

Property Inheritance, Deferred Reference and Copredication

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Version of 30th March 2021. Comments welcome but please do not cite.

Abstract

There are sentences that are coherent and possibly true, but in which there is at the very least the appearance of a conflict between the requirements of two (or more) predicates that are applied to the same argument. This phenomenon, known as *copredication*, raises various issues for linguistic theory. In this paper I defend and develop an approach to the issues of counting and individuation in copredication put forward in previous work (Gotham, 2017), in dialogue with criticisms made by Liebesman & Magidor (2017, 2019) and their own positive account of copredication.

1 Introduction

There are sentences that are coherent and possibly true, but in which there is at the very least the appearance of a conflict between the requirements of two (or more) predicates that are applied to the same argument. For example, in (1) *understood* seems to require that *the lecture* denote information, while *lasted an hour* seems to require that it denote an event; in (2) *delicious* seems to require that *lunch* denote food, while *took forever* seems to require that it denote an event; and in (3) *vandalized* seems to require that *bank* denote

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a physical object, while *calling in Bob's debt* seems to require that it denote something with agency—say, an institution.¹

- (1) Nobody understood the lecture, which lasted an hour.
- (2) Lunch was delicious but took forever. (Asher, 2011, 11)
- (3) The bank was vandalized after calling in Bob's debt.

This phenomenon, known as *copredication*, raises various issues for linguistic theory.² Pustejovsky (1995), who seems to have coined the expression, was primarily interested in how copredication can be made to cohere with an account of semantic (in)felicity based on sortal restrictions. Meanwhile, Chomsky (2000, 2013); Pietroski (2005) and Collins (2009, 2017) i.a. have taken the puzzle of what nouns supporting copredication (like *lecture*, *lunch* and *bank*) might refer to as evidence that words in general *don't* refer, i.e. as evidence against 'externalism' about semantics—see Jacob 2002; Ludlow 2003, 2011; Munkerud 2011; Segal 2012; Gotham 2014, §5.4 and Vicente 2019 for critical discussion.

Alongside these issues, in recent years there has been increased interest in issues of counting and individuation relating to copredication (Asher, 2011; Cooper, 2011; Gotham, 2014, 2017; Liebesman & Magidor, 2017; Chatzikyriakidis & Luo, 2015, 2018). These issues are most often exemplified (as they will be here) with respect to the noun *book*. *Book* supports predications requiring a physical object, as in (4), predications requiring an informational or abstract object, as in (5), and both at the same time, as in the copredication example (6).

- (4) There are three books on the shelf.
- (5) There are three books by C.S. Lewis.
- (6) There are three books by C.S. Lewis on the shelf.

Since the criteria of individuation for books as physical objects and as informational objects can come apart—the same informational book can be instantiated in multiple physical books and (plausibly) one physical book can instantiate multiple informational books—determining the meaning of a

¹Here is an alternative characterization: in copredication, it seems that more than one sense of a polysemous word is used 'at the same time'. See Section 5.2.2.

²See Gotham 2014, Chapter 1 for discussion.

sentence involving book-counting can be non-trivial. Just what do we count, and how is the answer arrived at compositionally?

In this paper I will defend and develop answers to these questions proposed in Gotham 2017, in dialogue with criticisms made by Liebesman & Magidor (henceforth L&M) in Liebesman & Magidor 2019, and their own theory advanced in Liebesman & Magidor 2017. The paper is structured as follows. In Section 2 I recap the compositional semantic system for copredication proposed in Gotham 2017. I expound the criticisms of this system made by Liebesman & Magidor (2017, 2019) in Section 3, and outline L&M’s positive proposals in Section 4. In Section 5 I argue that the theory proposed by Liebesman & Magidor (2017) causes more problems than it solves, and I respond to the criticisms by Liebesman & Magidor (2019) in Section 6. In the course of this response, in Section 6.5 I also introduce novel data into the discussion of copredication, concerning the interaction of more fine-grained criteria of individuation with each other, and show that a minimal extension to my system handles them well. Section 7 concludes.

2 The Theory Presented in Gotham 2017

Consider the situations shown in Figures 1 and 2. The theory presented in Gotham 2017, henceforth GT,³ predicts that (4) is true but (5) and (6) are false in the situation shown in Figure 1, and that this has to do with the selectional requirements of the predicate *by C.S. Lewis*. As for the situation shown in Figure 2, GT predicts that (5) is true but (4) and (6) are false in that situation, and that this has to do with the selectional requirements of the predicate *on the shelf*. By contrast, GT predicts that all three sentences are true in the situation shown in Figure 3.

I will now show how these results are predicted, conceptually in Section 2.1 and then formally and in full generality in Section 2.2.

2.1 A Mereological Approach to Copredication

In Gotham 2017 I proposed that the predicate *book* denotes a set of composite objects $p + i$, where p is a physical book and i is an informational book instantiated by p . Books *qua* physical+informational composites have the

³This is what Liebesman & Magidor (2019) call it and I am content to follow suit; I haven’t thought of a snappy name for it.

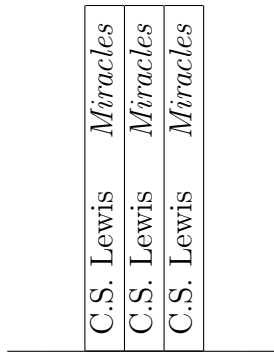


Figure 1: Three copies of *Miracles* on a shelf

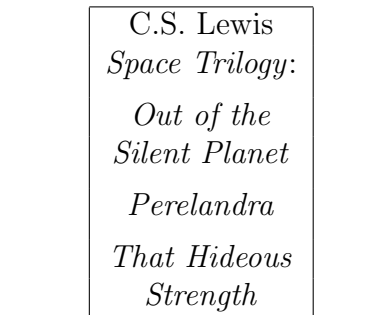


Figure 2: One copy of the *Space Trilogy* on a shelf

C.S. Lewis	<i>Miracles</i>
C.S. Lewis	<i>Mere Christianity</i>
C.S. Lewis	<i>The Abolition of Man</i>

Figure 3: Three copies of different books by C.S. Lewis, on a shelf

properties of their components—e.g. in Figure 1 vol. 1 + *Miracles* is on the shelf by virtue of vol. 1 being on the shelf, and is by C.S. Lewis by virtue of *Miracles* being by C.S. Lewis. The extensions of the relevant predicates in the situations under consideration are therefore as follows:

$$\begin{aligned}
\llbracket \textit{book} \rrbracket^{\text{Fig. 1}} &= \{\text{vol. 1} + \textit{Miracles}, \text{vol. 2} + \textit{Miracles}, \text{vol. 3} + \textit{Miracles}\} \\
\llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 1}} &= \{\text{vol. 1}, \text{vol. 2}, \text{vol. 3}, \text{vol. 1} + \textit{Miracles}, \\
&\quad \text{vol. 2} + \textit{Miracles}, \text{vol. 3} + \textit{Miracles}\} \\
\llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 1}} &= \{\textit{Miracles}, \text{vol. 1} + \textit{Miracles}, \text{vol. 2} + \textit{Miracles}, \\
&\quad \text{vol. 3} + \textit{Miracles}\} \\
\llbracket \textit{book} \rrbracket^{\text{Fig. 2}} &= \{\text{vol. 1} + \textit{Out of the Silent Planet}, \text{vol. 1} + \textit{Perelandra}, \\
&\quad \text{vol. 1} + \textit{That Hideous Strength}\} \\
\llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 2}} &= \{\text{vol. 1}, \text{vol. 1} + \textit{Out of the Silent Planet}, \\
&\quad \text{vol. 1} + \textit{Perelandra}, \\
&\quad \text{vol. 1} + \textit{That Hideous Strength}\}
\end{aligned}$$

$$\begin{aligned}
\llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 2}} &= \{ \textit{Out of the Silent Planet}, \textit{Perelandra}, \\
&\quad \textit{That Hideous Strength}, \\
&\quad \text{vol. 1} + \textit{Out of the Silent Planet}, \\
&\quad \text{vol. 1} + \textit{Perelandra}, \\
&\quad \text{vol. 1} + \textit{That Hideous Strength} \} \\
\llbracket \textit{book} \rrbracket^{\text{Fig. 3}} &= \{ \text{vol. 1} + \textit{Miracles}, \text{vol. 2} + \textit{Mere Christianity}, \\
&\quad \text{vol. 3} + \textit{The Abolition of Man} \} \\
\llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 3}} &= \{ \text{vol. 1}, \text{vol. 2}, \text{vol. 3}, \text{vol. 1} + \textit{Miracles}, \\
&\quad \text{vol. 2} + \textit{Mere Christianity}, \\
&\quad \text{vol. 3} + \textit{The Abolition of Man} \} \\
\llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 3}} &= \{ \textit{Miracles}, \textit{Mere Christianity}, \\
&\quad \textit{The Abolition of Man}, \text{vol. 1} + \textit{Miracles}, \\
&\quad \text{vol. 2} + \textit{Mere Christianity}, \\
&\quad \text{vol. 3} + \textit{The Abolition of Man} \}
\end{aligned}$$

An important notion in this theory is that of physical or informational equivalence. X and Y are **physically (informationally) equivalent** if they share a physical (informational) component.⁴ For example, *vol. 1 + Perelandra* and *vol. 1 + That Hideous Strength* are physically, but not informationally, equivalent; and *vol. 1 + Miracles* and *vol. 2 + Miracles* are informationally, but not physically, equivalent.

The interpretations that we end up with for (4)–(6) are as shown below.

- $\llbracket (4) \rrbracket \equiv$ There is a plurality of three books, all of which are on the shelf and no two of which are physically equivalent to each other.
(True in Figures 1 and 3, false in Figure 2.)
- $\llbracket (5) \rrbracket \equiv$ There is a plurality of three books, all of which are by C.S. Lewis and no two of which are informationally equivalent to each other.
(True in Figures 2 and 3, false in Figure 1.)
- $\llbracket (6) \rrbracket \equiv$ There is a plurality of three books, all of which are on the shelf and all of which are by C.S. Lewis and no two of which are physically or informationally equivalent to each other.
(True in Figure 3, false in Figures 1 and 2.)

⁴I do not say ‘and only if’, see Section 6.5.

Compositionally, in these interpretations the physical equivalence condition is contributed by the predicate *on the shelf* and the informational equivalence condition is contributed by the predicate *by C.S. Lewis*. I will henceforth call *on the shelf* a **physical indicator** and *by C.S. Lewis* an **informational indicator** (after Brandtner 2011).

2.2 Details of the System

I will now show how the results described above are arrived at formally. This presentation is identical in spirit but slightly different in detail, and simpler in exposition, to that of Gotham 2017. In this system, the ‘result’ type of a predicate is not t but $t \times ((e \times (e \rightarrow e \rightarrow t)) \rightarrow t)$, henceforth abbreviated as T . The idea is that given a pair $\langle a, b \rangle :: T$, a (the first or left projection) gives standard truth conditions while b (the second or right projection) acts as a store of equivalence relations on subsets of the domain of discourse, which can be accessed and manipulated by quantifiers.⁵

In order to ease presentation I will borrow some notation from set theory. These expressions are to be understood as abbreviations for expressions in the lambda calculus, as defined below. Suppose that

- v is a variable of (any) type τ , and v_1 – v_n are terms of type τ ,
- $\vec{\tau}$ is a (possibly empty) sequence of types, and \vec{v} is a sequence of variables of the same length and type(s) as $\vec{\tau}$, and
- f and g are terms of type $\vec{\tau} \rightarrow t$, and F is a term of type $(\vec{\tau} \rightarrow t) \rightarrow t$.

Then:

$$\begin{aligned} \{v_1, \dots, v_n\} &:= \lambda v. v = v_1 \vee \dots \vee v = v_n \\ \bigcup F &:= \lambda \vec{v}. \exists f. Ff \wedge f\vec{v} \\ f \cup g &:= \lambda \vec{v}. f\vec{v} \vee g\vec{v} \\ f \cap g &:= \lambda \vec{v}. f\vec{v} \wedge g\vec{v} \\ f \subseteq g &:= \forall \vec{v}. f\vec{v} \rightarrow g\vec{v} \\ a \in P &:= Pa \end{aligned}$$

⁵Another notational point: in the lambda calculus, left and right projections are accessed by the unary term constructors π_1 and π_2 respectively. So e.g. $\pi_1(\langle a, b \rangle) = a$ and $\pi_2(\langle a, b \rangle) = b$.

Constants written in SMALL CAPS denote **pseudo-equivalence relations**. In particular, PHYS and INFO respectively denote the physical and informational equivalence relations discussed in Section 2.1. The following axioms hold for any such constant R:

$$\begin{array}{ll} \forall x.\forall y.Rxy \rightarrow Ryx & \text{symmetry} \\ \forall x.\forall y.\forall z.(Rxy \wedge Ryz) \rightarrow Rxz & \text{transitivity} \\ \forall x.(\exists y.Rxy) \rightarrow Rxx & \text{restricted reflexivity} \end{array}$$

I assume a mereological treatment of plurals, where for any pluralities x and y , $\#(x)$ gives you the number of atomic parts of x and $x \leq_i y$ means that x is an individual part of y (Link, 1983; Nouwen, 2016).⁶ The predicate **comp'** of type $e \rightarrow (e \rightarrow e \rightarrow t) \rightarrow t$ says that a plurality is **compressible** by a relation, and is defined by the following axiom:

$$\forall x.\forall R.\text{comp}'xR \leftrightarrow \exists y.\exists z.y \leq_i x \wedge z \leq_i x \wedge y \neq z \wedge Ryz$$

In other words, if plurality x is compressible by R then there are at least two individual parts of x that are related by R . The toy lexicon for our examples is as follows:

$$\begin{aligned} \text{books} &\rightsquigarrow \lambda x. \langle * \text{book}'x, \{\langle x, \text{PHYS} \cap \text{INFO} \rangle\} \rangle := \mathbf{B} \\ \text{by } C.S. \text{ Lewis} &\rightsquigarrow \lambda x. \langle \text{by}'\text{Lewis}'x, \{\langle x, \text{INFO} \rangle\} \rangle := \mathbf{L} \\ \text{on the shelf} &\rightsquigarrow \lambda x. \langle \text{on}'(\iota y.\text{shelf}'y)x, \{\langle x, \text{PHYS} \rangle\} \rangle := \mathbf{S} \\ \text{modshift}' &:= \lambda P.\lambda Q.\lambda x. \langle (\pi_1(Px) \wedge \pi_1(Qx)), (\pi_2(Px) \cup \pi_2(Qx)) \rangle \\ \text{three} &\rightsquigarrow \lambda P.\lambda Q. \left\langle \begin{aligned} &(\exists x.\#(x) = 3 \wedge \pi_1(Px) \wedge \pi_1(Qx) \\ &\wedge \neg \text{comp}'x(\bigcup(\lambda R. \langle x, R \rangle \in (\pi_2(Px) \cup \pi_2(Qx))))), \\ &(\lambda o.\exists y.o \in (\pi_2(Py) \cup \pi_2(Qy))) \end{aligned} \right\rangle := \mathbf{3} \end{aligned}$$

Where x, y and z are of type e , P and Q are of type $e \rightarrow T$, R is of type $e \rightarrow e \rightarrow t$ and o is of type $e \times (e \rightarrow e \rightarrow t)$.

Our example sentences are therefore interpreted as shown below.

there are three books on the shelf $\rightsquigarrow \mathbf{3BS}$

⁶I mean ‘atomic’ in terms of plurality. The book-composite $p+i$ is atomic in this sense, even though it has parts.

$$\begin{aligned}
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{on}'(\iota y. \text{shelf}'y)x \right. \right. \\
& \quad \left. \left. \wedge \neg \text{comp}'x(\bigcup(\lambda R. \langle x, R \rangle \in (\{\langle x, \text{PHYS} \cap \text{INFO} \rangle, \langle x, \text{PHYS} \rangle\}))) \right) \right. \\
& \quad \left. \left(\lambda o. \exists y. o \in \{\langle y, \text{PHYS} \cap \text{INFO} \rangle, \langle y, \text{PHYS} \rangle\} \right) \right\rangle \\
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{on}'(\iota y. \text{shelf}'y)x \right. \right. \\
& \quad \left. \left. \wedge \neg \text{comp}'x(\bigcup\{\text{PHYS} \cap \text{INFO}, \text{PHYS}\}) \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{INFO}, \text{PHYS}\} \right) \right\rangle \\
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{on}'(\iota y. \text{shelf}'y)x \wedge \neg \text{comp}'x \text{PHYS} \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{INFO}, \text{PHYS}\} \right) \right\rangle
\end{aligned}$$

there are three books by C.S. Lewis $\rightsquigarrow \mathbf{3BL}$

$$\begin{aligned}
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{by}'\text{Lewis}'x \right. \right. \\
& \quad \left. \left. \wedge \neg \text{comp}'x(\bigcup\{\text{PHYS} \cap \text{INFO}, \text{INFO}\}) \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{INFO}, \text{INFO}\} \right) \right\rangle \\
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{by}'\text{Lewis}'x \wedge \neg \text{comp}'x \text{INFO} \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{INFO}, \text{INFO}\} \right) \right\rangle
\end{aligned}$$

there are three books by C.S. Lewis on the shelf $\rightsquigarrow \mathbf{3(modshift'LB)S}$

$$\begin{aligned}
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge \text{by}'\text{Lewis}'x \wedge * \text{book}'x \wedge \text{on}'(\iota y. \text{shelf}'y)x \right. \right. \\
& \quad \left. \left. \wedge \neg \text{comp}'x(\bigcup\{\text{INFO}, \text{PHYS} \cap \text{INFO}, \text{PHYS}\}) \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{INFO}, \text{PHYS} \cap \text{INFO}, \text{PHYS}\} \right) \right\rangle \\
& \rightsquigarrow \left\langle \left(\exists x. \#(x) = 3 \wedge \text{by}'\text{Lewis}'x \wedge * \text{book}'x \wedge \text{on}'(\iota y. \text{shelf}'y)x \right. \right. \\
& \quad \left. \left. \wedge \neg \text{comp}'x(\text{PHYS} \cup \text{INFO}) \right) \right. \\
& \quad \left. \left(\lambda o. \pi_2(o) \in \{\text{INFO}, \text{PHYS} \cap \text{INFO}, \text{PHYS}\} \right) \right\rangle
\end{aligned}$$

The first projection in the interpretation shown for (4) says that there is a plurality of three books (physical + informational composites) on the shelf, which is not physically compressible; i.e. no two of which share a physical component. For (5) it says that there is a plurality of three books by C.S. Lewis, which is not informationally compressible; i.e. no two of which share an informational component. And for (6) it says that there is a plurality of three books by C.S. Lewis on the shelf, which is neither physically nor informationally compressible; i.e. no two of which share either a physical or an informational component. These truth conditions mirror those given in Section 2.1 above.

3 Criticisms by Liebesman & Magidor (2017, 2019)

L&M make several criticisms of the theory outlined above, which I will now go through. The order of presentation is intended to follow that in Liebesman & Magidor 2019, although some of the material will be taken from Liebesman & Magidor 2017 as well.

3.1 The Extension of *book*

Note that in the system as described in Section 2, a purely informational book like *Miracles* might be an object in the model, but it is not in $\llbracket book \rrbracket$. This supposition would seem to predict that (7) is false, contrary to fact.

(7) *Miracles* is a book.

This observation seems to force a revision (or clarification) of the system described in Section 2, such that purely informational books are in $\llbracket book \rrbracket$ after all, along with the physical + informational books discussed. But that approach would land the advocate of GT in a dilemma: either purely informational books can be on shelves, or they cannot. If they can, then the rationale for GT breaks down. If they cannot, then (8) is predicted to be false in the situation shown in Figure 4, contrary to what Liebesman & Magidor (2019, 555) take to ‘clearly’ be the case.

(8) Every book Emily Brontë wrote is on the shelf.

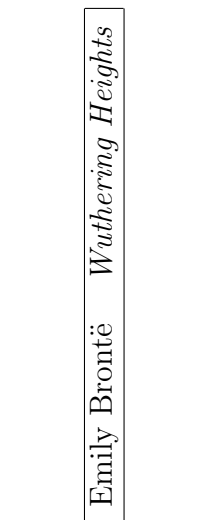


Figure 4: A single copy of *Wuthering Heights*—the only book Emily Brontë wrote—on the shelf.

3.2 Conflicting Properties

According to the presentation in Section 2 above, ‘books *qua* physical + informational composites have the properties of their components’. Liebesman & Magidor (2019, §3.3) argue that this approach is unsustainable, because

- (i) components can have properties that such composites could not possibly have, such as *being purely physical/informational*, and
- (ii) in some situations the properties of the components would directly contradict each other.

Regarding point (ii), Liebesman & Magidor (2019, 557) point out that we can refer to books as *old* or *new* either according to when the (informational) book was written, or according to when the (physical) book was printed. So suppose that the physical volume in Figure 4 was printed very recently. It seems that both (9) and (10) would be true.

- (9) There is an old book on the shelf.
- (10) There is a new book on the shelf.

A natural response might be to say that terms like *old* and *new* are ambiguous when predicated of composites, but L&M argue that predications like this fail standard ambiguity tests, as illustrated by (11) (Liebesman & Magidor, 2019, example 22).

- (11) *War and Peace* is quite old, but this copy of it isn't.

3.3 Undergeneration

3.3.1 Ignoring at Least One Indicator

According to GT, in numerically quantified copredication sentences involving *book* the book-composites counted must be **both** physically **and** informationally distinct—see the interpretation for (6) predicted in Section 2. Against this claim, Liebesman & Magidor (2017, 155) offer the following scenario:

Imagine that a certain library has a project of dusting each of its (physical) books. Moreover, since the informative books are much more popular among readers than the uninformative ones, they decide to start the project by dusting all the informative (physical) books in the library. Now, in that context, one can appropriately utter the following sentence, in reference to the three copies of *War and Peace*:

- (12) Three informative books are heavy, so take extra care as you're pulling them down from the shelf for dusting.
[(60) in Liebesman & Magidor 2017]

Assuming (as I do) that *informative* is a predicate of informational objects, the first clause in (12) is a copredication sentence and so should not be true in a situation involving (only) three copies of the same (informational) book. To the extent that (12) can be judged true in the situation envisaged it seems, in terms of the theory outlined in Section 2, that the informational indicator is ignored when it comes to computing the relevant compressibility statement.

3.3.2 Against All Indicators

But actually, Liebesman & Magidor (2019, §4) argue that the situation is even worse, because (13) can be judged **true** in the situation shown in Figure 1.⁷

(13) Exactly one book is on the shelf.

In term of the theory outlined in Section 2, this would amount to a reading of (13) in which the only overt indicator (*on the shelf*)—a physical indicator—is ignored, and the reading reported is derived by using a(n informational) principle of individuation not contributed by any overt linguistic token.

3.4 How to Count Informational Books?

3.4.1 Multiple Criteria of Individuation

Suppose I have a copy of *War and Peace* in the original Russian, and another copy which is an English translation. Informationally, is that two books, or one? It seems that in some circumstances we would want to answer *one*, and in other circumstances *two*. For example, *one* would be the most natural answer to the question in (14), and *two* to the question in (15) (if indeed Jim has memorized both versions).

(14) How many books by Tolstoy about the French invasion of Russia are there?

(15) How many books has Jim memorized?

Nevertheless, Liebesman & Magidor (2019, 4.1) argue that there are circumstances that allow either of these two (at least) ways of individuating informational books to be applied. Specifically, they argue that in a situation where on the table I have two copies of *War and Peace* in Russian and one in English, each of (16)–(18) ‘has a true reading’.

(16) One book is on the table. (*War and Peace*)

⁷This judgement can be forced by continuing *Namely, Miracles*. Liebesman & Magidor’s (2019) example is actually *One book is on the table*, but they intend this to be understood in the ‘exactly one’ sense (I have also swapped tables for shelves to maintain continuity with Figure 1).

- (17) Two books are on the table. (*War and Peace* in Russian and *War and Peace* in English)
- (18) Three books are on the table. (the three copies)

Clearly, the judgements reported in (16) and (17) interact with the argument from Section 3.3.2, as GT predicts that only (18) is true in the situation described. Nevertheless, the distinction between (16) and (17) raises a further question about how GT *could* distinguish between situations in which we count different translations as the same or different.

3.4.2 Combinations of Criteria of Individuation

Liebman & Magidor (2019, 560) ask us to

suppose that our book-and-pen shop has six physical objects on the display table: two copies of *War and Peace*, two Parker Jotter pens, and two Uniball Jetstream pens. On this scenario there is clearly a true reading of the following sentence:

- (19) One book and two pens are on the table. [(29) in Liebman & Magidor 2019]

However, no single (simple) interpretation of ‘on the table’ generates these truth-conditions [in GT].

Once again, this argument is clearly tightly connected to that presented in Section 3.3.2. The twist in this case is that we additionally seem to be using different criteria of individuation for books and for pens in judging (19) true, since pens do not seem to have informational content for a relation of informational equivalence to relate.

4 Liebman & Magidor’s (2017) Theory of Copredication

Liebman & Magidor (2019) conclude the introduction to their paper by clarifying that

Our purpose here is not to defend our positive view. This paper is intended purely as a critical discussion of Gotham’s theory. [...] Despite the fact that our sole aim here is critical, we take it that showing that we ought to reject one of the most promising accounts of copredication to appear in recent years offers indirect support for our own view.

I will outline Liebesman & Magidor’s (2017) positive view of copredication in this section, and critique it in Section 5, both for analogous reasons and also because looking in some detail at potential answers that L&M might give from within their own account to the challenges that they raise for mine really helps to get to the heart of the issues involved.

4.1 Property Inheritance

A distinctive feature of L&M’s approach is the rejection of what they dub a ‘false metaphysical view’ (Liebesman & Magidor, 2017, 132):

The false metaphysical view is that there are categorical constraints on property instantiation that ensure that, e.g. informational books can’t be on shelves and physical books can’t be informative. Against this, we’ll argue that instantiation is not so selective and objects like informational books can instantiate properties like being on a shelf

How and when can an informational book be on a shelf? As for the *how* question,

Informational books are distinct from physical books, but there are many properties that both can instantiate. This may seem particularly surprising when it comes to properties that are most familiarly instantiated by one or the other: e.g. being informative or being on a shelf. However, in many such cases one object instantiates the property only derivatively, inheriting it from the other. (Liebesman & Magidor, 2017, 137)

So for example, an informational book like *Miracles* really can be on a shelf in virtue of one of its copies being on that shelf. L&M also bolster their theory by offering a positive argument that (e.g.) informational books

can be on shelves, based on (20) and (T1–T3) (Liebesman & Magidor, 2017, 138–141).

(20) *War and Peace* is on the top shelf. [(15) in Liebesman & Magidor 2017]

(T1) [(20)] has the simple subject/predicate form of atomic sentences, in which “War and Peace” is the subject and “is on the top shelf” is the predicate.

(T2) “War and Peace” in [(20)], in the envisioned context [where every copy of *War and Peace* is on the top shelf], designates an informational book.

(T3) “is on the top shelf” in [(20)], in the envisioned context, designates the same property as when it is used to ascribe a property to a physical entity.

L&M defend (T3) by pointing to examples of ellipsis like (21) (Liebesman & Magidor, 2017, 141),

(21) *War and Peace* is on the top shelf, as is Ofra’s blue pencil.

and arguing that

In [(21)] we attribute the very same property to *War and Peace* as we do to Ofra’s blue pencil. Since the latter is a physical entity, then the property we attribute to *War and Peace* is the very same property we can attribute to physical entities.

What about the *when* question? L&M deliberately refuse to endorse any general schema that would predict an answer to this question. In other words, there is no theory that tells you either (i) for an arbitrary physical property *P*, how many copies of an informational book *b* have to have *P* for *b* to have *P*, or (ii) for an arbitrary informational property *P* and informational book *b* such that *b* has *P*, which (if any) copies of *b* have *P*.

Nevertheless, it is clear from the overall discussion in Liebesman & Magidor 2017 that in Figure 1 *Miracles* can be on the shelf by virtue of vol. 1, which instantiates it, being on the shelf, and that in general it suffices for a single physical copy of an informational book to be on a shelf for that informational book to be on the shelf.

4.2 Domain Restriction

According to L&M’s theory, we are to imagine the extensions of the relevant predicates in the situations under consideration as follows, then:⁸

$$\begin{aligned}
\llbracket \textit{book} \rrbracket^{\text{Fig. 1}} &= \llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 1}} = \llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 1}} \\
&= \{ \textit{Miracles}, \textit{vol. 1}, \textit{vol. 2}, \textit{vol. 3} \} \\
\llbracket \textit{book} \rrbracket^{\text{Fig. 2}} &= \llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 2}} = \llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 2}} \\
&= \{ \textit{vol. 1}, \textit{Out of the Silent Planet}, \textit{Perelandra}, \\
&\quad \textit{That Hideous Strength} \} \\
\llbracket \textit{book} \rrbracket^{\text{Fig. 3}} &= \llbracket \textit{on the shelf} \rrbracket^{\text{Fig. 3}} = \llbracket \textit{by C.S. Lewis} \rrbracket^{\text{Fig. 3}} \\
&= \{ \textit{Miracles}, \textit{Mere Christianity}, \textit{The Abolition of Man}, \textit{vol. 1}, \\
&\quad \textit{vol. 2}, \textit{vol. 3} \}
\end{aligned}$$

These extensions immediately raise the question of why no-one would judge any variant of (22) to be true in any of these situations.

(22) There are four books (by C.S. Lewis) (on the shelf).

L&M’s response is that our counting judgements in these cases arise due to contextual domain restriction, which in any case is independently motivated—for discussion see von Fintel 1994; Stanley & Szabó 2000. In addition to the features of domain restriction discussed in the literature, L&M propose that it is subject to a restriction that bans ‘double-counting’ in most cases. The idea is that, since e.g. in Figure 1 *Miracles* and vol. 1 in some sense ‘overlap’, no suitably restricted quantifier domain will include them both. L&M liken this to the case where you have crimson and maroon (and no other shades) on a canvas: the answer to the question *How many colours are there on the canvas?* could be *one* (red) or *two* (crimson and maroon) but never *three*. They furthermore argue that there are cases in which this double-counting restriction can be overridden (Liebesman & Magidor, 2017, Endnote 4).

We can now see how L&M derive an interpretation of (13) that makes it true in the situation shown in Figure 1: the domain of quantification is con-

⁸It’s actually unclear whether L&M would take the physical volumes to be in $\llbracket \textit{by C.S. Lewis} \rrbracket$, but that’s incidental to my point at this stage.

textually restricted to $\{Miracles\}$,⁹ $Miracles \in \llbracket on\ the\ shelf \rrbracket^{Fig. 1}$, therefore (13) is judged true. (4) also ‘has a true reading’ in that situation, namely when the domain of quantification is contextually restricted to $\{vol. 1, vol. 2, vol. 3\}$. Both sentences would therefore also ‘have a false reading’, given reversal of the contextual domain restrictions described.

5 Critical Discussion of L&M’s Theory

When considering what ‘categorical constraints on property instantiation’ there are (if any), and what forms (if any) ‘property inheritance’ might take, we have to take into consideration the major potential confound of meaning transfer or deferred reference (Nunberg, 1995).¹⁰ For example, surely no-one would conclude from Lakoff’s (1993) celebrated example (23) that a ham sandwich really can instantiate the property of leaving without paying, derivatively, in virtue of a person who ordered it leaving without paying.

(23) The ham sandwich left without paying.

In other work Liebesman & Magidor (2018, §3.3) discuss the distinction (as they see it) between property inheritance and meaning transfer, but only in one direction: they show that meaning transfer cannot be reduced to property inheritance but do not consider the possibility that some instances of what they take to be property inheritance might actually be meaning transfer.

Let us focus on the ‘true reading’ that L&M report for (13) in the situation shown in Figure 1—which, they argue, my theory does not allow for, but theirs does. My response in general will be to argue that, to the extent that readings like this¹¹ exist, they do not arise from the same process as underlies copredication, but rather are the result of meaning transfer. Therefore, they are not evidence for a property inheritance theory of copredication. Moreover, there is linguistic evidence *against* property inheritance in *book*

⁹However this happens in detail; we could equivalently imagine that $\llbracket [NP\ book] \rrbracket^{Fig. 1}$ is contextually restricted to $\{Miracles\}$ (Stanley & Szabó, 2000).

¹⁰I use these expressions interchangeably. Some authors make a distinction between them, relating to differing theories of the precise mechanisms underlying the interpretation of examples like (23), (29), and (30), but those differences will not be important for the discussion in this paper.

¹¹‘Against all indicators’ readings.

C.S. Lewis	<i>Miracles</i>
C.S. Lewis	<i>Miracles</i>
C.S. Lewis	<i>Miracles</i>

C.S. Lewis	<i>Miracles</i>
C.S. Lewis	<i>Miracles</i>

Figure 5: Three copies of *Miracles* on a shelf, and two on the floor

cases from very similar sentences, which can be accounted for if we suppose that meaning transfer is in play and that the kind of categorical constraints that L&M deny exist after all. I will then consider L&M’s positive argument for property inheritance in Section 5.3, and argue that it is unpersuasive.

Recall that for L&M, there is no necessary categorical conflict between physical (informational) properties and informational (physical) objects. For example, (13) ‘has a true reading’ in the situation shown in Figure 1 because *Miracles* really is on the shelf. That being the case, we should ask ourselves what is wrong with (24). Why is it anomalous when on L&M’s account, informational books *can* be on shelves and floors?

(24) Exactly one book is on the shelf. #It is (also) on the floor.

According to L&M’s account (24) should ‘have a true reading’ in the situation shown in Figure 5 in just the same way that (13) ‘has a true reading’ in the situation shown in Figure 1. As discussed at the end of Section 4.1, L&M do not offer a general theory of when property inheritance is predicted to happen, but (crucially) it is clear enough from the examples they give that, in their terms, it is sufficient for a single copy of an informational book *b* to be on the shelf for *b* to be on the shelf. Surely (13) ‘has a true reading’ in Figure 5 it if has one in Figure 1. And likewise, it is sufficient for a single copy of an informational book *b* to be on the floor for *b* to be on the floor—surely

(25) ‘has a true reading’ in Figure 5 if (13) does.

(25) Exactly one book is on the floor.

So if *Miracles* can inherit the property of being on the shelf from any copy of it on the shelf, and the property of being on the floor from any copy of it on the floor, what is wrong with (24)?

Note that this kind of puzzle does not arise from other purported examples of property inheritance that L&M give. For example, they draw the following analogy (Liebesman & Magidor, 2017, 138):

Complex objects can inherit properties from their proper parts
[...] For a table to have the property of touching a wall it suffices
for just some of its parts to touch the wall.

But in the case of complex objects like tables, anaphoric reference invoking a property inherited from a different part does not cause anomaly, as (26) shows.

(26) The table is touching the wall. It is also touching the floor.

I will argue that the anomaly of (24) is best explained on the assumption that there *is* a categorical conflict between e.g. physical properties and informational objects. That immediately raises the question of what we should make of the judgement that L&M report, namely that (13) can be interpreted as true in the situation shown in Figure 1. On the face of it, this question seems related to that of how (27) can be acceptable—and possibly true in the situation shown in Figure 1—if *Miracles* denotes an informational object.

(27) *Miracles* is on the shelf.

It also raises the question of why (28) should be at least better than (24).

(28) *Miracles* is on the shelf. ?It is also on the floor.

5.1 Meaning Transfer

It is important to take stock of the dialectic at this point. I have argued (i) that if L&M’s property inheritance theory successfully explained the judgement they report for (13), then (24) should be acceptable, (ii) (24) is anomalous, therefore (iii) L&M’s property inheritance theory does not explain

the judgement they report for (13). This argument is independent of the question: what *does* explain the judgement that L&M report for (13)?

My answer to that question is that this judgement results from meaning transfer. This answer could be wrong, and yet the argument against L&M's theory would still stand. That said, to the extent that 'against all indicators' readings exist it does behove me to provide *some* explanation of them, in defence of my own theory.

The poster case of meaning transfer is (29) (Nunberg, 1995, 110).

(29) I am parked out back.

Nunberg's analysis is that in (29) the predicate *parked out back* has undergone a contextually-induced shift in meaning so that it no longer means 'parked out back' but (roughly) 'the driver of a vehicle that is parked out back'. Put generally and semi-formally, in meaning transfer the property P is mapped onto the property of being $f(x)$, where $x \in P$ and f is some contextually-salient function between individuals. In these terms, in the reading of (13) understood as true in Figure 1, as in (27), *on the shelf* has undergone a contextually-induced meaning transfer so that it no longer means 'on the shelf' but something like 'the informational object instantiated by a physical object on the shelf'. In other words, (13) can be true in Figure 1 for essentially the same reason that (30)–(31) can be felicitous, and true in Figure 1.

(30) Lewis is on the shelf.

(31) Exactly one author is on the shelf.

On the meaning transfer view, *on the shelf* has undergone a contextually-induced meaning transfer here so that it no longer means 'on the shelf' but something like 'the author of a book that is instantiated by a physical object on the shelf'. Presumably L&M would agree with respect to these examples; they need deferred reference in any case as they appeal to it to account for why (32) can be true if uttered by someone who had picked up a blue copy of *War and Peace* the previous week, when the copy being pointed to is red (Liebesman & Magidor, 2017, 153–154):

(32) Hey, I picked up that red book from the library last week!

5.2 Limitations of Meaning Transfer

Taking a meaning transfer approach to examples like (13), (27) and (28) does raise some follow-up questions, though.

5.2.1 The Acceptability of Meaning Transfer

Firstly, if meaning transfer can be operative in (13), then why can (24) not be interpreted as shown in (33), which involves no categorical conflicts?¹²

- (33) a. Exactly one (informational) book is {instantiated by a volume that is [on the shelf]}.
- b. The unique (informational) book that is {instantiated by a volume that's [on the shelf]} is also {instantiated by a volume that's [on the floor]}.

Put differently, why is it so much easier for (28) to be interpreted as shown in (34) than for (24) to be interpreted as shown in (33)?

- (34) a. *Miracles* is {instantiated by a volume that is [on the shelf]}.
- b. *Miracles* is also {instantiated by a volume that is [on the floor]}.

The first thing to say here is that (24) probably *can* be interpreted as shown in (33), given sufficient contextual priming—and so under those circumstances it would not be anomalous. Consider the following situation:¹³ You visit the headquarters of a cult, which (as cults tend to be) is unquestioningly devoted to the teachings of its leader. These teachings are contained in a book. The person showing you around enthusiastically lets you know this, pointing to a shelf stacked with books and saying (35).

- (35) There is only one book on the shelf. It is also on the floor, on the stairs and in every room.

The fact that such contextual priming is required for (24) not to be judged anomalous is evidence that a pragmatic process is at work, which I take to be a process of meaning transfer. An utterance of (13) *can* be judged true in the situation shown in Figure 1, but an interpretation that *makes* it true—i.e.

¹²I use Brandtner's (2011) notation for meaning transfer.

¹³I am grateful to Gillian Ramchand for this example.

one that involves meaning transfer of *on the shelf*—is not one that a speaker would naturally arrive at without sufficient priming. In a sense, the meaning transfer involved is of the type that Ward (2004) dubs ‘kind-internal’: there is no categorical conflict (on either theory) between being a book and being on a shelf, so (absent the right context) a speaker would not automatically search for a shifted interpretation of (13). Given an *unshifted* interpretation of (13) as the first clause of (24), then, the hearer goes into the second clause interpreting *it* as referring to the unique physical book on the shelf. It is only upon attempting to ascribe the property of being on the floor to this object that a hearer would be forced into re-interpretation due to the obvious conflict with world knowledge. But the necessary re-interpretation, shown in (33), would involve backtracking over two sentences and applying meaning transfer in each of them. This is just too costly to avoid a judgement of anomaly.

In contrast, the meaning transfer involved in (34) is ‘kind-external’: there *is* a categorical conflict between being *Miracles* (the informational book) and being on the shelf; therefore, even without contextual clues a competent hearer will apply meaning transfer in order to interpret (27). Going into the second clause of (28), then, the hearer interprets *it* as referring to *Miracles*, and the meaning transfer operation required to interpret the second clause as coherent is no more costly than the one required to do the same for the first clause. Ward (2004, 283) notes that kind-external meaning transfer is generally more felicitous than kind-internal in neutral contexts, an observation that we see borne out here.^{14,15}

This type of explanation is not available to L&M, because for them there is explicitly no conflict between the properties of being an informational object and of being on the floor or the shelf, such as would sustain the kind internal/external distinction. If informational books could be on shelves, then (24) would not be anomalous. (24) is anomalous, therefore informational books cannot be on shelves.¹⁶

¹⁴Ward’s point relates specifically to equatives, e.g. *I am the ham sandwich*, but the principle applies more generally.

¹⁵As the annotation with ‘?’ shows, (28) is still not absolutely perfect without some supporting context. Again, this is not surprising; there are other factors involved in the acceptability of meaning transfer beyond those we need to look at here.

¹⁶A reviewer asks exactly what the meaning transfer function would look like in GT, since its NP and VP interpretations are of type $e \rightarrow T$ rather than $e \rightarrow t$. In Nunberg 1995 the meaning transfer function is as shown in (i), where f is the relevant contextually-salient function.

5.2.2 The Interaction of Copredication and Meaning Transfer

The second follow-up question¹⁷ is this. Since meaning transfer is available, one might wonder whether we need a separate theory of copredication at all. Perhaps (6) is actually interpreted as shown in (36-a) or (36-b)—in which case, *both* GT *and* L&M’s theory would be otiose?¹⁸

- (36) a. There are three (physical) books {that instantiate something [by C.S. Lewis]} on the shelf.
- b. There are three (informational) books by C.S. Lewis {that are instantiated by something [on the shelf]}.

The key argument here is that genuine copredication sentences are not subject to the same contextual and discourse effects on acceptability that sentences requiring the application of some pragmatic process (like meaning transfer) are. As mentioned above, on neither GT nor L&M’s theory is there a categorical conflict in copredication. I have argued that (24) is an-

$$(i) \quad \lambda P.\lambda y.\exists x.Px \wedge fx = y$$

The natural adaptation of (i) to the current system is as shown in (ii), where once again f is the relevant contextually-salient function, and R is a pseudo-equivalence relation congruent with the values of f .

$$(ii) \quad \lambda P.\lambda y.\langle (\exists x.\pi_1(Px) \wedge fx = y), \{ \langle y, R \rangle \} \rangle$$

For the case of the interpretation of (13) that we are interested in, we can take f to be the function mapping composite objects (like books, on GT) to their informational components, and R to be INFO. If we then apply (ii) to the interpretation of *on the shelf* given above, our shifted predicate has the interpretation shown in (iii).

$$(iii) \quad \lambda y.\langle (\exists x.on'(\iota z.shelf'z)x \wedge info-component'x = y), \{ \langle y, INFO \rangle \} \rangle$$

This particular implementation commits us to the view that purely informational books are in the extension of *book*—a position that I end up adopting in Section 6.1—and may well not be right in detail. But it is sufficient to show that a plausible way of combining GT with meaning transfer exists.

¹⁷Raised by an anonymous reviewer.

¹⁸One thing we might say about this suggestion is that (35-a) at least does not cohere very well with the picture of meaning transfer in the literature kicked off by Nunberg (1995), since it would imply that there is a contextually-salient *function* mapping each informational book to a single physical book instantiating it. To the extent that informational books tend to be instantiated by more than one physical copy, this is implausible. But the case against a meaning-transfer-only view of copredication does not rest on a particular view of the mechanics of meaning transfer.

omalous because the interpretation it does have very obviously contradicts world knowledge, and to get an interpretation that does not contradict world knowledge would require a meaning transfer operation that in general would be too costly.

By contrast, consider the paradigmatic case of meaning transfer in (29). This shows that a property of cars can be shifted so as to be applicable to car owners, due to availability of a contextually-salient function mapping cars to their owners. But it does not show that *any* such property can be shifted like this; to take another of Nunberg’s (1995) examples (37) is anomalous.

(37) #I may not start.

The obvious explanation is that salience of the transfer function is a necessary but insufficient condition for meaning transfer. We need not address here the question of just which other criteria have to be met for meaning transfer to apply; the point is that whatever those criteria are, they do not seem to be necessary in the case of genuine copredications. This observation, in fact, underlies the weaponization of copredication against ‘externalism’ about semantics by the authors mentioned in Section 1, whose argument is that copredication forces the semantic externalist into the position of having to defend the existence of objects with contradictory properties.

I suppose one could argue that the relevant difference is that in the case of *book*, but not *car*, we are talking about a meaning transfer to accommodate different senses of a single polysemous word. But not all polysemes support copredication.¹⁹ Take a simple process/result polysemy such as *construction*. This does not readily support simultaneous predication with predicates of the process and the result,²⁰ as can be seen e.g. from (38).

(38) #The construction took seven years and is over 800m tall.

This point is quite general: meaning transfer, even when applied to resolve requirements coming from different senses of a single polysemous word, is

¹⁹At least, according to a widely-held view of what polysemy is. I am sympathetic to the view that we ought to restrict the appellation *polysemy* to expressions that support copredication—but, obviously, adopting that definition at the current stage of the dialectic would involve the it’s-all-meaning-transfer theorist in circular reasoning.

²⁰In English. Brandtner (2011) provides a meaning transfer analysis of some ‘copredications’ like this in German; see Gotham 2014, §4.4 for arguments for distinguishing these from genuine copredications.

subject to constraints that copredication is not.

5.3 A Positive Argument?

So what are we to make of L&M’s positive argument that informational books *can* be on shelves? I dispute (T3). The first thing to note about L&M’s defence of this claim is that it presupposes an identity-of-meaning theory of ellipsis, which is more controversial than they seem to realise: research on ellipsis in Linguistics is split between identity-of-meaning and identity-of-structure (and hybrid) approaches (Merchant, 2019).

As argued above, if informational books like *War and Peace* cannot be on shelves then the first clause of (21) has to be interpreted via meaning transfer. The force of L&M’s argument is going to depend, then, on the question of whether or not meaning transfer can be operative in ellipsis. That is to say: in ellipsis, can the phonologically null VP have the **original** interpretation of the VP it depends on, while the VP it depends on has a **transferred** meaning? The answer seems to be *yes*, as shown by examples such as (39) and (40).²¹

- (39) I’m a bit worried because I’m parked on a double-yellow line. But then, several other cars are, too.
- (40) Lewis is on the top shelf, as are several old posters I haven’t gotten rid of yet.

Liebesman & Magidor (2018, 259) contend that the answer is *no*, giving the comparable example, (41), which does seem anomalous.

- (41) #Bill is a ham sandwich, as is the thing on this plate.

I will not attempt to explain why (41) should be anomalous while (39)–(40) are OK. Meaning transfer is obviously tightly pragmatically constrained, and my suspicion is that (41) violates a discourse coherence constraint something like that proposed by Brandtner (2011, §8.3). Regardless, all that is required to resist L&M’s positive argument for property inheritance is to provide *some* examples of meaning transfer operating in ellipsis. Liebesman & Magidor (2018, §6.3) are committed to claiming that all such examples are really instances of property inheritance,²² which seems far-fetched.

²¹I will not contend that these examples are perfect, but they are no worse than (21).

²²Caused perhaps by meaning transfer becoming conventionalized. They argue that this

5.4 Double Distinctness

Recall that in GT, the interpretation of (6) requires there to be three *different* physical copies (on the shelf) of three *different* informational book (by C.S. Lewis). It is a feature of GT that copredication sentences require ‘double distinctness’ in this sense. As mentioned above in Section 3.3.1, L&M take issue with the claim that this is *the* interpretation of a copredication sentence.

But the issue is not as straightforward as their theory having more flexibility than mine. L&M’s theory does not allow for such ‘doubly distinct’ readings at all. For them, quantification is over (some combination of) physical and informational books; a mechanism that would require both physical and informational distinctness is not available. For Liebesman & Magidor (2017, 155) this is as it should be, since they deny that such readings exist: ‘very little to justify the claim’ that they do has been said, apparently. I will now try to say a little more.

Suppose that we want to emphasize the feats of memory that Sue is capable of; we could do so by uttering (42).

(42) Sue memorized three thick books last week.

I submit that it is very hard to interpret (42) as true under any conditions other than in which Sue memorized the contents of three physically thick books, each of which has distinct contents.

I suppose that L&M could argue that there is a confound here in that *thick* in (42) can too easily be interpreted as a property of informational books, meaning something like ‘full of information’.²³ To forestall this potential confound, we should use a physical property without any obvious informational correlate.

Imagine the dystopian world of the novel *Fahrenheit 451* by Ray Bradbury. In this world, possession of books is illegal, and the job of the ‘firemen’ is (not to put fires out but) to burn books wherever they are found. There is a resistance movement who take it upon themselves to memorize books before all copies of them are destroyed. Now imagine a book memorization session in which the resistance have divided up the book memorization task by colour. When asked how it is going, you are told

is what has happened/is happening to *parked out back*.

²³This was suggested to me by an anonymous reviewer for the 2019 Semantics and Philosophy in Europe Colloquium.

(43) Granger has memorized three yellow books already.

Given this contextual set-up, I contend that (43) has *no* interpretation on which it is made true by three (yellow) copies of the same book, even if Granger read through all of them to make sure there are no discrepancies between the copies. Nor is it made true by three informational books in one (yellow) volume.

As will be further argued in Section 6.4, I wish to maintain that copredication sentences in general require double distinctness. The context of (43) has been set up so as to rule out this requirement being ignored or modified by pragmatically-acceptable loose talk. The point of this section is merely to show that doubly-distinct readings do exist, and it is not clear how L&M would account for them.

5.5 Unconstrainedness

My final concern about L&M's theory is that the use of domain restriction seems to be ad-hoc. Recall that in their theory the explanation for why no variant of (22) is true in either Figure 1 or 2 is that there is a ban on double-counting, supposedly parallel to that which (normally) forbids red and crimson being counted as two colours. But there is a crucial disanalogy between the two cases. Intuitively, the nature of what constitutes double-counting in the case of colours is relatively easy to articulate: there is a very strong tendency (at least) only to count colours by means of some partition of colour space (Regier et al., 2007; Zaslavsky et al., 2020). Since the portion of colour space conventionally called *crimson* is properly contained in that conventionally called *red*, no partition of colour space will give you cells for both *crimson* and *red*. So they cannot normally both be counted.

But things are different with books. What L&M seem to want from their theory, in the general case, is that we count books either physically or informationally.²⁴ But it is not obvious what this has to do with a ban specifically on double-counting. Suppose we were to combine the situations shown in Figures 1 and 2 into one where we have three copies of *Miracles*, and one copy of the *Space Trilogy*, on the shelf. What is it about L&M's theory that rules out any version of (44) being true in that situation?

(44) There are six books (by C.S. Lewis) (on the shelf).

²⁴A result guaranteed by Asher's (2011) theory, *inter alia*.

After all, three copies of *Miracles* plus *Out of the Silent Planet*, *Perelandra* and *That Hideous Strength* makes six books, no two of which overlap in a way that is analogous either to the way in which crimson and red overlap, or to the way in which *Miracles* and a physical copy of *Miracles* overlap. And yet (every variant of) (44) is clearly false in this situation. In order to ensure a judgement of falsity, L&M would either need an additional principle, with independent motivation, or to explain how their notion of overlap/double counting encompasses cases like this.

6 Response to Criticisms

In this section I will respond to the criticisms of GT described in Section 3. The responses in Sections 6.1–6.3 do not genuinely extend GT as outlined in Section 2, but those in Sections 6.4 and 6.5 do. These extensions are shown to be necessary not only in order to respond to L&M, but also in order to account for novel data.

6.1 The Extension of *book*

As mentioned in Section 3.1, the natural response to (7) is to say that *Miracles* \in $\llbracket \textit{book} \rrbracket$ after all.²⁵ As for (8) in the situation shown in Figure 4, I have already explained in Section 5.1 why this does not necessitate the view that e.g. informational books can be on shelves. To the extent that this sentence can be judged true in this situation, it is the result of meaning transfer.

6.2 Conflicting Properties?

Regarding point (i) from Section 3.2, the claim that books *qua* physical + informational composites have the properties of their components was never intended as a deep metaphysical claim, but simply a linguistic one about the truth of certain predications. Perhaps it would be better to say that there is a presumption/default in favour of properties of physical book *p* or

²⁵But not the only possible response. One could account for (7) within GT by assuming that $\llbracket \textit{book} \rrbracket$ (within the restrictor to a quantifier) and $\llbracket \textit{is a book} \rrbracket$ (used predicatively) differ, but I will not go down this route.

informational book i holding of composite $p + i$. In the model theory such relations would have to be mediated by meaning postulates.

Regarding point (ii), I do want to say that a book *qua* physical + informational composite can be new (in one sense), and also old (in another). That does not mean that words like *old* are ambiguous as such, but (perhaps) potentially multidimensional. So for instance, we can felicitously say things like (45).

- (45) This book is old in one respect (i.e. informationally), but new in another respect (i.e. physically).

A good analogy might be the use of subsective adjectives like *skilful*, as in (46).

- (46) Mark is a skilful violinist but not a skilful footballer.

(46) does not show that *skilful* is ambiguous, but rather that it needs to be interpreted relative to an activity. In the same way, when predicated of a composite, *old* is interpreted relative to a component. Predicates like this ‘fail’ ambiguity tests, as we can see from (47), analogous to (11).

- (47) This violinist is skilful, but this footballer isn’t.

Even though the ellided adjective is *skilful*, it doesn’t have to be interpreted as meaning skilful **in the same way** as the adjective it depends on.

6.3 Books and Pens

Let us remind ourselves of the situation under consideration as described in Section 3.4.2: on the table there are two copies of *War and Peace*, two Parker Jotter pens, and two Uniball Jetstream pens. In L&M’s terms, then, the extensions of the predicates would be

$$\begin{aligned} \llbracket book \rrbracket &= \{\text{vol. 1, vol. 2, } War \text{ and } Peace\} \\ \llbracket pen \rrbracket &= \{\text{pen 1, pen 2, pen 3, pen 4, Parker Jotter, Uniball Jetstream}\} \\ \llbracket on \text{ the shelf} \rrbracket &= \{\text{vol. 1, vol. 2, } War \text{ and } Peace, \text{ pen 1, pen 2, pen 3,} \\ &\quad \text{pen 4, Parker Jotter, Uniball Jetstream}\} \end{aligned}$$

Their argument is that (19) can be true in this situation because the domain of quantification can be contextually restricted to {*War and Peace*, Parker Jotter, Uniball Jetstream}, which contains no double-counting.

I have two arguments against this account of the situation described. The first parallels the argument I made in Section 5 with respect to (24). If pen *types* can be on tables, why is it that (48) is anomalous?

(48) Exactly two pens are on the table. #They are (also) on the shelf.

So, once again I would argue that meaning transfer is at play. For it to apply in (19), the contextually-salient function f would have to be one both taking each physical book to an informational books it instantiates, and also taking each individual pen to the type of pen it is. This might seem like an unusual function, but there is no conceptual argument that I know of against it. And it is consonant with an account of the anomaly of (48), as discussed in Section 5.1 regarding (24).

The second argument repeats my concerns regarding the use of domain restriction as expressed in Section 5.5. Given L&M's account, it is not clear what would prevent us from contextually restricting the domain of quantification to {vol. 1, vol. 2, Parker Jotter, Uniball Jetstream}—this set involves no obvious 'double-counting' in the sense of both a pen type and a token of that type, or a physical book and an informational book it instantiates. That being the case, (49) should have a 'true reading' in the situation described.

(49) Two books and two pens are on the table.

By the same logic, on L&M's account we should be able to contextually restrict the domain of quantification to {*War and Peace*, pen 1, pen 2, pen 3, pen 4}—which likewise contains no double-counting. Therefore, (50) should have a 'true reading' in the situation described.

(50) One book and four pens are on the table.

I submit that these readings, if they do exist, are extremely hard to get. It is not obvious why that should be given L&M's account, without the addition of a more substantial theory of what constitutes double counting.

6.4 Undergeneration?

I have already argued that ‘against all indicators’ readings depend on meaning transfer and hence are not evidence against GT. That leaves readings where it seems that we are ignoring at least one indicator. Let us remind ourselves of the example under consideration.

- (12) Three informative books are heavy, so take extra care as you’re pulling them down from the shelf for dusting.

L&M contend that (12) would be made true by three (heavy) copies of the same (informative) informational book, in the given context (discussed in Section 3.3.1). Crucially, that context has been set up such that the shared goal of the conversational participants is in partitioning the physical books into those that instantiate an informative informational book, and those that do not. For that task, they have no interest in distinguishing different informative informational contents from each other, and so apparently the informational indicator can be ignored.

Interestingly, however, it can be made un-ignorable by a slight change to the example, as in (51).

- (51) Three different informative books are heavy.

Now, it seems that we once again have a requirement for double-distinctness: (51) cannot be made true by three heavy copies of the same (informational) book. This effect would be somewhat puzzling on L&M’s theory of copredication. According to that theory, (12) is made true by three physical books, which are both heavy and informative. What information would it add to say that these objects are ‘different’?²⁶

²⁶A reviewer notes that there may be a connection here with the semantic effect of *different* on the availability of so-called ‘event-related readings’ of sentences like (i)–(ii).

- (i) Four thousand ships passed through the lock last year. (Krifka, 1990)
(ii) Four thousand different ships passed through the lock last year.

Barker (1999, 2010) notes that (i), but not (ii), permits an event-related reading: one where we count not ships but (plausibly) lock traversals by ships. I propose an account of the semantics of *different* in examples like these in Gotham 2021, but a unification of that treatment of *different* with the treatment of *different* given here for examples like (51) will have to wait for another occasion.

In a way, GT faces the same question, since according to it (12) already requires double-distinctness. What I propose is that *different* functions in (51) as a *slack regulator* (Lasersohn, 1999; Krifka, 2007; Sauerland & Stateva, 2011; Solt, 2014): it excludes a kind of ‘loose talk’ interpretation such as makes (12) acceptable in the situation described in Section 3.3.1.²⁷

6.4.1 Loose Talk and Slack Regulation

One of the contrasts that Lasersohn (1999) addresses is that between (52-a) and (52-b).

- (52) a. The townspeople are asleep.
- b. All the townspeople are asleep.

According to Lasersohn, (52-a) and (52-b) have identical truth conditions. However,

a speaker might very naturally use [(52-a)] even if some small percentage of the townspeople are, exceptionally, awake [...] It seems to me that [(52-a)] allows only as many townspeople to be awake as can be, for practical purposes, ignored. (Lasersohn, 1999, 523)

The idea is that there are in contexts in which (52-a) would be *judged* true because, although not strictly speaking true, it is close enough to the truth for conversational purposes. The effect of *all* in (52-b) is to eliminate this tolerance for exceptions or, put differently, to shift what qualifies as close enough to the truth. Formally, Lasersohn allows for an expression α in a context C to have, in addition to its denotation $\llbracket \alpha \rrbracket^c$, a ‘halo’ $H_c(\alpha)$ partially ordered by $\leq_{\alpha,c}$. $H_c(\alpha)$ is a set containing $\llbracket \alpha \rrbracket^c$ and potentially other model-theoretic objects of the same type, which $\leq_{\alpha,c}$ orders by closeness to $\llbracket \alpha \rrbracket^c$. Ordinarily, composition of denotations and halos proceeds in parallel, such that e.g. functional application in denotations corresponds to pointwise

²⁷Depending on other commitments, ‘acceptable’ can be interpreted either as (i) true relative to some parameter of evaluation that varies in precision (Krifka, 2007; Solt, 2014), or (ii) false but close enough to the truth in a specific sense (Lasersohn, 1999). For concreteness, in what follows I follow Lasersohn’s approach, but the same ideas could be implemented in other frameworks.

functional application in halos.²⁸ However, certain expressions manipulate halos more directly.

For example, in (52) the denotation of *the townspeople* is the set of all the townspeople, but for certain contexts c , $H_c(\textit{the townspeople})$ also contains some proper subsets thereof, where $\leq_{\textit{the townspeople},c} := \supseteq$. The effect of *all* is that $H_c(\textit{all the townspeople})$ is a proper subset of $H_c(\textit{the townspeople})$ such that for every $X \in H_c(\textit{all the townspeople})$ and every $Y \in H_c(\textit{the townspeople}) \setminus H_c(\textit{all the townspeople})$, $X <_{\textit{the townspeople},C} Y$.²⁹

6.4.2 Applied to Copredication

We can apply these ideas to copredication to account for how (12) can be judged true in the situation described. In addition to its denotation shown in (53) (adjusted for plurality), in contexts (such as the one we are interested in) where the conversational participants manifestly do not care about informational individuation, *informative* contains in its pragmatic halo the meaning shown in (54).³⁰ We can define the closeness order \leq on expressions of type $e \rightarrow T$ like this as $P \leq Q := \forall x. \pi_1(Px) = \pi_1(Qx) \wedge \pi_2(Qx) \subseteq \pi_2(Px)$.

$$(53) \quad \lambda x. \langle \textit{*informative}'x, \{ \langle x, \text{INFO} \rangle \} \rangle$$

$$(54) \quad \lambda x. \langle \textit{*informative}'x, \emptyset \rangle$$

Supposing that in the context in question *informative* is the only expression with a non-trivial halo, the halo of *informative books* then contains the meaning shown in (56) in addition to its truth-conditional content shown in (55).³¹

$$(55) \quad \lambda x. \langle (\textit{*informative}'x \wedge \textit{*book}'x), \{ \langle x, \text{INFO} \rangle, \langle x, \text{PHYS} \cap \text{INFO} \rangle \} \rangle$$

$$(56) \quad \lambda x. \langle (\textit{*informative}'x \wedge \textit{*book}'x), \{ \langle x, \text{PHYS} \cap \text{INFO} \rangle \} \rangle$$

The effect of *different* is to narrow the halo such that (56) is excluded. Given the right context, then, (12) has (57) as its truth-conditional content (requiring double-distinctness) and a halo containing both (57) and (58). (58) is the interpretation that L&M are after.

²⁸I.e., if $\llbracket \alpha \rrbracket^c = \llbracket \beta \rrbracket^c (\llbracket \gamma \rrbracket^c)$ then $H_c(\alpha) = \{f(a) \mid f \in H_c(\beta) \text{ and } a \in H_c(\gamma)\}$.

²⁹This covers the case where $H_c(\textit{all the townspeople}) = \{\llbracket \textit{the townspeople} \rrbracket^c\}$, but we needn't insist that this is always what happens.

³⁰There's more borrowing from set-theoretic notation here: $\emptyset := \lambda o. \perp$.

³¹Using *modshift'* and the interpretation of *books* as given in Section 2.2.

$$(57) \quad \left\langle \begin{array}{l} (\exists x. \#(x) = 3 \wedge *informative'x \wedge *book'x \wedge *heavy'x \\ \wedge \neg comp'x(PHYS \cup INFO)), \\ (\lambda o. \pi_2(o) \in \{INFO, PHYS \cap INFO, PHYS\}) \end{array} \right\rangle$$

$$(58) \quad \left\langle \begin{array}{l} (\exists x. \#(x) = 3 \wedge *informative'x \wedge *book'x \wedge *heavy'x \\ \wedge \neg comp'x PHYS), \\ (\lambda o. \pi_2(o) \in \{PHYS \cap INFO, PHYS\}) \end{array} \right\rangle$$

Given the halo-narrowing due to *different*, though, (51)'s halo contains only (57), not (58), and hence unlike (12) cannot be loosely interpreted as compatible with the situation described in Section 3.3.1. So, we have an account of the potential difference in interpretation between (51) and the first clause of (12). This account is in keeping with an intuitive understanding of what *different* means: it excludes from consideration pluralities of books with members that are not sufficiently (in this case, informationally) distinct from each other.

6.5 Different Ways of Individuating Informational Books

The final paragraph of Liebesman & Magidor 2017 actually indicates the way I want to respond to the question of different translations.

An alternative option for Gotham is to acknowledge only the finegrained informational books [*War and Peace* in Russian] and [*War and Peace* in English], and then add to his compositional theory multiple informational criteria of individuation (one according to which $V_1 + [\textit{War and Peace in Russian}]$ and $V_3 + [\textit{War and Peace in English}]$ count as informationally distinct and one according to which they do not)

In other words, talk of *War and Peace* being an informational book is an idealization. If you translate Tolstoy's original into English then you've produced another informational book. Nevertheless, for many purposes we would want them to be treated as the same informational book, and this is achieved by allowing $\llbracket \text{INFO} \rrbracket$ to relate them. Liebesman & Magidor (2017,

161) think that such an approach would be problematic because of the ‘massive ambiguity’ it would engender, since ‘the point generalizes beyond translations to editions, printings, etc.’.

I have two responses to this argument. The first is that it is not clear that L&M’s theory fares any better overall. Suppose for the sake of argument that there are two translations of *War and Peace*, each translation exists in two editions, and each edition exists in two printings. Suppose further that each of these distinctions coincides with a principle of counting used in some linguistic context. On the approach being advocated here, that would mean there are eight informational books in the model. In L&M’s theory there would need to be at least 15: the eight printings plus four editions, two translations and *War and Peace*. This then exacerbates the problems with the role of contextual domain restriction in L&M’s theory, as discussed in Sections 5.5 and 6.3: we need a predictive theory of which books are counted in which context and why.

My second response is that the existence of multiple criteria of individuation need not entail *ambiguity*. A more natural reaction would be to say that INFO is context-sensitive: relative to some contexts it relates *War and Peace* in Russian and *War and Peace* in English, and relative to others it does not. However, I suspect that as we get into the details of the relevant examples, the degree of context-sensitivity will not be as extensive as we might first think.

6.5.1 Decomposing INFO

Let us suppose that what we have been calling INFO covers two related pseudo-equivalence relations: PROP and LANG, where PROP denotes a relation that relates Russian and English versions of *War and Peace* to each other and well as themselves, and LANG denotes one that only relates each language version to itself. We would therefore have the meaning postulate shown in (59).³²

$$(59) \quad \text{LANG} \subseteq \text{PROP}$$

Suppose furthermore that what we have been calling INFO in the lexical entry for *book* is the more restrictive of the two, namely LANG. The distinc-

³²Given the abbreviations show on page 7, this is shorthand for $\forall x.\forall y.\text{LANG } xy \rightarrow \text{PROP } xy$.

tion between (14) and (15) can therefore be accounted for based on the toy lexicon below.³³

$$\begin{aligned}
books &\rightsquigarrow \lambda x. \langle *book'x, \{\langle x, \text{PHYS} \cap \text{LANG} \rangle\} \rangle := \mathbf{B} \\
three &\rightsquigarrow \lambda P. \lambda Q. \left\langle \begin{aligned} &(\exists x. \#(x) = 3 \wedge \pi_1(Px) \wedge \pi_1(Qx) \\ &\wedge \neg \text{comp}'x(\bigcup(\lambda R. \langle x, R \rangle \in (\pi_2(Px) \cup \pi_2(Qx))))), \\ &(\lambda o. \exists y. o \in (\pi_2(Py) \cup \pi_2(Qy))) \end{aligned} \right\rangle := \mathbf{3} \\
memorized &\rightsquigarrow \lambda x. \lambda y. \langle \text{memorize}'xy, \{\langle x, \text{LANG} \rangle\} \rangle := \mathbf{M} \\
by Tolstoy &\rightsquigarrow \lambda x. \langle \text{by}'Tolstoy'x, \{\langle x, \text{PROP} \rangle\} \rangle := \mathbf{T} \\
Jim &\rightsquigarrow \mathbf{Jim}'
\end{aligned}$$

We would then have the interpretations of (60) and (61) respectively shown below.³⁴

(60) There are three books by Tolstoy.

$$\begin{aligned}
&\rightsquigarrow \mathbf{3} \mathbf{B} \mathbf{T} \\
&\rightsquigarrow \left\langle \begin{aligned} &(\exists x. \#(x) = 3 \wedge *book'x \wedge \text{by}'Tolstoy'x \\ &\wedge \neg \text{comp}'x(\bigcup\{\text{PHYS} \cap \text{LANG}, \text{PROP}\})), \\ &(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{LANG}, \text{PROP}\}) \end{aligned} \right\rangle \\
&\rightsquigarrow \langle (\exists x. \#(x) = 3 \wedge *book'x \wedge \text{by}'Tolstoy'x \wedge \neg \text{comp}'x \text{PROP}), \\
&\quad (\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{LANG}, \text{PROP}\}) \rangle
\end{aligned}$$

³³A reviewer notes that the interpretation given for *by N* does not generalize: while we expect the pseudo-equivalence relation contributed by *books by N* to be PROP (as here), for something like *translations by N* it should be LANG or similar.

What I think is going on here is that, conceptually, *book/translation/etc. by N* requires specification of an activity that tells you how the book/translation/etc. came into being. In the case of *book by N*, what that means is that the interpretation we arrive at is something like ‘book authored by N’, and that (in fact) it is ‘authored’ that contributes the PROP pseudo-equivalence relation. I remain agnostic as to exactly how this contribution finds its way in; some candidate ideas would be syntactic deletion, saturation of a free variable in semantics (Szabó, 2001) or ‘selective binding’ into the ‘qualia structure’ of *book* (Pustejovsky, 1995, §7.3). The interpretation shown in this paper is a necessary simplification.

³⁴Given that $(\text{PHYS} \cap \text{LANG}) \cup \text{PROP} = \text{PROP}$. The proof of this is left to the reader.

(61) Jim memorized three books.

$$\begin{aligned}
&\rightsquigarrow \mathbf{3B}(\lambda x. \mathbf{M}x \text{Jim}') \\
&\rightsquigarrow \left\langle \begin{aligned} &(\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{memorize}'x \text{Jim}' \\ &\wedge \neg \text{comp}'x(\bigcup\{\text{PHYS} \cap \text{LANG}, \text{LANG}\})), \\ &(\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{LANG}, \text{LANG}\}) \end{aligned} \right\rangle \\
&\rightsquigarrow \left\langle (\exists x. \#(x) = 3 \wedge * \text{book}'x \wedge \text{memorize}'x \text{Jim}' \wedge \neg \text{comp}'x \text{LANG}), \right. \\
&\quad \left. (\lambda o. \pi_2(o) \in \{\text{PHYS} \cap \text{LANG}, \text{LANG}\}) \right\rangle
\end{aligned}$$

On this analysis, Russian and English versions of *War and Peace* do not count as separate books in the interpretation of (60), but in the interpretation of (61) they do. This seems right.

As mentioned above, this is a necessary simplification. If indeed different editions, printings etc. can be shown to correspond to different principles of counting in some linguistic example then INFO should be taken to span a corresponding range of pseudo-equivalence relations, with the one included in the lexical entry for *book* the most restrictive of all these. The principle of counting actually used will then be determined by the other informational indicator(s) used in the sentence, some or all of which could be context-sensitive to a degree.³⁵

6.5.2 Combining Informational Indicators

What happens if we combine more than one informational indicator, as in (62)? Based on the lexicon above, the interpretation would be as shown below.

(62) Jim memorized three books by Tolstoy.

$$\rightsquigarrow \mathbf{3}(\text{modshift}'\mathbf{T B})(\lambda x. \mathbf{M}x \text{Jim}')$$

³⁵There might still be an issue with bare existential statements such as *There are three books*. See Gotham 2014, §3.3.

$$\begin{aligned}
& \rightsquigarrow \left\langle \begin{aligned} & (\exists x. \#(x) = 3 \wedge \text{by}'\text{Tolstoy}'x \wedge * \text{book}'x \wedge \text{memorize}'x \text{Jim}' \\ & \wedge \neg \text{comp}'x(\bigcup\{\text{PROP}, \text{PHYS} \cap \text{LANG}, \text{LANG}\})), \\ & (\lambda o. \pi_2(o) \in \{\text{PROP}, \text{PHYS} \cap \text{LANG}, \text{LANG}\}) \end{aligned} \right\rangle \\
& \rightsquigarrow \left\langle \begin{aligned} & (\exists x. \#(x) = 3 \wedge \text{by}'\text{Tolstoy}'x \wedge * \text{book}'x \wedge \text{memorize}'x \text{Jim}' \\ & \wedge \neg \text{comp}'x \text{PROP}), \\ & (\lambda o. \pi_2(o) \in \{\text{PROP}, \text{PHYS} \cap \text{LANG}, \text{LANG}\}) \end{aligned} \right\rangle
\end{aligned}$$

We compositionally derive a requirement for PROP-distinctness. That is to say, on this analysis (62) would not be made true by Jim memorizing the Russian, English and French versions of *War and Peace* (impressive a feat though that would be), but it would be made true by him memorizing *War and Peace*, *Anna Karenina* and *Resurrection*, in whatever language. Again, this seems right. Although (62) is not a copredication sentence as such, since there is no felt contradiction between the requirements of the coordinated predicates, it is one in which subtly different principles of counting are contributed by those predicates. I have shown how the principle of counting finally used can be determined compositionally using the same techniques as are used for copredication. This potentially opens up interesting new avenues for research.

7 Conclusion

GT has been amended, qualified and bolstered in various ways in this paper. This is how things should be: copredication remains a philosophical and compositional-semantic puzzle and, as indicated particularly in Section 5.1, sometimes the boundaries of the phenomenon are not as clear as we might think. What I hope to have shown is that the fundamental ideas of GT remain intact and useful: nouns supporting copredication denote complex objects, and the truth conditions of sentences including these nouns are sensitive to the indicators in them. In contrast, property inheritance represents a wrong turn in addressing the issues raised. I have also brought some new data to light showing how fine-grained indicators can interact in non-copredication sentences in the same manner as coarser-grained indicators do

in copredication sentences. The full ramifications of this insight are a topic for future research.

Acknowledgements

To be added.

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