It's not just *that*:
Analysis of demonstratives and pronouns*

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Abstract

I propose a new analysis of demonstratives. I identify a unique property that demonstratives have, which is the ability to refer to an entity without requiring familiarity. This property, which I call an introducing use, includes the well-studied deictic reference as well as a descriptive use where an entity is defined by a relative clause. I propose a formal analysis where demonstratives lexicalize a binary maximality operator that requires two arguments instead of one, unlike a definite. Then, I propose that some pronouns in English can function as demonstratives, realizing the introducing mechanism. I show that this proposal a) resolves overgeneration problems of previous approaches of demonstratives, b) captures the distribution of pronominal and adnominal demonstratives as well as pronouns, and c) locates English demonstratives against a larger cross-linguistic picture.

Keywords: demonstratives, pronouns, deixis, anaphora, reference

1 Introduction

This paper is concerned with the analysis of demonstratives in English. In English, demonstratives can occur pronominally as in (1a) and adnominally as in (1b).

(1)   a.   that, those   [Pronominal demonstratives]
      b.   that linguist, those linguists   [Adnominal demonstratives]

Traditionally, English demonstratives have been analyzed as having a rigid, directly referential interpretation. This is illustrated by the contrast between (2a) and (2b), where the demonstrative description *that person* rigidly refers to John, unlike the definite.

(2)   (Pointing at John) If John and Mary switched places...

      a.   ...that person would be a woman. (false)

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      b.   ...the person I'd be pointing at would be a woman. (true)   [Kaplan 1977]

This use of demonstratives where an entity is directly pointed to is often called 'deictic'. Deictic uses always carry some kind of a demonstration that shows where the referent is: a pointing gesture is commonly used, but eyegaze and other gestures could be used. I indicate this demonstrative gesture with the symbol → that follows the linguistic expression that accompanies it as in (3).

(3)   [That linguist]$_\rightarrow$ looks happy.   [Deictic]

More recent studies have shown that demonstratives are not restricted to deictic uses (Elbourne 2013; Himmelmann 1996; King 2001; Nowak 2019; Roberts 2002; Wolter 2006). Many uses of demonstratives that fall under what has been described as 'non-deictic', such as the anaphoric use as in (4a) and the descriptive use as in (4b), have been identified.

(4)   a.   I met a linguist. That linguist looked happy.   [Anaphoric]
           b.   That linguist who studies pronouns also studies demonstratives.   [Descriptive]

The general approach to account for these uses has been to analyze one of the uses as the core property of demonstratives and extend the analysis to the other uses. The deictic approach maintains that demonstratives are inherently deictic and accounts for the non-deictic uses as extensions of deictic uses (Roberts 2002), while the anaphoric approach analyzes demonstratives as anaphoric elements and extends the analysis to subsume deictic uses (Wolter 2006). The last approach, called hidden argument theories in Nowak 2019, tries to account for all three uses, with the main focus on descriptive uses (Elbourne 2005; King 2001).

    In this paper, I propose an alternative analysis of demonstratives. I show that the previous approaches face undergeneration and overgeneration issues and locate the source of the problem in not capturing the characteristic difference between demonstratives and other referential expressions. More specifically, I argue that demonstratives differ from definites and anaphoric pronouns in referring to an entity without relying on familiarity. I identify two ways to refer to a non-familiar entity: pointing directly to the entity and defining the entity with a verbal description. I call this way of referring to a non-familiar entity an **introducing** use, and propose a formal analysis where introducing is at the core of the demonstrative's meaning. Demonstratives are analyzed as lexicalizing a binary maximality operator that requires an additional restriction than that of definites. This additional restriction hosts the introducing mechanism, either the pointing or the relative clause. I show that this analsis resolves the undergeneration and overgeneration issues identified in previous studies which do not draw a distinction between introducing and familiar uses and better accounts for the distributional differences between pronominal and adnominal demonstratives.

    In addition, I propose that English pronouns are ambiguous between realizing the regular, anaphoric structure and the introducing structure. Despite the general assumption that pronouns and demonstratives are separate semantic elements, I argue that they compete to realize the introducing structure and show a tightly knit interaction in English.

    The organization of this paper is as follows. In Section 2, I first discuss the three foci taken in previous studies of demonstratives: the deictic approach represented by Roberts 2002, the anaphoric approach in Wolter 2006, and the hidden argument theories (Elbourne 2005; King 2001; Nowak 2019, specifically that of Nowak 2019. After discussing contexts where these proposals undergenerate or overgenerate, I argue that the focus should not be on deictic or non-deictic uses,

but instead on the introducing use. In Section 3, I show that demonstratives are unique in allowing the introducing mechanism that consists of the deictic reference with a pointing gesture and defining uses with relative clauses. Based on this, I present in Section 4 an analysis that characterizes demonstratives as lexicalizing this introducing mechanism. In Section 5, I propose that some pronouns in English are ambiguous between realizing the regular, anaphoric structure and the introducing structure, thus functioning as demonstratives. I show that analyzing pronouns as competing with demonstratives in the introducing use account for their deictic and generic uses with relative clauses, and additionally resolves a puzzle present in the D-type analysis of pronouns (Elbourne 2005). In Section 6, I show that the introducing mechanism aligns well with the morphosyntactic markings of demonstratives in Korean and Romanian, further supporting the semantic analysis of introducing uses. Section 7 concludes.

2 Previous approaches: Three foci

In this section, I give an overview of the previous accounts of demonstratives. Recall that traditionally demonstratives received much attention for their deictic use, while more recently the non-deictic aspects of demonstratives were given attention, such as their anaphoric uses and descriptive uses with relative clauses. These uses are listed below in (5a), (5b), and (5c), respectively.

(5)   a.   [That linguist]$_{\rightarrow}$ looks happy.   [Deictic]
        b.   I met a linguist. That linguist looked happy.   [Anaphoric]
        c.   That linguist who studies pronouns also studies demonstratives.   [Descriptive]

The previous approaches can be divided into three broad categories based on these three foci: deictic, anaphoric, and descriptive. The analysis in Roberts 2002 represents the deictic approach, where demonstratives are analyzed as inherently deictic, and anaphoric uses are analyzed as extended deictic uses, where the target of pointing is now linguistic expressions. The analysis in Wolter 2006 represents the anaphoric approach, where the demonstratives are analyzed as definites that refer anaphorically. The hidden argument theories of demonstratives (Elbourne 2005; King 2001; borrowing the name from Nowak 2019) represent the third approach, where the main focus is on what they call 'complex demonstratives', the demonstratives that carry descriptions such as relative clauses.

I will first present the deictic approach represented by Roberts 2002 and the anaphoric approach represented by Wolter 2006 and show that these approaches cannot account for the hosting of relative clauses. Then, I discuss the hidden argument theories, which account for all three uses of demonstratives in a uniform way. However, I show that by focusing on all three uses of demonstratives, demonstratives under their analyses become too similar to definites, thus overgenerating. After discussing these in detail, I locate as the source of the problem the failure to specify the exact property by which demonstratives differ from demonstratives, which cuts orthogonally through the three uses identified here.

2.1 The deictic approach

The first approach highlights the deictic uses of demonstrative descriptions. Roberts (2002) encodes the deictic nature of demonstratives by arguing that demonstratives carry a presupposition that there

is a demonstration to a familiar entity. The informal description that she provides is shown in (6).

(6) **Presupposition of Demonstrative NPs** (Informal):   [Roberts 2002:19]
     Given a context C, use of a (non-)proximal demonstrative NP$_i$ presupposes (a) that there is
     an accompanying demonstration δ whose unique demonstratum, correlated with a weakly
     familiar discourse referent by virtue of being demonstrated, lies in the direction indicated by
     the speaker at a (non-)proximal distance to the speaker, and (b) that the weakly familiar dis-
     course referent for the demonstratum is the unique familiar discourse referent contextually
     entailed to satisfy the (possibly liberalized) descriptive content of NP$_i$.

As we discussed already, however, demonstratives also allow non-deictic uses such as the anaphoric
uses discussed in Roberts 2002 shown in (7).

(7)   a.   I saw a dog. That dog looked happy.
      b.   Every dog in my neighborhood, even the meanest, has an owner who thinks that that
           dog is a sweetie.   [Roberts 2002:(11)]

Roberts (2002) extends her analysis of deictic demonstratives to account for discousre deictic and
anaphoric uses of demonstratives. Two changes are made. First, the demonstratum is an actual
entity in deictic uses, while the demonstratum is a linguistic object like an NP or a sentence for
anpahoric uses. Second, while in the deictic demonstrative the requirement is that the returned
referent be identical to the demonstratum (the entity pointed to), the anaphoric demonstrative in-
stead requires that the returned referent be identical to the discourse referent introduced by that
demonstratum.

Undergeneration   Note, however, that there is no way to extend the deictic analysis to account
for the descriptive uses that involve relative clauses. There is no overt pointing to an actual entity
or a pointing to a linguistic entity in demonstratives that host relative clauses as in (5c) repeated
below.

(8)   That linguist who studies pronouns also studies demonstratives.

It may be possible to argue that the demonstrative hosting the relative clause in (8) is anaphoric, and
thus it is still pointing to some linguistic entity. However, this analysis cannot account for generic
uses of demonstratives that host relative clauses as in (9).

(9)   Those who read never fail.

In this use, there is no anaphoricity nor pointing to an actual entity. Instead, the demonstrative
phrase refers to all relevant individuals who read. Thus, the relative clause use is not derived in a
straightforward manner from the deictic approach.

2.2   The anaphoric approach

Wolter (2006) argues that both the definite *the* and the demonstrative *that* in English have semantics
based on uniqueness, but differ in the situations against which this uniqueness is evaluated. The
[default] and [non-default] distinction is built on Stalnaker's (1977) discussion of the two ways a

world (situation) variable is used when a sentence is uttered. Situation variables associated with the main predicate determines the truth value of the proposition, while situation variables associated with nominal constituents fix the reference of referential expressions to establish what proposition has been uttered. Wolter calls the situation variables with the former use the [default] situations, and the rest of situation variables the [non-default] situations. The demonstrative determiner is further specified to require its NP complement be evaluated against a non-default situation. The definitions of the definite and the demonstrative determiner are shown below:

(10)   a. $\llbracket \text{the}_n \rrbracket$: $\lambda P.P(s_n)$ is a singleton set.
            If defined, denotes $\iota x.P(x)(s_n)$
        b. $\llbracket \text{that}_n \rrbracket$: $\lambda P.P(s_n)$ is a singleton set and s_n is non-default.
            If defined, denotes $\iota x.P(x)(s_n)$
        c.   Given a sentence A, a situation variable s is a default situation just in case it is bound in A. Otherwise s is a non-default situation.

The default situation used for *the* is the one that is defined to interpret the main predicate of the sentence, while the one used for *that* is non-default. This non-defaultness can be both the 'zoomed-in' or 'zoomed-out' context that is provided by deixis as in (11a) and (11b), or recency in anaphoric contexts as in (11c).

(11)   a.   [in an art gallery; speaker points at a painting]
            This/That painting is beautiful.   [Zoom-in; Wolter 2006:(1)]
        b.   That bucket is full of water.   [Zoom-out; (23)]
        c.   A woman$_i$ entered from stage left. Another woman$_j$ entered from stage right.
            That woman$_j$ was carrying a basket of flowers.   [Anaphoric; (4)]

Note that Wolter (2006) herself does not call or consider this analysis an anaphoric approach. However, the formal denotation that makes use of situation variables that fix the reference of referential expressions outside the topic situation ends up encoding anaphoricity. What this means is that demonstratives are analyzed in Wolter 2006 as definites that refer anaphorically. Thus, Wolter analyzes demonstratives as referring uniquely in an anaphoric situational variable, and extends the anaphoric situational variable to subsume deictic references.

Undergeneration   This account also runs into undergeneration problems. Like Roberts, the anaphoric variable can be extended to subsume deictic references. However, demonstratives that host relative clauses and do not refer anaphorically or deictically cannot be accounted for in this analysis because non-default situations are anaphoric situations. Furthermore, note that the main consequence of presupposing the non-default situation is that Maximize Presupposition (Heim 1991) predicts demonstratives to only occur when the referent is not unique in the default, topic situation. However, in the relative clause uses as in (12), the referents are indeed unique in the given topic situation.

(12)   a.   That hominid who discovered how to start fires was a genius.
        b.   That which rolls faster gathers no moss.

Thus, Wolter's non-default analysis undergenerates and wrongly rules out the relative clause uses in (12).

In summary, what we see with the deictic approach and the anaphoric approach is that they are mirror images of each other: the deictic approach encodes deixis into the denotation of demonstratives and extends it to anaphoric uses, while the anaphoric approach encodes anaphoricity into the denotation and extends it to deictic uses. The generic uses of demonstratives with relative clauses, however, cannot be accounted for because the both approaches require reference to an entity, either by anaphoricity or by deictic pointing.

2.3   The hidden argument theories

Unlike the previous two approaches that focus on anaphoric and deictic uses of demonstratives, the hidden argument theories represented by King 2001, Elbourne 2005, and Nowak 2019 focus on the similiarity between demonstrative descriptions and definite descriptions. King (2001) argues against Kaplan 1977 by identifying many non-deictic uses of demonstratives, which involve anaphoric uses and uses that carry descriptions as shown in (13). In King 2001, the use in (13a) is called 'no demonstration no speaker-reference' to highlight that there is no deictic reference, while the use in (13b) is called 'quantifying-in' because a quantifier binds a pronoun inside the description.

(13)   a.   That hominid who discovered how to start fires was a genius.   [NDNS; King 2001:(3)]
        b.   Every father dreads that moment when his oldest child leaves home.   [QI; King 2001:(4)]

While the details differ, the main idea of their proposals is that demonstratives carry an additional property than a definite. For instance, while a definite description *the F* returns the unique entity that is F as in (14), a demonstrative of the form *that F* returns the unique entity that is F and further restricts it to an additional property, as shown in (15) from Nowak (2019), where G(x) represents this additional argument.

(14)   the F = the x: F(x)

(15)   that F = the x: [F(x) & G(x)]

In a deictic use of demonstratives, this G(x) is filled with an identity relation to the entity being pointed to, as in (16a), where Jin is a singer being pointed to.

(16)   [That singer]$_{\rightarrow \text{Jin}}$ is happy.
          a.   the x: [singer(x) & identical-to-Jin(x)]

In a non-deictic use, what fills the G(x) is either an index or a trivial property. For instance, in anaphoric uses, G carries an index information, as shown in the schema below, where *y* is an index.

(17)   I met a linguist. That linguist looked happy.
          a.   ⟦that linguist⟧ = ιx: linguist(x) ∧ x=y

There is an important difference between the originial hidden argument theories (Elbourne 2005; King 2001) and that in Nowak 2019 when it comes to the descriptive uses. In the former theories,

the additional property *G* can be semantically trivial. For example, in (18a), G(x) is filled with a trivial property that is always true, thus making the demonstrative semantically equivalent to a definite. This highlights the fact that (18a) can also be uttered with the definite as in (18b).

(18) a. That guy who wrote *Waverley* also wrote *Ivanhoe*.
      b. The guy who wrote *Waverley* also wrote *Ivanhoe*.

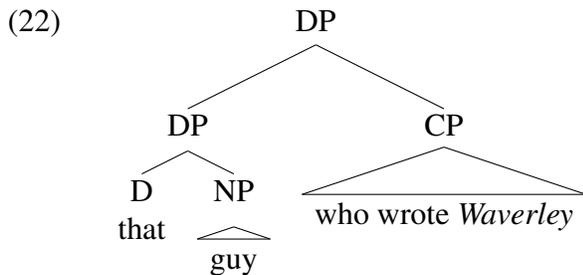(19) the x: [guy-who-wrote-Waverley(x) & self-identical(x)]

Nowak (2019), however, shows that using a trivial property that equates demonstratives to definites overgenerates and cannot account for contrasts such as (20).

(20) a. That guy who wrote *Waverley* also wrote *Ivanhoe*.
      b. #That author of *Waverley* also wrote *Ivanhoe*.   [Nowak 2019:(4-5)]

Note that the original analysis would not predict the relative oddness of (20b), because the analysis of (20b) would be identical to (20a) except for the content of the NP restriction, as in (21).

(21) the x: [author-of-Waverley(x) & self-identical(x)]

To resovle this overgeneration problem, Nowak (2019) modifies the original theory in two ways. First, he proposes that the relative clause in (20a) appears outside the main DP headed by the demonstrative as in (22).

(22)

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                          DP
                  ┌────────────┴────────────┐
                 DP                         CP
              ┌───┴───┐              ┌───────┴───────┐
             D       NP          who wrote Waverley
            that     ╱╲
                    guy
```

The idea is that a demonstrative requires a G(x) property that can syntactically occur in this higher position, and only (20a), but not (20b) has a property that can be appear such construction.

   With the CP outside the demonstrative head, however, a compositionality problem occurs because the head noun is not forming a constituent with the relative clause (Partee 1975). In order to avoid this problem, Nowak argues that when a definite appears in a structural configuration like (22) which he calls NP-S following others, a construction-specific composition principle (Bach & Cooper 1978) applies, and the determiner takes a resource variable over properties inside the restrictor of ι in addition to the NP restriction as in (23). This variable picks out the relative clause. Thus, the relative clause is interpreted inside the restriction of ι as in (24) even though it syntactically appears outside the DP.

(23) $[\![\text{the}]\!] = \lambda f. \iota x: f(x) = 1$ and $R(x) = 1$

(24) $\iota x :$ x is a man and x wrote Waverley

Second, Nowak (2019) adds to the denotation of demonstratives a presupposition that requires G(x) to properly restrict the set denoted by the DP. Thus, a semantically trivial property cannot occur in

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G(x). The denotation is shown in (25).

(25) ⟦that⟧ = $\lambda f \lambda g$: the intersection of {x: f(x) = 1} and {x: g(x) = 1} is a proper subset of {x: f(x) = 1}. ιx: f(x) = g(x) = 1   [Nowak 2019:(38)]

Deictic information as in (26a) is argued to occur inside the G(x) slot. Because being identical to Mirzakhani does properly restrict the set of women, the presupposition is met, and this sentence is felicitous.

(26) [That woman]$_{\rightarrow\text{Mirzakhani}}$ won a Fields medal.

    a.   the x: [woman(x) & identical-to-Mirzakhani(x)]   [Nowak 2019:(39-40)]

For non-deictic uses, only those with properties that satisfy the CP requirement and the presupposition in (20) are predicted to be felicitous. For example, in (20a), the relative clause *who wrote Waverley* occupies the CP position and properly restricts the set denoted by the DP, thus meeting the requirements and being predicted to be felicitous. In (20b), however, the genitive phrase *of Waverley* occurs noun-internally and cannot occupy the CP position. Thus, it is predicted to be infelicitous.

Overgeneration While the analysis in Nowak 2019 resolves the major overgeneration issues found in the original hidden argument theories, the composition that he assumes in the analysis still faces overgeneration. Recall that the content of DP-external G(x) enters the restriction of the ι operator because a construction-specific composition principle applies whenever the determiner appears in the NP-S structure. The main consequence of this is that the definite determiner *the* and the demonstrative *that* are predicted to be semantically equivalent when they occur in this specific construction. However, by extending the CP to contain deictic information, the analysis wrongly predicts definite descriptions to allow deictic uses. Consider the contrast in (27).

(27)   a.   [That woman]$_\rightarrow$ is a linguist, and [that woman]$_\rightarrow$ is a philosopher.
      b.   #[The woman]$_\rightarrow$ is a linguist, and [the woman]$_\rightarrow$ is a philosopher.

The felicity of (27a) suggests that the deictic information is indeed part of the restriction of the ι operator, because otherwise this sentence would not meet the uniqueness presupposition. That the deictic information enters the restriction of the ι, however, wrongly predicts the definite counterpart in (27b) to be felicitous. However, (27b) results in a uniqueness presupposition failure, and thus is ruled out.

    What we see is that the pointing information cannot be interpreted inside the ι for definites, while it is interpreted inside the ι for demonstratives. This contrast cannot be captured in Nowak's account because the restrictive composition of G(x) works in the same way for demonstratives as it does for definites. It wrongly predicts (27b) to be equally felicitous to (27a).

    Another potential problem has to do with pronominal demonstratives that carry relative clauses. Note that pronominal demonstratives can also host relative clauses as in (28).

(28)   a.   Those who read never fail.
      b.   That which rolls faster gathers no moss.   [Elbourne 2013:206]

How might we extend the analysis in Nowak 2019 to pronominal uses? Note that Nowak (2019)

focuses on adnominal demonstratives only and does not consider pronominal demonstratives. However, for a comprehensive theory of demonstratives, we would want the theory of adnominal demonstratives to apply to pronominal demonstratives. The construction-specific composition assumed in Nowak 2019 requires an 'NP-S' structure, where there is an overt NP present. One possible analysis would be to weaken this constructional requirement and allow the same composition even when there is no overt NP complement. However, if we allow pronominal demonstratives to be used this way, we would wrongly predict the definite determiner to host a relative clause without the NP complement.

(29)   *The which rolls gathers no moss.

An alternative solution would be to maintain the NP-S structural requirement and argue that only adnominal determiners trigger the construction-specific composition, but this would require an additional stipulation to account for the pronominal counterpart.

What this suggests is that the demonstrative must differ from definites in more ways than just carrying a CP-level property that properly restricts the set denoted by the DP. The information in this higher slot must be required to compose restrictively for demonstratives, but not for definites. In other words, the restrictive interpretation of the relative clause and deictic pointing with demonstratives should not just be a consequence of a specific structural configuration.

2.4 'Non-deictic' is not enough

What we have seen is that focusing solely on the deictic or anaphoric nature of demonstratives results in undergeneration, while trying to account for all three uses – deictic, anaphoric, and descriptive – result in overgeneration where important differences between definites and demonstratives are not captured. This suggests that the deictic, anaphoric, and descriptive uses of demonstratives do not sufficiently distinguish the characteristic property of demonstratives. Note that this categorization of demonstrative uses is a result of the initial focus on deictic uses: the non-deictic category appeared as a response to this initial focus, identifying all of the 'other' uses. However, this negatively defined categorization is not a natural class when it comes to meaning.

Upon closer look, we observe that there is a lot more similarity between the deictic use and some of the descriptive uses, and that these uses together as a category differ from the anaphoric use. What divides these two groups is the way in which reference is resolved. The anaphoric use employs a well-known mechanism of familiarity as defined in Roberts 2003, where an entity familiar to speakers either by being in previous discourse or simply by being in the common ground is referred to. The former group that contains the deictic use and the descriptive use differs from the anaphoric use in that no familiarity is necessary to resolve the referent. Instead, a new referent is *introduced* by providing information that can identify the referent. In the deictic use, for example, the identifying information is provided by directly by pointing to the intended referent. In the descriptive use, the intended referent is defined by verbal description found in the relative clause.

In a typological study of demonstratives, Himmelmann (1996) notes that 'demonstratives are used either in establishing a referent in the universe of discourse for the first time ... or to single out a certain referent among already established referents' (p.240). He calls the former an 'introducing' use, and the latter a 'singleout' use. I adopt this categorization and argue that the deictic and

descriptive uses be categorized under the introducing category. Instead of focusing on just the deictic use, or just the descriptive use as in previous studies, I propose to analyze demonstratives by focusing on this introducing use.

3 The introducing mechanism

I start by defining the introducing use. The introducing mechanism refers by *defining* a new referent. The crucial distinguishing factor for this mechanism from that of anaphoric uses is that it does not rely on familiarity. There is no specific entity that must be established prior to reference. The referent is defined at the point of utterance.

There are two main ways to introduce an entity with demonstratives. One is the deictic use where the speaker directly points to the entity present in the utterance context, as in (30).

(30)   a.   That$_\rightarrow$ is broken.
       b.   [That star]$_\rightarrow$ is blue.

In this deictic use, no familiarity is necessary. The hearer can resolve the referent as soon as the speaker points out the entity. Not only is familiarity unnecessary, but it is blocked in deictic uses of demonstratives. It has been shown in an experimental study that a familiarity-based anaphoric reading is blocked for English speakers as soon as the demonstrative is used with a co-speech pointing gesture (Ahn & Davidson 2018).

The second way to introduce an entity is to provide a description that defines that entity. Here, too, the sole source of information that helps in identifying the entity is the description rather than familiarity. Consider (31), which is an example of this type.

(31)   Those who read everyday never fail.

Here, the addressee does not have to be familiar with a specific group of entities that read. Instead, the relevant set of entities is defined by the property of reading everyday. This explains why (31) would be fully felicitous out of the blue. Note that not all descriptive uses, that is, cases of demonstratives co-occurring with relative clauses, introduce a referent. For example, in (32), it is possible for a demonstraive with a relative clause to refer anaphorically.

(32)   I met a linguist who studies demonstratives and a linguist who studies quantifiers. The one who studies demonstratives presented yesterday.

In fact, it is often difficult to tell whether a demonstrative occurring with a relative clause is introducing or anaphoric. It is easiest to identify introducing uses when a pronominal demonstrative occurs with a relative clause in generic sentences. I call these introducing uses 'defining uses' from now on, to distinguish them from the syntactically defined descriptive uses that refers to any use of demonstratives with relative clauses. I will show in Section 4 why it is easier to detect introducing uses with pronominal demonstratives.

I define the introducing mechanism as follows.

(33)   **Introducing referencing mechanism:** Referring to an entity makes use of the introducing referencing mechanism if it involves:

a. directly pointing to an entity that is present in the context, or

b. providing a description that fully defines the intended referent.

The crucial reason for focusing on the introducing uses as a category in studying demonstratives is that **introducing uses are unique to demonstratives**. In the next section, I discuss this in detail and motivate an analysis of demonstratives based on the introducing mechanism.

3.1 Demonstratives uniquely allow introducing mechanism

In this section, I show that demonstratives are unique in employing the introducing mechanism when compared to the inanimate pronoun *it* and the definite description. I focus on the inanimate pronoun *it* for this section because it forms a minimal pair with the pronominal demonstrative *that*. The animate pronouns will be the focus of Section 5, where I argue that some animate pronouns in English also have the role of demonstratives.

3.1.1 Deictic use

Demonstratives like *that* or *that linguist* readily allow deictic uses.

(34)   a.   (Pointing at a window decoration) I like that$_\rightarrow$.

b.   (Pointing at a linguist) [That linguist]$_\rightarrow$ was in my class.

It has been argued that demonstratives differ from other expressions such as a definite or an indefinite noun in bringing the information of pointing to at-issue (Ebert & Ebert 2014; Ebert et al. 2020). For example, while pointing with an indefinite noun or a definite noun only contributes a non-at-issue inference that cannot overtly be rejected, the inference contributed by pointing with a demonstrative can overtly be rejected.[1]

Moreover, with a demonstrative, the information contributed by the pointing gesture is restrictive. This becomes evident when more than one referent is pointed to as in (35), where A and B are locational variables and $\rightarrow$A represents pointing to A. In the examples in (35), the linguistic description is identical in the conjoined clauses. The only difference between the two DPs is the target of pointing. The fact that the sentences in (35) are not contradictory indicates that the pointing information must be part of the restriction that resolves the referent.

(35)   a.   I like that$_{\rightarrow A}$ but not that$_{\rightarrow B}$.

b.   [That computer]$_{\rightarrow A}$ is new, but [that computer]$_{\rightarrow B}$ is old.

This is different from both the inanimate pronoun *it* and definite descriptions.

(36)   (Pointing at a window decoration) I like it$_\rightarrow$.

(37)   (Pointing at a boy) [The boy]$_\rightarrow$ was in my class.

Pointing with *it* or a definite description is quite odd to begin with, but it is not ruled out. What is important, however, is that the pointing information cannot be restrictive with these expressions.

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[1]For Ebert & Ebert 2014, pointing contributes different inferences based on the kinds of linguistic expression it occurs with. In this paper, I assume that pointing always has a meaning of indicating location, and that only demonstratives restrictively compose with this information to resolve reference.

Note that in (38), the sentences are contradictory even though pointing targets two different locations.

(38)   a.   #I like it$_{\to A}$ but not it$_{\to B}$.
       b.   #[The computer]$_{\to A}$ is new, but [the computer]$_{\to B}$ is old.

Moreover, what we observe is that the pointing information *must* be restrictive for demonstratives. Ahn & Davidson (2018) show that an anaphoric link is broken when demonstratives occur with pointing. This applies both in intersentential uses as in (39) and in bound-variable readings as in (40).

(39)   a.   I saw [a water-type Pokemon]$_i$. That$_{\to *i}$ looked happy.
       b.   I saw [a water-type Pokemon]$_i$. [That Pokemon]$_{\to *i}$ looked happy.

(40)   a.   Every time I found [a water-type Pokemon]$_i$, I caught that$_{\to *i}$.
       b.   Every time I found [a water-type Pokemon]$_i$, I caught [that Pokemon]$_{\to *i}$.

Definite descriptions and *it*, on the other hand, never block the anaphoric reading. Regardless of whether pointing is present or not, the anaphoric link is maintained for these expressions.

What we can conclude from this set of data is that demonstratives, unlike *it* and definite descriptions, allow deictic pointing to compose restrictively and contribute at-issue inference. Furthermore, when pointing is present, demonstratives resist anaphoric readings altogether.

3.1.2   Defining use of relative clauses

Another property that seems to be unique to demonstratives is the generic interpretation of relative clauses. First consider the following phrases:

(41)   Those who read never fail.

(42)   That which rolls gathers no moss.

The pronominal demonstratives followed by relative clauses refer generically to anyone or anything that satisfies the property denoted by the relative clause. The reading of (41), for example, is a generic sentence about whoever reads, without requiring some specific group of people to have been previously established.

This is different from definite descriptions and pronouns like *it*.

(43)   The people who read never fail.

(44)   ?*It which rolls gathers no moss.

The definite description in (43) requires that some specific group of people to have been previously established. Even if it doesn't require that the specific group of people who read be previously established, it nevertheless requires that at least some domain of people is familiar to conversation participants, and that the speaker is discussing a subset of those people who read. The anaphoric pronoun *it* in (44), on the other hand, is infelicitous, as observed in Elbourne 2013. When an interpretation is forced, it can only refer to something familiar, with the relative clause only providing some supplementary information about the already-familiar entity.

For deictic uses, we saw that demonstratives accompanied by pointing resist anaphoric readings altogether. Do demonstratives resist anaphoric readings when accompanied by a relative clause? Indeed, pronominal demonstratives that host relative clauses seem to block anaphoric readings. Consider (45a), where *those who read* cannot refer back to the people the speaker met, unlike *they* in (45b).

(45)   a.   Yesterday I met [people who read regularly]$_i$. [Those who read]$_{*i}$ will never fail.
          b.   Yesterday I met [people who read regularly]$_i$. They$_i$ will never fail.

Adnominal demonstratives, on the other hand, show some variation. The example in (46) is degraded, possibly due to the redundant NP, but it is relatively easier to get an anaphoric reading of (46) than it is for (45a).

(46)   Yesterday I met [people who read regularly]$_i$. [Those people who read]$_i$ will never fail.

Thus, for some demonstratives, anaphoric reading is not only unnecessary but also blocked when accompanied by relative clauses. This is similar to what we observed with the deictic use above. The only difference is that for adnominal demonstratives that occur with relative clauses, anaphoric reading is still possible. We will see later that this difference is not accidental. After presenting the proposal, I show in Section 4.3.2 that there is a way to predict this difference between pronominal and adnominal demonstratives with relative clauses but not with deictic uses.

3.2 Demonstratives realize the introducing mechanism

In summary, we have seen that demonstratives are unique in allowing introducing uses, and also resisting anaphoric uses when either pointing or a relative clause is present. While the pronoun *it* and the definite description require the specific referent to be familiar and established in the discourse, demonstratives refer to new referents that are just pointed out or defined with a description. In this respect, demonstratives differ from any other definite or anaphoric expressions.
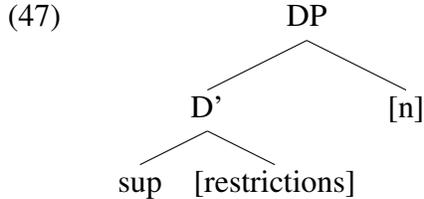
Based on this observation, I propose that the introducing mechanism should be at the core meaning that demonstratives encode, with the anaphoric use appearing only when the introducing mechanism is not available. Making the introducing mechanism the primary meaning of demonstratives and the anaphoric use secondary differs from previous studies which treat familiar uses as one of the core meanings of demonstratives.

4 Analysis

Let us first summarize what we have seen so far. Demonstratives have at least three different uses identified in the literature: deictic, anaphoric, and descriptive. The analyses that focus on deictic and anaphoric uses were shown to undergenerate and not predict descriptive uses. The hidden argument theory in Nowak 2019 does account for the descriptive uses but overgenerates because the demonstratives are still too similar to definites. Then, in the last section we established that demonstratives differ from definites in allowing introducing uses that do not rely on familiarity. Because demonstratives are unique in employing this mechanism, we argued that the core meaning of demonstratives should focus on this introducing use.

Thus, we need a theory of demonstratives that a) makes the introducing use its core property and b) makes demonstratives sufficiently different from definites to avoid overgeneration. I propose one such analysis in this section. I start with the basic assumptions I make in this analysis.

As the basis for my analysis, I take the extended D-type analysis of anaphoric expressions in Ahn 2019. In Ahn 2019, all anaphoric expressions including null and overt pronouns, and definites are analyzed as sharing the same underlying semantic structure represented in (47). I call this the familiar structure from now on, because it relies on familiarity, specifically anaphoric information, to resolve reference.

(47)

```
                    DP
                   /  \
                  /    \
                D'     [n]
               /  \
              /    \
            sup  [restrictions]
```

The supremum operator, defined as (48), takes the restrictions and returns the maximal entity that meets all of the restrictions. The index function *idx*, represented as [n] in the tree and defined in (49), is presuppositional: it takes an index *n* and an individual *x* and returns *x* if *x* is identical to the individual indexed at *n* (g(n)). The exact nature of [n] is not crucial to this analysis. It could be a presuppositional identity function as assumed here, or a domain restriction that allows for an anaphoric reference. Anyting that takes an individual returned by the sup operator and ensures an anaphoric reference would do.

(48) $[\![\text{sup}]\!] = \lambda P. \iota x{:}\forall y\ [P(y) \leftrightarrow y \sqsubseteq x]$

(49) $[n] = [\![\text{idx}]\!](n) = \lambda x{:}\ x$ is g(n). x

In Ahn 2019, all anaphoric expressions in any given language share this same structure and only differ in the kinds of restrictions that they carry. For example, a pronoun carries ϕ-information such as gender, animacy, and number, while an adnominal expression like the definite description carries the NP property. Note that in this analysis, ϕ-features are analyzed as <e,t> type modifiers. This treatment of ϕ-features as modifiers is also found in Esipova 2019. In Ahn's analysis, these <e,t> type modifiers enter the restriction of the supremum just like the NP description. The modifier analysis of ϕ-features only applies to semantic features and not grammatical features such as grammatical gender or noun classes, which are argued to be only syntactically represented (Ahn 2019). Whether each of these ϕ-features projects its own syntactic node or not is outside the scope of this paper. Regardless of their individual syntactic status, the assumption is that all of these properties will be composed conjunctively, serving as the restriction to the supremum operator. Thus, the pronoun *she* would have in the restriction the property of being female and being singular as in (50).

(50) $[\![\text{she}_7]\!] = \iota x{:}\ x$ is g(7). $\forall y\ [\text{entity}(y) \wedge \text{female}(y) \wedge \text{singular}(y) \leftrightarrow y \sqsubseteq x]$
        'the maximal entity that is female and singular'

A definite description would carry the NP property and the property of being singular in the restriction, with *the linguist* returning (51).

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(51) $[\![\text{the linguist}_7]\!] = \iota x$: x is g(7). $\forall y$ [entity(y) $\wedge$ $[\![\text{linguist}]\!]$(y) $\wedge$ singular(y) $\leftrightarrow$ y $\sqsubseteq$ x]
   'the maximal entity that is a linguist and singular'

The general schema of a maximality operator taking a set of restrictions and returning the maximal entity is assumed for definite descriptions in many frameworks, and analyzing pronouns as carrying a maximality operator is not new. In the D-type analysis of pronouns (Elbourne 2005), pronouns are analyzed as having the same denotation as a definite description, so that a pronoun such as *she* in (52) is semantically equivalent to the definite description *the linguist* except that the NP complement is elided.

(52) I met a linguist. She looked happy.
      a. $[\![\text{she}]\!] = [\![\text{the } \text{linguist}]\!]$

Ahn's analysis differs in that instead of arguing that pronouns are definites in disguise, it argues that all anaphoric expressions including pronouns and definites share the general structure that makes use of a maximality operator. Because the NP property is just one of the possible restrictions than are available for an anaphoric expression to carry, pronouns do not have to be analyzed as carrying an NP that is phonologically null. Instead, they can simply carry only the ϕ properties that are reflected in their morphosyntax. The removing of the NP complement from the restriction of pronouns has an advantage of resolving a puzzle present in the original D-type analysis of pronouns with what is called Voldemort phrases (Elbourne 2005). This is discussed in Section 5.

4.1 Demonstratives lexicalize a binary supremum operator.

I propose that demonstratives extend this basic structure by requiring a second argument in additoin to the regular restrictions. While a definite realizes a maximality operator that takes a set of restrictions such as the NP property, a demonstrative realizes a **binary maximality operator** that requires two arguments. The first argument is the regular set of restrictions such as ϕ-property or the NP property as discussed above, while the second argument, which I call *R*, hosts the introducing mechanism. The structure is shown in (53), with the binary supremum defined in (54).
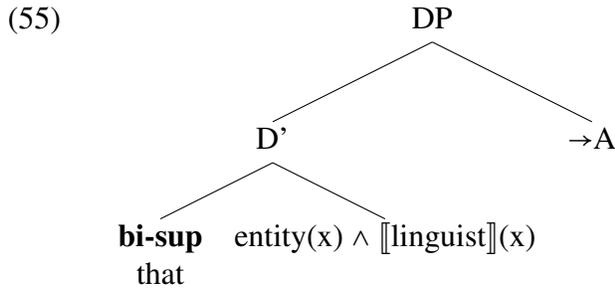
(53) **Introducing**

```
              DP
            /    \
          D'       R
        /    \
    bi-sup  [restrictions]
```
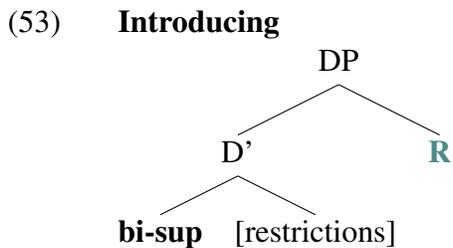
(54) $[\![\text{bi-sup}]\!] = \lambda P. \lambda R. \iota x : \forall y$ [P(y) $\wedge$ R(y) $\leftrightarrow$ y $\sqsubseteq$ x]

Like the structure in (47), different expressions are assumed to carry different kinds of restrictions. So a pronominal demonstrative would carry just ϕ-features as properties inside the first argument, while an adnominal demonstrative would carry the NP complement. In addition to this first set of restrictions, demonstratives require a second argument.

The second argument, *R*, replaces the index and hosts a property that can be used to define

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the referent, namely a deictic pointing or a relative clause. This information is always interpreted inside the restriction of the supremum operator. Because R replaces the familiar index, we capture the fact that the introducing mechanism does not rely on familiarity.

A deictic use of the demonstrative *that linguist*, where the speaker points to a location A can be analyzed as in (57). I assume that pointing to some location A is a modifier that takes an individual x and returns true iff x is at A as in (56). Note that pointing has been analyzed as contributing different meanings: Roberts (2002) and Ebert & Ebert (2014) analyze pointing as a direct reference to an entity while Grosz (2019) analyzes pointing as a reference to a situation. Instead of analyzing pointing as directly referring to an entity or a situation, I analyze it as a modifier because in this analysis, pointing occupies the same slot as the relative clause.
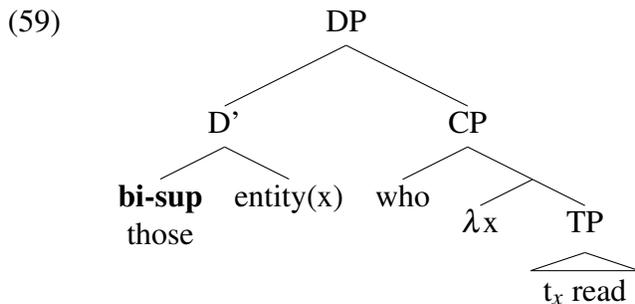
(55)

$$
\begin{array}{c}
\text{DP} \\
\diagup \diagdown \\
\text{D'} \qquad \rightarrow\!\text{A} \\
\diagup \diagdown \\
\textbf{bi-sup} \quad \text{entity(x)} \wedge [\![\text{linguist}]\!](x) \\
\text{that}
\end{array}
$$

(56) $[\![\rightarrow\!\text{A}]\!] = \lambda x.\ x$ is at A

(57) $[\![[\text{that linguist}]_{\rightarrow A}]\!] = \text{bi-sup}([\lambda x.\ \text{entity(x)} \wedge [\![\text{linguist}]\!](x)])(\lambda x.\ x \text{ is at A})$
         $=$ the maximal entity that is a linguist and at A

Because the binary supremum takes both the restrictions in its sister node and the R slot, the returned individual is the maximal entity that is a linguist and is at location A. A deictic use of a pronoun like *that* would be identical except that the restriction only carries the ϕ-information and not the NP restriction.

(58) $[\![\text{that}_{\rightarrow A}]\!] = \text{bi-sup}\ (\lambda x.\ \text{entity(x)} \wedge [\text{inanimate}](x))\ (\rightarrow\!(A)(x))$
         'The maximal inanimate entity that is at A'

A relative clause phrase 'those who read' will be analyzed similarly, with the relative clause appearing in the R slot. Because a pronominal demonstrative is used, the restrictions do not contain an NP property. Instead, it simply carries the entity property and the ϕ-restrictions.

(59)

$$
\begin{array}{c}
\text{DP} \\
\diagup \diagdown \\
\text{D'} \qquad\quad \text{CP} \\
\diagup \diagdown \qquad \diagup \diagdown \\
\textbf{bi-sup} \ \ \text{entity(x)} \quad \text{who} \quad \lambda x \quad \text{TP} \\
\text{those} \qquad\qquad\qquad\qquad\quad \diagup\diagdown \\
\qquad\qquad\qquad\qquad\qquad\quad \text{t}_x \ \text{read}
\end{array}
$$

(60) $[\![\text{those who read}]\!] = \text{bi-sup}(\lambda x.\ \text{entity(x)})(\lambda x.\ \text{read(x)})$
         'The maximal entity that reads'

4.2 Anaphoric index as a last resort

So far, I have argued that a demonstrative differs from a definite or a pronoun in lexicalizing a binary supremum operator that takes a deictic pointing or a relative clause as the second argument. Because *R* is a necessary argument of demonstratives that replaces the index in the structure, this analysis correctly predicts that demonstratives accompanied by a relative clause or pointing must interpret it restrictively and resist anaphoric readings.

However, we have also seen that demonstratives allow anaphoric readings. I propose that anaphoric readings are possible by filling the *R* slot with a contextual information like an anaphoric index. Specifically, I argue that when *R* is not filled with either of the introducing mechanisms, then *R* can be filled with an anaphoric index. Because *R* requires a property rather than a presuppositional element, the anaphoric index would have to take the form of a property, as shown below. The anaphoric demonstrative differs from other anaphoric expressions in carrying the index information as part of the restriction of the sup operator rather than as a presupposition.

(61) $[\![\text{idx}]\!] = \lambda n \, \lambda x. \text{ x is g(n)}$

It has been observed that anaphoric uses of demonstratives are degraded compared to that of definites (Roberts 2002; Wolter 2006). The degradedness of an anaphorically interpreted demonstrative can be derived from independently motivated semantic economy principles. When a demonstrative occurs without a pointing gesture or a relative clause, then the *R* slot must be filled with some other contextual information such as the index. However, a demonstrative that carries an anaphoric index in *R* becomes denotationally identical to an inanimate *it* when it is pronominal, and identical to a definite description when it is adnominal. While a definite or a pronoun makes use of a unary supremum operator with a presuppositional index, a demonstrative makes use of a binary supremum operator that takes both the restrictions and the indexical information as restrictions. Thus an anaphoric demonstrative is semantically equivalent to an anaphoric *it* or definite but has a more complex structure. There are many independently motivated semantic economy principles that block more complex LFs when a simpler and semantically equivalent form is available. For example, *Minimize Restrictors!* (Schlenker 2005) rules out definite descriptions that carry redundant restrictions. This principle would apply in this case and rule out demonstratives because they are denotationally identical to the simpler alternatives but carry an additional restriction. Other more general economy principles such as Efficiency (Meyer 2014) and Thought Uniqueness Hypothesis (Sauerland 2018) can also apply here to rule out the more complex demonstrative.

Note that there is an asymmetry between pronominal and adnominal demonstratives in the extent to which they allow anaphoric uses. Specifically, the pronominal demonstrative is much more degraded in anaphoric uses than the adnominal demonstrative. Roberts (2002) discusses examples as in (62) from Maclaran 1982, where the anaphoric use of demonstratives *this* and *that* are highly degraded.

(62)   A car drew up at the door. Two dark-suited men got out of {it / the car / ?this / ?that}, then {it / ?this / ?that} disappeared down the drive again. (after Maclaran 1982)

The adnominal counterparts, however, are not as degraded as shown in (63).

(63)   A car drew up at the door. Two dark-suited men got out of {it / the car / that car}, then {it / that car} disappeared down the drive again.

Accounting for the degradedness of anaphoric demonstratives by semantic competition with simpler forms allows us to capture this asymmetry because the alternatives with which the pronominal and adnominal demonstratives compete are different. For a pronominal demonstrative interpreted anaphorically, its simpler alternative is the inanimate pronoun *it*, which only has an anaphoric reading. Thus, semantic economy principles rule out the more complex *that*. On the other hand, for an adnominal demonstrative, the simpler alternative is the definite description. It has been observed that the definiet determiner *the* in English is ambiguous between at least two different meanings: uniqueness and familiarity (Schwarz 2009). For example, unlike many languages including German that mark uniqueness-denoting use as in (64a) differently from familiarity-denoting uses as in (64b), English encodes both with *the*.

(64) Uniqueness vs. familiarity-denoting definites in German   [Schwarz 2009]

     a.   *Armstrong flog als erster* **zum**   *Mond.*
         Amstrong flew as first   to-the$_W$ moon
         'Armstrong was the first one to fly to the moon.'

     b.   *Hans hat einen Schriftsteller und einen Politiker interviewt. Er hat* **#vom**   /
         Hans has a   writer   and a   politician interviewed He has from-the$_W$ /
         von dem Politiker *keine interessanten Antworten bekommen.*
         from the$_S$ politician no   interesting   answers   gotten
         'Han interviewed a writer and a politician. He didn't get any interesting answers from the politician.'

When an expression α has an ambiguity like above, and when another expression β overlaps with α in only one of the possible meanings, a different kind of pragmatic principle is assumed to take place to prefer β. *Maximize Presupposition!* (Heim 1991) is one of such principles, which requires the expression with a stronger presupposition to block the ambiguous, thus less informative, form. Jenks (2018) also proposes a similar principle for bare argument languages. Bare argument languages allow many different meanings for their bare nouns, including anaphoric and unique readings. In these languages, demonstratives often overlap with the bare noun to encode anaphoricity. Jenks (2018) argues that a principle *Index!* requires demonstratives to block bare nouns in anaphoric contexts to avoid the ambiguity in bare nouns.

A similar kind of pragmatic principle may be at play for the definite description and the adnominal demonstrative. Specifically, the semantic economy principle that requires a simpler form would prefer the definite description, while a principle like *Index!* would prefer maximally encoding anaphoricity with a demonstrative. The extent to which these different principles apply to render an expression infelicitous is beyond the scope of this paper. However, the crucial point here is that such clash would only occur with adnominal demonstratives that compete with the definite, and not with pronominal demonstratives that compete with the unambiguously anaphoric *it*. Thus, this analysis can derive the asymmetry between adnominal and pronominal demonstratives in their anaphoric ability.

4.3 Advantages

The main consequences of this analysis are that a) demonstratives differ from definites in more ways than proposed in the hidden argument theories, and b) demonstratives lexicalize the introduc-

ing mechanism. This has several advantages over previous proposals. First, it resolves the overgeneration problem in hidden argument theories. Second, it accounts for the difference in pronominal and adnominal demonstratives that occur with relative clauses. Lastly, it correctly predicts pointing and relative clauses to compete for a restrictor slot. I discuss each in turn.

4.3.1 Overgeneration problem resolved

In Nowak 2019, the definite and the demonstrative are semantically equivalent except for the fact that demonstratives require an additional, DP-external argument that is properly restrictive. This DP-external argument enters the restriction of the ι operator through a construction-specific composition mechanism that is triggered by the NP-S structure. As discussed above, however, there is nothing that stops the definites from having an additional argument and triggering this composition mechanism. Thus, the definite is wrongly predicted to allow deictic pointing in the restriction of the ι. There is also no way of accounting for the pronominal demonstrative hosting relative clauses without wrongly predicting definites without NP complements to host relative clauses.
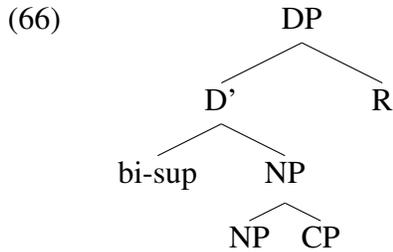
This overgeneration problem does not arise in this analysis because definites and demonstratives lexicalize different supremum operators. While the definite lexicalizes a unary supremum operator, the demonstrative lexicalizes a binary operator. This correctly predicts that demonstratives would always require a secondary argument, while definites never do. Thus, the information contributed by pointing can never enter the restriction of definites. The analysis also readily derives pronominal demonstratives hosting relative clauses without requiring definites to do so. Definites only have one potential slot for hosting relative clauses, which is the NP, while demonstratives have two potential slots: the NP and the R. Thus, definites are predicted to only host relative clauses when there is an overt NP, while demonstratives are predicted to allow relative clauses in both adnominal and pronominal forms. This flexibility in the hosting site for relative clauses accounts for the difference we observed in (45), namely that adnominal demonstratives with relative clauses allow anaphoric uses while pronominal demonstratives resist it. I discuss this below.

4.3.2 Pronominal vs. adnominal difference in relative clauses

Recall the difference between pronominal and adnominal demonstratives accompanied by relative clauses: while pronominal demonstratives resist anaphoric readings, adnominal demonstratives seem to allow it more readily.

(65)　　a.　Yesterday I met [people who read regularly]$_i$. [Those who read]$_{*i}$ will never fail.
　　　　b.　Yesterday I met [people who read regularly]$_i$. [Those people who read]$_i$ will never fail.

This is correctly predicted by the analysis presented here. Note that a relative clause can appear not only in the R position as proposed here, but also inside the NP argument, as classic accounts of relative clauses assume. This means that the pronominal and the adnominal demonstratives differ in that the latter has an additional slot for relative clauses. Thus, in the adnominal demonstrative, it is possible to have the relative clause appear in the lower NP argument instead of inside the R position as shown in (66).

(66)

```
                    DP
                   /  \
                 D'     R
                /  \
            bi-sup   NP
                    /  \
                  NP    CP
```

Note that in (66), the *R* position is not filled, and thus would take the anaphoric index property. The anaphoric index requires the domain of referents to be familiar, which would result in the interpretation we see in (65b).

As for the pronominal demonstrative, however, there is no NP position available for the relative clause to be hosted in the lower position, because in this analysis, pronominal expressions do not carry NP inside the restriction. The only place available is the *R* slot, which would take the relative clause information instead of the anaphoric index. This is why only the generic reading is available for pronominal demonstratives when relative clauses are present.

4.3.3   Pointing and relative clause compete

One important consequence of analyzing pointing and relative clause to appear in the same *R* slot is that we predict the two kinds of information to compete. This prediction is borne out. Consider (67), where the relative clause and pointing co-occur with the pronominal demonstrative *that*.

(67)   [That which rolls]$_{\rightarrow}$ gathers no moss.

The relative clause provides a descriptive information that defines the referent, while co-speech pointing provides a locational information of the referent. It seems that only one of these can be restrictive, with the other being supplementary. Consider the context in (68), where the speaker points to a part of the room where balls are rolling across the room. In this context, the speaker is referring to everything that rolls, so the relative clause composes with the demonstrative restrictively. The pointing only exemplifies some entities that roll, and this is done so in a supplementary way. In supplementary uses, the locational modification would take on a structure of a non-restrictive relative clause. The exact syntactic status of a non-restrictive relative clause is debated. Often, they are assumed to attach higher than inside the NP, at the DP level (see Demirdache 1991; Potts 2005) or even higher at the clausal level (see Emonds 1979; McCawley 1982). Details of the non-restrictive relative clause aside, the main idea is that it does not enter the restriction of the binary supremum operator. Thus in (68), the supplementary locational restriction roughly can be translated as in (69).

(68)   I am always in support of being active. [That which rolls]$_{\rightarrow}$ will not gather moss.

(69)   The maximal entity that rolls, <u>which is by the way exemplified there</u>, will not gather moss.

In (70), however, the speaker is pointing directly to one ball that is rolling across the room and utters the same sentence. In this context, the pointing information is now restrictive, while the relative clause is non-restrictive. The rough translation is given in (71).

(70)   [That which rolls]$_{\rightarrow}$ will not gather moss.

(71)   The maximal entity that is there, <u>which by the way rolls</u> will not gather moss.

The fact that the two pieces of information cannot both be restrictive suggests that they occupy the same position and compete. This provides evidence for the R slot hosting both of these, and for both of them carrying the same semantic type, which is that of properties.

Note that this competition is only visible when the demonstrative is pronominal, meaning that it does not carry the NP complement. This is again because the NP complement can serve as an alternate hosting place for the relative clause in this case. Then, it will be possible for both pointing and the relative clause to be restrictive: pointing appears in the R slot, while the relative clause is modifying the noun inside the NP. This prediction is also borne out as in (72): here, the speaker is talking about candidates sitting in a room, only some of whom are reading. In this context, the speaker can point to those who are reading and utter the following sentence, where both the property of reading and being in that location are restrictive.

(72)   I see the candidates sitting over there [Those guys who are reading]$_\rightarrow$ will not fail.

5   Demonstrative pronouns in English

So far I have focused only on the inanimate pronoun *it* because this forms a minimal pair with the pronominal demonstrative *that* with respect to the presence of R: *that* only differs from *it* in carrying this additional property R. However, when we look at other pronouns such as *she*, *he*, and *they*, we immediately notice that they allow both kinds of introducing uses. In this section, I discuss the deictic and defining uses of pronouns and identify some pronoun-internal differences. Then, I propose that pronouns are ambiguous between the familiar and introducing denotations, and that they compete with demonstratives for the introducing use. This analysis is shown to correctly derive the distribution of pronouns that allow introducing uses. In addition, I show that this analysis resolves a puzzle present in the original D-type analysis of pronouns in Elbourne 2005.

5.1   Pronouns allow introducing uses, too.

In the previous section, we saw that the inanimate pronoun *it* does not allow introducing uses. It always requires there to be a familiar entity established in the discourse. With other pronouns, however, we see that many of them readily allow introducing uses just like demonstratives. Moreover, we see that there is a pronoun-internal variation, with some allowing introducing uses more readily than others. I discuss the deictic use next, followed by the defining uses with relative clauses.

5.1.1   Deictic uses

Recall that the inanimate pronoun *it* and the definite description do not allow deictic uses as in (73), repeated from (38).

(73)   a.   #I like it$_{\rightarrow A}$ but not it$_{\rightarrow B}$.
         b.   #[The computer]$_{\rightarrow A}$ is new, but [the computer]$_{\rightarrow B}$ is old.

This was compared to demonstratives, which readily allow deictic uses as in (74) repeated from (35).

(74)   a.   I like that$_{\rightarrow A}$ but not that$_{\rightarrow B}$.

b.   [That computer]$_{\to A}$ is new, but [that computer]$_{\to B}$ is old.

When we look at animate pronouns such as *she*, *he*, and *they*, however, we see that they do allow deictic uses. New referents that are not familiar to the addressee can be pointed out as in (75).

(75)   Look at {her, him, them}$_{\to}$!

    These pronouns can also be used in contrastive uses, where two different entities are pointed to and distinguished in the same utterance as in (76).

(76)   a.   She$_{\to}$ is happy, and she$_{\to}$ is not.
           b.   He$_{\to}$ is happy, and he$_{\to}$ is not.
           c.   They$_{\to}$ are happy, and they$_{\to}$ are not.

Note that *they* is slightly degraded in this contrastive use: in colloquial speech adnomianl demonstrative forms with NPs denoting sets or subsets of people such as *those people*, *those guys*, or *those kids* seem more natural.

(77)   [Those people]$_{\to}$ are happy, and [those people]$_{\to}$ are not.

5.1.2   Defining uses

Now we move onto the second type of introducing mechanism, which is defining the referent by providing the description that sufficiently and necessarily refers to the intended set of referents.
    Elbourne (2013) shows that the animate pronoun *he* hosts relative clauses as in (78). He calls these 'Voldemort phrases' following the famous fictional moniker 'he who must not be named.' Note, however, that there is a crucial difference between the real Voldemort phrase and (78). Zobel (2015) calls the real Voldemort phrase a name-like use, while (78) is called a generic use. As the names suggest, (78) does not refer to a specific entity, while the Voldemort phrase does. The Voldemort phrase is more similar to singling out a specific referent out of already familiar entities, while the generic use does not require familiarity. From now on, I take Zobel's term and call these generic Voldemort phrases.

(78)   He who hesitates is lost.   [Elbourne 2013:205]

    There are more pronoun-internal differences in the ability to host relative clauses. Zobel (2015) notes that the generic use is possible but less frequent with the feminine pronoun *she* (fn 2), and that it is much more archaic-sounding with the plural pronoun *they* (fn 9). Elbourne (2013) also notes that these phrases are 'slightly degraded' (p.206) with *they* as in (79).

(79)   ?They who hesitate are lost.   [Elbourne 2013:206]
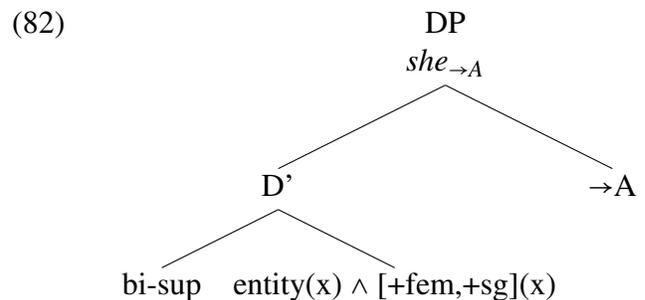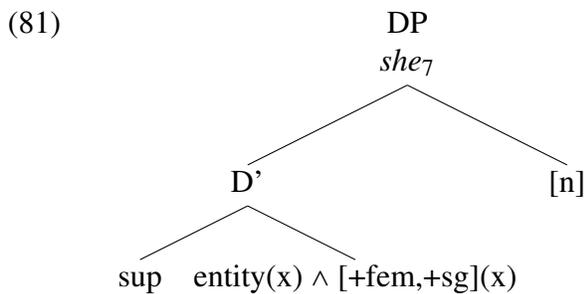
In summary, what we see is that pronouns in English show some variation with respect to allowing introducing uses. All animate pronouns allow deictic uses with *they* showing some degradedness. The male singular pronoun *he* allows generic Voldemort phrases, while *she* and *they* show degradedness. The inanimate pronoun *it* allows neither as we saw above. This is summarized in the table below.

Introducing uses	pronominal dem		adnominal dem		animate pronouns			inanimate pronouns
	that	*those*	*that* N	*those* N	*he*	*she*	*they*	*it*
Deictic	✓	✓	✓	✓	✓	✓	?	*
Defining	✓	✓	✓	✓	✓	?	?	*

(80)

In formal semantics, deictic uses of pronouns are often subsumed under anaphora. For example, deictically introduced entities are assumed to be familiar by simply being present in the context (see Heim 1982; Roberts 2002). In formal implementation, too, the mechanism by which a deictic pronoun refers to its referent is identical to how a coreferring pronoun refers to its antecedent (Heim & Kratzer 1998). However, this assumption runs into at least two problems already discussed in this paper. First, the pronoun-internal variation cannot be captured. We have already seen that *it* does not allow deictic uses altogether while animate pronouns do. Subsuming deixis under anaphora wrongly predicts all anaphoric expressions to allow deictic readings. Second, the ability to host defining uses shows a similar pattern to deictic uses in pronouns: it is not allowed in *it* while animate pronouns show a variation. This is not captured by existing theories of pronouns.

5.2 Demonstrative pronouns

I propose that pronouns in English are ambiguous between the regular familiar structure and the introducing structure. Thus, a pronoun *she* used anaphorically lexicalizes the familiar structure in (81) while *she* used deictically lexicalizes the introducing structure in (82).

(81)

$$\text{DP}\ (she_7)$$

D' — [n]

sup — entity(x) $\wedge$ [+fem,+sg](x)

(82)

$$\text{DP}\ (she_{\rightarrow A})$$

D' — $\rightarrow$A

bi-sup — entity(x) $\wedge$ [+fem,+sg](x)

There is a general assumption in the literature that pronouns and demonstratives are separate semantic elements that differ in their meaning. Thus, semantic analyses of pronouns and demonstratives have generally developed disjointly. Demonstratives, as a category, are assumed to differ from pronouns in allowing deictic uses, even in analyses that heavily consider non-deictic uses of demonstratives.

Across languages, however, it is often difficult to draw a clear boundary between pronouns and demonstratives (see Himmelmann 1996). There are many languages, for example, that simply use the pronominal form of one of their demonstratives as the pronoun, including Hindi, Korean, Japanese , and Turkish.

In this paper, I am proposing that in English, too, pronouns do not differ categorically from demonstratives. Instead, pronouns can function as demonstratives that realize the introducing mechanism. Crucially, I propose that animate pronouns have an option to lexicalize the introducing structure in contexts where there is no demonstrative available.

5.2.1 Competition

When is a demonstrative not available? In order to determine this, we can investigate how the pronoun and demonstrative morphemes of English realize different ϕ-feature combinations. In the table in (83), the '−' symbol indicates a missing morpheme for that particular ϕ-feature combination. What we see is that in English, the pronominal demonstratives are restricted to inanimate entities. In other words, English does not have animate demonstrative pronouns.

(83)   Familiar and Introducing structures

		Familiar	Introducing	
		pronoun	dem-pro	dem-adn
sg		he	–	that male
		she	–	that female
		it	that	that thing
pl		they	–	those males
		they	–	those females
		they	those	those things

Thus, in contexts where an introducing mechanism is required to refer to an animate entity, the animate pronouns *she*, *he*, and *they* have an option to employ the introducing mechanism. This competition-based analysis predicts that the animate pronouns would be ruled out even in animate contexts if the pronominal demonstratives are available.

This prediction is borne out. First, recall that the plural pronoun *they* was slightly degraded in deictic uses compared to *she* or *he*. This can be explained by the fact that the plural demonstrative *those* sometimes do allow a reference to animate entities. For example, it is possible for a speaker to point out her relatives to a friend by uttering (84).

(84)   Those→ are my parents over there.

Moreover, *they* was argued to be very archaic-sounding when appearing with relative clauses (Zobel 2015). This is readily accounted for by the fact that *those* in non-deictic uses can refer to animate entities easily, as we saw with (31) repeated below in (85).

(85)   Those who read will never fail.

It is also possible to find contexts where the singular pronoun *he* is degraded in an deictic context due to competition with the demonstrative *that*. One place where *that* can be used for animate referents is in a presentational context, where the speaker is pointing out different individuals to the addressee, as in (86).

(86)   That→ is Jin, and that→ is Jimin.

Note that in (86), the demonstrative *that* freely refers to animate entities. What is interesting is that it is in this specific context that the pronoun *he* seems to be much more degraded, as shown in (87)

(87)   #He→ is Jin, and he→ is Jimin.

Thus, what we see is that the introducing use of pronouns is tightly linked to the availability of a demonstrative. When demonstratives can be used for animate referents, as with *those* with relative

clauses and *that* in pointing-out contexts, pronouns *they* and *he*, respectively, are blocked.

Now that we have established that some pronouns allow introducing uses as readily as demonstratives, it might be tempting to argue that pronouns only lexicalize the introducing mechanism, rather than being ambiguous between the two structures. There are at least two reasons why this is not the case. First, the presence of *it* suggests that pronouns also lexicalize a structure without *R*. Second, pronouns allow non-restrictive pointing when necessary, unlike demonstratives. In Ahn & Davidson (2018), they found that adult speakers interpreted pronouns as referring anaphorically even when there was a pointing present, in contrast to demonstratives which were always interpreted deictically. Moreover, I will show below that there is an additional advantage of analyzing some animate pronouns as being ambiguous between the two structures, which is that it resolves a puzzle in the D-type analysis of pronouns (Elbourne 2005).

5.3   Voldemort phrases: A puzzle in D-type analysis

One advantage of analyzing pronouns as being ambiguous between the familiar and the introducing structure is that it resolves a puzzle observed in the D-type analysis of pronouns (Elbourne 2005). In the D-type analysis of pronouns, pronouns are analyzed as definite descriptions with null NPs. Semantically, pronouns are identical to definite descriptions, as in (88).

(88)   a. $[\![\text{the}]\!] = \lambda f_{<e,st>}. \lambda s: s \in D_s \;\&\; \exists! x \; f(x)(s) = 1. \; \iota x \; f(x)(s) = 1$
       b. $[\![\text{it}]\!] = \lambda f_{<e,st>}. \lambda s: s \in D_s \;\&\; \exists! x \; f(x)(s) = 1. \; \iota x \; f(x)(s) = 1$

Elbourne (2013) notes that one of the strongest pieces of evidence for a pronoun carrying an NP-complement comes from Voldemort phrases, discussed already in Section 5.1.2 of this paper. I repeat the example from (78) here, in (89).

(89)   He who hesitates is lost.

The idea is that the pronoun can host a relative clause because it carries an NP underlyingly. The NP is what hosts the relative clause.

The puzzle in the D-type analysis is that while (89) is possible, inanimate *it* does not allow relative clauses as in (90).

(90)   a.   *It which rolls fastest gathers no moss.
       b.   *It that rolls fastest gathers no moss.   [Elbourne 2013]

If all pronouns are analyzed as carrying an NP that can host a relative clause, Elbourne's analysis wrongly predicts (90) to be felicitous. Elbourne leaves this for future investigation, suggesting that it might be due to the inability of *it* to receive focal stress. However, recall that *she* and *they* also show degradedness, while allowing focal stress, which suggests that the issue does not seem to be due to inability to receive focal stress.

In the current analysis, however, the contrast between *he* and *it* is derived from two main aspects. The first is that pronouns in this account do not carry NP complements in their meaning. Instead, they only carry ϕ-properties as restrictions. This means that in the regular familiar use, there is no NP to host the relative clause for pronouns. The second is that the introducing structure makes available a slot that can host relative clauses, allowing a subset of pronouns to host relative clauses. The resulting prediction is that only the pronouns that allow the introducing structure

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would have the generic Voldemort uses.

This prediction is borne out: *it*, which does not allow the introducing structure does not allow Voldemort uses, while *he* does. The plural *they* is also degraded because the plural pronominal demonstrative *those* can refer to animate entities when accompanied by a relative clause and thus blocks *they*.

There is another advantage that this analysis has over D-type analysis. In Elbourne's D-type analysis, ϕ-features are assumed to be presuppositional. Thus, there is no difference between the different pronouns in terms of their asserted content. Thus, there is no straightforward way to explain why *he* is felicitous in the Voldemort uses while *she* isn't, and why *those* is the most natural out of all. In this account, however, ϕ-properties are restrictions inside the supremum operator. Given that the generic Voldemort phrases do not specify the gender or number of the referent, semantic economy principles can correctly predict that the simplest form with the least number of restrictions would be most felicitous. Thus, the unmarked gender form *he* is better than the marked *she*, and the unmarked number form *those* is better than the marked *he*, assuming that plural is unmarked following Sauerland et al. 2005.

In addition, this analysis readily accounts for why pronouns cannot host adjectives as in (91).

(91)   *she happy

Elbourne (2013) argues that this suggests that the relative clause attaches higher at the NP-level while adjectives are NP-internal. In this account, an alternative solution is proposed: pronouns do not allow adjectives because there is no covert NP complement inside the maximality operator. The relative clause is possible for some pronouns because these pronouns also lexicalize the introducing structure.

In summary, we see that the current analysis not only accounts for the contrast between *he* and *it* observed in Elbourne 2005 but also systematically predicts the relative degradeness of other pronouns.

6   Cross-linguistic evidence

The semantic division between the familiar and the introducing structure does not correlate with any morphosyntactic marking in English. The grouping of the decitic use and the defining use into a single introducing class is also not reflected in the language. We have seen, however, that grouping familiar reference in one category and the deictic and defining uses in the other allows for a simpler analysis of pronouns and demonstratives. In this section, I show that there is evidence in Korean and Romanian that support the grouping proposed in this paper.

6.1   Familiarity vs. introducing

Korean has a three-way distinction in the demonstrative paradigm (Sohn 1994, a.o.).

(92)   a.   *i*: 'this'
         b.   *ce*:'that over there'
         c.   *ku*: 'close to hearer or known to both speaker and hearer'   [Sohn 1994, a.o.]

Ahn (2017) shows that *ku* marks anaphoricity, and appears in anaphoric uses such as the bound-variable context in (93).

(93)　　*secem-eyse　　aylpem-ul　pol ttaymata　*(ku) aylpem-ul　sassta.*
　　　　bookstore-DAT album-ACC see every.time ku　　album-ACC bought
　　　　'Every time I saw an album I bought it.'　　　　　　　　　　　　　[Anaphoric]

Crucially, *ku* is not allowed in any of the introducing references. In the deictic use, the deictic demonstrative *ce* must be used as in (94).

(94)　　*[{*ku / ce} enehakca]→-nun nay chinkwu-i-ta.*
　　　　*KU/CE　　linguist-TOP　　my friend-be-DECL
　　　　'That linguist is my friend.'　　　　　　　　　　　　　　　　[Deictic]

In descriptive uses, too, *ku* is not available. Instead, a bare noun with a relative clause appears as in (95).

(95)　　*kwulu-nun kes-ey-nun　　ikki-ka　　kki-ci　　anhn-unta.*
　　　　roll-RC　　thing-DAT-TOP moss-NOM gather-CI NEG-DECL
　　　　'On those that roll, moss does not gather.'

What this shows is that while the Korean demonstrative *ku* overlaps with English demonstrative *that* in allowing familiar uses, it differs from *that* in not allowing introducing uses at all. It is not licensed in deictic uses or generic defining uses. This distribution of *ku* is accounted for if we make a distinction between familiar and introducing structures and argue that *ku* only corresponds to familiarity like the pronoun *it*.

Another language that makes a morphosyntactic division that aligns with the familiar vs. introducing categorization is Romanian. Romanian makes use of a number of different demonstrative constructions. Two forms of demonstratives have been discussed in previous literature due to how they correspond to anaphoric and deictic uses (Ahn 2017). The first type is called the short demonstrative in Cornilescu 1993, and appears prenominally as shown in (96a). The long form is used postnominally, strictly adjacent to the noun bearing the definite article. This is also called a double definite structure because the noun carries the affixal definite. This is shown in (96b).

(96)　　a.　*acea stea*　　　　　　　　　　b.　*stea.ua aceea*
　　　　　　that　star　　　　　　　　　　　　star.DEF that
　　　　　　'that star'　　　　[Short form]　　　'that star'　　　[Long form]

Ahn (2017) shows that the short form allows intersentential and bound-variable readings as in (97), while the long form is restsricted to deictic uses.

(97)　　*In fiecare bibliotecă care are vreo　carte despre varză,　　caut　　　în (acea) carte dacă*
　　　　in each　　library　　　that has some book about　cabbage search.1SG in (that)　book if
　　　　pot　　să　　frig la grătar　　varza.
　　　　can.1SG SUBJ grill.SUBJ+1SG cabbage.the
　　　　'In every library that has a book about cabbage, I look in the book whether I can grill cabbage.'
　　　　[Bound variable; short/*long]

(98) *Îmi   place {[stea**ua aceea**]→ /   [*****acea** stea]→}.*
me.CL please star._{the}   that/that star
'I like that star.'   [Deictic; *short/long]

While a defining form with a relative clause is not discussed in Ahn 2017, Romanian is similar to Korean in that it does not allow the demonstratives in a generic relative clause use. For example, two native speakers found the generic reading of (99b) and (99a) to be much degraded compared to alternatives that do not make use of a demonstrative altogether.

(99) a. *Acel om   care citeşte nu dă greş niciodată.*
that man who reads   not fails   never

b. *Omul   acela care citeşte nu dă greş niciodată.*
man.the that   who reads   not fails   never
Intended: 'Those who read never fail.'

6.2   Pointing and relative clause compete

Recall that in English, it was shown that pointing and relative clauses compete. In other words, it was impossible for pointing and relative clause to co-occur with a pronoun or a pronominal demonstrative in a way in which both provide restrictive information. Only one could provide restrictive information, and the other had to be supplemental, structurally appearing outside the nominal domain.

This leads to an interesting prediction for languages like Korean and Romanian which morphosyntactically mark the deictic use. When pointing and a relative clause co-occur for these languages, the deictic marking in the morphosyntax would require that pointing be restrictive, thus always rendering the relative clause supplementary. In order to test this prediction, however, we need to find a pronominal expression that allows the introducing structure. This is because an adnominal expression would allow relative clauses to occur in the NP complement as we saw with (72). Romanian long demonstrative requires a definite-marked noun, so it is not possible to test this prediction. In Korean, too, the deictic demonstrative *ce* most often occurs adnominally, with a full noun complement.

There is, however, one exception to this in Korean, in casual speech. The demonstratives *ku*, *ce*, and *i* can combine with the noun *ay* ('child, kid') to form monosyllabic expressions *kyay*, *cyay*, and *yay*, and can be used like pronouns. Thus, they form a set of highly restricted pronouns in Korean that can be used in casual speech to refer to entities who are of same age or younger than the speaker. Because it is impossible to attach a relative clause to the reduced noun in this case, we can test our prediction on *cyay*, the deictic pronoun.

This prediction is borne out. In (100), where the deictic pronoun *cyay* is used with pointing and a relative clause 'who reads', the only possible reading is where the relative clause is supplementary.

(100) *[chayk ilko-iss-nun cyay]→-nun silpay ha-ci anh-ul   kes-ita.*
book   read-be-RC **cyay**-TOP   fail   do-CI NEG-FUT thing-DECL
'That kid (who is by the way reading) will not fail.'

Because *cyay* is marked for deictic reference, pointing must occur inside the *R* slot and thus carry a restrictive meaning. But *cyay* is pronominal and cannot host an NP-internal relative clause. Thus,

the only possible way to interpret the relative clause in (100) is as a non-restrictive, supplementary relative clause. Note that Korean is similar to Japanese, which has been shown to not make an overt distinction between restrictive and supplementary relative clauses (Kuno 1973). This provides additional support for the introducing structure.

6.3 Summary: Cross-linguistic mapping

What we see in this section is that identifying these underlying semantics locates English in a larger cross-linguistic picture. I summarize the cross-linguistic mapping between the two underlying structures and morphology in the table in (101).

(101)

	Familiar	Introducing
	DP	DP
	D' [7]	D' R
	sup NP	bi-sup NP
English	*the*, *it*, *he*, *she*, *they*	*he*, *she*, *they*, *that*
Korean	*ku*	*ce*
Romanian	short demonstrative	long demonstrative

7 Conculsion

In this paper, I have presented a novel analysis of demonstratives based on the concept of introducing a referent. The main aspects of this theory are as follows.

First, I identify the introducing mechanism that consists of deictically pointing to an entity or defining the entity with a relative clause and show that this mechanism is uniquely employed by demonstratives. Based on this, I argue that the introducing use should be at the core of the meaning of demonstratives, with the anaphoric use being secondary.

Second, I propose a formal analysis of demonstratives that extends the basic intuition of the hidden argument theories (Elbourne 2005; King 2001; Nowak 2019) but argue that the demonstrative differs from the definite in more ways than argued in those theories. Specifically, demonstratives lexicalize a binary supremum operator that requires a second argument, and that second argument realizes the introducing mechanism by hosting a deictic pointing gesture or a relative clause. This is shown to resolve overgeneration problems that the original hidden argument theories face.

Third, I propose that English pronouns are ambiguous between the familiar and the introducing structure, and that pronouns compete with demonstratives for the introducing meaning. This correctly predicts that pronouns allow deictic and defining uses only when there is no demonstrative alternative. This analysis was also shown to resolve a puzzle in the D-type analysis of pronouns (Elbourne 2005) with Voldemort phrases.

Traditionally, pronouns and demonstratives are assumed to be disjoint semantic expressions. What we have seen in this paper is that the morphosyntactic labels such as 'pronoun' and 'demonstrative' do not always reflect underlying semantic differences. In English, pronouns and demonstratives interact and overlap in introducing uses. In Korean, pronouns are basically demonstratives used without NP complements. We have seen that analyzing pronouns and demonstratives as

sharing the introducing structure greatly simplifies the respective analyses and accounts for their distribution more systematically. What this suggests is that, for a more comprehensive theory of natural language meaning, we need to first identify the underlying semantics and determine how different languages map those meanings to different morphosyntactic expressions. This requires not only a systematic investigation that cuts across morphemic boundaries but also cross-linguistic comparisons. By investigating different meanings associated with the definite article *the* in English and in other languages, Schwarz (2009) shows that English *the* is ambiguous between denoting uniqueness and familiarity. This study has since motivated a wide range of cross-linguistic studies that look at how different sub-meanings of definiteness are encoded in languages that differ in their morphosyntactic properties (see Ahn 2017; Bombi 2018; Ingason 2016; Irani 2016; Jenks 2015). The current paper shows that this type of analysis is also necessary for the domain of pronouns and demonstratives and suggests a starting point for such research.

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