assume that the actual price of the new iPhone is \$800 and that the kind of wine Clara likes the most is Pinot Grigio).

- (25) a. Clara knows *the price of the new iPhone*.
b. Clara knows what the price of the new iPhone is/that the new iPhone costs \$800.
- (26) a. Gianni can’t remember *the kind of wine Clara likes the most*.
b. Gianni can’t remember what kind of wine Clara likes the most/that the wine Clara likes the most is Pinot Grigio.

CQs display interesting similarities with ConPs: although syntactically DPs, they can serve as arguments of certain question/proposition selecting verbs and can be paraphrased by questions/propositions; just like ConPs, when they occur with verbs like *tell* or *inform* they impose a factivity commitment (“Mary told John the place where Luisa had gone, #but she turned out to be mistaken”); they also occupy intensional argument positions, thus not allowing for substitution of equivalents. As shown in (27), knowing what the price of the new iPhone is does not entail knowing what the price of a 4-year membership at the local gym is,

⁸ There is a literature of so-called wide scope, opaque interpretations [18]. We may be seeing instances of such thing, although we leave this for future research.

even if the two definite descriptions happen to be co-extensional at the actual world.

- (27) a. Clara knows the price of the new iPhone.
 b. The new iPhone costs the same as a 4-year membership at the local gym.
 c. \nRightarrow Clara knows the price of a 4-year membership at the local gym.

Thus, CQs are intensional objects. The question is what kind of intensional objects are they? One popular answer to this question, which traces back to [6], is that CQs denote intensions of individuals, i.e., individual concepts (ICs), functions from possible worlds into individuals:

(28) *the price of the new iPhone*_(s,e)

$$\begin{bmatrix} w_0 \rightarrow \$800 \\ w_1 \rightarrow \$900 \\ w_2 \rightarrow \$1200 \\ \vdots \quad \quad \quad \vdots \end{bmatrix}$$

Informally, a sentence ‘a knows/is aware of the CQ’, construed as an IC, gives us true iff the value that the concept yields at the actual world equals the value that the concept yields at all of the attitude holder doxastic alternatives (for instance, ‘John knows/is aware of the price of the new iPhone’ is true iff the concept in (28) outputs the same value at the actual world and at each of John’s belief worlds). Since the price of the new iPhone and the price of a 4-year membership at the local gym are not the same concept (they only share the same extension at the actual world), then the lack of entailment in () is derived. The first step of our proposal is to generalize this solution to the domain of events.

4.2 Analysis of definite DNs with event-concepts

We assume that the nominal predicate of a DN denotes a property P of events, whereas a definite DN denotes the (uniquely salient) event e that satisfies P in w (29). The intension of e (an event concept) is a function from possible worlds w’ to events. The ConP reading of a simple sentence, such as *Caius knew of the death of Caesar* is derived in (31), which employs [15]’s entry for individual-concept selecting *know*, which we extend to event-concepts in (30). In (28), the denotation of *know* combines with the event-argument (type E) via intensionalized functional application [7]:

(29) $\llbracket \text{the DOC} \rrbracket^w = \iota e: e \text{ is a death of Caesar in } w$

(30) $\llbracket \text{know of} \rrbracket^w = \lambda f_{(s,E)}. \lambda x_e. \forall w' \in \text{Dox}_x [f(w') = f(w)]$

$$\begin{aligned}
(31) \quad & \llbracket \text{know of} \rrbracket^w (\lambda w' \llbracket \text{the DOC} \rrbracket^{w'})(\text{Caius}) \\
& = \forall w' \in \text{Dox}_C (\lambda w' \llbracket \text{the DOC} \rrbracket^{w'}(w') = \lambda w' \llbracket \text{the DOC} \rrbracket^{w'}(w)) \\
& = \forall w' \in \text{Dox}_C (\llbracket \text{the DOC} \rrbracket^{w'} = \llbracket \text{the DOC} \rrbracket^w) \\
& = \forall w' \in \text{Dox}_C [\iota e: e \text{ is a death of C. in } w' = \iota e: e \text{ is a death of C. in } w]
\end{aligned}$$

The formula in (31) is true in the world of evaluation w iff in each one of Caius' belief worlds w' (at w), the event of Caesar's death in w is the event of his death in w' . Even if the death of Caesar and the murder of Caesar are the same event in w —say, e_{40} —(32a) is true *iff* (the counterpart of) e_{40} is a dying of Caesar in all w' —not necessarily a murdering of Caesar. Thus, the entailment below does not go through:

- (32) a. Caius knew of the death of Caesar.
 b. The death of Caesar is the murder of Caesar
 \Rightarrow Caius knew of the murder of Caesar.

Thus, event concepts allow us to derive the lack of substitution of equivalents for attitude predicates, such as *know of*, without invoking QR.⁹

We also derive the factivity of ConPs naturally: (31) entails that the death of Caesar happens in the the actual world. This is a consequence of the analysis modeled after CQs: it captures both the opacity and factivity. As we saw above, when such verbs select propositions they are not necessarily factive.¹⁰

4.3 Solution to the problem of quantified DNs

The above approach, however, will not address the quantified ConPs which show the puzzling behavior of being wide-scoping in terms of their quantificational force but are nonetheless opaque in terms of their descriptive (or functional) content. In our analysis, quantified DNs are not suitable arguments for the embedding verb, since they do not denote (intensions) of events. Thus, they must

⁹ An event-concept analysis could also be given for verbs of communication; we won't do this here, however, for reasons of space.

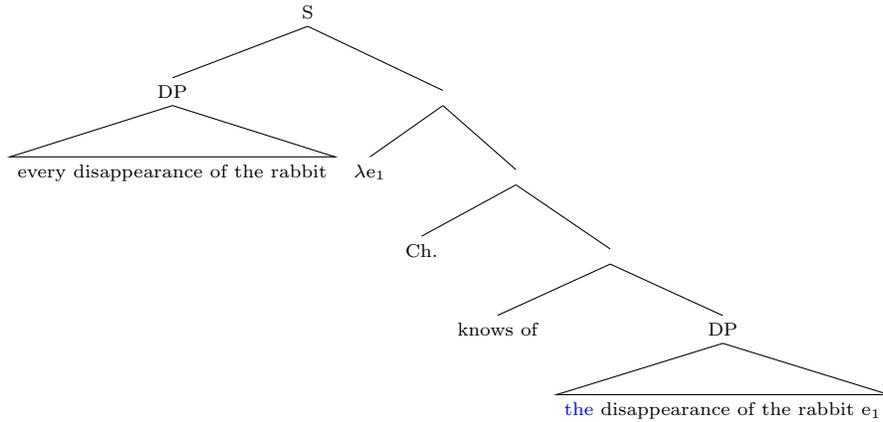
¹⁰ We are aware, however, that the derived truth conditions feel a little too strong for ConPs. For instance, it seems in some cases that all one needs to know if one knows of the death of Caesar is to know that such an event occurred, not that one knows which event is a death of Caesar. While we ourselves share this reservation, we think rejecting a concept approach as above might be too hasty, since similar issues arise for a concept-based analysis of CQs. After all, for one to know what the capital of Italy is, it would be sufficient, in most cases, to know its name, e.g. one may know the capital of Italy in the sense that they know its name is Rome, without necessarily being able to recognize the capital of Italy in any other way. Since events, do not bear names, it is harder to imagine under which mean of presentations these events are identified. We leave this issue and the issue of the way events are located and identified across worlds for future research

undergo QR. However, if we allow QR, the event descriptor (i.e., the nominal predicate inside the quantified DN; in this case *disappearance of the rabbit*) ends up being evaluated at the actual world—just as in Zucchi’s analysis. Worse than that the embedded proposition ends up being the tautological and meaningless equivalence “ $e = e$ ”:

- (33) a. [Every disappearance of the rabbit] λe . Charlie knows e
 b. $\forall e$ [e is a rabbit-disappearance at w_0 (= rabbit-jumping at w_0)] \rightarrow
 $\forall w' \in \text{Dox}_C(\lambda w'[[\mathbf{e}]]^{w'}(w')) = \lambda w'[[\mathbf{e}]]^{w'}(w)$
 $= \forall e$ [e is a rabbit-disappearance at w_0 (= rabbit-jumping at w_0)]
 $\rightarrow \forall w' \in \text{Dox}_C(e = e)$

We show that the problem disappears if we extend [4, 5]’s analysis of CQs with quantified DPs to CPs with quantified DNs. Her analysis assumes the copy-theory of movement and a mechanism that converts the lower copy to a definite description containing a bound variable [3]. Thus, instead of (33a), we have (34).

- (34) *Copy Theoretic Structure*
 Charlie knows of every disappearance of the rabbit.



In Fox’s system the value of a descriptive trace is provided by the variable assignment function, but with the presupposition that this value is in the extension of the NP-predicate at the world of evaluation. However, in order to avoid false sentences coming out undefined when the attitude holder has false beliefs regarding the extension of the NP-pred. at w , Frana replaces the definite determiner with the maximality operator in (35). This operator is a standard maximality operator (c.f. [16], for example), with an additional clause designed to deal with empty sets. According to the first clause, when the_{max} applies to the extension of a predicate in a given world (a set), it returns the maximal element of that set (an individual when the set is a singleton set, or an individual sum when the set consists of more than one individual). The second clause says that if

the set picked out by the predicate is empty, then $the_{max}(A)$ returns the null individual.¹¹ Descriptive traces are then interpreted as in (36); here $Pred$ is a predicate of individuals or events, and x ranges over individuals or events.

- (35) For any set A (i.e. the extension of a predicate NP in w)
 if $A \neq \emptyset$ then,
 $the_{max}(A) = \iota x[x \in A \wedge \forall x' \in A [x' \leq x]]$;
 if $A = \emptyset$ then,
 $the_{max}(A) = *$ (the null individual, which is not in any Natural Language denotation, c.f. [17])

- (36) $\llbracket \mathbf{the}_{max} Pred x_i \rrbracket^{w,g} = g(i)$ if $\llbracket Pred \rrbracket^{w,g}(g(i))$,
 otherwise $\llbracket \mathbf{the}_{max} Pred x_i \rrbracket^{w,g} = *$

- (37) For any constituent α and variable assignment g ,
 $\llbracket \lambda_{iT} \rrbracket^{w,g} = \lambda x_T. \llbracket \alpha \rrbracket^{w,g[i/x]}$

The structure (34) is interpreted as in (38), where DIS abbreviates the predicate of events *disappearance of the rabbit*.

- (38) $\llbracket (34) \rrbracket^{w,g} =$
 $\forall e (DIS(e) \text{ in } w \rightarrow \forall w' \in \text{Dox}_C(w) [(\lambda w_2. \llbracket \mathbf{the}_{max} DIS e_1 \rrbracket^{w_2, g[1/e]}(w'))$
 $= (\lambda w_3. \llbracket \mathbf{the}_{max} DIS e_1 \rrbracket^{w_3, g[1/e]}(w))] =$
 $\forall e (DIS(e) \text{ in } w \rightarrow \forall w' \in \text{Dox}_C(w) [\llbracket \mathbf{the}_{max} DIS e_1 \rrbracket^{w', g[1/e]} =$
 $\llbracket \mathbf{the}_{max} DIS e_1 \rrbracket^{w, g[1/e]}])$

Even if every rabbit-disappearing event is a rabbit-jumping event at w , according to the formula above, (24a) is true iff for every actual disappearing event e , (the counterpart) of e is also a disappearing event—not necessarily a jumping event—in all of Charlie's belief worlds w' . Thus, the conclusion in (24c) does not follow from the premises.

To conclude, building on existing analyses of CQs, we provide an analysis of ConPs in which definite DNs denote (intensions of) events, thus solving the problem of co-extensional events, without assuming that DNs denote propositions. The analysis is also extended to cover ConPs with quantified DNs which do not denote event concepts—within Frana's copy-theoretic account. In such cases, it is the copy-trace left by the QR-ed DN that supplies the event-concept argument to the verb.

¹¹ Null or absurd individuals have been employed in the choice function literature to resolve the empty NP-restrictor problem.

5 Summary and Concluding Issues

We have presented an account of DNs with ConP-readings that builds on existing analyses of individual-denoting DPs with concealed question-readings. The gist of our proposal is to extend an individual-concept account of CQs to ConPs, employing event concepts. This allowed us to resolve Zucchi's dilemma: ConPs' quantificational force scopes wide but its descriptive content is opaque. We used Frana's copy-theoretic analysis of CQs to capture this behavior. Another welcome benefit of the analysis is that it captures the factivity of ConPs with verbs that are otherwise not factive.

There is a further respect in which ConPs resemble CQs, and thus constitutes further evidence for our CQ-like analysis of ConPs. One issue that has arisen in the CQ literature is distinguishing between DPs complements of question-taking verbs that are simply so vague in admitting readings that are compatible with questions and those DP complements that deliver genuine CQ-meanings. One way to distinguish CQs from other question-like readings is their lack of vagueness.

- (39) Context (Part 1): The panel picked Mr. P as the winner of the writing contest.
I was informed of the winner of the contest. = CQ
- (40) Context (Part 2): Roger learned later that Mr. P plagiarized his work.
a. #I was informed of the winner of the contest (. . . i.e. he plagiarized.)
b. I was informed about the winner of the contest.

While any kind of contextually salient property/fact is something you can be informed *about*, *of*+CQ is not vague in the same way: it only delivers a meaning that resembles the identity question *who the winner was*. [14] has shown that *about*-phrases attached to sentence-embedding verbs are quite vague about the role of the DP.

Now, we predict that ConPs are likewise *not* vague. To test this we are going to compare canonical ConPs introduced by *of* with DNs introduced by *about*, as in (41):

- (41) Context: I was told that Mary resigned and that it was because she took another job. Then John said the truth of the matter is that she resigned because she stole cash.
a. Did John inform you about Mary's resignation?
b. #Did John inform you of Mary's resignation?

Inform of is odd in this context: it simply cannot convey any salient propositional/property available in the context holds of Mary's resignation, unlike

inform about.¹² We can conclude, then, that ConP interpretations are not just among a set of possible interpretations owing to vagueness. The event-concept analysis, coupled with Frana’s copy-theoretic implementation for quantified DNs, accounts for this.

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¹² Zucchi argues that *surprise* allows contextually-supplied properties in place of OCCUR.