Bare nouns, number, and definiteness in Teotitlán del Valle Zapotec[1]

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Abstract. How is definiteness expressed in number-marking languages lacking a definite article? May bare nouns in such languages simply be read as definites or indefinites, without constraint? Dayal (2004) demonstrates that the interpretation of bare nouns with respect to definiteness is significantly constrained in Hindi and Russian. In these languages, singular and plural bare nouns present different possibilities for indefinite interpretation, in a way that receives a natural explanation within a neo-Carlsonian theory of noun meaning (Chierchia, 1998). This makes for a close connection between the meanings of bare nouns in English and those in Hindi and Russian. Does this connection extend to the meanings of bare nouns in number-marking languages in general, even outside of Indo-European? In this paper, we demonstrate that the answer is yes. Our evidence comes from bare noun interpretation in Teotitlán del Valle Zapotec, a language of Oaxaca, Mexico. The Zapotec findings closely replicate Dayal's findings for Indo-European languages, providing support for the viability of the neo-Carlsonian approach as a set of constraints on semantic variation in general.

Keywords: Bare nouns, plural, number, definite, pseudo-incorporation, Zapotec

1. Introduction

Teotitlán del Valle Zapotec is a language with a singular/plural distinction and without a definite determiner. Arguments in this language frequently consist of just a bare noun, as in (1).[2]

(1)   Ka-zhunih kabai / d-kabai.
       PROG-run horse / PL-horse
       The horse(s) is/are running.

This paper is about the interpretation of Teotitlán del Valle Zapotec bare nouns, in particular as concerns definiteness and the role of number marking. Conventional wisdom holds that bare nouns in languages lacking definite articles are able to freely function both as definites and as indefinites.[3] If true, this would make bare nouns in such languages quite different from their counterparts in Germanic languages, such as English bare plurals and bare mass nouns. Those arguments are well-known to show a highly restricted range of interpretations, differentiating them both from definites and from ordinary indefinites with the article *a* (Carlson, 1977).

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[2]The TdVZ data in this paper are written in a practical orthography that is similar in pronunciation to Spanish with a few modifications. *ts* and *dz* represent voiceless and voiced alveolar affricates, and *ch* and *dx* their postalveolar counterparts. *ll* is a geminate alveolar lateral. The following abbreviations are used in TdVZ glosses: ANIM animal gender, COP copula, EMPH emphatic, FUT future, HAB habitual, NEG negation, NEUT neutral (aspect), PERF perfective, PL plural, PROG progressive, PRT particle, SBJ subjunctive, Y.N yes/no question.

[3]See, for instance, Lee (2006: p 9) on closely related language San Lucas Quiaviní Zapotec.

The work of Dayal (2004) poses an important challenge to the conventional wisdom about languages lacking definite articles. In Hindi and Russian, Dayal shows, only definite and kind-level readings are freely available for all arguments. All other types of interpretation are subject to significant restrictions. Bare plural arguments allow indefinite interpretations, but only weak indefinite readings are ever permitted. Bare singular arguments allow indefinite interpretations only in contexts of (pseudo-)incorporation. The distribution of definite and indefinite readings is thus significantly more complex than expected on the conventional view.

What sort of theory is required to account for these restrictions on bare noun interpretation? Dayal shows that the answer is more familiar than might be expected. With only a minor modification, the range of restrictions on bare noun interpretation in Hindi and Russian falls out from Chierchia's (1998) neo-Carlsonian theory for English bare nouns. The overall conclusion is that a unified theory of bare noun interpretation remains in reach, bringing together (number-marking) languages with and without definite articles.

This paper contributes new evidence in support of this conclusion from Teotitlán del Valle Zapotec, a language typologically and genetically distinct from the languages investigated by Dayal. Quite strikingly, the interpretation of singular and plural bare nouns in Teotitlán del Valle Zapotec shows the same intricate distribution predicted by the Dayal/Chierchia theory. In this language, too, only definite and kind-level readings are freely available to all arguments; existential readings show a complex distribution that involves both the number marking of the noun and the argument structure of the verb. Plural and mass bare nouns generally allow existential readings, though only with narrowest scope. Singular bare nouns show existential readings only with narrowest scope and only in contexts of plausible pseudo-incorporation. The findings overall lend support to the theoretical framework of Chierchia (1998) and Dayal (2004), as this approach successfully predicts both the range of readings possible for bare nouns and the way that number marking influences bare noun interpretation. Science depends on replication, and the prospects for formal semantic approaches to linguistic typology depend on teasing apart core constraints on semantic variation from accidental similarities owing to shared history or language contact. By showing that a familiar system for bare noun meaning is active in an unrelated, geographically distant language, this study suggests that core mechanisms of semantic competence are involved in regulating the interpretation of bare nouns.

The paper is laid out as follows. In the next section, we introduce Chierchia's (1998) approach to English bare nouns and consider certain of its crosslinguistic predictions, particularly in view of a modification suggested by Dayal (2004). In section 3, we present the core data on bare plural and mass nouns in Teotitlán del Valle Zapotec, showing that they behave as expected in this system. In section 4, we then discuss the special properties of singular kind terms, drawing especially on the discussion in Chierchia (1998); in section 5 we show how this approach leads to correct predictions for the analysis of Teotitlán del Valle Zapotec bare singulars. In section 6, we discuss how the numeral *te* 'one' fits into the system. Section 7 briefly concludes.

We round out this introduction with some background information on Teotitlán del Valle Zapotec and the data presented in this paper. Teotitlán del Valle Zapotec is spoken in Teotitlán del Valle, a community of approximately 5000 people located 25 km outside of Oaxaca City,

Mexico. Following a Zapotecanist convention, we henceforth abbreviate the language name as TdVZ. The language shows VSO word order with SVO as a common alternant. TdVZ data in this paper were elicited from four speakers, three of whom reside in Teotitlán del Valle; one speaker belongs to the diasporic community in California. Semantic data were obtained through three methods. The primary method was standard semantic elicitation of the type described in Matthewson (2004), involving translation between TdVZ and Spanish (for speakers in Mexico) or English (for the speaker in California) as well as judgments of the felicity of TdVZ sentences in particular contexts. The secondary methods involved a prompted narrative task, where the speaker was asked to provide TdVZ descriptions for portions of a pair of wordless picture books (Mercer Meyer's *Frog on his own* and *A boy, a dog, and a frog*), and act-out tasks, where the speaker was asked to narrate a series of actions performed by the fieldworker.

2. Interpreting bare nouns

In this section we introduce Chierchia's (1998) approach to English bare nouns and Dayal's (2004) extension of that approach to languages lacking definite articles.

2.1. Bare nouns in English

As is well-known, bare nouns in English support three major readings. On the first reading, the bare plural or mass noun functions as the name of a kind. This allows it to serve as the argument of a predicate like *common, extinct* or *rare*, which apply to kinds but not to individuals.

(2) a. Cats are common.   b. Gold is rare.

The second reading is the closely related generic reading. The bare noun continues to describe a species or (natural) kind, but the predicate is one that may also apply to particular individuals.

(3) a. Cats purr.   b. Gold is shiny.

The third reading is one where the bare noun is felt to contribute not a kind, but a set of instances of that kind. The sentence is understood with existential quantification over these instances.

(4) a. Cats are purring.   b. Gold is missing from the safe.

The basic task for theories of bare noun interpretation in English is to explain how bare arguments can span this range of interpretations (but no others).

In presenting the approach pursued by Chierchia (1998) and taken up by Dayal (2004), it will be helpful to start with mass nouns. Chierchia proposes that nouns like *gold* inherently denote kinds. Kinds are modeled as individual concepts, mapping any world or situation to the maximal sum of the relevant material (in this case, gold) in that world or situation. Once evaluated at a world or situation, a kind term is of type *e*. This semantic type explains why kind terms may function as arguments without the help of a determiner. The kind-level predicate simply

applies directly to the kind-level noun.[4]

(5)   Gold is rare. $rare(GOLD)$

To handle existential readings, Chierchia (developing ideas from Carlson 1977) proposes a special composition operation that applies as the kind-denoting argument combines with the predicate. This operation, 'Derived Kind Predication' or DKP, introduces local existential quantification over instances of the kind. In so doing, it makes use of the operator $^\cup$ 'Up' which maps kinds to properties, (6). The DKP rule itself is defined as in (7).

(6)   Let d be a kind. Then for any world s,   (Chierchia, 1998: 350)
$$^\cup d = \begin{cases} \lambda x\, [x \le d_s], \text{ if } d_s \text{ is defined} \\ \lambda x\, [FALSE], \text{ otherwise} \end{cases}$$
      where d_s is the plural individual that comprises all of the atomic members of the kind.

(7)   *Derived Kind Predication (DKP):*   (Chierchia, 1998: 364)
      If P applies to objects and k denotes a kind, then $P(k) = \exists x[^\cup k(x) \wedge P(x)]$

The existential quantification introduced by DKP is necessarily limited in scope; it applies as soon as the predicate composes with its arguments. This explains why the existential quantification associated with bare arguments standardly fails to outscope negation (Carlson, 1977).

(8)   John didn't find gold. $\neg \exists x[^\cup GOLD(x) \wedge find(j,x)]$

Partially similar mechanisms are proposed for the generic reading, which plays a relatively more minor role in the overall system. In this case the generic operator is restricted by a description obtained from the kind-level argument via accommodation; the restriction contains a variable over instances of the kind, via the freely available shifter $^\cup$ (Chierchia, 1998: 366-7).[5]

(9)   Gold is shiny. $Gn_{x,s}[^\cup GOLD(x) \wedge C(x,s)][shiny(x,s)]$

For count nouns, Chierchia proposes a basic property-type denotation. Singular count nouns like *cat* denote singular properties (sets of cat-atoms) whereas plural count nouns like *cats* denote plural properties (sets of sums of cat-atoms). The plural property is similar to a mass property in that it has a supremum; we may speak, relative to a world or situation, of the maximal sum of cats or of gold in that world or situation. The intensionalization of this sum is formally identified with the kind. To map plural properties to kinds, Chierchia introduces the operator $^\cap$ 'Down':

(10)   For any property P and world/situation s,   (Chierchia, 1998: 351)
$$^\cap P = \begin{cases} \lambda s\, \iota x[P_s(x)], \text{ if } \lambda s\, \iota x[P_s(x)] \text{ is in the set K of kinds} \\ \text{undefined, otherwise} \end{cases}$$

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[4]Here and below, we use capital letters for names of kinds.

[5]Following Chierchia, C is a contextual variable restricting the individual (x) and situation (s) arguments the *Gn* operator ranges over.

Application of $^\cap$ to the plural property $[\![cats]\!]$ produces a kind, CAT. Supposing $^\cap$ is freely available as a type shift, bare plurals will freely shift to a kind-level interpretation. Evaluated at a particular world or situation, the noun will then be able to function as a bare argument of type e, much as mass nouns do. As a kind term, it will be able to give a kind-level reading; a narrow scope existential reading, via DKP; or a generic reading, via accommodation and $^\cup$.

(11)   Cats are common. $common(^\cap cats)$

(12)   I don't see cats. $\neg\exists x[^{\cup\cap}cats(x) \wedge see(I,x)]$

(13)   Cats purr. $Gn_{x,s}[^{\cup\cap}cats(x) \wedge C(x,s)][purr(x,s)]$

This system provides an initial explanation for why singular count nouns cannot function as bare arguments in English, in view of the definedness conditions of $^\cap$. This operation is undefined when applied to a singular property like $[\![cat]\!]$, given that a single individual cannot be a kind.[6] Unable to type shift, the singular noun *cat* thus remains strictly property-type. This explains why it cannot function as an argument without the help of a determiner or quantifier.

This explanation is potentially threatened if additional type shifts beyond $^\cap$ are available in natural language. Chierchia proposes that two additional type shifts are indeed available. One is the ι type shift, forming definite descriptions. The other is the $\exists$ type shift, forming existential generalized quantifiers. These type shifts cannot be applied to English bare singulars because lexical determiners *the* and *a* are available with these denotations. This result is ensured by the principle in (14).

(14)   *Blocking Principle:*   (Chierchia, 1998: 360)
        For any type shifting operation τ and any X: *τ(X)
        if there is a determiner D such that for any set X in its domain, D(X) = τ(X)

The Blocking Principle ensures that bare nouns in English never receive definite interpretations; this is always blocked by *the*. It also ensures that singular count nouns never receive indefinite GQ interpretations; this is always blocked by *a*. Whether indefinite GQ interpretations are expected for bare plurals depends on the analysis accorded to plural determiner *some*: if treated as a pure existential quantifier, it is expected to block existential readings for bare plurals. Chierchia proposes that *some* not be treated in this way, and thus that existential GQ readings are in principle available to bare plurals. This allows him to explain why the bare plural is associated with an existential quantifier scoping over negation in examples like (15). That example demonstrates a scope pattern which is unavailable in simpler cases like (16).

(15)   John didn't fix parts of this machine. $\exists x[parts\text{-}of\text{-}this\text{-}machine(x) \wedge \neg fix(j,x)]$

(16)   John didn't fix coffee machines. $\neg\exists x[coffee\text{-}machines(x) \wedge fix(j,x)]$
                                    $(= \neg\exists x[^\cup COFFEE\text{-}MACHINE(x) \wedge fix(j,x)])$

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[6]On the singular definite generic, see section 4.

Table 1: Interpretations of English bare nouns (after Chierchia 1998)

		Bare mass noun	Bare plural	Bare singular
a)	Kind-level reading	Available N is kind-denoting	Available $\cap$ type shift	Unavailable $\cap$ undefined
b)	Narrow scope existential reading	Available N denotation + DKP	Available $\cap$ type shift + DKP	Unavailable $\cap$ undefined
c)	Definite reading	Unavailable ι blocked by *the* and outranked by $\cap$	Unavailable ι blocked by *the* and outranked by $\cap$	Unavailable ι blocked by *the*
d)	Wide scope existential reading ($\exists$ GQ interpretation)	Unavailable $\exists$ outranked by $\cap$; available only if $\cap$ is undefined	Unavailable $\exists$ outranked by $\cap$; available only if $\cap$ is undefined	Unavailable $\exists$ blocked by *a*

Why is a wide scope existential reading available in (15) but not in (16)? Chierchia builds on Carlson's intuition that the crucial factor is that not every plural property corresponds to a kind. Notably, *coffee machines* is considerably more amenable to a kind-level analysis than is *parts of this machine*. Suppose, therefore, that *parts of this machine* is undefined in combination with $\cap$, as the sum of the machine's parts is not a kind. This means that the default $\cap$ type shift for the bare plural cannot be applied, and an alternative option must be chosen. Chierchia proposes that the availability of alternatives is regulated by a hierarchical ranking as in (17).

(17)   *Ranking of Type Shifts (to be revised)*:
       $\cap > \{\iota, \exists\}$

Because *coffee machines* is capable of shifting via $\cap$, this is the only possibility. The result is a kind-level denotation which may lead to an existential reading only via DKP. For *parts of this machine*, by contrast, the kind-level reading is off the table and the lower ranked $\exists$ type shift may be used. This makes *parts of this machine* a quantificational expression which is capable of scoping over negation in (15).

The overall view of English bare nouns is summarized in Table 1; note that here and elsewhere, we set aside the generic reading.[7] With that proviso, the only available readings of bare nouns are in the unshaded cells of rows (a) and (b). The unattested readings in rows (c) and (d) are absent due to the combination of the Blocking Principle and the Ranking of type shifts (in some cases redundantly), as discussed above for count nouns. The same logic may be applied to mass nouns if these nouns can shift to properties, via $\cup$, from their basic kind-level denotations.

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[7]This omission is due both to the relatively minor role of the generic reading in the Chierchia/Dayal system and to the well-known interaction between generic readings and verbal morphology. This interaction means that significant further work on the tense/aspect/mood system of TdVZ will be necessary before major claims about generic sentences are made.

Bare singulars turn out not to make viable arguments in English in view of two factors working together. On one hand, the undefinedness of $\cap$ in combination with a singular prevents kind-level readings; this prevents narrow scope existential readings by blocking the proper setup for DKP. On the other hand, the lexical determiners *the* and *a* block the application of the other two type shifts, ι and $\exists$, which otherwise would be available to the bare singular.

2.2. Predictions for languages lacking a definite article

Several regions of Table 1 deserve special attention in connection with languages lacking definite articles. In this section, we focus on those that concern plurals and mass terms. We return to special issues in the analysis of bare singulars in section 4.

The first point of interest concerns row (c), the definite reading. On Chierchia's approach, the absence of a definite reading for English mass nouns and bare plurals is redundantly ruled out by blocking and by ranking of type shifts. Since the ι operator is ranked below $\cap$, a definite reading is not expected for bare mass nouns and bare plurals even in a language lacking definite articles, so long as $\cap$ is defined. Dayal (2004) proposes a modification to the ranking of type shifts which speaks to this point. The proper ranking, she proposes, is not (17) but (18).[8]

(18)   *Revised Ranking of Type Shifts*:
         $\{\iota, \cap\} > \exists$

With this revision, the absence of definite readings for bare nouns in English is entirely due to the presence of a definite article in the lexicon. A language lacking a definite article is expected to allow its bare nouns to type shift via ι as well as via $\cap$. Bare nouns in such a language should allow a definite reading in general, alongside the kind-level and narrow scope existential readings available for bare plurals and bare mass nouns.

Dayal's revision to the ranking of type shifts has an additional consequence in row (d), the wide scope existential reading. In a language which uses an ι type shift instead of a definite article, the ι shift, which is always defined, will always outrank $\exists$. This means that bare plurals and mass terms should never allow wide scope existential readings.

Finally, a comment is in order on row (b), the narrow scope existential reading, for reasons external to the system itself. Many languages have some variety of incorporation construction available to objects and sometimes to unaccusative subjects. Incorporated nominals standardly receive narrow scope existential readings, just like English bare mass nouns and bare plurals.[9] In languages with 'pseudo-incorporation' (Massam, 2001), incorporated nominals may look morphosyntactically quite similar to their non-incorporated counterparts. In such languages,

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[8]Dayal (2013) takes another step in this direction by proposing that $\exists$ type shifts are in fact not available in natural language and not implicated in examples like (15). This proposal leads to the view that ι and $\cap$ are freely available, unranked options available to bare nouns, making (18) unnecessary as part of the theoretical machinery. The reader is referred to Dayal's paper for full details. Note that nothing in the present analysis depends on the decision between this view and the view discussed in the text.

[9]Indeed, this similarity is at the heart of work by van Geenhoven (1998).

Table 2: Expectations for bare mass and plural nouns in languages lacking definite articles

		Bare mass noun	Bare plural
a)	Kind-level reading	Expected N is kind-denoting	Expected $^\cap$ type shift
b)	Narrow scope existential reading	Expected N denotation + DKP	Expected $^\cap$ type shift + DKP
c)	Definite reading	Expected $^\cup$ + ι type shift	Expected ι type shift
d)	Wide scope existential reading ($\exists$ GQ interpretation)	Unexpected $\exists$ outranked by ι	Unexpected $\exists$ outranked by ι

care must be taken to tell apart those narrow scope existential readings produced by DKP versus those produced by incorporation. This may be done by consideration of the argument-structural role of the bare nominal. Crosslinguistically, incorporation does not apply to external arguments (Mithun 1984, Baker 1988); no such restriction is placed on DKP. Therefore, a narrow scope existential reading for an external argument must be due to DKP.

The main predictions discussed in this section are summarized in (19), and the overall range of interpretations expected for bare mass nouns and bare plurals in languages without definite articles is schematized in Table 2. The next section shows that the pattern in Table 2 correctly describes the behavior of bare mass and plural nouns in TdVZ.

(19) A language lacking definite articles should . . .

    a. allow bare plurals and bare mass nouns to have definite, kind-level, and narrow scope existential interpretations.

    b. not allow bare nouns to have wide scope existential interpretations.

    c. allow bare plurals and bare mass nouns to have narrow scope existential readings both as internal arguments and as external arguments.

3. TdVZ bare mass nouns and plurals

Mass nouns[10] and plural count nouns in TdVZ present a proper superset of the readings available to their counterparts in English. In both languages, these nouns function freely as arguments to kind-level predicates. Various such predicates in TdVZ are Spanish borrowings.

(20) a. Komuun na niis.
      common COP water
      Water is common.

    b. Raar-te na or.
      rare-EMPH COP gold
      Gold is rare.

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[10]The mass-count distinction in TdVZ appears to function in a way quite similar to English and Spanish. Mass nouns require measure phrases to combine with numerals, and show sorting/packaging coercions if pluralized. We have found one pair of quantifiers that distinguishes mass vs. count, viz. *suskatih* 'how much' vs. *bel* 'how many'.

(21) a. Komuun-te   na d-beez.   b. Guk   d-beez ekstingir.
          common-EMPH COP PL-frog   become PL-frog extinct
          Frogs are common.   Frogs went extinct.

Because mass nouns and plurals may serve as kind terms, they are expected to allow existential readings via DKP. We see an existential reading of a mass term in (22) as well as in (23), where the bare noun is an external argument (ruling out an incorporation analysis).

(22) Context: You notice a water leak on the sidewalk.

      Ka-zhi'i   niis lo neez.
      PROG-spill water on road
      Water is spilling on the road.

(23) La b-ain   za   manch tuwai?
      Y.N PERF-make butter stain   towel
      Did butter stain the towel?

The existential quantifier associated with the mass noun may only have narrow scope. This is readily seen for negation, where the two scope patterns are contrasted in (24) versus (25). Example (24) presents a negative answer to an existential question. Only the $\neg > \exists$ scope pattern constitutes an appropriate answer, and the bare mass noun subject is felicitously used.

(24) Context: Question (23)

      A'a', kedih b-ain-di   za   manch tuwai.
      no,   NEG PERF-make-NEG butter stain   towel
      No, butter didn't stain the towel. [$\neg > \exists$]

Example (25) presents a context where only a wide scope existential reading is appropriate; the narrow scope reading contradicts the previous discourse. The $\exists > \neg$ pattern is not possible for a simple negated sentence with a mass subject, as (25a) makes clear. Instead, an apparently biclausal sentence with negation in the lower clause must be used, as in (25b).[11]

(25)   Previous discourse:
          Bi-la'a   te tank chikru bi-zhi'i   setih.
          PERF-crash one tanker and   PERF-spill oil
          A tanker crashed and oil spilled out.
      a. # Per kedih bi-zhi'i-di   setih.
            But NEG PERF-spill-NEG oil
            But oil didn't spill out. [Consultant: "It's a contradiction."]
      b.   Per y-u'u   tubru'   setih kedih bi-zhi'i-di.
            but NEUT-be a.little.bit oil   NEG PERF-spill-NEG
            But some oil didn't spill out.

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[11]This example instantiates a pattern of subordination without overt markers of embedded structure, which seems to be widespread both in TdVZ and in nearby Zapotecan languages.

The same range of facts holds of bare plurals. The existential reading of a bare plural and its narrow scope with respect to negation are seen in the question-answer pair in (26). (Further examples of the bare plural scoping under negation are seen in (40a) and (41a) below.)

(26) Q: La ka-yoo   d-beni   gushadih?
          Y.N PROG-eat PL-person grasshopper
          Are people eating grasshopper?

      A: Kedih ka-yoo-di   d-tourist gushadih.
          NEG   PROG-eat-NEG PL-tourist grasshopper
          No tourists are eating grasshopper. [¬ > ∃]

Once again, narrow scope existential readings are conveyed with simple bare noun constructions, whereas wide scope constructions use a biclausal alternative, (27b).

(27) a. # Ka-sia   d-bekuh,   per kedih ka-sia-di   d-bekuh.
            PROG-howl PL-dog   but NEG   PROG-howl-NEG PL-dog
            Dogs are howling, but dogs aren't howling.
            Consultant: "It's contradicting each other."

      b. Ka-sia   d-bekuh,   per y-u'u   d-bekuh kedih ka-sia-di.
          PROG-howl PL-dog   but NEUT-be PL-dog NEG   PROG-howl-NEG
          Dogs are howling, but there are dogs not howling.

In the facts reviewed thus far, TdVZ mass nouns and plurals match the range of interpretations of their English counterparts. Where the languages diverge is in the availability of the definite reading. In TdVZ, bare mass nouns and plurals freely allow definite readings. Definite readings of both plurals and mass nouns are seen in the short discourse in (28); bare nouns occur here first with existential readings, italicized, and subsequently as anaphoric definites, bolded. Examples (29) and (30) provide similar examples collected via the act-out (29) and storytelling (30) tasks.

(28) Context: I am narrating what is happening in a cooking show I am watching.
      a. Raate d-kosiner ri-beki *d-paap*   kun *za*   le'n perolih.
          every PL-chef   HAB-put PL-potato and butter in   pot
          Every chef puts potatoes and butter in a pot.

      b. **D-paap** g-ai   lo **za**.
          PL-potato FUT-cook in butter
          The potatoes will cook in the butter.

(29) Y-u'u   jug, y-u'u   *niis*. Naa gu-da'-a   **niis** le'n vas.
      NEUT-be juice, NEUT-be water. I   PERF-pour-1SG water in   cup
      I have some juice and some water. I pour the water into a cup.

(30)   Context: A boy and his dog are walking through the park, carrying a frog and a turtle in a bucket. [Excerpt from *Frog on his own*]

    a. Mientr ri-zaa-d-an,   gu-na-d-an   *d-maripoos*.
        while HAB-walk-PL-HUMAN PERF-see-PL-HUMAN PL-butterfly

        While they walked, they saw butterflies.

    b. Beez siemprte ri-zhulazu-m   r-idie-m.   Gu-asia-m.
        frog always HAB-like-ANIM HAB-go.out-ANIM PERF-jump-ANIM
        B-idie-m   le'n kubet.
        PERF-go.out-ANIM from bucket

        The frog always liked to go out. It jumped. It went out from the bucket.

    c. Mientr bekuh kin   ka-ye-m   **d-maripoos**.
        while dog   DEM PROG-look-ANIM PL-butterfly

        Meanwhile that dog was looking at the butterflies.

In summary, bare mass nouns and plurals in TdVZ allow kind-level readings, narrow scope existential readings, and definite readings; wide scope existential readings are absent. This means that these nouns behave in precisely the way predicted by the Chierchia/Dayal system. They may function as kind terms, giving rise to kind-level and narrow scope existential readings (the latter by DKP). Alternatively, they may type shift via ι, producing definite readings. But they may not type shift into generalized quantifiers with $\exists$, given that ι is higher than $\exists$ on the ranking of type shifts. This reveals an important sense in which the definite/indefinite distinction is not fully neutralized in this language. An important class of indefinite interpretations remains unavailable to bare plurals and bare mass nouns.

4. Interpreting bare singulars

In this section we turn to the predictions of the Chierchia/Dayal system for bare singulars. This case deserves special attention in view of the fact that many languages are able to use singular arguments with kind reference. In English, this is seen as the singular definite generic:

(31)   a. The gopher is widespread.   b. Babbage invented the computer.

This construction has received a good amount of theoretical and empirical scrutiny.[12] One central puzzle, originally noted by Lawler (1973), is that singular definite generics diverge from bare plurals in their allowance for existential readings. The existential reading of singular definite generics is possible only in cases where the predicate describes "something momentous or significant about the species as a whole" (Carlson, 1977); it is absent in examples like (32b), in contrast to bare plural counterpart (32a).

(32)   a. Gophers are eating my tomatoes.
       b. The gopher is eating my tomatoes.

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[12]See, i.a., Carlson 1977, Ojeda 1991, Wilkinson 1991, Krifka et al. 1995, Chierchia 1998, and Dayal 2004.

A number of different approaches to this puzzle have been explored. On a view like Wilkinson's (1991), where bare plurals are ambiguous between kind-level and indefinite readings, the facts simply show that definite singulars are not similarly ambiguous; they lack indefinite interpretations. On Carlson's (1977) view, adopted and adapted by Chierchia (1998) and Dayal (2004), this explanation is not available; bare plurals always denote kinds. Examples like (31) show that singular definites can denote kinds, too, but (32b) seems to show that this kind-level interpretation is not always available.

The approach taken by Chierchia (1998) responds to the challenge of (31)-(32) by essentially reversing Wilkinson's explanation – treating singular definites, rather than bare plurals, as subject to an ambiguity. The core approach to singular definites is as referential expressions denoting singular collectives. To combine with a kind-level predicate, the singular definite must be mapped to the associated individual concept via abstraction over the world/situation variable. This operation is forced in examples like (31) by sortal restrictions of the predicate. When a singular definite combines with an object-level predicate, as in (32b), however, there is no sortal mismatch to be repaired by intensionalization. This leaves the singular definite without a true kind-level interpretation. It may combine with the predicate only via simple function application, not in the way mediated by DKP.[13]

These considerations lead to the following predictions for singular count nouns in languages lacking definite articles. We saw above that languages lacking definite articles are expected to allow all nouns to type shift via ι, given that this type shift is not lexically blocked. (See (19a).) Bare singulars should thus allow definite readings. If intensionalization is universally available as a type adjustment, then bare singulars should also allow kind-level readings. In contrast, existential readings of bare singulars are expected to be significantly limited. Wide scope existential readings are predicted to be absent, given (at least) that the $\exists$ type shift is outranked by ι.[14] (See (19b).) Furthermore, bare singulars are expected to diverge from bare plurals in the availability of the narrow scope existential reading. Bare singulars cannot obtain narrow scope existential readings by DKP. Narrow scope existential readings for bare singulars could only arise via an independent mechanism, such as incorporation. This means that narrow scope existential readings should always be absent for singulars when they serve as external arguments, given that incorporation is not possible in this argument-structural configuration. The two predictions specific to bare singulars are summarized in (33), and the overall range of expected interpretations for bare singulars is schematized in Table 3.

(33)   A language lacking definite articles. . .
   a.   should allow bare singulars to have kind-level or definite interpretations.

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[13]An alternative route is explored by Dayal (2004), who posits that singular definites do indeed have true kind-level interpretations without the help of a special abstraction operation. What is key is that singular kind terms block access to their instantiation sets: "the singular kind term is an atomic entity which does not allow distributive predication to entities we intuitively associate with it. That is, it is an atomic term whose only instantiation set, when available, includes perhaps a representative or prototypical object." This means that DKP is unavailable for singular kind terms, blocking the missing reading of (32b). As far as we can tell, this approach is equal in empirical coverage to the Chierchia 1998 view; we adopt the latter for simplicity of exposition only.

[14]See section 6 for additional discussion.

b. should not allow bare singulars to have narrow scope existential interpretations, except via incorporation (if the language makes use of this option); narrow scope existential interpretations should always be absent for singular external arguments, which cannot incorporate.

Table 3: Expectations for bare singulars in languages lacking definite articles

		Bare singular
a)	Kind-level reading	Expected ι + intensionalization
b)	Narrow scope existential reading	Unexpected (modulo incorporation)
c)	Definite reading	Expected ι type shift
d)	Wide scope existential reading ($\exists$ GQ interpretation)	Unexpected $\exists$ outranked by ι

The next section shows that this rather complex set of expectations is again borne out for TdVZ.

5. TdVZ bare singulars

There are three respects in which bare singulars are expected to behave like bare plurals: in allowing kind-level readings, in allowing definite readings, and in disallowing wide scope existential readings. We begin this section with the evidence that these expectations are met.

As expected, kind-level predication may be carried out in TdVZ either via the bare plural or via the bare singular.

(34)   a. Guk   (d-)beez ekstingir.   b. Komuun-te   na (d-)beez lo geu.
           become (PL-)frog extinct   common-EMPH be (PL-)frog in river
           Frogs/the frog went extinct.   Frogs are / the frog is common in the river.

Also as expected, bare singulars are amenable to definite readings just as their plural counterparts are. Anaphoric singular reference is accomplished with bare singulars in examples like (35) and (36); the relevant definite terms are bolded.

(35)   Rap-a   te manzan, kon te manguh, per gu-zuub-an   **manguh** lo yagzhilih.
        have-1SG a apple   and a mango but NEUT-sit-3SG mango   on chair
        I have an apple and a mango but the mango is on the chair.

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(36)   Context: A boy and his dog are walking through the park with a net, looking to see if they can catch an animal. They come across a frog sitting on a lily pad in a pond.

     a.   "N-iu'!"   n-e-m.   "A te   beez zu   lo nis!"
        NEUT-look NEUT-say-ANIM PRT one frog   stand on water
        "Look!" it [the dog] said. "There's a frog on the water!"

     b.   Xila'azga, xila'azga, ka-zaa-d-an   te   neez-d-an **beez**.
        slowly   slowly   PROG-walk-PL-3 PRT catch-PL-3 frog
        Slowly, slowly, they walked to catch the frog.

Examples (37) show that bare singulars are also readily used to describe referents that are unique, whether absolutely or relatively.

(37)   a.   Ziit-te   zuub **gubiizh**.   b.   Rom zu-gua   **Paap**.
         far-EMPH   sit   sun   Rome PROG-be.located pope
         The sun is very far away.   The pope lives in Rome.

Finally, bare singulars behave like bare plurals, and as expected, in disallowing wide scope existential readings. Examples (38) and (39) show that bare singulars are rejected in a context calling for the wide scope existential reading; the consultant corrects the sentences to include the word *te* 'one' (discussed in section 6).

(38)   Context: there's six frogs and five of them are in the basket. We want to say there's one that's not, so we say:

    # Kedih y-u'u-di   beez le'n kanast.
      NEG   NEUT-be-NEG frog in   basket

    Speaker's correction:

     Kedih y-u'u-di   te   beez le'n kanast.
     NEG   NEUT-be-NEG one frog in   basket
     One frog isn't in the basket.

(39)   Context: I'm editing a paper for someone else, and fixing mistakes. I'm expressing my regret because I realize I've sent the paper off and there is a mistake I didn't fix.

     a.   Kedih b-ain   sru-di-a   te   eror.
         NEG   PERF-make good-NEG-1 one mistake
         I didn't fix a mistake.

     b.   # Kedih b-ain   sru-di-a   eror.
         NEG   PERF-make good-NEG-1 mistake
         Consultant: "It's more normal if you say *te eror*."

Discussion of example (39b) revealed that the bare singular object would be improved in this context if modified by a relative clause or a sequence of other modifiers. This additional material presumably rescues the example by improving the felicity of a definite reading, which requires a single salient referent for the object.

This brings us to the point where bare singulars and bare plurals are expected to diverge, namely

the possibility of the narrow scope existential reading. Let us begin with those bare arguments not amenable to incorporation. Example (40) contrasts a bare singular and a bare plural subject for the unergative verb *zhiiz* 'laugh'. As we saw above, the bare plural is freely able to show a narrow scope existential reading in this environment; the bare singular, however, is not.

(40)   Context: my husband has shared a joke with me and I told it to my class. When I get home, he asks if anyone laughed. I have to report the sad news: no laughing.

      a.   Kedih   ba-zhiiz-di   d-bi'in xkuilih.
           NEG   PERF-laugh-NEG PL-student
           No students laughed.

      b. # Kedih   ba-zhiiz-di   bi'in xkuilih.
           NEG   PERF-laugh-NEG student
           Intended: No student laughed. Only possible reading: one student didn't laugh.

Example (40b) is acceptable only on an interpretation where the bare singular picks out a single individual – just what is expected, if it is forced to be definite when serving as an external argument of a non-kind-level predicate. Example (41) shows a similar contrast for transitive subjects. The bare plural is readily able to show the narrow scope existential reading; the bare singular has only a single-individual reading.

(41)   The mail carrier is often chased by dogs. Today he comes home and says: *Sru guk nazhi...* [It was a good day...]

      a.   ... kedih bi-dieno-di   d-bekuh naa.
             NEG PERF-chase-NEG PL-dog me
           No dogs chased me.

      b. # ... kedih bi-dieno-di   bekuh naa.
              NEG PERF-chase-NEG dog   me
           Intended: no dog chased me. [Consultant: "This sounds like a specific dog."]

It is quite striking that this contrast between singulars and plurals comes out precisely as expected and essentially in parallel with the English facts in (32). The result is even more remarkable if we consider that the contrast collapses for internal arguments – a fact which we propose to attribute to (pseudo)-incorporation. The prototypical incorporated arguments are direct objects, and in TdVZ, narrow scope existential readings are freely available in this case. Example (42) shows that both singular and plural direct objects may scope under a higher intensional operator and quantificational subject. Example (43) provides an additional case of a singular direct object showing a narrow scope existential reading.

(42)   Context: Tourists going to Hollywood have a general desire to meet celebrities.

      a. Kadga tourist ri-kas   gu-mbe beni   famos.
         every tourist HAB-want SBJ-meet person famous
         Every tourist wants to meet a famous person.

      b. Kadga tourist ri-kas   gu-mbe d-beni   famos.
         every tourist HAB-want SBJ-meet PL-person famous
         Every tourist wants to meet famous people.

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(43)   Context: I'm going to meet somebody and I want to describe to them what I look like.

Kedih kaa-di   zhumbrel kiye-'.
NEG   PROG.wear-NEG hat   head-1
I'm not wearing a hat.

Subjects of certain intransitive verbs may also show narrow scope existential readings; these verbs are plausibly analyzed as unaccusative. One of these is the (locative) copula *u'u*.

(44)   Kedih y-u'u-di   beez le'n kanast.
NEG   NEUT-be-NEG frog in   basket
There's no frog in the basket.

Finally, prepositional objects may show narrow scope existential readings in examples like (28a) above, where pots covary with chefs. This range of facts shows that bare singulars may in principle have narrow scope existential readings, but only by a mechanism that does not apply to subjects of unergative intransitives (40) or to transitive subjects (41). Incorporation is a mechanism that is argument-structure sensitive in precisely this way, and thus, these facts suggest that TdVZ is a language making use of some type of incorporation construction.

These facts are of special interest for the study of incorporation constructions because there is no obvious morphosyntactic difference in TdVZ between clauses with incorporated objects versus those with non-incorporated objects. There is, for instance, no difference in object marking or object agreement (by contrast to Hindi (Dayal, 2011) or Nez Perce (Deal, 2010)), no overt compounding of the verb and the object (by contrast to West Greenlandic (van Geenhoven, 1998)) and no switch from VSO to VOS (by contrast to Niuean (Massam, 2001) or Chol Mayan (Coon, 2010)). This suggests that TdVZ may be a language with *purely* semantic incorporation: the object composes with the verb in a way that facilitates extraordinary narrow scope (perhaps among other semantic effects; see Dayal 2011), but without any special consequence for word order or morphosyntactic marking.

6. Does TdVZ have an indefinite determiner?

The theory presented thus far makes use of two central tools in regulating the interpretation of bare nouns: the Blocking Principle (14) and Ranking of Type Shifts (18). In this section, we consider and reject the possibility that Ranking may be removed from the theory by means of an analysis that reassigns some of its work to Blocking. In particular, we argue that TdVZ does not have indefinite articles (i.e. items that lexicalize the $\exists$ type shift) available for all types of NPs. The best candidate for such an item is *te* 'one', and we argue that this lexical item does indeed create existential GQs; however, it is restricted to singulars or partitive structures. The absence of a wide scope existential reading for mass and plural bare nouns therefore cannot be attributed to Blocking by *te*.

The behavior of *te* 'one' with singulars is in several ways reminiscent of English indefinite article *a*. Like *a*, *te* gives rise to antifamiliarity and antiuniqueness implications, showing effects of Maximize Presupposition (Heim, 1991).

(45) Nau-te   te bekuh bedih   lele'e. Cha-rilian   (#te) bekuh.
      chase-EMPH one dog   rooster patio. PROG-hungry one   dog
      A dog is chasing a rooster on the patio. The dog looks hungry. [Consultant: With *te*, it means another dog.]

(46) Rom zu-gua   (#te) Paap.
      Rome PROG-be.located one   pope
      The pope lives in Rome [Consultant: with *te*, there is more than one pope.]

Te-phrases are also similar to English *a*-phrases in allowing variable scope with respect to clausemate negation. We have seen *te*-phrases with scope over negation in (38)-(39) above. An example with scope under clausemate negation is shown in (47).

(47) Q: Did Maria buy a chicken?
      A: Ketih guzi-di   Lie   te   bedih.
         NEG   buy-NEG Maria one chicken
         Maria didn't buy a chicken. ($\neg > \exists$)

Overall, these facts suggest that singular *te* phrases, like their English *a*-phrase counterparts, are existential GQs. This has the consequence that the absence of a wide scope indefinite reading for TdVZ bare singulars could be attributed to Blocking, rather than Ranking, just like in English. Can the absence of the $\exists$ type shift in TdVZ *in general* be attributed to Blocking, then? No: while *te* can occur in plural DPs (unlike English *a*), *te PL-N* does not behave as an ordinary existential GQ. Rather, plural DPs containing *te* seem to be partitives, often also containing a demonstrative and presupposing the existence of an element in $[\![PL\text{-}N]\!]$ (e.g., in (48), a plurality of tortillas). Also notably, *te PL-N* is never used for an ordinary narrow scope existential reading, unlike in singular examples like (47); bare plurals are used instead.

(48) Bell (lee) ri-ki'ini-u   **te d-get   kan**, guni-naa.
      If   (you) HAB-need-2S one PL-tortilla DEM, tell-1SG
      If you need some of the tortillas, let me know.
      Consultant: This is what you say if you've already made the tortillas.

The interaction with number suggests that *te* is a existential GQ only with a singular complement. Apparent plural complements, like in (48), reflect hidden partitive structure: *If you need **one portion of** the/those tortillas.*[15] We conclude that blocking by *te* does some, but not all, of the work of ruling out wide scope existential readings for bare nouns. Both Blocking and Ranking are needed in order to fully constrain the interpretation of bare nouns in TdVZ.

7. Conclusions

In this paper, we have demonstrated that TdVZ, while it may lack definite articles, is not a language where definite and indefinite readings are freely available for bare nouns. Rather,

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[15]The absence of an overt noun 'portion' here recalls Nez Perce and Yudja, on the analysis of Deal (2017).

(in)definiteness in TdVZ bare nouns is constrained by number and by argument-structural position, and this in precisely the way predicted by the neo-Carlsonian approach to bare noun meaning (Chierchia 1998, Dayal 2004). In corroborating this approach with evidence from Zapotecan, our results lend new support for the neo-Carlsonian theory as a characterization not of an accident of (Indo-)European heritage or history, but rather of Universal Grammar mechanisms at work in number-marking languages.

References

Baker, M. (1988). *Incorporation*. Chicago: University of Chicago Press.

Carlson, G. N. (1977). *Reference to Kinds in English*. Ph. D. thesis, UMass Amherst.

Chierchia, G. (1998). Reference to kinds across languages. *Natural Language Semantics 6*(4), 339–405.

Coon, J. (2010). VOS as predicate fronting in Chol. *Lingua 120*, 354–378.

Dayal, V. (2004). Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy 27*(4), 393–450.

Dayal, V. (2011). Hindi pseudo-incorporation. *Natural Language and Linguistic Theory 29*(1), 123–167.

Dayal, V. (2013). On the existential force of bare plurals across languages. In I. Caponigro and C. Cechetto (Eds.), *From Grammar to Meaning: The Spontaneous Logicality of Language*. Cambridge University Press.

Deal, A. R. (2010). *Topics in the Nez Perce Verb*. Ph. D. thesis, UMass Amherst.

Deal, A. R. (2017). Countability distinctions and semantic variation. *Natural Language Semantics 25*(2), 125–171.

Heim, I. (1991). Artikel und Definitheit. In A. v. Stechow and D. Wunderlich (Eds.), *Semantik: Ein internationales Handbuch*, pp. 487–535. Berlin: de Gruyter.

Krifka, M., F. J. Pelletier, G. N. Carlson, A. Ter Meulen, G. Link, and G. Chierchia (1995). Genericity: an introduction. In *The Generic Book*, Chicago, pp. 1–124.

Lawler, J. M. (1973). *Studies in English Generics*. Ph. D. thesis, University of Michigan.

Lee, F. (2006). *Remnant Raising and VSO Clausal Architecture: A Case Study of San Lucas Quiaviní Zapotec*. Springer.

Massam, D. (2001). Pseudo noun incorporation in Niuean. *Natural Language and Linguistic Theory 19*(1), 153–197.

Matthewson, L. (2004). On the methodology of semantic fieldwork. *International Journal of American Linguistics 70*(4), 369–415.

Mithun, M. (1984). The evolution of noun incorporation. *Language 60*(4), 847–894.

Ojeda, A. E. (1991). Definite descriptions and definite generics. *Linguistics and Philosophy 14*(4), 367–3998.

van Geenhoven, V. (1998). *Semantic Incorporation and Indefinite Descriptions*. CSLI.

Wilkinson, K. (1991). *Studies in the Semantics of Generic Noun Phrases*. Ph. D. thesis, UMass Amherst.