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## Linguistic **Frontiers**

# Books

Original Study

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This paper is about books, more precisely, mostly about their ontology.[1] I use the term *book* throughout though just as shorthand for arbitrary document types. Books might seem an odd topic since everybody sort of knows what they are. But this everyday idea obscures at least two mysteries. The first involves the relation of the notion book to that of *abstract object*. The standard view is that abstract objects, things like numbers and propositions, exist neither in space nor time and cannot enter into causal relations. The very view that there are such things as abstract objects is, of course, highly controversial. But I need not defend that view or that books in particular are abstract objects because the positions I will argue against, already assume them. For an introduction to the general issue see Cowling (2017).

I agree with those who say, controversially, that abstract objects are independent of minds. That bears on the central issue I address, a matter highlighted by quote (1).

(1) Rosen (2017), Article: Abstract objects in the *Stanford Encyclopedia of Philosophy*.
a. "A similar problem arises for so-called *abstract artifacts*, like Jane Austen's novels and the characters that inhabit them. Some philosophers regard such items as eternally existing abstract entities that worldly authors merely 'describe' or 'encode' but do not create. *But of course the commonsensical view is that Austen created Pride and Prejudice and Elizabeth Bennett, and there is no good reason to deny this* (Thomasson 1999; cf. Sainsbury 2009; see also the entry on fiction; emphasis mine: PMP). If we take this commonsensical approach, there will be a clear sense in which these

items depend for their existence on Austen's mental activity, and perhaps on the mental activity of subsequent readers." "These items may not count as mind-dependent in either of the senses canvassed above, since *Pride and Prejudice* can presumably exist at a time even if no one happens to be thinking at that time. (If the world took a brief collective nap, *Pride and Prejudice* would not pop out of existence.) "*But they are obviously mind-dependent in some not-merely-causal sense. And yet they are still presumably abstract objects* (emphasis mine: PMP)."
b. "Abstract artifacts like Jane Austen's novels (as we normally conceive them) come into being *as a result* of human activity."

So, according to Rosen, books, in particular *Pride and Prejudice*, are abstract objects and yet mind-dependent, and somehow created by authors. My instant ignorant reaction to such an idea was that it made no sense. And reflection over time has solidified that reaction and led to the conclusion that the idea is, moreover, unmotivated since no fact associated with books implies that human beings create them or that they are mind-dependent.

Ideas similar to Rosen's remarks are found in linguistic writings like those in (2), (3) and (4).

(2) Pullum (2015); Pullum and Scholz (1997).
(3) Pullum (2015, 7).
"If Platonism about linguistic objects is the view that sentences (etc.) are abstract and mind-independent, then it has more than the two rivals (nominalism and conceptualism) that Katz discusses. At least the following

possible positions concerning English Sentences conflict with Platonist realism:

(3) a. Katz's 'Nominalism': English sentences exist mind-independently but are concrete rather than abstract.
b. Katz's 'Conceptualism': English sentences exist as mental representations: they are both concrete and mind-dependent.
c. Pullum & Scholz's 'Constructivism': English sentences exist as abstract yet mind-dependent objects."

(4) Pullum (2015, 8—9)
a. "It is surely not irrational to suggest that if there were no thinking beings in the universe, there would be no sentences of English or any language."
b. "We regard a diamond deep underground that no human has yet discovered as existing: no human being needs to know about it or think about it in order for it to exist. Nothing similar holds for *a dream that no one has ever had*, or for *a poem that no one has yet written*, or *a sentence that no one has ever thought to frame or utter*. I think it is reasonable to regard such things as dreams, poems, and sentences as abstract yet mind-dependent."

These authors also accept that natural languages involve things called *mind-dependent abstract objects*. And like Rosen, they take it that while abstract, books are yet *somehow* created by minds.

The word *somehow* in the previous sentence indicates that in reading works like those cited I find no account of what a manufacturing process for abstract objects could consist of. Perhaps such an account exists in other literature of which I am ignorant. But normally creation involves things not existing at time T coming into existence after T. Since abstract objects in the standard sense have no temporal existence, the idea of their creation appears to be incoherent. Talk of abstract object creation should then logically appeal to a distinct notion of abstract object. But I do not know what such a notion could be and am not enlightened by the works I have cited.

Pullum (2015, 3—4) cites the remarks in (5) by an eminent logician as presumed support for his position.

(5) Boolos (1998, 128—129)
"We do not engage in physical interactions with them, in which energy is transmitted, or whatever. But we twentieth-century city dwellers deal with abstract objects *all the time*. We note with horror our *bank balances*. We listen to *radio programs*: *All Things Considered* is an abstract object. We read or write *reviews of books* and are depressed by *newspaper articles*. Some of us write *pieces of software*. Some of us compose *poems* or *palindromes*. We correct *mistakes*. And we draw *triangles* in the sand or on the board. Moreover, bank balances, reviews, palindromes, and triangles are "given" to us "in experience," whatever it may mean to say that. … [No] sense of "sensible" or "experience" has

been shown to exist under which it is not correct to say that we can have sensible experience of such objects, such things as the zither melody in *Tales from the Vienna Woods*, the front page of the sports section of the morning's Globe, a broad grin, or a proof in set theory…"

But Pullum built no argument on the quote, which contains none. Seemingly, he took it to make some essentially self-evident point. However, (5) just fails to distinguish certain abstract objects from their *tokens*. Tokens in the relevant sense are physical things and their relation to the abstracta they are tokens of is arbitrary and conventional. This relation can be characterized as a code, a function from elements of a class to various symbol combinations representing those elements. A serious analysis of this key idea is beyond the present discussion; see Wetzel (2009).

Boolos says people listen to the radio program *All Things Considered*, rightly viewed as an abstract object on one sense of the expression. On that sense though, the program has no spatial or temporal existence. The physical activity of listening can only directly relate to physical events, here functioning as tokens of some abstract objects. And the token relation in the radio case is quite indirect, involving not the original human produced sounds but several transformations of them into resemblant sounds.

Similarly, despite Boolos's remark, one cannot literally draw indestructible geometrical abstract objects called triangles. Concreta created in sand are physical things, mere intended tokens of triangles, which cease to exist at the whim of winds and tides. So Boolos's remarks provide no support for the idea of mind-dependent abstract objects.

Talk of creation of abstract objects is also seen in the offhand remarks in (6), where the *of course* operator takes the place of nonexistent argumentation for the position.

(6) a. Chomsky (1986, 33)
"Of course, one can construct abstract entities at will."
b. Chomsky (1987, 35)
"Of course, people may study whatever abstract objects they construct, as a form of mathematics."

These remarks are remarkably indifferent to the history of set theory, Russell's paradox and so on, which were unmentioned. Chomsky was thus strangely open to the feasibility of constructing an integer between 18 and 19. There was though no clarification of what this supposed creation could consist of or justification as to why appeal to it was not incoherent.

While the idea of mind-dependent abstract objects appears to make no sense, the idea of books as abstract objects as usually understood makes perfect sense. *Pride and Prejudice*, for example, like the number 47 and the law of contradiction, can be found neither in space nor time, cannot cause anything or be destroyed. But despite

that, the book case might seem initially paradoxical. To consider why, rather than Jane Austen's august work, focus on the simpler and more salient document in (7).

(7) Short Story
The space alien ship landed in Central Park on a hot summer evening. The two lizard occupants of the ship exited it around 1AM and were immediately killed and stripped of all of their equipment by typical nighttime park denizens. By 2AM, the space ship into which the lizard corpses had been thrown had been thoroughly sacked and set on fire. By 3AM, nothing whatever was left of the ship or the lizards, not even chemical residues. This is why news reports fail to indicate that a space alien lizard ship ever landed in Central Park.

If, following Rosen's commonsensical approach, *Pride and Prejudice* has to be taken as a mind-dependent abstract object Jane Austen created, then (7) must be a mind-dependent abstract object *I* created. But while there is indeed an abstract object *connected to* (7), and while there might be some *initial* plausibility to the idea that the relevant abstract object is mind-dependent and was created by me, logic tells us that that idea has to involve the *illusion* represented by (1), (3), (4), (5) and (6).

Since (7) proclaims that it is a story and represents an abstract object, what is that object? One might say initially that it consists of a sequence of five English sentences. But sentences are complex things with syntactic, morphological, phonological and semantic properties. And only the latter significantly define written works. The story alluded to in (7) is really the sequence of meanings of the ordered sentences represented. It is because meanings define documents that the notion of translation makes sense.

If, according to the doctrines of Rosen, Pullum and Scholz, I, as the unchallenged author of the masterpiece in (7), created the relevant abstract object, I would have created both the component sentences and their order. But since both sentences and sequences of them are sets, and neither has any presence in space or time nor any ability to be caused, the idea of creating them is not coherent. The right analogy is with (8).

(8) 716,534,211

The view that I created the integer represented by this decimal representation would determine, ludicrously, that this integer did not exist before I did some typing. Worse, anyone taking such a point of view would have to explicate how typing manages to create things characterized by the Peano postulates. What I actually did to yield (8) was pick out existing integers, type their standard orthographic names and line those names up, with the standard anglophone punctuation. Since it is groundless to claim that the integer represented in (8) is a mind-dependent abstract object I created, it is equally groundless to claim anything analogous about (7).

This reasoning is reinforced by simply looking at (7) realistically. While I claimed that the story is a sequence of sentence meanings, on the face of it, (7) consists of nothing but 534 ordered orthographic characters, spaces included, a character sequence my typing created. Of course, I ignore that there is no single (7) since every reproduction of this article will have its own instance of it.

While the idea that typing characters has the power to create integers or sentences or sequences of them is stillborn, it does point to the basis of the mind-dependence illusion. First, character sequence creation as in (7) might seem to define authorship; the author is the original producer of the relevant character sequences. But if written works are abstract objects tout court, how can they have authors? Neither the principle of Modus Ponens or the number 387 has one. Second, it is a short jump from discussing the date an author wrote a particular book to the conclusion that since books have a temporal beginning, their existence must depend on the temporally defined writing activity. Third, evidently authors do perform activities when writing, such as typing, and at first glance, these activities seem required for things like books to exist. So it might appear that there are real grounds for thinking books are created, and depend on human minds and activities. Consequently, while from one point of view, books seem like abstract objects; from another, they might seem like things people create.

But despite the matters just mentioned, ironically, nothing motivates the incoherent idea that abstract objects can be created by human activity. Because none of the factors I have cited requires any appeal to abstract object creation.

The fundamental flaw in the idea of mind-dependent abstract objects is failure to distinguish between abstract objects and knowledge of them. While books are abstract objects entirely independent of human creation, what does manifest such dependence is knowledge of them. So the real creative contribution of writers is to make available knowledge of specific abstract objects.

How do they accomplish that? Well, actual writing involves the real world activity of making orthographic marks. Such creation of a series of marks in some medium can relate to, essentially pick out, an abstract object by virtue of the fact that some such sequences of marks correspond to the visual tokens of natural language sentences according to some existing orthographic conventions. So, knowing the relevant conventions, an author can select various sentences from those their internalized grammar characterizes and make the appropriate marks which serve as the orthographic representations of just those sentences. That views things from the vantage point of authors.

Taking the viewpoint of potential readers, if, as in (7), the marks represent orthographic tokens of *English* sentences, then someone *with knowledge of English and of English orthography* can interpret the marks as tokens of the relevant sentences and grasp that there is an object corresponding to the sequence of their meanings.

While the Rosen/Pullum/Scholz view takes authors to create documents in some unspecified manner, are there not grounds for the *equally erroneous* view that *readers* do the creation? After all, writers cannot provide readers with abstract objects, but only with collections of orthographic marks like (7). So if the idea of abstract object creation made sense, English-speaking readers would have a good claim to be the creators of the story represented by (7). Starting from nothing but marks on paper, they would have putatively concocted the story, an object found nowhere in time or space. But that idea makes no more sense than the idea that I created the relevant abstract object. What readers can do is utilize the knowledge supplied by an internalized grammar and various orthographic conventions to interpret the marks as tokens of certain sentences. Then they can utilize their psychologically real grammars to calculate the sequence of meanings.

On this account, both writer and reader engage in mental activities which link marks in some medium to representations of sentences and hence to representations of the sequence of meanings of documents. That *partially* makes good my claim that while books are abstract objects, writing and reading involves no creation of them. But the reasoning so far contains a huge gap.

For I carefully spoke about *mental representations of sentences*. But like whatever goes on in computers, mental representations are natural world things, and thus not abstract objects. So where is the link between mental/physical things and abstract objects?

The link depends on knowledge of language. Somehow humans manage to develop internal grammars of natural languages; their logical status is analogous to that of computer programs on the sense where the latter are physical aspects of computer, can be found on disks and are destructible. Despite their physical character, one unproblematically says that computers actually do calculations, which involve real abstract objects, numbers in particular. That is correct because computers and computer programs are built so that certain physical features of the machines can be reliably interpreted as coding the abstract objects of real interest. Binary machine language matching the twin states of a physical device indicates how such a relation can work.

The same sort of thing must be assumed about the sentence characterizations formed by mentally/physically represented grammars. Literally, these involve mind-internal tokens which reliably code information about the abstract objects which are sentences. The computer analogy is useful here because much more is known about what goes on in computers and how their actions relate to the things they code than is known about what goes on in human minds.

So in such terms, what an author does is somehow select from the endless class of sentence representations his or her internal grammar makes available some subset of representations to yield a desired communication. Authors can do this implicitly secure that

these representations correspond faithfully to natural language sentences, because the grammar they have learned provides knowledge of the sentences. Since the grammar provides knowledge that sentence S has property P, in particular, has meaning Z, S will indeed have meaning Z.

The just given account of course recognizes a human creative process involved in book writing. But this process accomplishes no more than pointing out to readers equipped with the relevant linguistic knowledge the existence of certain necessarily uncreated abstract objects. In effect, authorship of a particular text T, through the intermediary of knowledge of a natural language and its orthography, selects from the endless array of eternal abstract objects formable from sequences of natural language sentences, a particular abstract object composed of ordered expressions represented by the ordered orthographical elements of T.

*In principle*, no one having knowledge of the language in which T is written needed an author to gain knowledge of T. But given the lack of constrains on texts formed by combinations of natural language sentences, in actual fact, no one has any chance discernably distinct from zero of a priori focusing on T in particular because of the endless universe of existing alternatives. So writing texts serves as a catalyst for otherwise *in practice* unobtainable knowledge of abstract objects.

Incidentally, assuming there are at least a denumerable infinitude of sentences in a language L, the class of books on L has cardinality greater than any denumerable set. Taking their term *language* as a rough equivalent of my notion *book*, Partee, ter Meulen and Wall (1993, 67—69) provide three proofs of this claim.

Then, appealing to the reasoning of Langendoen and Postal (1984), one can show further that the universe of books is truly vast, amounting to what is called a *proper class* in some varieties of set theory. The key assumption there is that any collection of sentences of the same type can be conjoined to yield a new distinct sentence. For example, the sentences represented in (7) conjoin to yield sentence (9).

(9) The space alien ship landed in Central Park on a hot summer evening and the two lizard occupants of the ship exited it around 1AM and were immediately killed and stripped of all of their equipment by typical nighttime park denizens and by 2AM, the space ship into which the lizard corpses had been thrown had been thoroughly sacked and set on fire and by 3AM, nothing whatever was left of the ship or the lizards, not even chemical residues and this is why news reports fail to indicate that a space alien lizard ship ever landed in Central Park.

So just as sentences form sequences defining books, there is a mapping from books to sentences, which then feeds a still bigger collection of books, and so on, endlessly.

## Books

Return to the bizarre expression in (4b) *a poem that no one has yet written*. Pullum must have assumed that invocation of such a thing supported his view that poems are mind-dependent abstract objects. But on the contrary, such phrase makes sense only if it refers to an uncreated but existent abstract object. For an *unwritten* document could not be an actual object internal to a view where written works exist only because people write them. The phrase is sensible because written works ultimately consist of sequences of sentences, yielding sequences of meanings. Whether anyone has or ever will select some particular set of sentences to form an orthographically realized document is an ontological irrelevance.

Summing up, I have argued that the ordinary, enticing view that books exist because people write them is both impossible and unmotivated. Actually, the reverse is the case: only because books exist can people write them. Books exist because natural language sentences exist and hence sequences of them exist. All authors can do is select and code such sequences in some orthography, as I did in creating the marks in (7).

In one sense, the picture I have drawn of the nature of documents is artificial since such can contain expressions from other languages, pictures, diagrams, formulas, onomatopoetic forms, etc., not allowed for in my account. While I do not think extending the present ideas to such document elements ultimately raises any ontological problems, that remains to be shown; but not in this short work.

I said at the outset that the notion of book involved at least *two* mysteries, the first being the seeming paradox of the creation of uncreatable abstract things. The second puzzle is that my expounded ontology of books leaves unaccounted for the fact that phrases like *book* and *article* in some contexts denote physical things but in others abstract objects.

For instance, (10), said while pointing at a table might reference reading the copy on the table.

(10) I read that book.

Or it might indicate reading of a distinct copy of the same book, raising the issue of understanding the notion 'same book' covering distinct physical things. But (11) said in the same context could only hold of the physical object on the table.

(11) I am going to burn that book.

Moreover, while (12c) seems like a valid inference from (12a), (12d) is not a valid inference from (12a, b). And (12d) is incoherent because, while burned up stuff no longer exists, combustion has never eliminated any contradiction.

(12) a. The terrorists burned up Frege's *Grundgesetze*.
b. Frege's *Grundgesetze* embodied a contradiction.
c. Therefore the terrorists burned up some paper.
d. Therefore the terrorists burned up a contradiction.

Accounting for facts like those just cited is not trivial. In (13) for instance the noun *book* must denote a physical thing which can be on my table.

(13) The same (contradictory) book that is on a table in my study is on a 3rd floor shelf in the library.

How then can the same object be on a shelf in library? And if *book* in (13) denotes a physical object, why isn't the actually coherent long version of (13) incoherent in the way (12d) is? Taking (13) to reference a magic hardcover book capable of being in two places at once could address the multiple location issue but not that of how a supposed physical thing can be contradictory. The Eiffel Tower cannot be contradictory.

Some linguists claim that the issues just raised are lexical/semantic matters; they will say that words like *book* have multiple senses or alternatively have complex senses with both abstract and concrete denotations. But taking *book* in (13) to be ambiguous over abstract object or concrete token meanings cannot give a proper analysis. If *book* denotes an abstract object, then the contradictory claim of the longer version is sensible. But then, it is incoherent to speak of its presence on tables or shelves. And if it denotes something concrete, then the longer version would, counterfactually, be incoherent.

Combining these semantic puzzles with my ontological conclusion, one can envision a syntactic approach. Each document noun like *book* forms at least two partially distinct types of syntactic phrases each of which contains the word. In some cases, the word occurs alone as in (14a); in the others, in a structure like (14b).

(14) a. [Determiner [book]]
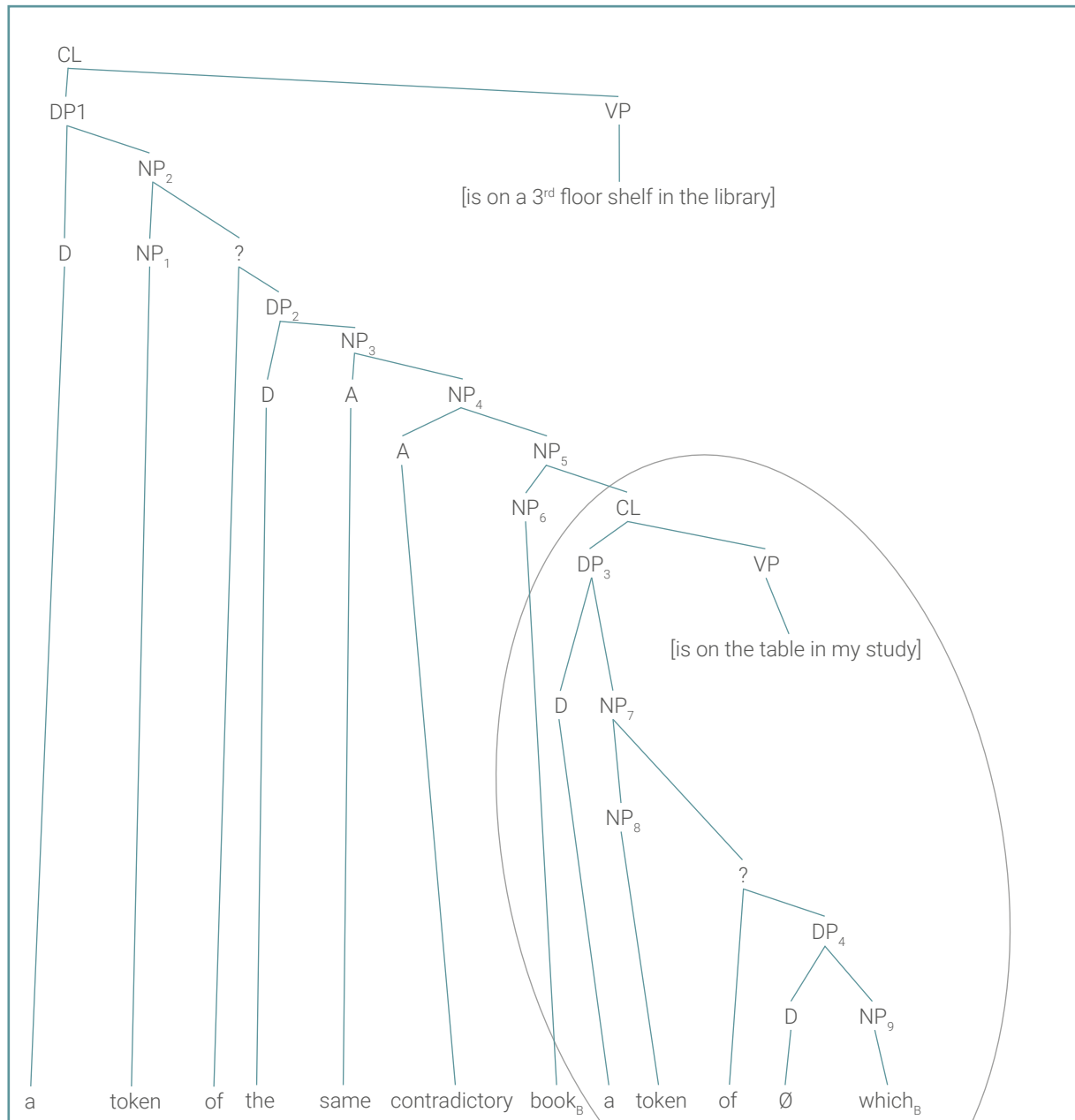b. [Determiner [token of [Determiner book]]]

In both cases, *book* itself, as in earlier remarks, denotes an abstract object. The fact that many uses of a phrase like *the book* denote something physical is then due to structure (14b). One must say that this complex structure normally reduces to what only appears to be the simpler case. But this reduction is not necessary, as the paraphrase relation between the variants of (15) shows.

(15) a. The terrorists burned Frege's *Grundgesetze*.
b. The terrorists burned a token/copy of Frege's *Grundgesetze*.

Given these ideas, (13) is representable in a way which consistently captures its properties, namely, as in (16).

The key here is that the *book* nominal, represented by NP5, is embedded in a complex structure DP1, whose head is a token nominal. Thus the main clause which predicates position on a shelf is a coherent assertion about the token.

The adjective *contradictory*, which can only coherently restrict expressions denoting abstract objects, modifies NP4, whose head is *book*, which as in earlier

**Postal**

CL

DP1     VP

NP$_2$

[is on a 3$^{rd}$ floor shelf in the library]

D   NP$_1$   ?

DP$_2$

NP$_3$

D   A   NP$_4$

A   NP$_5$

NP$_6$   CL

DP$_3$   VP

[is on the table in my study]

D   NP$_7$

NP$_8$

?

DP$_4$

D   NP$_9$

a    token    of   the    same   contradictory   book$_B$   a   token   of   Ø   which$_B$

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remarks, indeed denotes an abstract object. So there is no paradox of a phrase denoting both abstract object and physical token.

The circled expression in (16) is a restrictive relative clause modifying NP6 whose content is *book*. This relative clause introduces a second NP denoting tokens, and the relative pronoun which links to *book* is again embedded in the larger token phrase. Like the token expression in DP1, that represented by DP3 determines the coherence of the relative clause predication of something being on my table.

The function of that relative clause is to specify that the book token on my shelf is a token of the same book type abstract object which the main clause asserts to have a token located on a shelf in the library. As with distinct variables in logic, nothing a priori requires the denotations of the distinct token occurrences to be identical, and in this ease they would not be.

The identity between the object denoted by *book* in NP5 and that denoted by *which*, indicated for presentational purposes by the common subscripts, is determined by the nature of restrictive relative clauses. The identity holds for the same reason as that in (17).

(17) The frogF [whichF is on the table] is happy.

That is, the denotational identity in which the relative pronoun participates requires no ad hoc assumption due to my proposal about English document word structures.

Of course, key aspects of sentences like (13) are not represented in (16). In particular, it must ultimately be indicated that DP2 not DP1 functions as the subject of the VP, and of course the parts of DP1 above DP2 must be rendered invisible. And parallel properties must be imposed on DP4 and DP3. Such matters ae beyond this discussion.

## Books

To conclude, I have argued distinct intersecting points related to books. Fist, books are abstract objects and there is no sense or motivation for talking of them as mind-dependent. The error there arises, I have suggested, from failing to separate distinct things. These include the abstract objects themselves, concrete tokens of them, human knowledge of languages and orthographies, which is of course mind-dependent, and the physical process of token construction. The fact that human actions are involved in the writing process does not require talking about creating abstract objects since the process is describable as selecting and ordering individual sentences and creating orthographic tokens of them.

Second, I sketchily tried to show that a syntax which treats a proper subset of uses of words denoting documents as representing complex structures involving elements denoting both documents and their tokens permits simple, natural treatments of cases which otherwise are quite puzzling.

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