THE INSTANTIATIVE FUNCTION OF CAN ANDEXISTENTIAL MODALITY

HIROTAKA TOMOZAWA
Hitotsubashi University*

Keywords: instantiation, existential modality, potential, occasional development of potential, set-theoretic inclusion

1. Introduction

Like most other words of the category, the English modal auxiliary can is known for a variety of uses. A relatively common use is one for instantiation, exemplified by the following:

(1) A real number can be an integer, a fraction, or a decimal.
(http://www.math.com/school/subject2/lessons/S2U1L1DP.html)

(2) A parallelogram can be a rectangle, a rhombus, or a square.
(Gold (2002: 168))

(3) Allergy medicine can be pills, liquids, or even sprays for your nose.
(http://kidshealth.org/kid/asthma_basics/related/allergies.html)

In these sentences, the modal auxiliary is used to provide instances of the referent of the subject NP: (1) says that an integer, a fraction, or a decimal is an instance of a real number; (2) tells us that a rectangle, a rhombus, or a square instantiates a parallelogram; and (3) explains that pills, liquids, etc. are all instantiative forms of allergy medicine. The following examples represent the same use of the modal:

(4) In India a school can be a tent in the desert, a bus that travels the city streets, or a classroom in the shade of a mango tree.
(Harvey and Goudvis (2007: 273))

(5) Subject complements can also be adjectives. (Berk (1999: 45))

(6) Genitives take various shapes. They can be determiners; they

* I am indebted to two anonymous reviewers for their invaluable comments and suggestions on earlier versions of this paper. All remaining errors are my own.

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can be proper nouns; or they can be full noun phrases.  
(Berk (1999: 67))

(7) In fact, celebrating can be as simple as talking, listening, learning something new and playing a game together.  
(http://www.timeforkids.com/TFK/kids/news/story/0,28277,170003,00.html)

(4) says that a tent in the desert, etc., is a possible instance of a school.  (5) and (6) assert that the items specified in the complement NPs instantiate the subject NP referents, that is, subject complements and genitives respectively.  (7) describes how you can celebrate a holiday, suggesting activities like talking, listening, etc. as possible instances of celebrating it.  

In this paper, we will examine the use of can illustrated above from a semantic point of view.  In what follows, we will first take a brief look at the auxiliary as used to express possibility and see how it can be captured in terms of existential and epistemic modality.  We will then focus on existential modality and claim that the can of instantiation represents an existential use of the modal.  Finally, we will argue for a treatment of instantiative can as a distinct semantic category, based on an examination of its use in a syntactically restricted context.

2. Can and Possibility

It is generally agreed that the semantics of modal can involves such notions as “ability,” “possibility,” and “permission.”  Its use for expressing possibility is often analyzed in terms of “existential modality” and “epistemic modality.”  
Consider the following sentences, which include the can of possibility:

(8) Lightning can be very dangerous.  
(Leech (2004: 74), Oe (1983: 12))

(9) Even expert drivers can make mistakes.  

(10) This picture can be a Chagall.  

1 Sentences (1)–(7), all including a modal with an instantiative function, can be classified into two groups, one that can be taken to exhaust (almost) all the possibilities ((1) and (3)) and one that cannot ((2), (4), (5), (6) and (7)).  In the former case, the verb be may be replaced by be exemplified by more easily than in the latter case.

2 A brief outline of the uses of modal can is provided in Takaie (2005).
(11) It can’t be the postman at the door. It’s only seven o’clock.  
(Swan (2005: 334))

Sentence (8) means that lightning is sometimes very dangerous, although it is not always so. (9) implies that expert drivers sometimes make mistakes or that some expert drivers do so. In each of these sentences, the modal auxiliary represents existential modality, expressing the occurrence or existence of the event in question (Palmer (1990: 107–109), Huddleston and Pullum (2002: 184, 185), Sawada (2006: Chap. 10)). On the other hand, examples (10) and (11) involve epistemic modality, concerning the (speaker’s) judgment as to the possibility of the truth of the proposition involved (Palmer (1990: 60–63), Huddleston and Pullum (2002: 180, 181), Sawada (2006: Chaps. 11 and 12)). The judgment made is affirmative in (10) and negative in (11).³

3. Can and Existential Modality

In the foregoing section we saw how the possibility use of can is captured in terms of two types of modality, existential and epistemic. In the present section, we will explore further the nature of the modal involving the former type of modality. Existential can is generally characterized as (i) describing general/generic rather than particular/specific situations and (ii) expressing the frequency of the event, indicating it as occurring sporadically.⁴ The following examples may serve to illustrate these points:

(12) The weather can be awful. (Palmer (1990: 107))
(13) The Straits of Dover can be very rough.  
(Thomson and Martinet (1986: 133), Sawada (2006: 229))
(14) Roses can be mauve. (Palmer (1990: 107), Sawada (2006: 227))
(15) Poinsettias can be red or yellow.  
(Huddleston and Pullum (2002: 184))

These sentences are concerned with general characteristics of the subject NP referent: (12) describes the general tendency of the weather in question; (13)³

³ Epistemic can is typically used in a non-assertive/non-affirmative context as in (11). See Huddleston and Pullum (2002: 180, 181) and Sawada (2006: 187, 188) for further discussion.

⁴ See Oe (1983: 13), Leech (2004: 83) and Sawada (2006: 222, 228, 233) for more on these points. In this connection, Kashino (1993; 2002) characterizes the possibility expressed by existential can as “general possibility” (Kashino (1993: 193–207), Kashino (2002: Chaps. 2 and 3)). Kashino (1993: 193–207) and Sawada (2006: 228) present other descriptive labels applied to this use of can.
gives a general characterization of the Straits in terms of the climate; (14) and (15) provide general descriptions of the plants with regard to their color. And because they generally indicate a sporadic occurrence of the event in question, the sentences have paraphrases involving quantificational terms such as “sometimes” and “some”: 5

(16) The weather is sometimes awful.
(17) The Straits of Dover is sometimes very rough.
(18) Some roses are mauve.
(19) Some poinsettias are red, others yellow. 6

The sentences above are quantificational counterparts of (12)–(15): (16) and (17) mean that the event happens occasionally, not always; (18) and (19) imply that the event involves a restricted, not the entire, set of subject noun referents. 7 Sometimes the modal and the quantifier are found to co-occur:

(20) These animals can sometimes be dangerous.
(Huddleston and Pullum (2002: 184))

(21) Ann can really get on your nerves sometimes. (Swan (2005: 98))

These sentences, though involving apparent redundancy, can be taken to emphasize the sporadic nature of the event involved, a semantic characteristic that is typically exhibited by the modal auxiliary in this context.

It will be noted at this point that the can of instantiation illustrated earlier represents an existential use of the modal. The examples of the instantia-

5 Sawada (2006: 228) mentions that quantificational modality is another name for existential modality.
6 The ability of (15) to be paraphrased as (19) might make the former sentence, where the modal can occurs with the conjunction or, appear to be a combination of two statements (“Poinsettias can be red” and “Poinsettias can be yellow”), each expressing a sporadic occurrence of the event in question. It should not be analyzed as a case of conjunction-reduction, however, in that (15) generally implies that the two possibilities presented are the only alternative occurrences of the event in question (that is, red and yellow are the only possible colors of the plant), making it virtually synonymous with its non-modal counterpart (Huddleston and Pullum (2002: 184, 185)):

(i) Poinsettias are red or yellow.

This seemingly peculiar implicature may be due to the fact that sentence (15) does not present any other possibilities, thereby generally indicating an absence of such possibilities. The modal can in this case appears to exhibit a somewhat different function, serving in effect as a device for toning down the non-modal version of the sentence. The nature of the functional variation remains to be explored.
7 This shows that the quantificational expressions fall into two groups, one involving frequency adverbs (such as sometimes) and the other quantifying determiners (such as some). See Palmer (1990: 107–109), Huddleston and Pullum (2002: 184, 185) and Sawada (2006: 235, 236) for further discussion.
tive use presented describe general rather than particular situations, and they have natural quantificational equivalents:  

(22) A real number is sometimes an integer, a fraction, or a decimal.

(23) A parallelogram is sometimes a rectangle, a rhombus, or a square.

(24) Allergy medicine is sometimes pills, liquids, or even sprays for your nose.

(25) In India a school is sometimes a tent in the desert, a bus that travels the city streets, or a classroom in the shade of a mango tree.

(26) Some subject complements are also adjectives.

(27) Genitives take various shapes. Some of them are determiners; some are proper nouns; some are full noun phrases.

(28) In fact, celebrating is sometimes as simple as talking, listening, learning something new and playing a game together.

The general paraphrasability shared by all examples of existential *can* might tempt us to dispense with the separate category of instantiative *can*. The following sections will be devoted to examining the validity of this analysis.

4. The Semantic Core of *Can* and Existential Modality

In this section, we will first turn to the semantic core of the modal to see how the existential use can be captured in connection with it. It has often been pointed out in the literature that the central meaning of *can* as used to express possibility is “potential” (Sweetser (1982: 486), Sweetser (1990: 53), Bolinger (1989: 13), Oe (1983: 15), Kashino (1993: 204), Kashino (2002: 34)). This means that the possibility of an event presupposes the existence of “potential” on the part of the subject; an event is only possible

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8 Sentences (22)–(28) correspond to (1)–(7) respectively. It is to be noted that the former set of sentences is not the only quantificational counterpart of the latter. As Palmer (1990: 107) points out, the “some” interpretation does not require a plural subject, which suggests that (1), for example, may also be rendered as the following:

(i) Some real numbers are integers, some are fractions, and some are decimals.

See also footnote 11.
The notion of potential usually implies its occasional, rather than frequent, development, which means that modal can indicates that the event occurs occasionally instead of frequently. Thus, the modal sentence (29a) is normally paraphrased by (29b), rather than (29c):

\[(29)\]
\[\begin{align*}
\text{a. The weather can be awful.} \\
\text{b. The weather is sometimes awful.} \\
\text{c. The weather is often awful.}
\end{align*}\]

This restricted quantificational possibility is attributable to an implicature of modal sentences: sentences with modal can state that the referent of the subject NP has potential for an event but do not state anything about actual occurrences of the event, and if they are not followed by any non-modal statement expressing a frequent occurrence of the event, then they are usually taken to imply that the event must happen only occasionally. It is to be noted that the idea of occasional development of potential is what the existential use of can is concerned with, and this explains why expressions involving the modal have quantificational equivalents expressing an occasional occurrence of an event: the former focuses on “potential” and the latter on its “occasional development.”

We will explore the implication of the idea of occasional development of potential. If potential develops occasionally, it follows that there are occa-

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9 The close connection between possibility and potential or ability for modal can is widely noted in previous studies. Leech (2004: 75) says that there is no clear-cut distinction between the can of ability and the can of possibility and that the two meanings are especially close because “ability” implies “possibility.” Coates (1983: 86) states that can has “ability,” “possibility” and “permission” as its meanings, with “possibility” as its semantic core, but that the distinction between the core and the other meanings is unclear (See also Sawada (2006: 221, 222)). In this connection, Honda (2006) attempts to capture the semantics of can in terms of “ability” and “possibility,” with the success of the action attributed to the actor in the former and to someone/something other than the actor in the latter. He claims that the various illocutionary forces of the modal (request, suggestion, etc.) derive from the notion of “possibility” so defined. Honda’s distinction corresponds partly to that between categories of dynamic modality, “ability on the part of the subject” and “ability on the part of the situation,” presented in Takaie (2005). It should also be noted that the can of possibility in Leech (2004) subsumes existential modality and the latter category of dynamic modality.

10 This implicature is based on the Q-principle in Levinson (2000: 76): “Do not provide a statement that is informationally weaker than your knowledge of the world allows, unless providing an informationally stronger statement would contravene the I-principle.” That is, if you know that the event actually occurs frequently, you must represent it in a way that is not informationally weaker than your knowledge, viz. by using a statement without the modal can; conversely, if you represent the event only modally, then it follows that you know that it must occur occasionally or infrequently.
sions when it develops and occasions when it does not and that the former is included as a part of the set of all the occasions. For example, in *The weather can be awful* those occasions when the weather is awful are included in the set of all the occasions with regard to the weather. Occasional development of potential can also be interpreted in terms of the things involved, such that there are things where potential develops and things where it does not, and the former is part of the set of all the entities. For example, in *Roses can be mauve* the set of roses that are mauve constitutes part of the set of all roses. These examples show that the existential use of *can* can be generally described in terms of set-theoretic inclusion.  

5. Instantiative *Can* and Existential Modality

In the preceding section we considered how the existential use of *can* can be captured in connection with its central meaning. The main points of the argument may be recapitulated as follows:

- (30) The existential use of *can* is concerned with the idea of occasional development of potential.
- (31) The existential use of *can* can be generally described in terms of set-theoretic inclusion.

We will now return to the instantiative use of *can*, which, it was noted in section 3, counts as a case of existential *can* because of their shared paraphrasability in quantificational terms. In the following discussion, we will confine ourselves to those cases where *can* is followed by the verb *be* and an NP complement, leaving out of consideration cases where the modal is

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11 The availability of the two interpretations for existential *can*, one pertaining to occasions and the other to things, suggests an intriguing general parallelism between the two kinds of entities. In this connection, Declerck (1988), discussing the functional similarity between restrictive *when*-clauses and adverbial quantifiers, points out the possibility of relating occasion-associated quantifiers (adverbials such as *sometimes*) to thing-associated quantifiers (determiners such as *some*) (Declerck (1988: 146)):

(i) Species of animals die out when they do not adapt themselves.
(ii) Species that do not adapt themselves die out.
(iii) Species of animals sometimes die out (if they do not adapt themselves).
(iv) Some species of animals die out (if they do not adapt themselves).

Sentences (i) and (iii) correspond to (ii) and (iv) respectively. The *when*-clause in (i) and the adverbial quantifier in (iii) (viz. *sometimes*), by restricting the cases for which the proposition in the head clause holds true, indirectly restrict the referent set of the subject NP in question. See Doetjes (2007) for discussion on a related phenomenon with reference to degree adverbs and frequency adverbs in French.
followed by other structures. One point to note is that, of the two aspects of existential can described in (30) and (31), the instantiative use of can foregrounds the latter, rather than the former, aspect. Sentence (1), for example, emphasizes that the set of real numbers includes the set of integers, fractions, and decimals, but it does not seem to put as much emphasis on the occasional development of the potential of a real number to be an integer, fraction, etc. This disproportion in emphasis applies, perhaps more saliently, to cases like (4), which asserts that the set of schools includes tents in the desert, buses that travel the city streets, etc., but which does not seem likely to overplay the potential of a school to be a tent in the desert, etc. This positive emphasis on set-theoretic inclusion is not present in all cases of existential can, as the following example indicates:

(32) … a school can be a very powerful community for kids partly because it’s sometimes the only community they belong to.

(http://www.ait.net/technos/tq_05/2meier.php)

The sentence does include the can of existential modality but it does not represent an instantiative use of the modal, because it does not foreground the relation of set-theoretic inclusion that involves the set of schools including those that are very powerful communities for kids; rather, it stresses the occasional development of the potential of a school to be such a community. The positive emphasis on set-theoretic inclusion distinguishes the can of instantiation from the existential but non-instantiative use of the modal.

Another thing to point out is that in a sentence with instantiative can the complement NP referent is a form of the subject NP referent: in (1) integers, fractions, and decimals are forms of real numbers; in (4) tents in the desert, buses that travel the city streets, etc., are possible forms of schools. This relationship between the subject and complement NP referents does not apply to (32), where a very powerful community for kids is not a form of a school but the other way around; the latter is a possible form of the former. The following sentences belong with (32):

(33) Finding a teaching position can be a very competitive process, especially at top-ranked schools.

(http://www12.georgetown.edu/sfs/cpass/summary.PhD.htm)

(34) Unless you’re a medic, understanding the jargon surrounding the disease can be a challenge.

(http://findarticles.com/p/articles/mi_qn4159/is_/ai_n14637111)

In these cases, as in (32), it is the subject NP referent that counts as a form of the complement NP, rather than the other way around. The subject-complement relationship is another criterion that distinguishes between the
instantiative and non-instantiative uses of *can*.

We may claim, therefore, that although instantiative and non-instantiative *can* are both existential uses of the modal, the former can be analyzed as a semantic category distinct from the latter. The two uses may look alike but semantically they are not really the same.

6. Conclusion

In this paper, we have examined the semantics of the instantiative use of *can*. The *can* of instantiation involves a positive emphasis on set-theoretic inclusion and a subject-complement relationship lacking in the non-instantiative use of *can*, and this qualifies it as a distinct category of existential modality. This claim is based on an examination of syntactically restricted cases; how the category of instantiative *can* can be identified in a wider syntactic context remains to be explored in future research.\(^{12}\)

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\(^{12}\) Papafragou (2000) argues for an analysis of modal expressions in terms of a tripartite quantificational structure with the logical form OPERATOR (Restrictor, Matrix), where the operator takes scope over the proposition in the matrix and relates it to another proposition (the restrictor) (Papafragou (2000: 40)). She proposes the following for the general semantic structure of *can* (Papafragou (2000: 43)):

(i) *Can*: p is compatible with \(D_{\text{factual}}\)

This suggests that instantiative *can*, which has been analyzed in this paper by invoking quantificational notions, can be captured along with other uses of the modal as part of a wider phenomenon involving modality and quantification. We will leave the exploration of this possibility to future research.
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[received September 16 2008, revised and accepted January 5 2009]

Graduate School of Law
Hitotsubashi University
2–1 Naka, Kunitachi-shi
Tokyo 186–8601
e-mail: cj00640@srv.cc.hit-u.ac.jp