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## On the Semantics of Existence Predicates

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### Abstract

The most common philosophical view about the notion of existence is that it is a second-order property or existential quantification. A less common view is that existence is a (first-order) property of 'existent' as opposed to 'nonexistent' (past or merely intentional) objects. An even less common view is that existence divides into different 'modes of being' for different sorts of entities. In this paper I will take a closer look at the semantic behavior of existence predicates in natural language, such as *exist*, *occur*, and *obtain*, arguing that existence predicates in natural language support the two less common philosophical views. I will develop explicit analyses of existence predicates in their time-relative and space-relative uses which will explain why they apply to some kinds of entities, but not others.

The most common philosophical view of existence is that existence amounts to existential quantification (the Quinean tradition) or is a second-order concept (the Kant-Frege tradition). A less common philosophical view is that existence is a first-order property distinguishing between nonexistent (past, possible, or merely intentional) objects and existing objects. An even less common philosophical view is that existence divides into different 'modes of being' for different kinds of entities (a view held, for example, by Aristotle, Heidegger, Sarte, Ryle, and more recently McDaniel).<sup>1</sup> The aim of the present paper is to take a closer look at how the notion of existence is in fact expressed in natural language. In natural language, it appears, existence is not so much expressed by quantification, which can be shown to be neutral as regards any distinction between existent and nonexistent objects that one might draw. Rather existence is expressed by predicates, and that is, first-order predicates. Furthermore, there is, at least in English, no single existence predicate, but rather at least three: *exist*, *occur* (or related predicates such as *happen* or *take place*), and *obtain*. The semantic behavior of such existence predicates (regarding the kinds of entities that they can apply to and the sorts of

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<sup>1</sup> For a recent defense of the Quinean view, see van Inwagen (1998). For a recent defense of a view of existence dividing into different modes of being see McDaniel (to appear a, b).

adverbial modifiers they allow) reveals a notion of existence that divides into at least three different kinds of modes being, reflecting the distinction between endurance and perdurance, as well as their space-related analogues, but also the particular mode of being of such entities as states, facts, conditions, and laws. Existence predicates reflect such distinctions primarily in their time- and space-related uses, but in fact the location-independent uses of existence predicates should best be understood as derivative upon their location-dependent uses.

I will first clarify the notion of an existence predicate itself as well as some fundamental semantic differences in natural language between constructions of existential quantification and existence predicates. I then discuss the semantics of the three existence predicates *exist*, *occur*, and *obtain* in greater detail.

### 1. The notion of an existence predicate

While many philosophers take existence to amount to just existential quantification, it has hardly escaped philosophers' attention that natural language displays existence predicates, in particular, of course, the predicate *exist*. A number of philosophers, most notably Frege, have taken *exist* to be a special, second-order predicate, applying to concepts rather than individuals. However, from the point of view of natural language semantics, *exist* clearly is a first-order predicate.<sup>2</sup> It does not require, like putative second-order predicates, predicative terms, but rather requires expressions in subject position that act as singular terms, as in (1a, b) and (2a,b), or that act as quantifiers binding individual variables, as in (1c):<sup>3</sup>

(1) a. The president of France exists.

b. Mars exists.

c. Some planet exists.

(2) a. The king of France does not exist.

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<sup>2</sup> Philosophers that have argued that *exist* is a first-order predicate include Miller (1975, 1986, 2002), Salmon (1987, 1989), and McGinn (2000).

<sup>3</sup> *Exist* also allows for bare plurals or mass nouns in subject position, in which case it does seem to express existential quantification:

(1) a. Giraffes exist.

b. Gold exists.

However, as will be shown later, bare plurals and mass nouns in the subject position of *exist*-sentences are in fact kind-referring, and thus singular terms. This means that *exist* is a first-order predicate in sentences like (1a, b) as well.

b. Vulcan does not exist.

When *exist* is viewed as a first-order predicate in positive existence statements as in (1a, b, c), it is generally taken to express a trivial or almost trivial property, the property every entity has or, less trivially, the property that every present and actual entity has. The occurrence of *exist* in negative existentials, as in (2a, b), is more difficult to handle. The main focus of this paper is the application of time- or space-relative uses of existence predicates to particular kinds of entities, but for an appropriate discussion of existence predicates a few words are necessary concerning negative existentials.

There is a significant debate of how to analyse negative existentials with singular terms, while treating *exist* as a first-order predicate. On one view, the subject term in negative existentials is an empty term, *exist* expresses the trivial property everything has, and negation is taken to be external negation. On that view, (2b) will mean: ‘it is not true that Vulcan exists’. On another view, the Meinongian view, the subject term in a true negative existential always stands for an entity, but a ‘nonexistent’ entity, an entity of which *exist* is false. There is also a third, hybrid view, that of Salmon (1987, 1998), on which the subject term in true negative existentials sometimes stands for an object of which *exist* is not true, namely an object that has existed only in the past or a merely possible object. If the subject of the negative existential is a fictional term, though, Salmon takes it to be empty, with negation then being external negation.

Negated existence predicates in existentially quantified sentences present a particularly interesting phenomenon which appears to give support for the Meinongian view. Meinongians have long argued that existential quantification, unlike predication with *exist*, is not existentially committing.<sup>4</sup> This is displayed by the following ‘Meinongian’ statement:

(3) There are things that do not exist.

The Meinongian statement in (3) can hardly serve as a piece of ‘linguistic evidence’ for the Meinongian view, though: a sentence like (3) serves to express a philosophical position, rather than being a ‘natural’ sentence of natural language, a sentence that can be used without thereby making explicit a philosophical conviction. But there are constructions in natural

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<sup>4</sup> Recent Meinongians include Parsons (1980) and Priest (2005).

language that appear to involve intentional objects as semantic values of subject terms in negative existence statements. The relevant sentences are entirely natural in the sense that they hardly sound like the expression of a philosophical view. These are examples:

- (4) a. Some people John mentioned do not exist.  
 b. Some things John thought of do not exist.

In (4a, b) the subject consists of a definite description formed, crucially, with an intentional verb, such as *mention* or *think of*. Such verbs appear to take intentional ‘nonexistent’ objects as arguments when the intentional act they describe is not successful, and these entities appear to be the ones the existential quantifiers in (4a,b) range over.

If intentional ‘nonexistent’ objects are involved in existentially quantified negative existentials as in (4), then they may just as well be involved in negative existentials with apparent empty proper names and descriptions associated with a failed or pretend act of reference (and in particular descriptions formed with intentional verbs as in *the woman John mentioned does not exist*). However, this paper is not the place to defend such a view further.<sup>5</sup> What is important in the present context is simply the difference displayed by existential quantification and existence predicates in natural language.

The apparent ability of natural language quantifiers to range over nonexistent objects is not the only respect in which existential quantification in natural language differs from existence predicates. There is a further fundamental difference between sentences with an existence predicate and with existential quantification. Existential quantifiers in natural language may range over entities of any kind whatsoever, but existence predicates in natural language are generally restricted to a particular kind of entity. Thus, *exist* is restricted to enduring objects (basically material objects), at least in its tensed form. For perduring entities, that is, events, *occur* (or *happen* or *take place*) is the appropriate existence predicate instead. Moreover, for entities of the sort of states or facts, abstract entities in a certain sense, there is a specific existence predicate in English, namely *obtain*.

The apparent variety of existence predicates in natural language raises the question of what makes a predicate an existence predicate in the first place. This question obtains importance in view of the fact that in the history of philosophy there have been a variety of views as to what

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<sup>5</sup> See McGinn (2000) for a philosophical defense of that view.

‘modes of being’ there are. Thus Sartre took conscious entities to engage in a distinctive mode of being and in the phenomenological tradition ‘being experienced’ was considered a mode of being (even the only one). The question thus is: is there a criterion that tells us whether a predicate is an existence predicate in a linguistically relevant sense? There is in fact a very clear criterion for existence predicates, namely the semantic behavior of predicates under negation. Negative existentials display the peculiarity that they can be true even if the subject does not refer to or stand for an actual object. Other predicates simply do not display that particular feature. Ordinary predicates when negated will in such a case lead to sentences that intuitively lack a truth value (such as *the present king of France is bald*).

Intentional verbs like *think of*, *mention*, or *describe*, as already mentioned, arguably take intentional objects as arguments (*John thought of the woman Bill mentioned*). Unlike existence predicates, though, they do not systematically yield truth when negated. Thus, the sentence below may very well be false, even if the woman John described does not exist:

(5) Bill did not think of the woman John described.

Ordinary (non-intentional) predicates thus are subject to the following condition:

(6) a. A (intransitive) predicate P is an *ordinary predicate* iff for any world w and time t, for any singular term T, if T does not stand for an actual entity in w, then neither  $[T \text{ not } P]^{w,t} = \text{true}$  nor  $[T \text{ not } P]^{w,t} = \text{false}$ .

By contrast, existence predicates are subject to the following condition (formulated so as to remain as neutral as possible regarding the treatment of negative existentials):

(6) b. Criterion for Existence Predicates

An (intransitive) predicate P is an *existence predicate* iff for any world w and time t, for any singular term T, if T does not stand for a (present, actual) entity in w, then  $[T \text{ not } P]^{w,t} = \text{true}$ .

Applying the criterion to some putative existence predicates, *exist* obviously is classified as an existence predicate, as are *occur* and *obtain* given the possible truth of the sentences below:

- (7) a. The event John mentioned did not occur.  
 b. The situation John described did not obtain.

*Live* and *be alive* are putative existence predicates, but by the criterion they do not come out as such:

- (8) The person Mary mentioned does not live / is not alive.

*Live* and *is alive* presuppose that the object they apply has been alive before; they do not specify the actual existence of an object of thought. The criterion also rules out as existence predicates a range of other predicates that according to particular historical philosophical views might be regarded as such, for example *being experienced*.

With this clarification of the notion of an existence predicate as such, let us now focus on the semantic differences among different existence predicates as well as their time- and space-related application.

## 2. The difference between *exist* and *occur*

Existence predicates when they occur in a positive sentence in a tensed form have a particular lexical meaning relating an entity in a certain way to its location in time. Let us first look at the two existence predicates *exist* and *occur*. We have already seen that tensed *exist* applies to ‘enduring’ objects (which I will call simply ‘objects’), whereas *occur* applies to ‘perduring’ object’, that is, events.

The categorial restrictions of *exist* and *occur* give support for ‘three-dimensionalism’ as opposed to ‘four-dimensionalism’ regarding material objects. On a four-dimensionalist view, events and objects are both space-time worms bearing the same relation to space and time: they are both ‘spread out’ in space and time. This means that they both occupy a spatio-temporal region by having parts that occupy the subregions of the spatio-temporal region. Given the four-dimensionalist view, it is hard to see how time-relative *exist* could be restricted to one sort of four-dimensional object rather than another. By contrast, on a three-dimensionalist view, objects and events will be fundamentally different kinds of entities, bearing fundamentally different relations to time: objects endure, whereas events perdure. These restrictions are easy to formulate on a three-dimensionalist view

The standard view of endurantism draws the distinction between enduring and perduring entities as follow (Lewis 1986, Hawley 2001): An enduring entity occupies a time  $t$  by being wholly present at each moment of  $t$ , whereas a perduring entity occupies a time  $t$  by some part of it being present at any moment of  $t$ . Endurance thus requires complete presence of an object at each moment of its lifespan. By contrast, perdurance requires only the presence of a part of an entity at any moment of its duration. The notions of endurance and perdurance correspond to time-relative existence and extension, in the following sense of Fine (2006): enduring entities exist at a time, which means they are completely presence at each moment of the time; by contrast, perduring entities are extended over a time, which means only a part of them needs to be present at any given moment of the time. This way of drawing the distinction means that perduring entities can have temporal parts, whereas enduring entities cannot. Entities such as organisms, artifacts, and entities with lasting spatial boundaries, such as countries or stones, are among the enduring entities, whereas events are examples of perduring entities.

The distinction between enduring and perduring entities in terms of time-related existence and extension seems well suited for capturing the lexical meanings of *exist* and *occur*. However, *exist* cannot just express the property that holds of an object  $x$  at a time  $t$  iff the whole of  $x$  is present at each moment of  $t$ , and *occur* cannot just express the property that holds of an object at a time  $t$  iff for any moment  $t'$  of  $t$ , some part of  $x$  is present at  $t'$ . This would allow both *occur* and *exist* to apply to momentaneous events. *Exist* and *occur* will in addition impose particular sortal constraints on the entities they can apply to. *Exist* imposes the condition that the entity it applies to not be able to have temporal parts, in virtue of the kind of entity it belongs to. *Occur* imposes the condition that the entity it applies be able to have temporal parts, in virtue of the kind it belongs to.

Thus the lexical meanings of tensed *exist* and of *occur* will be as follows:

(9) a. The lexical meaning of tensed *exist*

For an entity  $x$  that cannot have temporal parts,  
for a time interval  $t$ ,  $x \in [exist]^t$  iff for every  $t' < t$ , the whole of  $x$  is present at  $t'$ .

b. The lexical meaning of *occur* (preliminary formulation)

For an entity  $x$  that can have temporal parts,  
for a time interval  $t$ ,  $x \in [occur]^t$  iff for every  $t' < t$  some part of  $x$  is present at  $t'$ .

There is a problem, though, with giving the meaning of *exist* and *occur* as in (9), and that is that it fails to account for the fact that *exist* is a stative verb, whereas *occur* is an eventive verb. It is remarkable that in natural languages there is generally no stative existence predicate of events, even though ‘extension in time’ appears to be a state. English *occur* clearly is an eventive verb: it takes adverbial modifiers that are typical of event predicates, such as *suddenly* or *quickly*, modifiers that are impossible with stative predicates; moreover it allows for the progressive (*the event is occurring right now*), which again is typical of eventive predicates. *Occur* thus does not describe a state of extendedness over a time, but rather it describes a transition, or rather a series of transitions, from an event part being at a time to another event part being at a subsequent time.

In order to account for this difference between *exist* and *occur*, it is useful to adopt the Davidsonian view of the semantics of verbs on which events (and states) act as implicit arguments of verbs. Given the Davidsonian view, the implicit event arguments of verbs will also be the referents of the corresponding nominalizations such as *the occurrence of the murder* or *the existence of the house*. *Occur* will thus express a two-place-relation between occurrences and (occurring) events and *exist* a two-place relation between states of existence and (existent) entities.

Occurrences appear to be a kind of temporal abstraction from the occurring events. This is indicated by the differences in the kinds of predicates that occurrences and occurring events accept: occurrences, unlike occurring events, do not accept qualitative predicates:

- (10) a. The murder was grisly / brutal.  
 b. ?? The occurrence of the murder was grisly / brutal.

Occurrences do allow for other types of event predicates, though, for example temporal and attitudinal predicates:

- (11) The occurrence of the murder was sudden / unexpected.

Thus it appears that occurrences are events that retain none but the temporal features of the corresponding occurring events. Occurrences may therefore be viewed as transitions from the presence of a proper part of the occurring event at a time to the presence of a proper part of the occurring event at a subsequent time. I will take the ‘presence’ of an event part at a time to



be a temporal trope: the relational trope that is the instantiation of the temporal *at*-relation (AT) in the event and the time. Within the Davidsonian semantics of events, the lexical meaning of *occur* can thus be reformulated as follows, where *f* is the function mapping an *n*-place relation and *n* entities to the instantiation of the relation in those entities:

(12) The lexical meaning of *occur*

For a time *t* and events *e* and *e'*,  $\langle e, e' \rangle \in [\textit{occur}]^t$  iff *e* = the sequence of transitions from  $f(\textit{AT}, e'', t')$  to  $f(\textit{AT}, e''', t'')$  for any subsequent times  $t', t'' < t$  for which there are event parts *e''* and *e'''* of *e*.

What about momentaneous events, a flash or a crack? The account applies here as well: the occurrence of such a momentaneous event is simply a single trope that is the manifestation of the temporal 'at'-relation with respect to that event and the moment it occurs.

The Davidsonian semantics of verbs can also be applied to *exist*. *Exist* is a stative verb, satisfying standard linguistic criteria for stativity. Also its nominalization *existence* clearly describes a state rather than an event. Looking at the range of predicates that can apply to 'existences', though, it appears that existences are states of a particular sort: existences have fewer properties than one might have thought states of existence should have. For example, a state of existence, one might think, should have a spatial location, being located just where the object is during its existence. But sentences with *exist* do not allow for spatial modifiers:<sup>6</sup>

- (13) a. \* John exists in Germany.  
 b. \* The king of France existed in France.

Obviously, the location modifiers cannot be predicated of the state of existence, and thus existences, if they are Davidsonian event arguments, simply cannot have spatial location.

The location modifiers in (13a, b) may be understood in another way than as predicates of the Davidsonian event argument. In natural language semantics, two different kinds of

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<sup>6</sup> There is one important exception to this generalization, namely *exist*-sentences with bare plurals and mass nouns, which in fact are kind-denoting terms:

(1) Giraffes exist only in Africa.

I will turn to those in Section 3.

adverbial modifiers in fact need to be distinguished: adverbials that act as adjuncts and adverbials that act as complements. If an adverbial modifier is obligatory, it will be a complement; if it is not, it may be adjunct (though it need not be). As an adjunct, an adverbial acts as a predicate of the state or event described. As a complement, it provides an argument of the relation expressed by the verb, and thus generally provides a component that is constitutive of the described event or state.<sup>7</sup> *Exist* does not allow for location modifiers as complements either, when it applies to material objects. The reason is that material objects do not exist in space: for an entity *e* to exist at a spatial location *l* requires *e* to be completely present at each sublocation of *l*. But this is impossible for material objects. Material objects are rather extended in space: they occupy a space by having some part being at any sub-region of the space. Since material objects have spatial parts, they cannot be completely present at each sublocation of their location.

Recent linguistic semantic work on stative verbs can help give an answer to the question why *exist* resists location modifiers as adjuncts. It has long been observed that in fact most stative verbs do not allow for location modifiers and thus display what is known as the Stative Adverb Gap (Katz 2003). Among those verbs are *know*, *own*, and *weigh*:

- (14) a. ?? John's knows mathematics in France.  
 b. ?? John owns a watch in Munich.  
 c. ?? John weighs 100 kilos in Germany.

In fact, such verbs also resist a range of other modifiers, such as manner modifiers, and they cannot form the complement of perception verbs:

- (15) a. ?? John owns a watch with a lot of effort.  
 b. ?? John knows French in a strange way.  
 (16) a. ?? Mary heard John know French.  
 b. ?? Mary saw John weigh 100 kilos.

*Exist* in fact patterns with that class of verbs also in these two respects:

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<sup>7</sup> A variety of syntactic tests distinguish adjunct and complement adverbial modifiers, which I will not go into.

- (17) a. \* The house has existed for a few years in a strange way.  
 b. \* John saw house exist for many years.

Maienborn (2007) has proposed an ontological account of the Stative Adverb Gap, tracing it to the particular nature of the state most stative verbs describe.<sup>8</sup> Maienborn argues that stative verbs take states as arguments that are abstract in the sense of a Kimean conception of events or rather states. A Kimean account of states will consist in a specification of the existence and identity conditions of states on the basis of a property, an individual, and a time, as below.

(18) The Kimean account of states

- a. For a property  $P$  and an object  $o$ ,  $f(P, o)$  obtains at a time  $t$  iff  $o \in P^t$ .  
 b. For properties  $P, P'$ ,  $o, o'$ ,  $f(P, o) = f(P', o')$  iff  $P = P', o = o'$ .

The Kimean account of states amounts to an implicit definition of states. This means that states will have only those properties as intrinsic properties that are specified by the account itself. Thus, they will have properties of temporal duration, but not of spatial location. On a Kimean account, states will come out as abstract in the sense of not involving a particular manifestation; rather all there is to a Kimean state is what is specified by the account itself.<sup>9</sup>

The condition of complete presence that *exist* imposes requires some qualifications. It cannot be that strictly all the parts of an enduring object need to be present at any moment of the lifespan of the object; this should only hold for atemporal parts, not the parts that a material object may have only at some point during its lifespan (Fine 2006). Also the atemporal parts need to be understood appropriately. An object may have functional parts which can be constituted by different material at different times and thus are not strictly speaking material parts. Furthermore, the question arises whether complete presence should not also include essential features of an object, such as its configuration or form if it is essential or qualitative features. In any case, what defines existence at a time should be the

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<sup>8</sup> There is an alternative proposal concerning the Stative Adverb Gap, namely that of Katz (2003). Katz argues that stative verbs lack an event argument position. But see Maienborn (2007) for discussion.

<sup>9</sup> Verbs that describe Kimean states contrast with verbs that describe what Maienborn calls 'Davidsonian states'. The latter include verbs like *stand*, *sit*, and *sleep*. Concrete states do allow for location and manner modifiers and can be the object of perception.

recurrence of features and parts constitutive of an object throughout the time, not the presence of material parts as such.

### 3. Space-relative existence

Ordinary material objects generally cannot bear the existence relation to a spatial location because they cannot be completely present at the spatial sublocations. But there are entities for which space-relative existence is possible. Fine (2006) in fact argues for a generalization of existence at a time, as complete presence at a time, to existence at a spatial location, that is, complete presence at a location. Fine gives the example of a composite aroma of coffee and vanilla whose presence at a location, he argues, requires the presence of both the aroma of vanilla and the aroma of coffee. This example is not unproblematic from the present point of view, though: aromas do not go along very well with the existence predicate *exist*:

(21) a. ?? The aroma exists in that room.

The reason why aromas do not go along with *exist* appears to be an ontological one. Aromas as particulars simply cannot be wholly present at different locations. Only aromas as kinds can, as in the examples below:<sup>10</sup>

(21) b. This kind of perfume does not exist in France anymore.

c. This kind of aroma only exists in oriental countries.

What are aromas as particulars? Arguably aromas as particulars are tropes without a bearer: they are mere spatio-temporally located features. Tropes in fact in general do not go along very well with space-relative existence predicates:

(22) ?? The greenness of the plants exists everywhere in the garden.

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<sup>10</sup> Sounds and physical fields for Fine are other cases of entities involving complete presence at a given location. I find the example of sounds even more problematic than aromas. Sounds neither as particulars nor as kinds seem to accept existence predicates, including location-relative existence predicates in particular:

(1) a. ?? The sound exists throughout the house.

b. ? This kind of sound does not exist in modern opera houses anymore.

Space-relative *exist* with tropes is not possible because tropes as particulars (with or without a bearer) cannot be present at different locations at once.

But there are entities, particular sorts of abstract entities, with which space-relative *exist* is perfectly natural. One such case is languages. Languages can be completely present at different places, and they do allow for location modifiers with *exist*.<sup>11</sup>

(23) This dialect does not exist in this region anymore.

It is easily explained why languages have space-relative existence. The location of a language is the region where the language is spoken, and every part of that region should count as a location of the language, and of course the entire language.

Other entities that display space-relative existence include condition-like entities such as situations and laws, which also allow for space-relative *obtain*, as will be discussed later

Another important case of abstract entities displaying space-relative existence are kinds. This requires a little linguistic elaboration. It is a common view among linguists that kinds can be the referents of bare mass nouns and plurals, in particular with predicates like *widespread* or *rare*.<sup>12</sup>

(24) a. Ants are widespread.

b. White gold is rare.

Whereas kind reference of bare plurals and mass nouns with predicates like *widespread* is considered unproblematic, linguists are not unanimous that bare plurals and mass nouns are always kind-referring. Some linguists, in particular Carlson (1977) and Chierchia (1998), held the view that bare mass nouns and plurals are (almost) always kind-referring (with the predicate being responsible for different readings). Other linguists hold the view that with some predicates, such as *eat* or *buy* bare plurals or mass nouns express existential quantification ranging over the instances of the kind (such as quantities or individuals). The present discussion fortunately can stay entirely neutral as regards those two linguistic views. There are a range of tests for kind reference that tell if a given occurrence of a bare mass noun

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<sup>11</sup> Thanks to Roger Schwarzschild for bringing this example to my attention.

<sup>12</sup> Obviously these need not be natural kinds, but may include kinds of artifacts -- in fact kinds of any sorts of entities.

or plural can only be kind-referring, and these tests show clearly that with *exist* a bare plural or mass noun must be kind-referring.

First, anaphora when they take a bare plural as subject of an *exist*-sentence as antecedent stand for the entire kind, not one of the instances that an existential quantifier would range over:

(25) a. Dinosaurs do not exist. But they once did exist.

b. Three dinosaurs do not exist. \* But they (three dinosaurs or other) once did exist.

Moreover, bare plurals and mass nouns can be modified by a relative clause whose predicate is an instance-distribution predicate:

(26) Dinosaurs, which used to be widespread in Europe, do not exist anymore.

Also temporal modifiers of *exist* with bare plurals or mass nouns show kind reference:

(27) a. Dolphins still exist.

b. Dinosaurs no longer exist.

The same holds for aspectual predicates such as *continue* or *cease*:

(28) a. Dinosaurs continued to exist.

b. Dinosaurs ceased to exist.

Finally, bare mass nouns and plurals do not allow an interpretation on which they act as existential quantifiers taking wide scope over other quantifiers or negation in the sentence, unlike ordinary existentially quantified NPs:

(29) a. Dinosaurs do not exist anymore. (impossible as: for some dinosaurs *x*, *x* does not exist anymore)

b. Two dinosaurs do not exist anymore. (ok as: for two dinosaurs *x*, *x* does not exist anymore)

Thus, bare plurals and mass nouns in *exist*-sentences stand for kinds, in the relevant (linguists') sense.

An important observation about *exist*-sentences with kind terms is that they also allow for terms referring to kinds of events:

(30) Great wars still exist.

The crucial observation now is that *exist*-sentences with kind terms, including terms for kinds of events, allow for location modifiers:<sup>13</sup>

(31) a. Giraffes still exist in Africa.

b. Political protests do not exist in Bhutan.

What does the existence of a kind amount to, and the existence of a kind at a location in particular? Given the semantics of existence statements with kind terms, obviously, the existence of a kind as such means that there is an actual instance of the kind, and the existence of a kind at a location means that there is an instance of the kind at the location. That is, the existence of a kind at a location means that the kind is instantiated in an individual at the location (or at a part of the location).

Location-relative existence applied to kinds should also amount to complete presence at the relevant locations. But in what sense could a kind be completely present at a location, being instantiated in an individual at the location? It should somehow mean that all the parts of the kind are present at the location of the individual instantiating the kind. But what are the parts of a kind? One might think that the parts of a kind are the instances of the kind, a kind being a sort of plurality of all its instances (or all its possible instances). But this would give the wrong result since not all the instances can be at any location at which a kind is instantiated. In fact, the more common view about the parts of a kind is that the parts are the characteristics of the kind, that is, the attributes that together make up the 'essence' of a kind.

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<sup>13</sup> There are in fact two linguistically relevant notions of kind: referents of bare plurals or mass nouns and kinds as referents of definite singular kind terms as in (1) below. Only the former not the latter allow for space-relative *exist*, as seen in (2):

(1) The giraffe is mammal.

(2) a. Giraffes exist everywhere.

b. ?? The giraffe exists everywhere.

Complete presence of a kind at a location would thus mean instantiation of all the attributes of the kind in an individual at the location.

There is one remaining puzzle concerning the space-relative existence of kinds. One might have thought that an existence statement locating a kind at a spatial region such as (31a) should state the complete presence of the kind at each sub-location of the location mentioned by the location modifier, just as a time-relative existence statement requires the complete presence of the individual at each moment of its lifespan. This is not the case in (31a), though, which does not require the complete presence of the kind giraffes in each part of Africa. It is in fact sufficient that the kind be completely present just at the locations of in Africa, and it suffices that there be just some instances of the kind in Africa.

It seems that this puzzle has less to do with space-relative existence for kinds as such than with the semantics of English locative sentences. A weak, existential condition seems to be part of the semantics of locative modifiers in general, for example in the sentence below:

(32) John resides in Munich.

*In Munich* specifies that John's residence is located somewhere in Munich, not that it is located everywhere in Munich or all over Munich.<sup>14</sup>

Not just location modifiers with *in*, but also those with a variety of other spatial prepositions locate the described event or individual in fact just somewhere within the location mentioned. This is illustrated with location-relative existence statements below:

- (33) a. Giraffes exist outside of Africa  
 b. Giraffes still exist near the coast.

Also the location modifiers in (33) do not give the precise location of the entity in question. Thus, for a term T, *in* T locates an entity somewhere in the location that T refers to, *outside* T locates it somewhere outside that location, and *near* T locates it somewhere 'near' that location.

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<sup>14</sup> Existential quantification is in fact also involved in the semantics of temporal modifiers:

(1) John resided in Munich last year.

*Last year* requires John to have resided in Munich at some point in the last year, not throughout the last year.



Only special locational modifiers such as *throughout* and *all over* require that every part of the location mentioned is where the entity or event in question is located:

- (34) a. Giraffes exist throughout Africa.  
 b. Giraffes exist all over the world.

This is because such location modifiers are in fact quantificational, containing an explicit (*all* in (34b)) or implicit (*throughout*) quantifier ranging over the parts of the location.

A distinction thus needs to be made between the location mentioned by the location modifier and the *strict location*, the location that is in fact where exactly the entity or event in question is located. The complete-presence condition of *exist* needs to be fulfilled only with respect to the parts of the strict location, not the location mentioned.

With an ordinary location modifier, an existence statement concerning a kind requires just that the kind be instantiated in an individual at some sublocation of the location mentioned by the modifier, the strict location. But would this not require that the kind be present at each sublocation of the location of a relevant instance of the kind? This is certainly not the case. The location of an instance should in fact count as a minimal location for the kind. The reason for that is this. Kinds inherit their location from the location of their instances; they cannot have a location in any other way. Thus they could not possibly be located at a proper part of the location of an instance of the kind.

As a consequence of the possibility of the space-relative existence of kinds, kinds can be multiply located. That is, *exist* may locate a kind at different locations, which amounts to the kind being ‘entirely’ present in instances of the kind at those locations. This matches well the Aristotelian view of universals as being able to be multiply located, located just where the instances are located.

The existence of a kind at a location obtains in virtue of an entity that completely instantiates the kind being at the location. Note that this in-virtue condition does not require that the instances of the kind ‘exist’ at the location in question. A requirement that the instances exist at the location could not be fulfilled by instances that are enduring objects and thus cannot exist at locations. Moreover, such a requirement could not be fulfilled by instances that are events, since events do not ‘exist’ in the first place. Rather for the existence of a kind at a location *l*, it suffices for an instance to simply be at *l*. The relation of being at a location is applicable both to enduring objects and to events.

Kinds generally have properties in virtue of their instances exhibiting particular conditions. So far the examples involved kinds as referents of bare mass nouns and plurals. In the linguistic semantic literature, it has been argued that kinds in this sense obtain certain of their properties in a particularly strict sense from their instances. Ever since Carlson (1977), it has become a common view to take the application of so-called stage-level and individual-level predicates to kinds to be obtained from predicates applying to individuals on the basis of existential and generic quantification over instances of the kind. Individual-level predicates generally are taken to be predicates that are true of individuals throughout their lifespan. Such predicates generally exhibit a generic reading when applied to kinds, as in (35a):

(35) a. Firemen are intelligent.

Stage-level predicates are generally taken to be predicates that are true only of a ‘temporal stage’ of an individual. Such predicates generally exhibit an existential reading when applied to kinds, as in (35b):

(35) b. Firemen are available.

On the Carlsonian view, individual-level predicates are lifted to kind predicates on the basis of generic quantification over individuals and stage-level predicates on the basis of existential quantification, as below:<sup>15</sup>

(36) a. For an individual-level predicate  $P$ , for a kind  $x$ ,  $x \in [P_{\text{kind}}]$  iff  $\text{Gn } y [y \text{ I } x; y \in [P]]$ .  
 b. For a stage-level predicate  $P$ , for a kind  $x$ ,  $x \in [P_{\text{kind}}]$  iff  $\exists y [y \text{ I } x; y \in [P]]$ .

Given the Carlsonian view, the question arises, should *exist* be classified as a stage-level predicate or as an individual-level predicate? *Exist* when applied to kinds of concrete objects clearly triggers an existential not a generic interpretation. But *exist* is not easily classified as a stage-level predicate. *Exist* necessarily holds of an entity throughout its life span. A characterization of stage-level predicates as predicates expressing accidental properties seems to do better. Concrete entities generally exist only accidentally, not essentially. Since this

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<sup>15</sup> Gn is the generic quantifier, see Krifka et al. (1995).

paper does not provide the space for an in-depth discussion of the stage-level/individual-level distinction as such, let us just note that *exist*, if anything, goes along with the class of predicates generally classified as ‘stage-level’, rather than those classified as ‘individual-level’.

*Exist* as a stage-level predicate applying to kinds could obviously not be obtained by the condition in (36b), by existential quantification over instances with the application of *exist* to particular instances. Location-relative *exist* as a kind predicate is not obtained from location-relative *exist* as a predicate applying to individuals. Rather location-relative *exist* involves existential quantification over instances fulfilling a ‘weaker’ condition than existence relative to the location in question.

*Exist* is not alone in that respect. The same also holds for certain other ‘stage-level’ predicates, such as *recognize*:

(37) John recognized gold (in virtue of coming across some instances).

In order for John to recognize gold, he must have ‘come across’ an instance, though ‘recognize’ would not apply to that instance. *Recognize* applies to a kind rather directly, requiring a weaker condition on an instance, that of having ‘come across’ an instance.<sup>16</sup> To conclude, some stage-level predicates, including *exist* and *recognize*, need not apply themselves to an instances; rather only a weaker condition than that expressed by the predicate itself may be applied to an instance.

There is another reason not to trace the existential reading of *exist* with kinds to a Carlsonian account of stage-level predicates with bare mass nouns or plurals in general. The reading of *exist* involving existential quantification over instances is equally available for certain other kind terms than bare mass nouns and plurals, in particular demonstrative kind terms of the sort *this flower* or *this animal*.<sup>17</sup>

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<sup>16</sup> Another example of a stage-level predicate applying to a kind ‘directly’ is *disappear*, as in Geach’s (1968) example below:

(1) Dinosaurs have disappeared.

Here in fact no existential quantification is involved at all in the interpretation of the predicate.

<sup>17</sup> Obviously demonstrative kind terms like *this flower* behave differently in that respect from definite kind terms of the sort *the giraffe*, see Fn. 10.

- (38) a. This flower exists in many countries in Europe.  
 b. This animal does not exist in this region anymore.

To summarize, space-relative *exist* can apply to kinds because of the particular nature of kinds, their ability to be completely present at different locations at once.

#### 4. The existence predicate *obtain*

We have seen that location-relative *exist* expresses the condition of complete presence at all the relevant sublocations. The same condition is in fact expressed by location-relative *obtain*, even though *obtain* imposes different requirements on the entities it can apply to. *Obtain*, recall, is an existence predicate that applies to entities such as states, situations, conditions, and facts. It does not apply to material objects, persons, or events:

- (39) a. The state / situation / condition / fact obtains.  
 b. \* The house / The person / The event obtains.

The restriction imposed by *obtain* cannot be one to abstract objects: *obtain* does not apply, for example, to mathematical objects, properties, or propositions.

*Obtain* like *exist* is an abstract state verb. Moreover, it has a time-relative as well as a space-relative application, with entities such as states, situations, or conditions:

- (40) a. The state / situation / condition still obtains.  
 b. The state of emergency / The same situation / The same condition obtains in Arizona.

Time-relative and space-relative *obtain* does not apply to facts, though. The reason clearly is that facts are themselves already location-wise complete.

What characterizes the entities to which *obtain* is restricted is that they are constituted by certain conditions holding, that is, by certain properties or relations holding of an object or a number of objects. Let me call those entities *condition-like entities* and the conditions in question *constitutive conditions*. Some condition-like entities go along with canonical descriptions, that is, descriptions that display exhaustively the nature of the entity in question. Facts have canonical descriptions of the form *the fact that S*, states have canonical

descriptions of the form *the state of NPs being VP*, and similarly conditions have standard descriptions of the sort *the condition of NP's being VP*. It is the canonical description that explicitly displays the property or relation whose holding is constitutive of the fact, state, or condition. The states will thus be abstract states as described earlier. In fact, the four kinds of entities to which *obtain* applies are precisely the kinds of entities for which a Kimean account would be suitable (that is, the account Kim originally proposed for events discussed earlier).<sup>18</sup> This account, recall, gives identity and existence conditions in terms of a property or relation holding of an object or a number of objects as well as possibly a location. (Of course the property of relation may itself be complex, involving connectives or quantifiers.)

Time-relative and space-relative *obtain* involves as its application condition a condition that like the application condition of location-relative *exist*, is the condition of complete presence at the relevant sublocations of the 'strict location'. But in the case of *obtain*, the condition manifests itself in somewhat different ways. Obviously, for an entity *e* to 'obtain' at a time interval *t*, the constitutive conditions must hold of the objects in question at *t*, and in fact at all the moments of *t*. If not, the entity may not be a state, but rather a sort of event, involving a transition from one state to another, distinct state. Similarly, it is plausible that if *obtain* applies to an entity *e* relative to a strict spatial location *l*, this will require the fulfillment of the constitutive condition of *e* at relevant sublocations of *l*. Thus, the sublocation condition holds for location-relative *obtain* just as it did for location-relative *exist*.

It remains then the complete-presence condition. What could the complete presence of a situation, state or condition at a time or location consist in? That is, what could count as the parts of a condition-like entity? The objects and times from which condition-like entities are obtained (in the 'Kimean' way) certainly do not count as parts of such entities. This manifests itself in the fact that they are not treated as parts by part-related expressions of natural language: *part of the situation*, *part of the condition*, or *part of the state* can never 'mean' a participant or location of the situation, condition, or state. Furthermore, if the parts of condition-like entities include properties, it is hard to make sense of them being 'present' at a time. The only suitable candidates for involvement in the complete presence condition are in fact any constitutive sub-conditions. This corresponds well to the way the *part-of* construction is used in natural language: *part of the condition*, *part of state*, *part of the situation* can only make reference to constitutive subconditions. Thus, condition-like entities, unlike material

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<sup>18</sup> This implies a Strawsonian view of facts, on which facts are not in the world, but abstractions from things going on in the world (Strawson 1950), rather than an Austinian view (Austin 1979).

objects, do not have spatial parts, and unlike events, they do not have temporal parts. Their only parts are constitutive subconditions. It is relative to them that complete presence at sublocations needs to be fulfilled when *obtain* applies. Thus for a situation, condition, or state *e* to obtain relative to a location *l* means that all the constitutive subconditions of *e* are fulfilled at all the relevant sublocations of *l*. Because condition-like entities have neither temporal nor spatial parts they can be completely present, in the sense of complete obtaining, at different times as well as different places. In that sense, they ‘endure’ both throughout time and across space.

The closeness between *obtain* and *exist* manifests itself also in that *exist* can apply to all the entities to which *obtain* can apply. Thus, (41a) and (41b) (with location-relative *exist*) are fairly acceptable, unlike sentences with *exist* applying to events:

(41) a. The state / The situation / The condition / The fact exists.

b. The same state / situation / condition still exists in some countries.

Location-relative *obtain* thus shares the condition of complete presence at the relevant sublocations with location-relative *exist*. The way *obtain* differs from *exist* resides in its sortal restriction to condition-like entities as well as the particular notion of ‘presence’ it involves: *exist* requires presence in the sense of spatial or temporal location, whereas *obtain* requires presence in the sense of a property being true of an object relative to a location. (What makes *exist* in (41a) and (41b) acceptable is obviously that the presence condition imposed by *exist* is extended so as to cover the ‘holding-at-a-location’ condition as well.)

Condition-like entities raise the question on what grounds their constitutive conditions hold, be it at a time, at a place, or absolutely. There are in fact two fundamentally different kinds of condition-like entities: those based on empirical facts (about the time or spatial location, or the world), and those based on normative conditions or conditions resulting from ‘declarations’ (which may or may not be restricted to a time or a spatial location). The state of someone’s mind or health is a state of the first kind, as are habits; a state of war, requirements etc are condition-like entities of the second kind. The first kind of state holds in virtue of what is taking place at the relevant location; the second kind of state holds by declaration or whatever may ground normative conditions. Thus for a condition-like entity to obtain at a location, either all the various things need not happen at the location in virtue of which the condition can be said to obtain or else the relevant condition, with all its subconditions needs

to have been put into place for that location. Either way, the condition-like entity will need to enjoy endurance throughout the location as long as the constitutive condition holds. Note that both *obtain* and *exist* are applicable to normative condition-like entities, including laws:

- (42) a. The law still obtains / exists in some countries.  
 b. The requirement for a president still exists / obtains in many countries.

## 5. Conclusion

Existence predicates in English, I have argued, form a clearly characterized semantic class of predicates. In their location-relative use, *exist* and *obtain* have a nontrivial meaning, specifying the complete presence of an entity at the relevant sublocations. *Occur*, by contrast, tracks the temporal locations of subevents of an event, describing an event that reflects the mere temporal structure of the occurring event.

There is one remaining question, and that is: what is the meaning of location-independent uses of existence predicates? It is important to note that location-independent uses of existence predicates still impose the same sorts of restrictions on the kinds of entities they can apply to. Location-independent *exist* like location-relative *exist* is inapplicable to events. Location-independent *exist* is also applicable to mathematical and other abstract objects, unlike location-dependent *exist*. Location-independent *obtain*, unlike location-dependent *obtain*, is applicable to facts. But it is still inapplicable to entities other than condition-like objects. The preservation of the sortal restrictions is an indication that the location-independent meaning of existence predicates is derivative upon their location-relative meaning.

How can the location-independent meaning then be derived from the location-dependent one? Time-independent *exist* applying to abstract objects may be obtained from time-relative *exist* by universal quantification over times. That is, *exist* is true atemporally of an object *o* if it is true of *o* at all times (which means *o* is completely present at all times). *Exist* with that meaning could not apply to events: it would require the complete presence of an event at all times, which is impossible.

Can the time-independent use of *obtain* can be derived from the time-relative use in that way as well, namely by universal quantification over times? In the case of *obtain*, this should mean complete fulfillment at all times of the constitutive conditions of the condition-like

entity. Facts that are constituted by the holding of a property of objects at a particular time could not fulfill this condition, though. Thus, the time-independent use of *obtain* must be derived differently for that case. It is plausible that condition-like entities that are complete regarding the parameters of the holding of the constitutive condition are completely present at any time (and any space). Time-independent *obtain* still presupposes that the entity it applies to be condition-like and that is because it is derived from location-relative *obtain*, which specifically relates to the constitutive conditions of the entities it applies to.

Can space-independent *exist* be derived from space-relative *exist*? This would require complete presence everywhere of entities that exist space-independently. Complete presence everywhere is of course impossible for material objects (which are extended in space). Perhaps space-relative *exist* is in fact itself derived from time-relative *exist* by form of analogy.<sup>19</sup>

Overall, we have seen that tied to the notion of existence is fundamentally that of complete presence throughout a location. This condition is inapplicable to some entities, such as events. It is in this sense that events might be said to have ‘being’ in a weaker sense. What is constitutive of objecthood is recurrence of the essential parts or features of an entity across locations, which is what the more fundamental notion of existence amounts to.

It has sometimes been argued that our linguistic intuitions about the verb *exist* should not be taken too seriously, for making either a semantic or a philosophical point, since *exist* is a relatively recent verb and tied to a more ‘technical’ use in philosophical contexts.<sup>20</sup> I think this caution is unjustified. We have seen that our intuitions about the verb *exist* are in fact very systematic and allow for a natural explanation within a fairly well-established ontological view. Furthermore, *exist* is not alone in displaying the relevant semantic behavior. In English, the existence predicate *obtain* behaves strikingly parallel to *exist*. The linguistic intuitions associated with *exist* thus are better viewed as displaying an important underlying concept of location-relative existence rather than peculiar features of a somewhat special lexical item.

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<sup>19</sup> Other uses of *exist* applying to material objects may involve implicit existential quantification, as part of the interpretation of tense.

<sup>20</sup> See in particular Simons (2006).



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