How Mutual Knowledge Constrains the Choice of Anaphoric Demonstratives in Japanese and English

David Y. Oshima
Department of International Communication
Nagoya University
Furo-cho, Chikusa-ku, Nagoya
Japan 464-8601
davidyo@nagoya-u.jp

Eric McCready
Department of English
Aoyama Gakuin University
4-4-25 Shibuya, Shibuya-ku, Tokyo
Japan 150-8366
mccready@cl.aoyama.ac.jp

Abstract

It has been widely acknowledged that the choice of Japanese demonstratives (the distal a-series, the medial so-series, and the proximal ko-series) in their anaphoric use is regulated by the rules concerned with the interlocutors’ knowledge of the referent. In cross-linguistic discussions of anaphoric demonstratives, on the other hand, the effect of the interlocutors’ knowledge of the referent has not received such recognition. This paper has the following goals. First, it critically reviews Susumu Kuno’s seminal analysis of Japanese anaphoric demonstratives, and presents a modified version of it. Second, it argues that the interlocutors’ knowledge of the referent is relevant to the choice of the English demonstratives this and that too. Third, it provides a formal semantic analysis of anaphoric demonstratives in the two languages couched in the Discourse Representation Theory (DRT) framework.

It should be noted, before we proceed, that our discussion will focus on usage of anaphoric demonstratives in typical, two-agent conversations (dialogue); the question of whether and how the presented analysis can be extended to other discourse types, such as soliloquy (monologue) and nonfictional prose, will be left open. Also, our discussion will not cover the cases of demonstratives that do not refer to a specific entity (e.g., the “donkey anaphora” case, as in: If a man is in Rhodes, that man cannot be in Athens).

1 Distinct Uses of Demonstratives

Demonstratives in many, if not all, languages have several distinct uses. We adopt Diessel’s (1999) classification and terminology, where the uses of demonstratives are first divided into the exophoric and endophoric uses, and the latter is further divided into subtypes including the anaphoric use.

The exophoric use is widely thought to be the most basic. Exophoric demonstratives (or expressions containing them) refer to entities present in the discourse situation.

1For the sake of simplicity, we will say “adnominal demonstrative X refers to Y” to mean “an NP modified by X refers to Y”. For example, this in I read this book will be said to refer to a book, although more precisely it is the NP this book that does
Anaphoric demonstratives, on the other hand, are coreferential with a noun phrase in the preceding discourse and keep track of the referents already introduced to the discourse (and are not present in the discourse situation), as in (1).

(1) My neighbor has a dog, and {this/that} dog kept me awake. (Gundel et al., 1993: 279)

Anaphoric demonstratives must be distinguished from recognitional and discourse-deictic demonstratives, two other major types of endophoric demonstratives. A recognitional demonstrative does not have an antecedent in the surrounding discourse and refers to an entity that is “discourse-new” but is identifiable for both interlocutors by virtue of their shared knowledge (e.g.,*. Do you still have that radio that your aunt gave you for your birthday?; Diessel, 1999: 7). A discourse-deictic demonstrative refers to a proposition expressed by, or a speech act carried out by, a chunk (clause, sentence, etc.) of the surrounding discourse (e.g.,*. John is not here. — That’s {false/a lie}.)

3 Anaphoric Demonstratives in Japanese

3.1 Kuno (1973) on Anaphoric Demonstratives

Japanese has a three-term system of demonstratives, which consists of (i) the proximal ko-series (“close to the speaker”), (ii) the medial so-series (“close to the hearer and distant from the speaker”), and (iii) the distal a-series (“distant from both”). Each series contains several forms with different syntactic categories and meanings, e.g., pronouns kore/sore/are ‘this/that one (insentient)’, adnominal modifiers kono/sono/ano ‘this/that’, and manner adverbs koo/soo/aa ‘in this/that way’.

There has been a vast amount of literature on anaphoric demonstratives in Japanese. Among the numerous existing studies, the chapter titled “the anaphoric use of kore, sore, and are” in Kuno (1973) has been one of the most influential. Regarding the contrast between the a-series and so-series, he essentially claims that the a-series is used to refer to an entity that both S (the speaker) and H (the hearer) know personally (know well, are acquainted with), and the so-series is used to refer to an entity that either S or H does not know personally (does not know well, is not acquainted with). In accordance with these generalizations, in (2) an a-demonstrative is chosen to refer to a person that both S and H are acquainted with, and in (3) a so-demonstrative is used to refer to an individual that only one of the interlocutors (i.e., A) “knows personally”.

(2) A: Kinoo Yamada-san-ni hajimete yesterday Y-Suffix-Dat for.the.first.time aimashita. {Ano/sono} hito, zuibun meet.Pst.Plt {thata/thato} person quite kawatta hito-desu-ne.
strange person-Cop.Prs.Plt-DP
‘I met Yamada for the first time yesterday. Thata man is a very strange person, isn’t he?’
B: Ee, {Ano/sono} hito-wa yes {thata/thato} person-Top henjin-desu-yo.
eccentric-Cop.Prs.Plt-DP
‘Yes, thata man is an eccentric.’
(adapted from Kuno, 1973: 283–284)

(3) A: Watashi-no kinjo-ni I-Gen neighborhood-Dat Yamada-san-toiu hito-ga Y.-Suffix-called person-Nom sundeimasu. {Ano/sono} hito-wa live.Ipfv.Prs.Plt {thata/thato} person-Top Porsche-o motteimasu.
P.-Acc own.Ipfv.Prs.Plt
‘I have a neighbor called Yamada. He,so owns a Porsche.’
B: {*Ano/sono} hito {thata/thato} person kanemochi-na ndesu-ne.
wealthy-Cop.Attr-DAux.Prs.Plt-DP ‘So he,so is wealthy, I suppose?’

As for anaphoric ko-demonstratives, which are exemplified in (4), Kuno states that their referent must be something that S knows well but H does not, and

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2The abbreviations in glosses are: Acc = accusative, Attr = attributive, Cl= classifier, Cop = copula, Dat = dative, DAux = discourse auxiliary, DP = discourse particle, Evid = evidential particle, Inf = infinitive, Ipfv = imperfective, Loc = locative, Neg = negation, Nom = nominative, Plt = polite, Pot = potential, Prs = present, Pst = past, Top = topic, Vol = volitional. Subscript ko, so, and a in the glosses/translations indicate that the corresponding Japanese expression is a ko-, so-, and a-demonstrative, respectively.
also point out that they add an emotional overtone to
the utterance.\footnote{It is interesting to observe that \textit{ko}-demonstratives of this kind have similarity with so-called “emotional-dectic” or “affective” demonstratives in English (Lakoff, 1974; \textit{e.g.}, \textit{This Henry Kissinger really is something}!). A notable difference, however, is that \textit{this} and \textit{that} in their affective use tend not to have an explicit antecedent while an anaphoric \textit{ko}-demonstrative needs one.}

(4) Boku-no tomodachi-ni Yamada-toiu
I-Gen friend-Dat Y.-called
hito-ga iru-nda-ga,
person-Nom exist.Prs-DAux.Prs-and
\{\textit{kono/sono}/*\textit{ano}\} otoko-wa nakanaka-no
\{\textit{this}_{ko}/\textit{that}_{so}/\textit{that}_{a}\} man-Top considerable
rironka-de ... theorectician-Cop.Inf
‘I have a friend by the name of Yamada, and
\{\textit{this}_{ko}/\textit{that}_{so}\} man is a theoretician of some caliber, and ...’
(adapted from Kuno, 1973: 288)

3.2 Reconsideration of Kuno’s Generalizations
While Kuno’s analysis reviewed above captures well
the way anaphoric \textit{ko/so/a}-demonstratives contrast with each other, it leaves some room for refinements
and elaborations. In the following, we address the
following issues and present a modified version of
Kuno’s generalizations.

(5) i. It can be shown that it is not “to know
well/personally”, but a weaker kind of cognitive
relation (between an interlocutor and a referent) that affects the choice of the
Japanese anaphoric demonstratives.

ii. Kuno does not explicitly discuss cases where
neither S nor H knows (well) the referent.

iii. There are cases where a \textit{so}-demonstrative
is chosen despite its referent being known
(well) to both S and H.

Our discussion here will have to be brief due to
space limitation; see Oshima (2014) and Oshima
and McCready (in preparation) for a fuller presenta-
tion and discussion of additional complications.\footnote{The additional complications are mainly concerned with the use of an \textit{e}-demonstrative for reference to an entity that \textit{H} is not familiar with. It is observed in so-called \textit{pseudo-soliloquy} (a type of speech that constitutes part of dialogue and yet is pre-
sented as if it were part of monologue), as well as in a discourse situation where (i) it is assumed that \textit{H} is looking for an entity with some property \textit{P} (\textit{e.g.}, a good piano instructor), and (ii) \textit{S} introduces such an entity to \textit{H}.}

The borderline between “known” and “not known”: The choice of Japanese anaphoric demonstratives largely hinges on the interlocutors’ knowledge of the referent. Exactly what kind of knowledge matters, however, is a question that requires careful consideration.

To begin with clear-cut cases, entities such as
one’s close friends, personal items that one uses day-to-day, and places that one often visits will be the
central cases of referents that are “known (well)”.
Also, as pointed out by Kuno (1973: 285), public
figures (\textit{e.g.}, film actors, politicians) that one knows
of through public media (\textit{e.g.}, magazines, TV) have
a good potential to be treated as, or as if they were,
“known (well)”, as long as the choice of anaphoric
demonstratives is concerned. A referent that an
interlocutor came to know through hearsay (including the other interlocutor’s previous utterances), on the
other hand, is not regarded as “known (well)”, so
that reference to it is made with a \textit{so}-demonstrative, as in (3B) above.

According to Kuno, entities that an interlocutor
had only a casual encounter with and does not know
well (\textit{e.g.}, a person that he met briefly on the street)
constitute a borderline case, and it is possible for
him (or his conversation partner) to refer to them
with the \textit{so}-series.\footnote{See Oshima (2014: 9–10) and Oshima and McCready (in preparation) for discussion of the data which led Kuno — wrongly, in our view — to this conclusion.}

This claim is hard to maintain, however, in view of data like the following:

(6) (A and B go to the cinema together. During the
movie, they hear the person sitting behind them sob loudly. After leaving the theater, they talk
about this person.)

A: Ushiro-no hito naiteta-yone.
back-Gen person cry.Ipfv.Pst-DP
‘The person sitting behind us was sobbing,
wasn’t he?’

B: \{\textit{Ano}/*\textit{sono}\} hito-no sei-de
\{\textit{that}_{o}/\textit{that}_{so}\} person-Gen cause-by
eiga-ni shuuchuu-dekinakatta-yo.
movie-Dat concentrate-do.Pst.Neg.Pst-DP
‘I couldn’t concentrate on the movie because
of that, person.’

Unacceptability of *sono* in (6B) shows that, contra Kuno, any kind of contact involving direct perception, even if it is as casual/slight as just hearing sobbing noise, implies that the referent is in the realm of “known (well)”. Henceforth, we will use the term “recognize”, in place of Kuno’s “know well/personally”, to refer to the relation that may hold between an interlocutor and a referent and that affects the choice between the three series of Japanese anaphoric demonstratives. Along with close friends and some public figures, entities that one has had some kind of perceptual contact with belong to the domain of “recognized”.

**Reference to an entity that neither S nor H recognizes**: Taken literally, Kuno’s generalizations (with an amendment on the relevant cognitive relation) predict that the *so*-series and not the other two series can be used to refer to an entity that neither S nor H recognizes. This is because that “neither S nor H recognizes the referent” logically entails that “either S or H does not recognize the referent” (where “or” is understood to be inclusive). This prediction needs to be empirically tested, however, because the data discussed by Kuno do not preclude the possibility that the *so*-series can be used only when one of the interlocutors knows well the referent and the other does not (cf. the discussion of English *this* in §4).

Data like the following show, however, that Kuno’s generalizations deal well with the situation where “neither S nor H recognizes the referent”. Such a referent can be referred to with a *so*-demonstrative, but not with a *ko*- or *a*-demonstrative.

(7) (A and B are helping with the organization of an academic conference as research assistants. They were told that another research assistant would join them in the afternoon, but they are not acquainted with him.)

A: Ato-de moo hitori kuru-yone. Kono late more one. Cl come.Prs-DP this shigoto-wa *{sono/*ano/*kono}* hito-ni task-Top  {*that_so/*that_o/*this ko*} person-Dat tanomoo. ask.Vol
‘Another person will come in the afternoon, right? Let’s ask that_so person to do this task.’

B: *{Sono/*ano/*kono}* hito-ga
*{that_so/*that_o/*this ko*} person-Nom kuru-no-wa come.Prs-Pro-Top
nan-ji-da-kke? what-o’clock-Cop.Prs-DP
‘What time is that_so person supposed to come, again?’

**Reference to an entity that (i) both S and H recognize but (ii) H does not know S recognizes**: The use of the *so*-demonstrative in (8B) does not conform to Kuno’s analysis (the use of *ano* in this place is possible, but seems to be slightly less natural than that of *sono*).

(8) (A comes to visit B’s home.)

A: Ekimae-de keeki-o station.front-Loc cake-Acc
katta-nda-kedo, sono mise-no buy.Pst-DAux.Prs-and that shop-Gen
tenchoo-san, sugoku omoshiroi manager-Suffix very interesting.Prs
hito-datta-yo. Sono hito, wakai person-Cop.Pst-DP that person young.Prs
koro, Paris-de okashi zukuri-no time P.-Loc confectionary making-Gen
shugyoo-o shita-nda-tte. training-Acc do.Pst-DAux.Prs-Evid
‘I bought some cake near the station. The manager of the cake shop was an interesting person. He told me that he received his training as a confectioner in Paris in his youth.’

B: *{Sono/(?)ano}* hito, watashi-no {*that_so/*that_o*} person I-Gen
osananajimi-de, ima-demo, yoku childhood.friend-Cop.Inf now-even often issho-ni tsuri-ni ittari together fishing-Dat go.Representative
suru-ndesu-yo. do.Prs-DAux.Prs.Plt-DP
‘He is a childhood friend of mine. We still hang out often, and do such things as going fishing together.’

At the time (8B) is uttered, (interlocutor B knows that) the cake shop manager is recognized by both A and B, and thus, if Kuno’s analysis is taken at face
value, the use of the so-series must be blocked. Such data suggest that the choice between the three series of anaphoric demonstratives hinges not on whether (S knows that) the referent is recognized by S and H, but rather on whether it is presupposed (i.e., is considered a mutual knowledge of the interlocutors) in the discourse situation that the referent is recognized by both S and H.

Taking into consideration the points made above, we put forth the following generalizations:

(9) i. The a-series can be used only if it is presupposed that both S and H recognize the referent.
ii. The so-series can be used only if it is presupposed that either S or H does not recognize the referent.
iii. The ko-series can be used only if it is presupposed that S recognizes the referent and H does not.

The (somewhat degraded) acceptability of the a-demonstrative in (8B) can be accounted for in terms of pragmatic accommodation. Upon hearing the use of ano hito in (8B), interlocutor A will quickly update the common ground — the collection of mutual knowledge of the discourse participants — adding to it the information that interlocutor B recognizes the referent.

4 Anaphoric Demonstratives in English

English has a two-term system of demonstratives, consisting of proximal this (and these) and distal that (and those). These forms can be used as a pronominal (nominal head), a nominal determiner, or a degree adverb (e.g., this big, that expensive).

This and that used anaphorically are often interchangeable, but sometimes they are not. Lakoff (1974: 350) remarks that this has a more colloquial tone than that, and suggests that the former is not permissible in (10a) for this reason.

(10) a. John likes to kick puppies. {That/#this} man’s gonna get his one of these days!
b. John likes to kick puppies. {That/this} man has been under surveillance by the SPCA for 5 years now.

It is possible to find, however, instances of anaphoric this occurring in colloquial discourse.

(11) I’ve got a new roommate. I’ll ask this guy if he’d be interested in buying your heap.

Gundel et al. (1993: 279) present another case, namely (12), where that cannot be replaced with this.

(12) A: Have you seen the neighbor’s dog?
   B: Yes, and {that/#this} dog kept me awake last night.

They claim that anaphoric this is subject to the “speaker-activation” constraint, i.e., its referent must be something introduced to the discourse by S, as in (1) and (11), rather than by H.

An alternative way to account for the contrast between (1) and (12) is to suppose that this is subject to some constraint related to the interlocutors’ mutual knowledge, so that it, like Japanese so- and ko-demonstratives, cannot be used to refer to an entity that (it is presupposed that) both S and H recognize (note that interlocutor A of (12), but not the hearer of (1), is assumed to recognize the dog in question).

This line of analysis seems to be applicable to the contrast between (10a) and (10b) as well. When one interprets discourse segment (10a) in isolation, it is most natural to presume that John is a mutual acquaintance of S and H. (10b), on the other hand, may be taken more easily to be an utterance where S describes some malicious person previously unknown to H.

It is furthermore possible to find evidence against the “speaker-activation”-based account. The following discourse segments show that this sometimes can be used to refer to a “hearer-activated” entity.

(13) A: John has a pet tortoise.
   B: Oh really? How big is {that/this} tortoise?

(14) A: My neighbor downstairs asked me if I’d be interested in buying opium.
   B: You should tell the police about {that/this} guy.

There are also cases where S has to choose that, rather than this, to refer to a speaker-activated entity. (10a) above is one such case, and (15) is an...
additional example.

(15) (Both S and H have driven Mary’s Corolla several times.)
Mary decided to sell her Corolla. {That/*this} car is now 20 years old, and she’s had it with all the maintenance problems it causes.

It seems thus that the “mutual knowledge”-based account is the more appropriate. What exactly, then, is the discourse-configurational constraint that this is subject to? As has been seen above with (13)/(14), unlike a ko-demonstrative, and like a so-demonstrative, this may be used to refer to an entity that H recognizes but S does not. This differs from a so-demonstrative, however, in that it cannot be used to refer to an entity that neither S nor H recognizes. Compare (7) with (16).

(16) (the same situation as in (7))
A: Another assistant will join us in the afternoon, right? Let’s ask {that/*this} guy to do this task.
B: What time is {that/*this} guy supposed to come, again?

It can thus be concluded that the constraint on anaphoric this involves exclusive “or”: the referent needs to be recognized by S or H, but not by both. To put it differently, this signals informational asymmetry between S and H regarding the referent. Anaphoric that, on the other hand, is free from any kind of constraint that has to do with the interlocutors’ mutual knowledge. In more precise terms, these properties of this/that can be stated as follows:

(i) This can be used only if it is presupposed that S or H, but not both, recognizes the referent.
(ii) That can be used whether or not it is presupposed that S and/or H recognize the referent.

From (17a,b), it follows that it is generally possible to replace anaphoric this with anaphoric that, but not vice versa.

5 Formal Analysis

This section formalizes the preceding discussion. There are many ways in which this project could be carried out; but given that our domain of inquiry is anaphoric demonstratives, it seems natural to make use of a theory of semantics formulated at the level at which discourse anaphora takes place. Consequently, in this paper, we will use Discourse Representation Theory (DRT; Kamp and Reyle, 1993; Kamp et al., 2011) as the framework for our discussion.

5.1 Preliminaries

In the interest of space, we will assume the reader’s familiarity with the basic components of DRT detailed in Kamp and Reyle (1993). For a brief reminder, in DRT, each (informative) sentence in a discourse introduces conditions and possibly discourse referents into a Discourse Representation Structure (DRS) in a form specified by a construction algorithm. Discourse referents are similar to logical variables, and serve as markers for entities asserted to exist within the discourse. A DRS \( K \) can be represented set-theoretically as an ordered pair \( (U_K, C_K) \), where \( U_K \) is the set of discourse referents (the universe of the DRS) and \( C_K \) is the set of conditions that are predicated of the discourse referents. However, DRSs are usually represented using a box notation for readability. For instance, the DRS for \( A \) wolf howled looks as follows:

\[
\begin{array}{c}
\text{x} \\
\text{wolf(x)} \\
\text{howled(x)}
\end{array}
\]

In the sequel, we will use \( DRef \) for the set of discourse referents and \( Cond \) for the set of conditions associated with a DRS.

In addition to the above, we need three more ingredients for the purposes of this paper: (i) a model for attitude ascriptions, (ii) a model for analyzing acquaintance with the particular objects the embedding function relates to discourse referents, and (iii) a model of presupposition. The second is obviously needed in order to characterize the kind of cognitive relation we have claimed to be necessary for the
use of some anaphoric demonstratives; the first is required to specify the desired notion of establishment of such acquaintance relations. We will now show how these elements are realized in DRT, in some detail since they will be key in our analysis. Finally, our formal analysis will treat the felicity conditions on anaphoric demonstratives in a way parallel to the treatment of other kinds of felicity conditions in the literature: as presuppositions (e.g. the treatment of ϕ-features in Kamp et al. 2011).

In recent versions of DRT, attitude ascriptions are modeled as attitudinal predicates which relate three elements: attitude holders, discourse representation structures (DRSs) K, and a function which maps (subsets of) DRef directly to objects in the model, and thus have the form Alt(a, ADS, EA) for agent a, a so-called ‘Attitude Description Set’ ADS, and external anchoring function EA. The attitudinal predicate specifies that an attitude ascription is being made. The first argument is the attitude holder. The second argument, the ADS, specifies the content of the attitudes being ascribed. It consists of a set of pairs ⟨Mode, K⟩, where Mode is an attitude specification which can be drawn from (at least) BEL(ief), DES(ire), and INT(end), and K is a DRS. It is also possible here to have conditions of the form ⟨[Anch, x], K⟩, which specify that x as used in K is believed by the attitude holder to be anchored to some external object. Only BEL will play a role in our analysis. Finally, EA is a function which maps some subset of the discourse referents used in the conditions in the ADS to objects external to the discourse representation, i.e., to objects whose existence is independently known, or which are taken to be so.7

Our final task before proceeding to the analysis proper is to give background on treatments of presupposition within DRT. There is a large literature on this topic within DRT and dynamic semantics in general, with authors proposing varied treatments, but here we will present a treatment within more or less standard DRT following van der Sandt (1992), though differing from that work in some issues of representational detail. The basic idea of DRT views of presupposition is that presuppositions are anaphoric objects which target elements already existing in DRSs by virtue of previous linguistic or nonlinguistic content. For an example of the intuition behind this approach, note that the presupposition of the possessive NP — that John has a daughter — is licensed in the discourse in (19) by virtue of the content of the first sentence.

(19) John has a daughter and a son. His daughter is going to a good university next year.

Within DRT, this can be modeled by letting presuppositional expressions introduce special DRSs of the form ∂K. Such expressions are not integrated with the rest of the DRS, instead being resolved to other preexisting elements in the DRS. The discourse in (19), for instance, gets the representation in (20). The condition z = ? indicates that z must be resolved to some contextual entity, if such resolution is possible.

A resolution algorithm then searches for an antecedent condition with the same content as the presuppositional DRS modulo substitution of variables.7 After such resolution, modeled by letting the unresolved variable ? in the condition z = ? take on the value x, the presuppositional content is integrated: in a case like this one, where an antecedent expression exists, it is eliminated from the representation. However, if no suitable antecedent exists, the presupposed content is added to the DRS via accommodation when doing so does not result in inconsistency. This process is illustrated in the variant of the above in (21).

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6The model theory of these conditions is complex and its full explanation is beyond the immediate requirements of this paper. Full details can be found in Kamp et al. (2011).

7This is a minor simplification; see van der Sandt (1992) and Beaver (1997) for a detailed discussion.
John has a family. His daughter is going to a good university next year.

In the DRS representing this discourse, no condition exists of the form \( \text{daughter}(y,j) \) for any variable \( y \); thus, the presupposition cannot be resolved. However, since it is plainly consistent with the rest of the discourse, it can be accommodated.

It is worth mentioning finally the case of proper names, because of their close relation to demonstratives (e.g. Kaplan, 1989), though in the present paper we will not be able to address the issue of direct reference for reasons of space. In DRT, proper names are taken to introduce discourse referents which are associated with the presupposition that the name itself holds of that referent. They are thus a species of presuppositional indefinite. The discourse referent itself must be represented at the highest level of the DRS, and so must be mapped to some object in the model; it is not allowed to scope under operators such as negation. The presence of the referent at the top level may be achieved by accommodating the presupposition if required (cf. Beaver and Zeevat, 2007).

5.2 Japanese

Let us begin by reconsidering the constraints on Japanese anaphoric demonstratives from a DRT perspective. It can be seen that the basic ingredients required for a formal analysis are (i) an anchoring function, (ii) a way to separate the anchors associated with S and H, and (iii) a way to indicate the metalinguistic beliefs of S about the anchoring functions of the S and H.

This observation can be implemented as in (23), which provides a semantics for adnominal anaphoric demonstratives \( \text{ano/sono/kono} \). Here, we have treated the constraints on these expressions as presuppositional in nature. The use of an adnominal anaphoric demonstrative introduces four things to a DRS: (i) a new discourse referent \( x_n \), (ii) a condition requiring the resolution of that referent, \( x_n =? \), and two “true” presuppositions: one requiring \( x \) to satisfy the predication introduced by the nominal element, and one putting some constraint or constraints on the belief states of S and H, namely that they recognize, or do not recognize, the referent. We capture this by allowing individuals to have beliefs about each other’s internal anchors and thus, indirectly, about each other’s anchoring functions. In the sequel, we will use conditions of the form (22) to indicate content of this kind; (22) can be read “\( i \) believes that \( j \) takes \( x \) to be externally anchored”.

\[
\text{Bel}(i, \text{Anch}(j, x))
\]

The above condition abbreviates the usual DRT attitudinal representations discussed above. We can simplify this condition still further for our purposes here. In conditions of the form (22), the anchoring condition \( \text{Anch}(a, x) \) indicates that \( a \) takes \( x \) to be externally anchored; the remainder indicates that the attitude holder \( i \) takes \( a \) to take \( x \) to be anchored. In all the conditions we will use below, the attitude is claimed to be jointly held by S and H, and so part of the common ground. Given that this part of the condition is constant, we will eliminate it in our analysis proper, simply writing \( \text{Anch}(j, x) \).

Our semantics for the Japanese anaphoric demonstratives can then be stated as follows, with the adnominal modifiers \( \text{ano/sono/kono} \) used as the representative cases. In (23) and hereafter, \( \{s, h\} \) represents the group of S and H, and so \( \text{Att}(..., \{s, h\}, \ldots) \) is a kind of commonly held attitude predicate. For the case of belief, the use of this argument indicates common belief of S and H (cf. van Ditmarsch et al., 2007).

\[
\begin{align*}
\text{ano } N \text{ introduces a condition of the form} \\
\partial & \begin{cases} \\
\text{x} & \text{\( x =? \)} \\
N(x) & \text{\( \text{Anch}(\{s, h\}, x) \)}
\end{cases}
\end{align*}
\]

\[
\begin{align*}
\text{sono } N \text{ introduces a condition of the form} \\
\partial & \begin{cases} \\
\text{x} & \text{\( x =? \)} \\
N(x) & \neg \text{Anch}(\{s, h\}, x)
\end{cases}
\end{align*}
\]

\[
\begin{align*}
\text{kono } N \text{ introduces a condition of the form} \\
\partial & \begin{cases} \\
\text{x} & \text{\( x =? \)} \\
N(x) & \neg \text{Anch}(\{s, h\}, x)
\end{cases}
\end{align*}
\]
This analysis takes the conditions on demonstratives to be essentially presuppositional. These conditions have three parts. First, a fresh discourse referent \( x \) is introduced within the DRS corresponding to the presupposition. This referent is then indicated to require an antecedent by the condition \( x = ? \). The core of the analysis comes in the remaining condition(s), which state the requirements on the anchoring of the variable. In (23a), the variable associated with the referent of an anaphoric demonstrative in the \( a \)-series is required to be jointly believed by \( S \) and \( H \) to be anchored for both of them. (23b,c) are similar to the above except for the attitudinal requirement. (23b) requires that \( S \) and \( H \) do not jointly believe that they both have anchors for \( x \), as required by the conditions on the \( s o \)-series, and (23c) requires that \( S \) is jointly believed to have an anchor for the variable, but that \( H \) is not.

The above seems to adequately capture the conditions we have claimed to hold of the Japanese anaphoric demonstratives. It should be noted that we must assume that presupposed conditions relating to attitudes can be resolved in the structures which are used to represent attitudes in DRT. To our knowledge, this sort of case has not been discussed in the literature, mostly because metalinguistic conditions of this kind involving mutual belief have not been the focus of much work in this area. We think that this is not problematic.

5.3 English

The English case, summarized in (17) above, is substantially simpler than the Japanese one. Each of the Japanese anaphoric demonstratives had a distinct condition (or set of conditions) associated with it, but for English we find that \( this \)-demonstratives are relatively tightly constrained in having both negative and positive conditions (as with the \( ko \)-series in Japanese), but \( that \)-demonstratives can be used quite freely.

The task of giving a formal analysis for English thus centers on the case of \( this \)-demonstratives. We propose the following semantics for \( this \)- and \( that \)-demonstratives; note that we focus on the (singular) pronominal case, which differs from the adnominal case discussed above for Japanese in lacking a presupposition associated with the nominal predicate. The adnominal case (of \( this \)/\( that \)) is analyzed by adding such a presupposition, while the Japanese pronominal cases can be analyzed by removing the presupposition that \( N(x) \) from each clause of (23).

The pronominal uses also have implications for the animacy/sentience of their referents; for instance, \( are/sore/kore \) in general cannot denote a sentient entity, and neither can pronominal \( this \)/\( that \) (except when they occur as the subject of \( be \), as in: \( That \) is his assistant.), which we model by adding a presupposition that the referent is insentient.  

\[
\begin{align*}
\text{(24) a. ‘this’ introduces a condition of the form} \\
\quad \partial &\quad x = ? \\
&\quad \text{insentient}(x) \\
&\quad \neg \text{Anch}(\{s, h\}, x) \\
&\quad \text{Anch}(s, x) \lor \text{Anch}(h, x) \\
\end{align*}
\]

\[
\begin{align*}
\text{b. ‘that’ introduces a new discourse referent} \\
x &\rightarrow DRef \text{ and the conditions } x =? \text{ and} \\
&\quad \text{insentient}(x) \text{ to Cond.}
\end{align*}
\]

Given what we have done in (23) for Japanese, the analysis of \( this \) is rather straightforward. (24a) states that \( this \) behaves like a kind of combination of the Japanese \( so \)-series and the \( ko \)-series demonstratives; like the \( so \)-series, it indicates that the referent is not jointly anchored, but like the \( ko \)-series, it indicates that it is anchored for one discourse participant, though it does not indicate which one. We have treated anaphoric \( that \)-demonstratives as essentially ordinary pronouns lacking anchoring restrictions. Both expressions presuppose that their refer-

\[8\] Of course, this requirement is satisfied if the referent is jointly anchored.
erents are insentient. Note, though, that for both cases, adnominal uses require an extra specification; anaphoric demonstratives of the form this/that $N$ also presuppose that $N(x)$, just as with the Japanese anaphoric demonstratives.

6 Conclusion

This paper has identified some difficulties with Kuno’s (1973) analysis of the Japanese anaphoric demonstratives in the $a$-, $so$-, and $ko$-series, and presented a modified version of that analysis which accounts for a wider range of facts. This analysis was stated in terms of the interlocutors’ knowledge of the referent which the demonstrative picks up; we have argued in addition that such knowledge is also relevant to the choice of the English demonstratives this and that. Finally, it has provided a formal semantic analysis of anaphoric demonstratives in the two languages stated in terms of pragmatic presuppositions on belief states, as modeled in the DRT framework. This work represents an advance on our current knowledge of anaphoric demonstratives, both in empirical and theoretical senses.

This work opens several avenues for future research. The first is the application of the current analysis to anaphoric demonstratives in other languages. We have argued that epistemic conditions on external anchoring constrain the choice of demonstratives in Japanese and English, but have not touched on other languages. The question of whether these factors also play into demonstrative use elsewhere is worthy of further investigation. Second, we have been careful to limit our analysis to the case of anaphoric demonstratives in dialogue. The constraints we have noted seem to behave in a subtly different manner in other discourse genres such as monologue or reportage; also, bound-variable uses of demonstratives also seem exempt from them, as in the case of donkey anaphora. The way(s) in which demonstratives are used across the full range of genres, and how the constraints on their use interact with constraints on other types of nominal expressions, is also a useful area for later research. Finally, it would be interesting to attempt the integration of the results of this paper with computational models of discourse generation and interpretation.

References

David Beaver. 1997. Presupposition. In Handbook of Logic and Language, pages 939–1008. Elsevier, Oxford.

David Beaver and Henk Zeevat. 2007. Accommodation. In Gillian Ramchand and Charles Reiss, editors, Oxford Handbook of Linguistic Interfaces. Oxford University Press, Oxford.

Holger Diessel. 1999. Demonstratives: Form, Function and Grammaticalization. John Benjamins, Amsterdam.

Hans van Ditmarsch, Wiebe van der Hoek, and Barteld Kooi. 2007. Dynamic Epistemic Logic. Springer, Berlin.

Jeanette Gundel, Nancy Hedberg, and Ron Zacharski. 1993. Cognitive status and the form of referring expressions in discourse. Language, 69:274–307.

Hans Kamp, Josef van Genabith, and Uwe Reyle. 2011. Discourse representation theory. In Dov Gabbay and Franz Guethner, editors, Handbook of Philosophical Logic, volume 15, pages 125–394. Springer, Berlin.

Hans Kamp and Uwe Reyle. 1993. From Discourse to Logic. Kluwer, Dordrecht.

David Kaplan. 1989. Demonstratives. In Joseph Almog, John Perry, and Howard Wettstein, editors, Themes from Kaplan, pages 481–566. Oxford University Press. Manuscript version from 1977.

Susumu Kuno. 1973. The Structure of the Japanese Language. MIT Press.

Robin Lakoff. 1974. Remarks on ‘this’ and ‘that’. In Proceedings of the Chicago Linguistics Society, volume 10, pages 345–356.

David Y. Oshima. 2014. Nihongo shizisi no naibu shoo’oo yooohoo (bunnayaku shizi yooohoo) ni tsute: Kuno Susumu ni yoru bunseki no saikentoo [On the endophoric use of demonstratives in japanese: A reconsideration of Susumu Kuno’s analysis]. Forum of International Development Studies, 44:1–16.

David Y. Oshima and Eric McCready. in preparation. Anaphoric demonstratives and the interlocutors’ mutual knowledge: The cases of Japanese and English. Nagoya University and Aoyama Gakuin University.

Rob van der Sandt. 1992. Presupposition projection as anaphora resolution. Journal of Semantics, 9:333–377.

Leslie Stirling and Rodney Huddleston. 2002. Deixis and anaphora. In Rodney Huddleston and Geoffrey K. Pullum, editors, The Cambridge Grammar of the English Language, pages 1449–1564. Cambridge University Press, Cambridge.