Chapter 10

A morpho-semantic account of weak definites and bare institutional singulars in English

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Weak definites in English have been widely studied as an example of when the definite article doesn't contribute uniqueness (Aguilar-Guevara & Zwarts 2011; Aguilar-Guevara et al. 2014, among others). I take *uniqueness* to stem from the interaction between definiteness and number within the noun phrase. From this perspective, weak definites should be seen as a data point situated in the larger cross-literature on number. One particular phenomenon from the literature on number, the understudied class of the English bare institutional singulars (BISs), has been discovered to share several semantic properties with weak definiteness, namely number neutrality, referential deficiency, and lexical idiosyncrasy. In this chapter, I postulate a shared account of English weak definites and BISs that utilizes semantic root ambiguity (Rappaport Hovav & Levin 1998; Levinson 2014) as a way to account for these facts. This account has syntactic consequences that resonate with recent morphosyntactic accounts of number phenomena that argue NumP is the host of number interpretation and marking (Ritter 1991; 1992; 1995) in languages like Amharic, (Kramer 2009), Halkomelem Salish (Wiltschko 2008), and Haitian Creole (Déprez 2005).

1 Introduction

Noun phrase constructions called *weak definites* (Birner & Ward 1994; Poesio 1994) have been heavily studied in English (Carlson & Sussman 2005; Carlson et al. 2006; Aguilar-Guevara & Zwarts 2011; Aguilar-Guevara 2014) and other languages (Schwarz 2009; 2013; 2014). They pose a problem for classical accounts

of definite noun phrases (Frege 1892; Russell 1905; Hawkins 1978; Sharvy 1980; Heim 1982) which require them to be referential and denote unique individuals in the discourse, as is evidenced by (1) below.

(1) *Bob went to **the store** and Mary did too.* (Carlson 2006: 19)
     (Different stores OK.)

(2) *Bob is in **jail** and Fred is too.* (Carlson 2006: 18)
     (Different jails OK.)

Interestingly, English has yet another noun phrase construction – the BARE INSTITUTIONAL SINGULAR (BIS), as in (2) – that is not marked for definiteness, but shares many semantic properties with the weak definite, including number neutrality, diminished referential capacity, and lexical idiosyncrasy. Although it has been noted that not all lexical items can participate in weak definite and BIS constructions (Carlson 2006; Carlson et al. 2006; Aguilar-Guevara & Zwarts 2011; Aguilar-Guevara et al. 2014; Aguilar-Guevara & Schulpen 2014), very few accounts have used this fact as fundamental in their analysis of weak definites (but see Baldwin et al. 2006). In this chapter, I propose a shared account for both weak definite and BIS constructions that accounts for both their interpretive similarities and their lexical idiosyncrasy.

I propose that interpretive similarities between weak definite and BIS constructions can be derived via root semantic type ambiguity (see Rappaport Hovav & Levin 1998), parallel to Levinson (2014) on verbal argument structure alternations. The lexical items that can occur in weak definite or BIS constructions have a many-to-one mapping between their syntactic roots and potential denotations of those roots, unlike most lexical items (e.g. the *strong definites*[1]) that have a one-to-one mapping. Interestingly, no lexical item can participate in both weak definite and BIS constructions, suggesting that, although roots from both classes are special in that they are semantically ambiguous, the two subclasses of roots are associated with different pairs of possible denotations. Furthermore, the root denotation interacts with whether a definite determiner can be merged later in the derivation, and determines which of two versions of the determiner can be merged.

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[1]I use the term *strong* to mean definites that are unique and referring, which is slightly different from the use of the term in Schwarz (2009; 2013).

I restrict my focus to weak nominal constructions[2] utilizing directional predicates with location/institution nouns, because they provide a unique testing ground for investigating the relationship between number and definiteness. Representative sentences of the three types are given below in (3–5):

(3)   *Ron went to **the store**.*   WEAK DEFINITE SINGULAR

(4)   *Ron went to **school**.*   BARE INSTITUTIONAL SINGULAR

(5)   *Ron went to **the castle**.*   STRONG DEFINITE SINGULAR

In my examples, I hold the main verb and preposition constant, because altering either has been shown to affect the availability of the number neutral interpretation (Aguilar-Guevara 2014: 18–19). Although other verbal predicates can be used in sentences that get weak readings, I use the light verb *to go* because it is compatible with all three sentence types (3–5). Because of their restricted syntactic distribution, weak definites are often cited as having an "idiomatic" flavor (Nunberg et al. 1994) – a property they share with BISs. I chose to use lexical items from the location/institution class of weak definites (Stvan 1998) and BISs, because they are the most freely combining (Baldwin et al. 2006), making them a good class to work with.

This chapter is organized as follows. §2 argues in favor of interpretive similarities between weak definites and BISs. §3 discusses the lexical idiosyncrasy of roots that participate in weak definite and BIS constructions. §4 discusses syntactic consequences of adopting a root semantic type ambiguity account of weakness in English nominals. §5 provides a morpho-syntactic analysis that builds on work on cross-linguistic number that suggests number neutrality has a syntactic reflex, i.e. a lack of a Num projection (as in languages with *general number*). I also show that the denotation of roots affects which interpretations and syntactic structures are possible. Finally, §6 concludes.

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[2]The term *weak definite* does not necessarily correspond to a single, uniform class in either the syntactic or semantic sense, and thus, different subtypes of weak definites have been given a wide range of theoretical and experimental treatments (see, for example, Barker 2005; Klein et al. 2009; Aguilar-Guevara & Zwarts 2011; Klein 2011; Aguilar-Guevara & Schulpen 2014; Schwarz 2014), and extending this account to other subtypes (e.g. those given in Stvan 1998) is left for future work.

2 Weak definite singulars and bare institutional singulars share semantic properties

Weak definite singulars and BISs share interpretive similarities with each other, to the exclusion of strong, referring definite singulars. There are multiple diagnostics for weakness (see Carlson & Sussman 2005), all of which indicate that BISs and weak definites do not have to refer to a singular entity: they can be used in contexts where multiple entities can satisfy the descriptive content of the definite, they can receive sloppy identity under VP ellipsis, their behavior differs from that of referring definites under a type of sluice (under a novel diagnostic test), and they have an impaired ability to antecede pronouns in the following discourse.

Before I present the diagnostic tests, it is important to caution the reader that some weak definite Det-N strings are ambiguous between weak and strong interpretations. Therefore, I use a subset of lexical items for each class of nominals to help readers access the appropriate readings throughout this section (these lexical items are provided in the footnotes to Table 1 for reference).

Table 1: Classes of lexical items

	+Definite marked	−Definite marked
Weak interpretation	WEAK DEFINITE[a]	BARE INSTITUTIONAL SINGULAR[b]
Strong interpretation	STRONG DEFINITE[c]	*[d]

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[a]Relevant lexical items: e.g. *the store, the bank, the hospital* (potentially ambiguous between weak and strong definite interpretations).

[b]Relevant lexical items: e.g. *school, church, prison, jail* (unambiguously weak).

[c]Relevant lexical items: e.g. *the castle, the stadium, the restaurant* (unambiguously strong).

[d]I assume this cell is empty due to the Blocking Principle discussed in Chierchia (1998: 360), and Deal & Nee (2016). The Blocking Principle states that bare nominals cannot be interpreted as definite, because there is a lexically specified type shifter present in the language that performs this function.

2.1 Multiple entities satisfying descriptive content

Weak definites and BISs can be used in contexts where multiple entities satisfy the descriptive content of the noun phrase, suggesting that they don't uniquely refer (Carlson & Sussman 2005). In (6−8) below, each of the bolded noun phrases fails to require a single unique referent:

(6)   *Don went to **the zoo**.*

(7)   *Sue took her nephew to **the hospital**/**the store**/**the beach**.* (Carlson et al. 2006: 2)

(8)   *Please take **the elevator** to the second floor.* (Aguilar-Guevara 2014: 14)

Although the examples above can be used to refer to identifiable, unique referents in the discourse, one can also utter (6) in cities where there are multiple zoos, (7) in towns where there are multiple hospitals, stores or beaches, and (8) when standing before a bay of elevators. Furthermore, weak definites can also be used in situations with multiple potential referents in the discourse, allowing the weak definite noun phrase to stand for a plurality of entities:[3]

(9)   Context: Ron has been looking for Don, who was supposed to help him set up a party, but then went missing for a while.
       Ron: *Hey Don! Where have you been? The party starts in an hour!*
       Don: *I went to **the store** to buy balloons. I had to go to **four of them** because the first three were all sold out!*

In the mini-discourse in (9), the bolded definite marked noun phrase *the store* does not impose a restriction that there only be a single, unique store in the context, because immediately following the definite, Don mentions that he went to *four of them*. If the definite noun phrase in (9) did impose this restriction, we would predict the mini-discourse to be infelicitous. Similarly, the bare singular, as in (10), can also be used felicitously in situations where multiple entities satisfy the BIS's descriptive content.

(10) Context: Ron just met up with Don at their ten-year high school reunion.
       Ron: *Hey Don! Wow, you look great! What have you been up to for the last ten years?*
       Don: *Funny you should ask... Actually I went to **prison** for five years after high school. I spent the first three years on Riker's Island, and the last two, in Alcatraz.*

Since BISs and singular weak definite noun phrases both lack the uniqueness required for strong definite descriptions under this diagnostic, one would hope that the two types of weak nominal should have some grammatical similarities. Compare the two discourses above with the one below:

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[3]The interpretation of the following examples is not exhaustive; they are infelicitous in situations where there are only e.g. four stores, as in (9).

(11)   Context: Ron and Don are on a vacation in Britain. They split up for a few
        days and are just meeting up again to continue on their adventure. The
        two had discussed their travel plans before splitting up.
        Ron: *Hey Don! How did your weekend go? See anything interesting?*
        Don: *Yeah, I had a really great weekend. I went to **the castle** and got some
        great pictures. ??On Saturday, I went to Windsor Castle, then took a train
        over to Dover Castle on Sunday.*

In this case, because Don's response is unnatural, I conclude that the defi-
nite noun phrase *the castle* requires a single, unique referent in the discourse.
The incompatibility of (11) suggests that the lexical item conditions whether the
uniqueness presupposition is present, since it is unacceptable to use the singular
definite noun phrase *the castle* in a context where there are multiple castles.

2.2 Sloppy readings under VP ellipsis

Singular weak definites and BISs differ from strong definites in that they do not
require that the elided noun and the overt one refer to the same exact individual;
they merely require that the individual(s) they refer to satisfy the descriptive
content of their shared noun phrase. This loose identity requirement on noun
phrases under VP ellipsis is called SLOPPY IDENTITY.

(12)   *Bob went to **the store** and Mary did too.* (Carlson 2006: 19)
        (Different stores OK.)

(13)   *Bob is in **jail** and Fred is too.* (Carlson 2006: 18)
        (Different jails OK.)

If the noun phrases in the antecedent VP in (12) and (13) are still faithfully
duplicated in the ellipsis site, then presumably they cannot be strong definite
noun phrases. Under VP ellipsis, they only need to match in the syntactic material
that is present. Since the syntactic material present does not introduce a unique
noun phrase, strict coreference is not required. In other cases, the noun in the
elided phrase is required to be coreferential with the unique singular individual
in the antecedent VP, as in (14):

(14)   *Ron went to **the castle** and Don did too.*   (strong reading only)
        (Must be the same castle.)

In (14), there is a full strong noun phrase present in the ellipsis site. We only
get a felicitious interpretation if the overt noun phrase and elided one refer to

the same individual. In (15) below, we can see that *the store* is interpreted as a weak definite based on this diagnostic from above:

(15)   *Ron went to **the store** and Don did too. Ron went to Krogers, and Don went to Meijers.*

We can see that *the store* in (15) can be used felicitiously in VP ellipsis contexts, where multiple locations satisfy the descriptive content of the noun phrase.

2.3 Sluicing

One final diagnostic, which is novel, comes from another ellipsis phenomenon, sluicing (Ross 1967; 1969). Sluicing separates strong definites from weak definites and BISs, as the latter two are acceptable under a sluice, and the former is not:

(16)   *I know Ron went to **church** as a kid, but I don't know which one/church.*

(17)   *I know Don went to **the store** after work, but I don't know which one/store.*

(18)   ?? *I know Don went to **the castle** after work, but I don't know which one/castle.*

In (18), one must have a referent in mind to felicitiously use the definite marked noun phrase, which explains the unnaturalness of the sluice. Since (16) and (17) are acceptable under the sluice, one particular referent is not required. Thus, like the ellipsis diagnostic above in §2.3, sluicing allows us to argue for the lack of referentiality present in weak nominals.

2.4 Limited capacity to establish discourse referents

Following Aguilar-Guevara & Zwarts (2011: 182), I note that weak definites and BISs have a limited ability to establish discourse referents, which results in them being worse than strong definites at anteceding pronominal *it*. I assume that anaphorically linked noun phrases, like *it*, must match their antecedent in as many features (such as number specification and referentiality) as possible. If *it* is taken to be (generally) referring, and specified for singular, then it will have trouble matching its features with weak nominals that are neither referring nor specified as being singular (see §2.1). If there is only one nominal in the context, and it is referential and singular, *it* can be anaphorically linked to it, as in (19) and (20):

(19)   *Ron went to **the store** and Don went to **it** too. They both went to Krogers.*

(20) *Ron went to **the castle** and Don went to **it** too. They both went to Neu-schwanstein Castle.*

However, if we have pronominal *it* – which is referring (in this case), and wants to match its number features with its antecedent – in a context with multiple potential referents (as in 21), the sentence becomes less felicitious.

(21) *Ron went to **the store** and Don went to **it** too. ?Ron went to Krogers, and Don went to Meijers.*

Despite the fact that lexical items like *store* can participate in weak definite constructions, by establishing coreference with *it* in (21), the noun phrase *the store* can only receive a strong, referring interpretation. One way to encode this difference would be to say that some singular definite noun phrases (like *the store*) are actually ambiguous between noun phrases that are un-marked for number, and those that are marked for singular. In English, these two options will be string identical. When a pronoun tries to establish coreference with a definite noun phrase that is un-marked for number, the result is degraded, as in (21).

If pronouns must match features with their antecedents, non-referring noun phrases like BISs should not have enough features to match with the pronoun, and thus should be even more degraded. This prediction is borne out:

(22) *Don went to **church**$_i$ and Ron went to **it**$_{*i,j}$ too.*

Establishing an anaphoric link with a referring pronoun is less acceptable for weak definites, but the BISs are unable to establish coreference with the pronoun at all. Therefore, one could assume that there are two missing features that make BISs unable to set up coreference, while for weak definites, there is only one (i.e. the number feature is missing). I claim that NumP is the crucial projection that is missing in both types of weak nominals; see §4 for further discussion.

2.5 Summary

In this section, I described the interpretive similarities that weak definites and BISs share to the exclusion of strong definites; weak nominals can be used in situations where multiple entities satisfy the descriptive content (§2.1), can receive sloppy readings under VP ellipsis (§2.3), are compatible with sluicing (§2.3), and have limited capacity to establish discourse referents (§2.4).

3 Lexical idiosyncrasy

As discussed in the introduction, not all lexical items are equally able to participate in weak constructions (see Table 1). Weak definite and BIS interpretations are particularly sensitive to the identity of the lexical item:

(23)   *Don went to **the zoo**/#**the conservatory**.*

(24)   *Please take **the elevator**/#**the forklift** to the second floor.*

(25)   *Sue took her nephew to **the hospital**/#**the hospice**.*

Even roots with comparable meanings (e.g. *hospital* and *hospice*) are unable to receive weak interpretations. It has been widely noted that weak interpretations for nominals are only available for certain lexical items, but few works other than Baldwin et al. (2006) discuss this explicitly. Certain lexical items, e.g. *store*, from the WEAK-STRONG AMBIGUOUS class can be interpreted as weak or as strong, while others, e.g. *castle*, from the STRONG-ONLY class can never be interpreted weakly (repeated from above, 12 and 14).

(26)   *Ron went to **the store** and Don did too.*
       (Can be the same store.)

(27)   *Ron went to **the castle** and Don did too.*
       (Must be the same castle.)

Because root identity seems to condition whether the weak reading is available, perhaps a lexical ambiguity is present. This could mean that there are two denotations paired with the root, *store*, but only one denotation for the root, *castle*. I argue that this lexical ambiguity manifests itself in the semantic type of the root (a lá Levinson 2014), as opposed to being a restriction on the type of elements that are present in the extension of the noun phrase.

The choice of root has consequences for the syntax. One piece of evidence in favor of a root-level semantic ambiguity that affects syntax is that the weak interpretation disappears when the root appears outside of constrained syntactic frames compatible with the weak interpretation. For example, *store* cannot be interpreted weakly in subject position:[4]

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[4]If the noun is present in the subject position of a "characterizing sentence" in the sense of Carlson (1977) and subsequent work, the definite noun phrase can receive a kind interpretation:

(i)   ***The store** is a miraculous and entertaining place to visit.*

I take kind-referring noun phrases to be constructed differently than the definites I account for here, and leave an account comparing the two for future work.

(28)   ***The store*** *is closed today* (**but I don't know which*).
         (Must be a strong reading.)

Similarly, lexical items from the BIS class cannot receive a weak interpretation in subject position, see (29). However, when they occur with a definite article, they must receive a strong, referring interpretation; the weak interpretation is not allowed, see (30):

(29)   ***School*** *is closed today.*
         ('School' here is a proper name referring to the speaker's school, or to the maximal set of all relevant schools.)

(30)   *Ron went to* ***the school*** *and Don did too.*
         (Must be the same school.)

Thus, lexical items from each of the three classes can receive a referring interpretation when they are in definite marked noun phrases, but only a subset can receive a weak interpretation when definite marked or bare. Some roots can only receive strong interpretations (STRONG ONLY). Some (roots from the WEAK-STRONG AMBIGUOUS class) can receive either. Yet, a third class of lexical items can be unmarked for plurality or definiteness, and also when they have definite marking, they can only receive a strong interpretation (BIS). The behavior of these classes of roots is summarized in Table 2.[5]

Table 2: Three lexical classes of roots

	STRONG ONLY	STRONG-WEAK AMBIG.	BIS
the+NP can be strong	Y	Y	Y
the+NP can be weak	N	Y	N
can be bare/incorporated	N	N	Y

3.1 Root semantic type ambiguity is not homophony

I've argued that weakness starts at the root as a type difference, which then percolates up to affect higher syntactic projections. However, what sort of semantic

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[5]A lexical item that cannot get a strong or a weak interpretation, and cannot be bare, is unlikely to exist. What would be its distribution? Would it only be present in indefinite noun phrases with *a*? This doesn't seem very plausible. I leave the task of extending my lexical account to indefinites to future work.

ambiguity do we have in this case? I argue that this is a case of true ambiguity, and not simple homophony. Under a homophony account, the roots have no inherent connection to each other. This would mean that we would have two lexical items that are both pronounced, e.g. *store*, and that their interpretive similarity is accidental.

One way to test for homophony was put forth in the general number literature (Rullmann & You 2006; Wilhelm 2008). In this diagnostic, homophonous lexical items receive parallel interpretations under VP ellipsis. I assume the following denotations[6] for the two homophonous lexical items:

(31) $[\![\text{pen}_{\text{enclosure}}]\!] := \lambda x. pen_{enclosure}(x)$

(32) $[\![\text{pen}_{\text{implement}}]\!] := \lambda x. pen_{implement}(x)$

(33)   *Lee saw a pen, and Sam did, too.*
  a.   *Lee saw an animal enclosure and Sam saw an animal enclosure too.*
  b.   *Lee saw a writing implement and Sam saw a writing implement too.*
  c.   * *Lee saw a writing implement and Sam saw an animal enclosure.*
  d.   * *Lee saw an animal enclosure and Lee saw a writing implement.*

In the example above, the word *pen* must receive the same lexical interpretation across the two seeing events; either it always has to be interpreted as an animal enclosure (as in 33a, with denotation as in 31), or always interpreted as a writing implement (as in 33b, with denotation as in 32). Thus, if singular weak definites and BISs were lexically ambiguous, we should not expect them to have readings where the number interpretation of the noun phrase differed between the main clause and the elided one. However, the two phrases are allowed to differ in number interpretation:

(34)   *Lee went to **the school**/**school** in Boston and Sam did too.*
  a.   *Lee went to only one school/store in Boston and Sam went to only one too.*
  b.   *Lee went to multiple schools/stores in Boston and Sam went to multiple too.*
  c.   *Lee went to only one school/store in Boston and Sam went to multiple.*
  d.   *Lee went to multiple schools/stores in Boston and Sam went to only one.*

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[6]Type conventions are as follows: *x*, *y*, *z* are from the domain of individuals and are type *e*; *e′*, *e″*, *e‴* are from the domain of events and are type *v*; *m*, *n* are from the domain of numbers and are type *n*; *j*, *k* are from the domain of kinds and are type *k*; type *t* is for truth values; types can be combinatory; *P*, *Q* are used for higher types, and their types are specified via subscript.

Thus, we can conclude that the ambiguity associated with certain lexical items is not an ambiguity in the interpretation of the lexical item that merely prunes the elements in the extension. Instead, I argue for a semantic lexical ambiguity that affects higher structure (i.e. a type ambiguity), paired with a structural ambiguity that is higher.

3.2 Root denotations for weak definites, BISs, and strong definites

Now that we know no single lexical root can participate in both weak definite and BIS constructions, I postulate semantic types for the three classes of roots. Across all classes, roots with type $\langle n, \langle e, t \rangle \rangle$ are "countable"; and for the strong determiner to be present, there must be a countable root present in the tree. This accords with the intuition that if one knows the referent of a noun phrase, one also knows the number specification of that referent. Otherwise, the weak version of the determiner is inserted, resulting in a weak, non-uniquely referring interpretation for the noun phrase.

Each of the three classes of lexical item has different sets of potential denotations for their roots; STRONG-ONLY lexical items have only one potential meaning, and can only be of type $\langle n, \langle e, t \rangle \rangle$, STRONG-WEAK AMBIGUOUS lexical items are semantically ambiguous and can be of type $\langle n, \langle e, t \rangle \rangle$, or type $\langle e, t \rangle$, and BIS lexical items can have roots of type $\langle n, \langle e, t \rangle \rangle$ or type $\langle k, t \rangle$. Furthermore, I postulate two versions of the definite determiner, one that encodes the "strong", uniquely referring interpretation of the definite, and another that does not.

4 Syntactic consequences of root semantic ambiguity

The interpretive similarities discussed in §2 align with cross-linguistic analyses of non-inflectional number phenomena in Haitian Creole (Déprez 2005) and Halkomelem Salish (Wiltschko 2008); these accounts argue that these properties correspond to number neutrality which is syntactically cashed out as the absence of NumP. Additionally, recent work on Russian nominal agreement (Landau 2016) also points to NumP as necessary for both cardinality and anaphoricity. Bringing together semantic work on definiteness and cross-linguistic work on number neutrality, this analysis splits the semantic contribution to definiteness across two heads, D and Num, with Num contributing to number interpretation, and D contributing referentiality.

Following this cross-linguistic literature on number, I assume this I assume that both weak definites and BISs lack a NumP, which is the projection that con-

tributes singular or plural interpretation (Ritter 1991; 1992; 1995). I build towards the structures in (35–37), which correspond to (3–5).

(35)   Strong definite   (36)   Weak definite   (37)   BIS
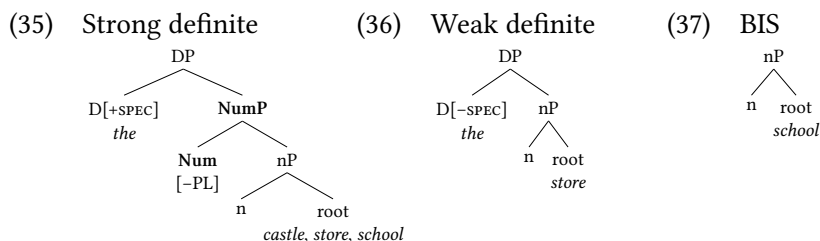
In (35–37), we see that all three classes of roots can appear in the strong construction (35), but only certain roots can appear in the weak construction (36) and the BIS construction (37). This accords with the data provided in §3. Moreover, (36) and (37) differ from (35) in that they lack a Num projection. I argue that this syntactic difference results from the semantic type of the root. While BIS and the weak definite are syntactically similar in lacking a NumP, they differ in whether they have a DP layer. This analysis takes BISs to be pseudo-incorporated noun phrases, following Carlson (2006: 9–10), who has argued for such an account in English and for languages like Greek (Gehrke & Lekakou 2013), as well as Niuean and Turkish (Massam 2001; 2009). Thus, weak definites and BISs are both smaller than strong, uniquely referring definites; weak definites are missing one projection, NumP, while BISs are missing two, NumP and DP. This "small" size interacts with an aspect of the interpretation of weak definites and BISs: the so-called semantic enrichment of weak definites and BISs follows from their super-local relationships in a manner that is reminiscent of many idiomatic constructions across languages (Marantz 1995). This is discussed in more detail in the next section.

If the account is correct in correlating root ambiguity with syntactic consequences, we might expect syntactic structure to affect the weak, number neutral interpretation. This prediction is borne out in two ways: changing the morphological number marking on these nominals or modifying them with structurally high adjectives bleeds the weak number-neutral interpretation. If we assume that the locus of number marking and interpretation is NumP (Ritter 1991; 1992; 1995), then these syntactic effects suggest that this projection cannot be present in noun phrases that receive the weak interpretation. Other preliminary evidence of the importance of NumP for interpretation comes from the domain of semantic agreement; Landau (2016) adduces additional evidence that NumP may be an important boundary for referential interpretation within the nominal domain from Hebrew attributive adjectival agreement.

4.1 Enrichment of weak nominals

Another often discussed fact about weak definites is that they receive semantically enriched interpretations. Following Aguilar-Guevara & Zwarts (2011: 182), weak definites display "enrichment [that] is stereotypical in the sense that it invokes the most common circumstances under which the event referred to by the sentence could happen". Furthermore, Aguilar-Guevara & Zwarts note that if the presence of the weak reading tends to co-occur with the presence of the semantic enrichment (below examples copied from Aguilar-Guevara & Zwarts 2011: 182, ex. 10b, 11b):

(38)   *Lola went to the store. = Lola went to the store. + Lola did shopping.*

(39)   ?? *Lola went to the store to pick up a friend.*

Under the weak reading, (39) is anomalous, because the stereotypical enrichment is not present. Like weak definites, BISs require enrichment:

(40)   *The janitor went to school. = The janitor went to a school + attended it.*

(41)   ?? *The janitor went to school to clean.*[7]

Parallel to (38–39), (40–41) show that the weak reading generally disappears when the extra enrichment is blocked. Extra enrichment is reminiscent of idiomatic expressions, where lexical items can get special meanings based on the contexts they are found in. Following (Marantz 1997: 208), I take idiomatic interpretations of lexical items to crucially depend on their local syntactic context. Given my claim in earlier sections that weak definites and BISs are syntactically smaller than strong definites (see 35–37), the root is closer to the definite or the preposition in weak definite and BIS constructions, creating the perfect local environment for idiom-like enrichment of meaning.

4.2 Bleeding weakness

Now that we have seen some preliminary data compatible with the idea that weak nominals (i.e. singular weak definites and BISs) could be analyzed differently from their strong counterparts, I motivate my claim that this correlates with a syntactic difference at NumP. What evidence can we adduce that strings like *the store* can have weak or strong interpretations depending on whether NumP is

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[7]This sentence can receive an interpretation that is full referential. Under this interpretation, the speaker claims that the janitor is going to the speaker's school to clean. For a similar example and more discussion, please see (28).

syntactically present? There are a few syntactic tests that suggest the difference between weak and strong nominals is below the level of DP. In the rest of this section, I discuss two syntactic modifications that block weak interpretations: plural marking and modification by high adjectives.

Following Carlson & Sussman (2005) and Aguilar-Guevara (2014), I use sloppy identity under VP ellipsis as the standard accepted diagnostic for weak interpretations of definites for the remainder of this section. Thus, when I use # for a sentence under the weak interpretation, I mean that it cannot be read as sloppy under VP ellipsis.

4.2.1 Plural marking bleeds weak interpretations

One test for this fact is that changing the apparent number marking on the definite description bleeds the weak reading (Aguilar-Guevara 2014: 19):[8]

(42) *Don went to **the bank** and Ron did too. Don went to First National Bank, and Ron went to CitiBank.* (copied from (15) above)

(43) *Don went to **the banks** and Ron did too. #Don went to First National Bank and CitiBank, while Don went to Chase and Bank of America.*

(44) *Don went to **the banks** and Ron did too. They both visited First National Bank and CitiBank.*

If we compare (42) and (43), the only difference is the plural marking. While (42) can receive sloppy readings under ellipsis and patterns as weak nominals do with respect to the diagnostics in §2, (44) cannot, because the noun phrase *the banks* must be interpreted as uniquely referring to a salient plurality of banks.

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[8]Examples of plural-marked weak definites do exist:

(i) *Lola went to **the mountains** and Alice did too. Lola went to the Alps and Alice visited the Appalachians.* (Based on Aguilar-Guevara 2014: 20, ex. 42)

(ii) *Ron washed **the dishes** and Don did too. Ron washed 20 dishes, but Don only washed one.*

Crucially, these readings are also only allowed for certain lexical items. For examples like these, I would assume that the plural marker has a different meaning, and perhaps, a different syntactic height. This is not entirely implausible in light of (i), because one has the intuition that the plural marker is talking about a number of mountain peaks which all contribute to a single mountain range. One potential way to go would be to follow Kramer (2015) in taking some plural markers to be merged low on the little n head, following the intuition that lower projections are more likely to get idiosyncratic meaning and condition contextual allosemy (Romanova 2004; Svenonius 2005; Marantz 2013).

In (44), adding plural marking causes the definite-marked noun phrase to lose its weak interpretation, and can only be taken to refer to a unique and salient plural set of bank locations. If weak readings are derived from kind property-denoting roots (i.e. they are not countable), and the addition of NumP requires a countable root, then plural marking hosted on NumP will be incompatible with weak readings. In (46) below, we have further evidence that adding plural marking bleeds the weak interpretation because the enrichment we see with the weak interpretation is suddenly no longer available.

(45)   *Don went to **school** and Ron did too. Don went to Pioneer and Ron went to Huron.*

(46)   *Don went to **schools** and Ron did too.*

For (46) the two boys both physically went to multiple institutions for whatever purpose (i.e. it doesn't have to be to attend school); this is in contrast to (45), where the enrichment is present, and each boy had to attend his respective school. Thus, if one varies the number specification on the noun phrase in a weak definite or BIS construction, the weak reading disappears, as is evidenced by the loss of the semantic enrichment. If it is true that number specification falls on NumP then adding a NumP bleeds the weak reading.

4.2.2 High adjectival modification bleeds weak interpretations

Another source of evidence comes from the fact that certain modifiers can bleed the weak interpretations of definite noun phrases (Aguilar-Guevara 2014). Certain modifiers (e.g. canonical property adjectives) are base-generated higher (Cinque 2010) than NumP, while others, classificatory or kind-referring ones (e.g. noun-noun compounds) are lower (see e.g. Laenzlinger 2005). The height differences between these subtypes of modifiers is straightforwardly visible from ordering facts:

(47)   *the expensive grocery store*

(48)   * *the grocery expensive store*

High modifiers force strong interpretations of definite marked noun phrases, suggesting that certain modifiers require countable nominals, while others don't.

(49)   *Don went to the* [*grocery, pet, drug, #good, #red, #expensive*] *store.*
   (Weak reading)

(50)   *Don went to [boarding, nursing, catholic, *good, *red, *expensive] school.*
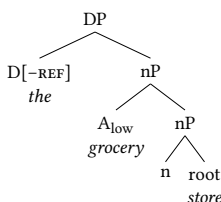   (Bare institutional singular)

(51)   *Don went to the [good, red, expensive] school.*

In (49), the definite noun phrase is unable to receive a weak reading if there is a high adjective merged in the DP. Similarly, because BISs are structurally small, they also cannot host high modifiers, as in (50). These differences could be cashed out as the trees below in (52–54), which build upon (35–37).
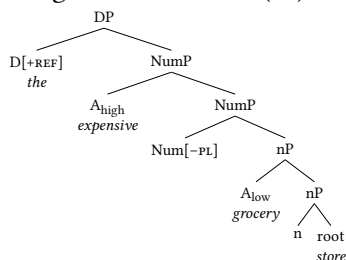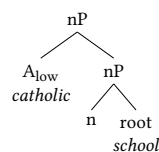
(52)   Strong definite   (53)   Weak definite   (54)   BIS

Thus, high adjectives[9] select for a NumP. The presence of a NumP requires that the root be countable (i.e. type $\langle n, \langle e, t \rangle \rangle$), and countable roots require that the strong D be merged above it (or else there is a type clash). If there is no NumP present, a D could be merged or it could not be, depending on the identity of the root; this is the distinction between weak interpretations of definites and BISs.

4.3 Summary

In sum, this section has argued that a root semantic type ambiguity account has several syntactic consequences. Such an account predicts that semantic enrichment and idioms are similar, based on locality, and that the weak readings can be bled by several syntactic alterations within the DP, including plural marking and modification by high adjectives.

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[9]The modifiers that preserve the weak readings, i.e. *grocery*, *pet* and *drug* do not seem to be run-of-the-mill modifiers (e.g. it appears that they're nominal and not adjectival). Thus, you could say that a syntactically low derivation process like noun-noun compounding could be happening here, perhaps at the little n level. I leave the question of how the syntax of compounding interacts with weakness to future work.

5 Analysis

Now that we have determined what sorts of semantic interpretation are required for weak readings of noun phrases, and that there are syntactic consequences, this section presents a compositional semantic fragment for strong definites, weak definites, and BISs, showing how root semantic type interacts with the interpretation of the definite article. I lay out my assumptions, then list lexical items, and finally provide a working fragment that derives the three separate interpretations, based on the syntactic structures I've advocated in §4.

First, I assume that countable nouns have atoms in their extensions, thus, I need to take an atomizer function; I take this one:

(55)   ATOMS$(x) = \{y|y \leq x \& \forall z \leq x[z \not\leq y]\}$ (Ouwayda 2014)

Starting at the root, we need different types of lexical items to capture the differences in potential interpretations each lexical item can receive. My three classes of roots have the following sets of denotations:

(56)   STRONG-ONLY: e.g. *castle, graveyard, stadium, restaurant.*
   a. Countable noun: $[\![castle]\!]_{\langle n, \langle e, t \rangle \rangle} := \lambda n.\lambda x.castle(x) \& |\text{ATOMS}(x)| = n$ $\& \forall y \in \text{ATOMS}(x)[castle(y)]$

(57)   STRONG-WEAK AMBIGUOUS: e.g. *store, bank, hospital.*
   a. Countable noun: $[\![store_1]\!]_{\langle n, \langle e, t \rangle \rangle} := \lambda n.\lambda x.store(x) \& |\text{ATOMS}(x)| = n$ $\& \forall y \in \text{ATOMS}(x)[store(y)]$
   b. Property: $[\![store_2]\!]_{\langle e, t \rangle} := \lambda x.store(x)$

(58)   BIS: e.g. *school, jail, prison, church.*
   a. Countable noun: $[\![school_1]\!]_{\langle n, \langle e, t \rangle \rangle} := \lambda n.\lambda x.school(x) \& |\text{ATOMS}(x)| = n \& \forall y \in \text{ATOMS}(x)[school(y)]$
   b. Kind property: $[\![school_2]\!]_{\langle k, t \rangle} := \lambda k.school(k)$

Next, I assume that the syntax requires a null categorizing head, *n*, which has the denotation of the polymorphic identity function; alternatively, it could have no semantic interpretation, and merely be a syntactically (and potentially phonologically) realized functional element.

Continuing up the tree, the insertion of Num depends on whether the noun phrase will be interpreted as plural or singular.[10] I assume three potential options.

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[10] This is somewhat similar to Sauerland (2003) in that it assumes a binary specification for number, but unlike his system, my denotation for the plural does not include atoms in its extension.

If the noun phrase is specified for number, a contentful Num (as in 60 and 61) merges, otherwise, no lexical item[11] will be inserted.

(59) $\varnothing$: No lexical item inserted

(60) $[\![\text{Num}_{[+\text{PL}]}]\!] := \lambda P_{\langle n,\langle e,t\rangle\rangle}.\lambda y.\lambda m_{\langle n\rangle}.[P(m)(y) \ \& \ m > 1]$

(61) $[\![\text{Num}_{[-\text{PL}]}]\!] := \lambda P_{\langle n,\langle e,t\rangle\rangle}.\lambda y.\lambda m_{\langle n\rangle}.[P(m)(y) \ \& \ m = 1]$

The choice of which option is possible is determined by the meaning of the root. First, if the root is not countable, no Num can be inserted; if it were, there would be a type-clash. If the root is countable, a Num is merged,[12] and it could either be a plural or a singular.

Finally, a $D_{[+\text{Def}]}$ can be inserted, depending on the type. There are two potential interpretations for the definite article.[13] The first is roughly Sharvy's (1980) denotation for *the* updated to take a higher type, $\langle n,\langle e,t\rangle\rangle$, to account for the countability of roots; this dentotation confers referentiality. The second is a kindifying definite article that takes a property and returns its corresponding kind if that kind is well-established (see Chierchia 1998 for details):

(62) $[\![\text{D}_{[+\text{REF}]}]\!] := \lambda P_{\langle n,\langle e,t\rangle\rangle} : \exists x.\exists n.\forall y[\text{MAX}(P)(n)(y) \leftrightarrow x = y].\iota x.\exists n.$
       $[\text{MAX}(P)(n)(x)]$

(63) $\text{MAX(P)(n)} := \lambda x.P(n)(x) \& \neg \exists y.[P(n)(y) \& x < y]$

(64) $[\![\text{D}_{[-\text{REF}]}]\!] := \lambda P_{\langle e,t\rangle}.\lambda k.^{\cap}P = k$

If we have a STRONG-WEAK AMBIGUOUS lexical item, (64) will be inserted after the little n head, but if we have a BIS lexical item, (64) cannot be inserted or else there would be a type clash.

Next, we merge the preposition. I take prepositions that can facilitate weak readings to be ambiguous between normal (e.g. to_2) and incorporating variants

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[11]For the moment, nothing relies on whether no Num is merged or whether a vacuous, or "expletive" version is merged, along the lines of Wood (2012), Myler (2014), among others.

[12]For this work, one could say that Num is privative and has the value PL and it would not affect the analysis. In this case, the singular would merely be a Num without any features. In this work, I follow Harbour (2007) and others in assuming a binary specification for Num.

[13]These two denotations for the definite article are not lexically connected under the present account. For the moment, these are merely homophones. This is not a desirable result, since the intuition is that there is something universally shared between a kindifying definite and a regular strong definite. In fact, there is no language known by this author that has a kindifying determiner that is not homophonous with the definite article. In future, it would be better to find an account which unifies the two, either by constructing one out of the other, or by finding a single denotation that can yield both interpretations.

(e.g. to_2),[14] since the weak interpretation can only occur when the definite is in certain syntactic configurations (e.g. when it is the complement of *to*). I also assume, following Aguilar-Guevara (2014), among others, that weak definites do not make explicit reference to individual atoms, and take Chierchia's (1998) type-shifters, DOWN and UP; DOWN takes one from a property to a kind, while UP takes one from a kind to a property.

(65) $[\![to_1]\!]_{\langle e, \langle v, t \rangle \rangle} := \lambda x. \lambda e. \text{GOAL}(e) = x$

(66) $[\![to_2]\!]_{\langle \langle k, t \rangle, \langle e, \langle v, t \rangle \rangle \rangle} := \lambda P_{\langle k, t \rangle}. \lambda e. \exists x. \exists k. [P(k) \&^{\cup} k(x) \& \text{GOAL}(e) = x]$

The denotation for to_1 is the classical one for directional prepositions from event semantics (see Champollion 2017: 57, for one formulation). The denotation for to_1 is more unique, since it is an incorporating adposition.[15] It takes a kind property and tells you that there is a kind that satisfies the property and that one of its instantiations is the GOAL of an event.

The structure of a strong definite such as (5) is exemplified below as in (67). The main difference between this singular strong noun phrase and a strong plural one would be the specification on NumP:

(67)
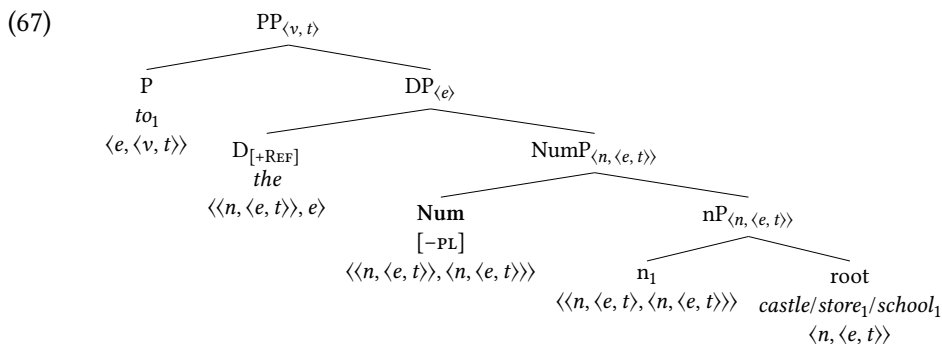
We combine the categorizing head with the countable root, which passes up the interpretation of the root. Next, we add in the number specification, which restricts the extension of the noun to singletons. Finally, the type requires that

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[14]I use the lower types for simplicity, but, if you prefer a continuations-style denotation, the preposition could have an additional argument for the main event predicate. This has no consequences for my account of weakness.

(i) $[\![to_{1\text{high-type}}]\!]_{\langle \langle v, t \rangle, \langle e, \langle v, t \rangle \rangle \rangle} := \lambda P_{\langle v, t \rangle}. \lambda x. \lambda e. P(e) \& \text{GOAL}(e) = x$

[15]Another potential way to avoid this ambiguity would be to use an explicit incorporating element that constructs to_2 from to_1.

we add the updated Sharvy definite (as in 62, and then the regular directional preposition, as in 65), resulting in the following derivation:

(68) $[\![n_1\ castle]\!]$
$= \lambda n.\lambda y.castle\,(y)\&\, \big|\textsc{Atoms}(y)\big| = n\&\forall z \in \textsc{Atoms}(y)[castle\,(z)]$

(69) $[\![\textsc{Num}_{[-\textsc{pl}]}\ n_1\ castle]\!]$
$= \lambda m.\lambda y.castle\,(y)\&\, \big|\textsc{Atoms}(y)\big| = m\&\forall z \in \textsc{Atoms}(y)[castle\,(z)]\&m = 1$

(70) $[\![D_{[+\textsc{spec}]}\ \textsc{Num}_{[-\textsc{pl}]}\ n_1\ castle]\ ]$
$= \iota x.\exists m.[(castle\,(x)\&\, |\textsc{Atoms}(x)| = m\&\forall z \in \textsc{Atoms}(x)[castle\,(z)]$
$\&m = 1)\&\neg\exists y.[castle\,(y)\&\, \big|\textsc{Atoms}(y)\big| = m\&\forall x' \in \textsc{Atoms}(y)[castle\,(y)]$
$\&m = 1\&x < y\,]$

(71) $[\![to_1\ D_{[+\textsc{spec}]}\ \textsc{Num}_{[-\textsc{pl}]}\ n_1\ castle]\!]$
$= \lambda e.\textsc{Goal}(e) = \iota x.\exists m.[(castle\,(x)\&\, |\textsc{Atoms}(x)| = m\&\forall z \in \textsc{Atoms}(x)[castle\,(z)]$
$\&m = \mathbf{1})\&\neg\exists y.[castle\,(y)\&\, \big|\textsc{Atoms}(y)\big| = m\&\forall x' \in \textsc{Atoms}(y)[castle\,(y)]$
$\&m = 1\&x < y\,]$

The denotation in (71) gives a set of events whose GOAL is a unique castle. Some number of atoms is in the extension of *castle* and each of them are also castles, and their cardinality is one (i.e. there is only one of them). Additionally, it asserts that there isn't any other entity (which is a castle that has a number of atoms, which are also castles, and whose cardinality is one) that has the original castle as one of its proper subparts. This is indeed the interpretation we get for the strong definite noun phrase.

Compared to a strong definite, a weak definite, such as in (3), differs in at least two ways. First, the denotation of the root is different, resulting in the weak definite article (66) being merged. Second, these two choices conspire to combine with the incorporating adposition. These combinations are required based on the type of the root.
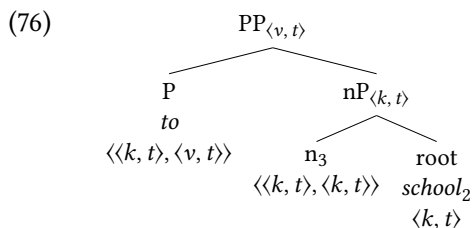
(72)
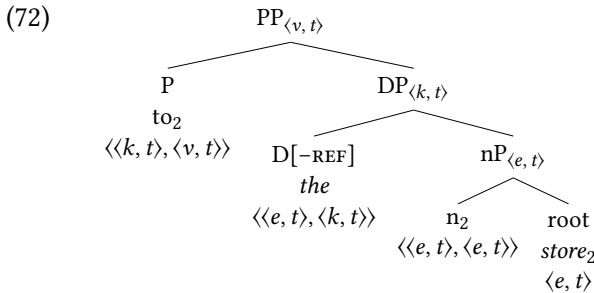
(73) $[\![n_2\ store_2]\!]$
$= \lambda x.store\,(x)$

(74) $[\![D_{[-\textsc{spec}]} \; n_2 \; store_2]\!]$
      $= \lambda k.^{\cap}store = k$

(75) $[\![to_2 \; D_{[-\textsc{spec}]} \; n_2 \; store_2]\!]$
      $= \lambda e.\exists y.\exists k.[^{\cap}store = k \,\&\,^{\cup}k(y)\textsc{Goal}(e) = y]$

Finally, we take the BIS, as in (4). Roots that can be bare have the denotation of a kind-property (see 58b). This root merges with a categorizing head, which passes up the type and denotation of the root, and then with the incorporating preposition.

(76)

```
                    PP⟨v, t⟩
         ┌─────────────┴──────────────┐
         P                          nP⟨k, t⟩
         to                  ┌─────────┴────────┐
   ⟨⟨k, t⟩, ⟨v, t⟩⟩          n₃              root
                      ⟨⟨k, t⟩, ⟨k, t⟩⟩     school₂
                                           ⟨k, t⟩
```

(77) $[\![n_3 \; store_2]\!]$
      $= \lambda k.school(k)$

(78) $[\![to_2 \; D_{[-\textsc{spec}]} \; n_2 \; school_2]\!]$
      $= \lambda e.\exists y.\exists k.[school(k) \,\&\,^{\cup}k(y)\,\&\,\textsc{Goal}(e) = y]$

The derivation for the BIS reflects their similarity with weak definites. More specifically, both derivations lack a Num projection, and combine with the incorporating adposition.

6 Conclusion

I have argued that weak definites and bare singulars mean similar things (both are number neutral), and share comparable morphosyntactic structure (both lack a Num projection, and merge with an incorporating adposition). Roots that participate in weak nominal constructions divide into two lexical classes; one participates in weak definite constructions and the other participates in BIS constructions. These two classes are distinct, with no single lexical item can participate in both weak definite and BIS constructions. Lexical items from these classes are semantically type ambiguous at the root level, with two denotations each. This semantic ambiguity affects whether the root can appear in particular syntactic configurations (e.g. whether it requires an overt strong determiner to be merged).

Interpretive differences between strong and weak nominals correspond to differences at two syntactic positions: first, at the root-level, semantic type ambiguity determines which interpretation(s) is/are possible, and second, at the determiner-level, the semantic type of the root conditions which of two versions of the definite determiner will be chosen. Using these two ingredients, this account explains why weak definites and bare singulars receive number neutral interpretations, while simultaneously explaining their lexical idiosyncrasies.

Acknowledgements

Abbreviations

BIS	Bare institutional singular	PL	Plural
NUM	Number	REF	Referential

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