

Comparison, predication, and lexical semantics of PC nouns in Telugu *

Rahul Balusu

EFL University, Hyderabad

kodiguddu@gmail.com

ABSTRACT

This paper examines how the lexical semantics of PC nouns effects predication and gradability in Telugu. Three PC noun classes are proposed based on differences in predication. The diagnostics from comparison and gradability further strengthen this claim. The basis for all these differences, it is claimed, is rooted in the lexical semantics of the PC nouns, with one class denoting portions of substances and another class denoting relations between individuals and portions of substances, and the third class allowing a type-shift from one denotation to the other. The framework adopted for analyzing these PC nouns is the model-theoretic mereological structure of abstract mass proposed by Francez and Koontz-Garboden (2013). In spite of the differences in predication and comparison, it is shown that the encoding of all the three classes of PC terms as nouns makes mixed comparatives and equatives possible, because of the type-theoretic match which in turn results from all of the classes being based on a common semantics of substance. This further strengthens the correlation between nominal categorization and a lexical semantics of abstract mass for PC terms proposed in Jenks *et al.* (2013).

KEYWORDS: property concepts; comparison; predication; modification; gradability; mass nouns; substances; adjectives; dravidian; telugu

1 Introduction

Francez & Koontz-Garboden (2013) (FKG) show that in some languages Property Concepts (PC) (Dixon 1982) are realised as nouns and have to be composed using possessive morphosyntax to predicate. They propose that possessive PC constructions are necessary for these nominal PCs to predicate because they are substance denoting and possession is semantically required for them to achieve truth conditions. They model these PC nouns as having mass-like denotations and the context-sensitive gradable nature of these nouns as contextually restricted existential quantification.

Telugu lexically realises a lot of PCs as nouns, and it uses the possessive strategy, and displays it transparently in a variety of possessive constructions employed to express PC predication. But not all PC nouns employ the possessive strategy, some use a canonical non-possessive

*An earlier version of this paper was presented at GLOW in Asia X, National Tsing-Hua University, 24 - 26 May, 2014. I am grateful to the audience for their comments. I'm also grateful to the anonymous reviewers of *Indian Linguistics* for their comments. All remaining errors are mine.

strategy for predication. They also differ from the possessive predicating PC nouns in comparison and gradability. A third set of PC nouns in Telugu show both possessive and non-possessive predicating strategies, and in comparison and gradability show the properties appropriate for each type depending on whether the construction is possessive or non-possessive.

Through an investigation of these three classes of PC nominals in Telugu this paper seeks to establish a link between the type of denotation (substance vs. individual characterizing) of PC nouns, the kind of predication they require (possessive vs. non-possessive), and the type of comparatives they occur in (bare vs. non-bare).

It also confirms a more broad link between nominal categorization of PCs and a lexical semantics of substance, by showing that in comparatives and equatives, the three classes of PC nouns can be freely mixed with each other, which would otherwise not be possible without a type match, say if one class of PC nouns had a substance denotation and another class a degree or interval denotation.

The dative experiencer construction in Dravidian also gets an explanation here, as a necessity of substance denotation requiring possessive predication, to achieve the right truth conditions. We'll begin by looking at the predication strategies that PC nouns in Telugu employ.

2 Three PC noun classes based on predication

Based on their morphosyntactic properties, PC nouns in Telugu can be divided into three classes, given in (1).

- (1) ClassM *psych/somatic*: bhayam 'fear', aascaryam 'surprise', daaham 'thirst'
 ClassU *dimension*: ettu 'height', baruvu 'weight', veDalpu 'width'
 ClassA *color/physical*: mettana 'softness', callana 'coolness', erupu 'redness'

The first morphosyntactic property that these PC nouns differ on is predication. The restrictions on PC nouns in predicative structures are the following:

1. ClassM (Mass-like) nouns, encoding psychological and somatic properties, can't occur in nominative predicate nominals, but only in dative predicate nominals.
2. ClassA (Adjective-like) nouns, encoding physical properties like color, taste, density, texture, etc., can occur only in nominative predicate nominals, and not dative predication.
3. ClassU (Ubiquitous) nouns, encoding dimensions, can occur in both nominative and dative¹ predicate nominals.

This is shown in (2)-(3), in predicative constructions with a null-copula.

- | | |
|---|---|
| <p>(2) siita erupu/ettu/*koopam/*aakali
 Sita redness/height/anger/hunger
 'Sita is red/tall/angry/hungry.'</p> | <p>(3) siita-ki *erupu/??ettu/bhayam/aakali
 Sita-DAT redness/height/fear/hunger
 'Sita is red/tall/afraid/hungry.'</p> |
|---|---|

The dative predicative construction is possessive with the possessor marked with dative case, whereas the nominative predicative construction is non-possessive, as shown in (4)-(6), a paradigm of Dravidian (Amritavalli & Jayaseelan 2003).

- | | | |
|---|---|--|
| (4) siita Tiicaru
Sita teacher
'Sita is a teacher.' | (5) idi biyyamu
this rice
'This is rice.' | (6) siita-ki iddaru pillalu
Sita-DAT two kids
'Sita has two kids.' |
|---|---|--|

Another possessive strategy of predication seen with ClassM nouns is with the comitative postposition *-too* (this is also seen in Hausa, with a large set of “abstract nouns of sensory quality” Newman 2000). This is shown in (7).

- (7) neenu koopam/bhayam/aakali/daaham-too unnaanu
I-NOM anger/fear/hunger/thirst-with EX-1SG
'I am angry/afraid/hungry/thirsty' Lit: I am with anger/fear/hunger/thirst.

ClassA nouns are derived from roots², as shown in (8)³, by suffixing a possessive nominalizer⁴, shown in (9)⁵.

- | | |
|---|--|
| (8) eru - pu
$\sqrt{\text{red}}$ -NOML
'redness' | (9) duura- pu banDi 'distant cart'
gunDra- pu balla 'round table'
bangara- pu golusu 'golden chain' |
|---|--|

ClassM nouns are mostly derived from roots of sanskrit origin, by adding the suffix *-am*, shown in (10)⁶. The same derivation is also seen in Malayalam (Menon & Pancheva 2014). The suffix *-am* does not seem to have any semantics associated with it, and it is also seen in deriving a wide variety of non-PC nouns from Sanskrit roots.

- | | | | |
|---|---|---|---|
| (10) bhay - am
$\sqrt{\text{fear}}$ -NOML
'fear' | aascary - am
$\sqrt{\text{surprise}}$ -NOML
'surprise' | dweeS - am
$\sqrt{\text{hate}}$ -NOML
'hate' | santooS - am
$\sqrt{\text{happy}}$ -NOML
'happiness' |
|---|---|---|---|

ClassU nouns do not show any obvious root-affix pattern.

In attributive constructions, ClassA and ClassU nouns modify their hosts inside the DP without the need for any additional possessive morphology⁷, as shown in (11). ClassM nouns occur in either a relative clause structure with the equative copula⁸, or require a possessive morpheme, as shown in (12). ClassU nouns can also occur in these constructions as shown in (13).

- | | | |
|---|--|--|
| (11) eru-pu cokka
$\sqrt{\text{red}}$ -ness shirt
'red shirt' | ettu ceTTu
height tree
'tall tree' | |
| (12) andam-ain-a ammai
beauty-EQ-REL girl
'beautiful girl' | andam-gala ammai
beauty-POSS girl
'beautiful girl' | (13) baruvu-ain-a pustakam
weight-EQ-REL book
'heavy book' |

3 Proposal: PC noun classes differ in denotation

Following FKG and Jenks *et al.* (2013), we take this contrast in predication between the PC noun classes as diagnostic of a difference in the lexical semantics of the PC nouns between: (i) abstract mass or substance denotations, and (ii) denotations which characterize individuals that have the substance in question.

To give a model-theoretic account of substances, FKG model them analogous to the mereological approach to mass nouns in Link (2002), where they are predicates over a domain that is mereologically ordered, with the structure of a join semilattice. The join operation induces a ‘part of’ ordering relation, and gradability is modeled as an ordering on the portions of the substance. FKG take expressions referring to substances to denote the set of all ‘portions’ of the relevant substance. Directly predicating a substance denoting expression of an entity would yield the meaning that the entity is a portion of the substance. To predicate the substance of an individual a semantics of substance possession through possessive morphosyntax is required. We can conclude from the data in the previous section that ClassM nouns in Telugu are substance denoting and possession is semantically required for them to achieve truth conditions when predicated of an entity.

ClassM nouns are derived from roots as seen earlier, shown again in (14). They are derived without any change in denotation, as shown in (15). Boldfaced English nominalizations are used as constants over substances. The denotation of a substance referring expression is written as the function characterizing all and only the portions of this substance, as shown in (15). Here p is a variable that refers to portions.

- (14) bhay -am (15) $\llbracket bhay \rrbracket = \llbracket bhayam \rrbracket = \lambda p[\mathbf{fear}(p)]$
 \sqrt{fear} -am
‘fear’

ClassA nouns exhibit a canonical predication strategy that is non-possessive. We conclude that their denotations characterize the individuals that have a property and therefore their composition is through non-possessive morphosyntax. The derivation of ClassA nouns is shown in (16), and their denotations given in (17). ClassA nouns denote relations between individuals and portions of substance to which they stand in the possessive relation, following Jenks *et al.* (2013). The roots they are derived from denote substances, as shown in (17a). The nominalization with *-pu* establishes the possessive relation between the substance and individuals who have it, as shown in (17b). As will be seen later in the sections on comparatives and intensifiers, ClassA nouns can directly compose with degree modifiers and occur in comparatives without the need for supporting degree morphology. This means that they also pack in a degree argument, which locates the position of the portion of the substance in the preorder, represented in the formula in (17b) via the function μ . When the ClassA root, which has the same denotation as the ClassM nouns, composes with the possessive nominalizer, it results in the denotation of these ClassA nouns as given in (17c).

As substances are modeled in this analysis as sets of portions, an individual has a substance if and only if that individual possesses some portion of the substance, where the possessive relation is written as π . To capture the context-sensitivity of gradable modification –as is well attested in the literature on adjectival modification (Klein 1991, Kennedy 2007c, Kennedy 2011), where it is handled through contextually salient degrees, or supervaluations –and to saturate the degree argument, a null pos morpheme existentially binds the degree argument and provides the restriction that it comes from a degree on the scale above a certain threshold. The proposition expressed finally is that there is a portion of the substance that the individual has, and that portion is above a certain contextually-determined standard.

- (16) eru -pu (17) a. $\llbracket err \rrbracket = \lambda p[\mathbf{redness}(p)]$
 \sqrt{red} -ness b. $\llbracket -pu \rrbracket = \lambda P \lambda x \lambda z \lambda d [P(z) \wedge \pi(x, z) \wedge \mu(z) \geq d]$
‘redness’ c. $\llbracket erupu \rrbracket = \lambda x \lambda z \lambda d [\mathbf{redness}(z) \wedge \pi(x, z) \wedge \mu(z) \geq d]$

The so-called comparative markers *ekkuva* ‘more’ and *takkuva* ‘less’ are nominalizations of the verbs *ekku* ‘climb/increase’ and *taggu* ‘decrease’, as shown in (24) - (25).

- | | | |
|------|--------------------------|-----------------------|
| (24) | siita ceTTu ekk-indi | varSam tagg-indi |
| | Sita tree climb-PST.3FS | rain decrease-PST.3FS |
| | ‘Sita climbed the tree.’ | ‘The rain decreased.’ |

- | | | | |
|------|-------------|--------------|---------------|
| (25) | ekku-wa | takku-wa | melaku-wa |
| | ascend-NOML | descend-NOML | wake-NOML |
| | ‘increase’ | ‘decrease’ | ‘wakefulness’ |

ClassU nouns cannot occur in bare comparatives with dative possessors, but can occur in bare comparatives as nominative non-possessive predication, as shown in (26)-(27).

- (26) naa-ku nii-kanTe *(ekkuva) **ettu** undi
 I-DAT you-than *(more) height is
 ‘I am taller than you.’

- (27) neenu nii-kanTe *(ekkuva) **ettu**
 I-NOM you-than (*more) height
 ‘I am taller than you.’

That ClassM PC nouns pattern with mass & count nouns in comparatives gets a ready explanation from the analysis that they have a structured substance denotation just like mass nouns, which have a structured mass denotation. As the ClassM PC nouns denote portions of substance, they do not have the right denotation to compose in the comparative which is looking for a degree argument. The purpose of *ekkuva/takkuva* is to provide this missing piece to the construction. The denotation that is assumed for *ekkuva* is shown in (28), a quantity or measure term with no comparative semantics in it.

- (28) $\llbracket ekkuva \rrbracket = \lambda P \lambda x \lambda d [P(x) \wedge \mu(x) = d]$

The denotation of ClassA nouns as relations between individuals and sets of portions of substance with a degree argument explains why ClassA PC nouns pattern differently from mass & count nouns and like adjectives in languages like Hindi and Hebrew, since like adjectives they have a degree argument which can directly participate in the comparison without the need for additional degree morphology.

But where exactly is the comparative semantics present in these comparative constructions, if it is not in the markers *ekkuva / takkuva*? Following Alrenga *et al.* (2013), Kennedy (2007b) & Schwarzschild (2010), I assume that like languages in which the standard phrase itself has a semantics of comparison, in Telugu also the standard phrase is a degree quantifier that binds the degree argument of the gradable predicate. The precise compositional semantics of the comparative constructions in Telugu needs to be made explicit, but we leave that for future work.

Telugu has another comparative construction, without the standard marker *kanna* (or its variant *kanTe*), as shown in (29). This is not implicit comparison, and passes all the tests for explicit comparison (Kennedy 2007a) like crisp judgements and minimum standards. The actual implicit comparison construction in Telugu, which fails the crisp judgement test is shown in (30).

(29) mana iddari-loo neenu ettu
 our two-in/among I height
 ‘Between the two of us, I am taller.’

(30) nii pakkana, neenu ettu
 your side, I height
 ‘Next to you, I am tall.’

The construction in (29) is productively used to express the superlative in Telugu, and parallels the English superlative in terms of the comparison class being marked by the adposition *-loo* ‘among/in’, although Telugu does not have a superlative morpheme. The superlative in Telugu can be expressed in two ways, as shown in (31) - (32), with *kanna* or with *-loo*

(31) mii andari-loo siita ettu
 your all-among Sita height
 ‘Among all of you, Sita is the tallest.’

(32) mii andari-kanna siita ettu
 your all-than Sita height
 ‘Sita is taller than all of you.’

So (29) is actually the superlative construction, with only one other individual in the comparison class. Here the silent comparative head must be licensed by the *-loo* phrase. This construction must also have the semantics of ‘than everything else’ for the superlative meaning to arise.

Here again, ClassM nouns require the possessive dative structure and the comparative marker to license them in this construction, whereas Class A do not, as shown in (33) - (34). ClassU nouns in the possessive dative structure obligatorily require the comparative marker, as shown in (35).

(33) mana iddari-loo naaku *(ekkuva) **koopam**
 our two-in/among I-DAT more anger
 ‘Between the two of us, I have more anger.’

(34) mana iddari-loo neenu **telupu**
 our two-in/among I whiteness
 ‘Between the two of us, I am fairer.’

(35) mana iddari-loo naaku *(ekkuva) **ettu**
 our two-in/among I-DAT more height
 ‘Between the two of us, I am taller.’

In the next section we’ll find more support for the denotations of ClassM nouns as being lexicalized without a degree argument, and ClassA noun denotations containing a degree argument, and ClassU noun denotations as being able to type-shift from a ClassM denotation to a ClassA denotation.

5 More evidence: Differences with intensifiers

As ClassA noun denotations have a portion argument which is related to an individual via a degree argument, it can be saturated by a measure phrase, which composes with this degree

argument. This is seen most clearly with ClassU nouns, which type-shift between the two denotations, and which as relations allow measure phrases, but as substances do not allow measure phrases, as shown in (36)-(37).

- (36) *naa-ku aaru aDugulu **ettu** undi (37) neenu aaru aDugulu **ettu**
 I-DAT six feet height is I-NOM six feet height
 ‘I have 6ft in height.’ ‘I am 6ft tall.’

It also explains why with degree intensifiers without quantity denotation, ClassM and mass terms require the support of *ekkuva* ‘much’ (just like in comparatives), whereas ClassA terms do not, as shown in (38)-(39). As ClassM PC nouns and mass terms denote structured sets of substance and mass respectively, they cannot compose with these degree intensifiers directly, but need the mediation of a morpheme that has a degree variable.

- (38) a. siita-ki marii *(ekkuva) **biyyam/koopam** undi
 Sita-DAT too much rice/anger is
 ‘Sita has too much rice/anger.’
 b. siita marii *(ekkuva) **erupu**
 Sita too much redness
 ‘Sita is too red.’
- (39) a. siita-ki baagaa *(ekkuva) **biyyam/koopam** undi
 Sita-DAT very much rice/anger is
 ‘Sita has so much rice/anger.’
 b. siita baagaa *(ekkuva) **erupu**
 Sita very much redness
 ‘Sita is very red.’

In English too, adjectives compose directly with degree intensifiers, whereas PC nominals require the modifier *much*, which can never occur with adjectives, as shown in (40).

- (40) a. Sita is too/very/so (*much) tall.
 b. Sita has too/so *(much) height.

However, we’ll see in the next section that all the PC noun classes in Telugu are built on a semantics of substance possession, whether directly as substances –ClassM, or indirectly as relations between individuals and substances –ClassA.

6 All PC nouns are substance based

The evidence that in spite of the differences in comparatives and with intensifiers, all the PC noun classes in Telugu are based on a lexical semantics of substance comes from a diagnostic in Jenks *et al.* (2013), comparative subdeletion –of the form ‘*x* is more p_1 than p_2 ’, where p_1 and p_2 are different predicates (Kennedy 1999). The sentence in (41a) illustrates the construction in English, with the interpretation in (41b), based on Heim (1985); von Stechow (1984) –the degree to which an entity has property p_1 is compared to the degree that it has a different property p_2 .

- (41) a. The lamp is hotter than it is bright.
 b. $\exists y[y > \iota x$ [the lamp is x -bright] & [the lamp is y -hot]]

Jenks *et al.* (2013) note that a comparative subdeletion construction with one comparative argument a copular predicating PC word and the other a possessive predicating PC word is ill-formed, whereas two of the same kind are well-formed, as shown by the English data in (42). This is due to a type-theoretic mismatch in interpretation, when one of the arguments makes reference to portions of substance and the other to degrees, directed scale segments (Schwarzchild 2013), or intervals (Schwarzchild & Wilkinson 2002), depending upon the theory of adjectives. Only when the two arguments refer to the same semantic type is the sentence well-formed. Two PC nominals which are built on the semantics of substance can be compared; or two adjectives, since they are of the same type, can be compared.

- (42) a. #The lamp is hotter than it has brightness.
 b. #The lamp has more heat than it is bright.
 c. The lamp is hotter than it is bright.
 d. The lamp has more heat than it has brightness.

It comes as no surprise that in Telugu, a comparative subdeletion construction with two PC nouns of the same class, whether copular predicating or possessive predicating, are well-formed, as shown in (43).

- (43) a. siita-ki enta koopam und-oo aame-ki anta-kanT-ee ekkuva balam undi
 Sita-DAT how-much anger is-DISJ she-DAT that-than-EMPH more strength is
 ‘Sita has more strength than she has anger.’
 b. kuura enta erupu-oo adi anta-kanT-ee pulupu
 curry how-much redness-DISJ it that-than-EMPH sourness
 ‘The curry is more sour than it is red.’

But unlike in English, copular-predicating and possessive predicating PC words –ClassA and ClassM nouns, can be mixed in comparative subdeletion constructions in Telugu, as shown in (44).

- (44) a. siita-ki enta koopam und-oo aame daani-kanT-ee erupu undi
 Sita-DAT how-much anger is-DISJ she that-than-EMPH redness is
 ‘Sita is more red than she is angry.’
 b. siita enta erupu und-oo aame-ki daani-kanT-ee ekkuva koopam undi
 Sita how-much anger is-DISJ she-DAT that-than-EMPH redness is
 ‘Sita is more angry than she is red.’

The same pattern holds true in mixed equatives. In English, just like in comparative subdeletion, equative constructions do not allow a mismatch in semantic types, as shown in (45)

- (45) a. #The lamp is as hot as it has brightness.
 b. #The lamp has as much heat as it is bright.
 c. The lamp is as hot as it is bright.
 d. The lamp has as much heat as it has brightness.

In Telugu, just like mixed comparative subdeletion, mixed equatives with one argument copular predicating (ClassA) and one possessive predicating (Class M) are well-formed, as shown in (46).

- (46) a. siita-ki enta **koopam** und-oo aame ant(a)-ee **erupu** kuuDaa
Sita how-much redness is-DISJ she-DAT as-much-EMPH anger also
'Sita is as red as she is angry.'
- b. siita enta **erup(u)**-oo aame-ki ant(a)-ee **koopam** kuuDaa undi
Sita how-much redness-DISJ she-DAT as-much-EMPH anger also is
'Sita is as angry as she is red.'

The explanation for why copular predicating ClassA nouns and possessive predicating ClassM nouns can be mixed as properties in comparatives and equatives is because there is no type-theoretic mismatch involved. This can only come about if ClassA PC nouns denote relations between individuals and portions of substances, given that ClassM PC nouns denote portions of substances. Therefore an equative or comparative with ClassA and ClassM PC nouns is licit in Telugu, as the denotations of both are based on the same underlying semantics of substances, and portions in the denotation of each property can be compared or equated to one another, as show in (47).

- (47) a. $\llbracket \text{sri erupu} \rrbracket = \lambda d \lambda z [\text{redness}(z) \wedge \pi(\text{Sri}, z) \wedge \mu(z) \geq d]$ 'Sri (is_{eq}) redness.'
- b. $\llbracket \text{sri-ki ekkuva bhayam} \rrbracket = \lambda d \lambda z [\text{fear}(z) \wedge \pi(\text{Sri}, z) \wedge \mu(z) = d]$ 'Sri has much fear.'

Because of the type-theoretic match, as substances have the semantics of abstract mass terms, all classes of PC nouns in Telugu also allow mixed comparative subdeletion and mixed equatives with mass nouns, as shown in (48), with ClassA and Class M PC nouns as one property and a mass noun as another property.

- (48) a. diini-ki enta **venDi** und-oo idi ant(a)-ee **telupu** kuuDaa undi
This-DAT how-much silver is-DISJ this as-much-EMPH whiteness also is
'This has as much whiteness as it has silver.'
- b. diini-ki enta **venDi** und-oo idi anta-kanT-ee **telupu** undi
This-DAT how-much silver is-DISJ this that-than-EMPH whiteness is
'This has more whiteness than it has silver.'
- c. diini-ki enta **venDi** und-oo ant(a)-ee **andam** kuuDaa undi
This-DAT how-much silver is-DISJ as-much-EMPH whiteness also is
'This has as much beauty as it has silver.'
- d. diini-ki enta **venDi** und-oo anta-kanT-ee ekkuva **andam** undi
This-DAT how-much silver is-DISJ that-than-EMPH beauty is
'This has more beauty than it has silver.'

The data from mixed comparatives and equatives in Telugu strengthens the hypothesis in Jenks *et al.* (2013) that nominal encoding of PC terms always involves a semantics in the domain of substances. ClassM PC nouns directly denote portions of substances, and ClassA PC nouns denote a possessive relation between an entity and portions of a substance.

This link between the nominal lexical category of a PC and a lexical semantics of substance is also confirmed by all the substance referring terms, from mass nouns to ClassA PC nouns, taking the same quantity term *enta* 'how much', as shown in (49), and *caalaa* 'a lot', as shown in (50).

- (49) a. vaaDi-ki en-ta **koopam/biyyam/ettu** undi?
him-DAT how-much anger/rice/height is
'How much anger/rice/height does he have?'

- b. idi en-ta erupu/ettu?
this how-much redness/height
'How red/tall is this?'
- (50) a. vaaDi-ki caalaa koopam/biyyam/ettu undi
him-DAT lot anger/rice/height is
'He has a lot of anger/rice/height.'
- b. idi caalaa erupu/ettu
this lot redness/height
'This is very red/tall.'

7 Conclusion

All PC roots in Telugu are substance denoting, but PC nouns differ from one another in their denotation. One class of PC nouns (ClassM) do not change denotation on being derived from roots and remain substance denoting. But another class of PC nouns (ClassA) change denotation from substance denoting roots to denoting the set of individuals that have portions of the substance, when the root gets suffixed with the nominalizer. The nominalizer for this Class (ClassA) has a possessive semantics and also packs in a degree argument, allowing the noun to directly compose with degree modifiers and occur in comparatives without degree morphology. The third class of PC nouns (ClassU) which occurs ubiquitously in both types of constructions has a denotation that type-shifts from one denotation to the other.

A typology of PC nouns and adjectives cross-linguistically, along with the predicative strategies they employ, and whether they need degree morphology in comparatives and with intensifiers is given in the table in (51).

Language	Category	Type of Predication	Comparative
English PC noun	Noun	Possessive	+much
English Adj	Adjective	non-Possessive	-much
Basaa PN	Noun	Possessive	-much
Basaa AN	Noun	non-Possessive	-much
(51) Malayalam Class 1	Verb	non-Possessive	-much
Malayalam Class 2	Noun	Possessive	-much
Telugu ClassM	Noun	Possessive	+much
Telugu ClassA	Noun	non-Possessive	-much
Telugu ClassU	Noun	(non)-Possessive	+/-much

In English, PC nouns like *softness*, *beauty*, and *height*, occur in possessive predicative structures, and need the support of the quantity term *much* (which introduces a measure function and returns a degree) in comparatives and with intensifiers, as shown in (52). So we can conclude that PC nouns in English are substance denoting.

- (52) a. Oscar has/*is beauty/height.
b. Oscar has too/so *(much) beauty/height.
c. Oscar has *(more) beauty/height than Goldie.

Adjectives in English on the other hand, occur in non-possessive predicative structures, and do not need the support of the quantity term *much* with intensifier and in comparatives, as shown

in (53). So we can conclude that adjectives in English are not substance denoting and include a degree argument in their lexical semantics.

- (53) a. Oscar is/*has beautiful/tall.
 b. Oscar is too/so (*much) beautiful/tall.
 c. Oscar is taller than Goldie.

Adjectives and PC nouns cannot occur together in mixed comparatives and equatives in English as we saw earlier in (42) & (45). This is a result of the type-theoretic clash that occurs when comparing substance denotation with adjective denotation, as shown in (54).

- (54) a. $\llbracket beautiful \rrbracket = \lambda x \lambda d [\text{BEAUTIFUL}(x, d)]$
 b. $\llbracket have\ beauty \rrbracket = \lambda x \lambda z [\text{beauty}(z) \wedge \pi(x, z)]$

Jenks *et al.* (2013) examine PC nouns in Basaa (Bantu; Cameroon), and differentiate between adjectival nouns (AN) and property nouns (PN) in Basaa based on the type of predication. PNs occur in possessive predicative constructions, and don't require the support of degree morphology in comparatives and with intensifiers, as shown in (55)

- (55) a. a gwee ma-soda
 1.AGR have 6-luck
 '(S)he is lucky.' Lit: (S)he has luck.
 b. Kim a gwee masada loo kii a gwee nguy
 Kim AGR has luck pass as he has strength
 'Kim has more luck than he has strength.'
 c. Kim a gwee nguy ngandak
 Kim AGR has strength very
 'Kim is very strong.' Lit. Kim has very strength.

ANs occur in non-possessive predicative constructions, and they too don't require the support of degree morphology in comparatives and with intensifiers, as shown in (56). Because they can be directly predicated of an entity through a copula, they must be individual-characterizing.

- (56) a. hi-nuni hii hi ye li-muge
 19-bird 19.that 19.SUB be 5-quiet
 'That bird is quiet.'
 b. hi-ni hi-nuni hi ye hi-laam lel hi-i
 19-this 19-bird 19.AGR is 19-nice surpass 19-that.one
 'This bird is nicer than that one.'
 c. Kim a ye nlaam ngandak
 Kim AGR COP beautiful very
 'Kim is very beautiful.'

Though ANs are individual-characterizing like adjectives in English, unlike English adjectives which cannot mix with PC nouns, they can occur in mixed comparatives and equatives with PNs, and also pattern with PNs in degree modifier constructions. Jenks *et al.* (2013) take this as evidence that in Basaa both ANs and PNs are built on a lexical semantics of substance (otherwise there should be a type mismatch), as shown in (57).

- (57) a. $\llbracket Kim\ a\ ye\ nlaam \rrbracket = \lambda z[\mathbf{beauty}(z) \wedge \pi(Kim, z)]$ ‘Kim is beautiful.’
 b. $\llbracket Kim\ a\ gwee\ nguy \rrbracket = \lambda z[\mathbf{strength}(z) \wedge \pi(Kim, z)]$ ‘Kim has strength.’

In Malayalam, Menon & Pancheva (2014) building on Menon (2014), classify PC roots into two classes. They show that Class 1 PC roots participate in canonical predication using the equative copula (but they assume a covert possessive strategy brought in by a null verbal affix), can directly compose with degree intensifiers and measure phrases, and occur in comparatives without additional degree morphology (in fact, prohibit it), in the bare comparative construction, as shown in (58)

- (58) a. *avan nalla-van aane*
 he having-goodness-M.SG EQ-COP
 ‘He is good.’
 b. *aane mupattu kilo valiy-a-te aane*
 elephant thirty kilo big-REL-NEUT EQ-COP
 ‘The elephant weighs 30 kilos.’
 c. *anil komalan-e kaaL-um (*kuuTuttal) nalla-van aane*
 Anil Komalan-ACC than-UM more good-M.SG EQ-COP
 ‘Anil is better than Komalan.’

On the other hand, Class 2 roots form nouns via the suffix *-am*, occur in possessive predicative structures, can compose directly with measure phrases, and can occur in comparatives without additional degree morphology, i.e. bare comparatives (though they don’t prohibit the comparative marker), as shown in (59). By having a degree argument these PC nouns are also different from normal mass nouns. Normal mass nouns in Malayalam do not have a degree argument, and need a degree introducing morpheme to occur in comparatives and with intensifiers.

- (59) a. *avaLkke pokkam uNTe*
 she.DAT tallness EX-COP
 ‘She is tall.’
 b. *Anil-ine muune ati pokkam uNTe*
 Anil-DAT three feet tallness EX-COP
 ‘Anil is 3 feet tall.’
 c. *anil-ine komalan-e kaaL-um (kuuTuttal) pokkam uNTe*
 Anil-DAT Komalan-ACC than-UM more tallness EX-COP
 ‘Anil is taller than Komalan.’

The lexical semantics that Menon & Pancheva (2014) propose for the two classes of Malayalam PC forms is shown in (60). The two denotations only differ in the Class 1 verbal form establishing a possessive relation with an individual whereas the Class 2 noun form does not. So the Class 2 noun requires a possessive predicative strategy, and the Class 1 verbal form does not. But both denotations have a degree argument in them, and therefore compose directly with degree intensifiers and in comparatives.

- (60) a. $\llbracket \sqrt{nall} + \phi_{v_poss} \rrbracket = \lambda d \lambda z \lambda x[\mathbf{goodness}(z) \wedge \pi(x, z) \wedge \mu(z) \geq d]$
 b. $\llbracket \sqrt{pokk-am_n} \rrbracket = \lambda d \lambda z[\mathbf{tallness}(z) \wedge \mu(z) \geq d]$

Finally, in Telugu, to recapitulate, the denotations of ClassM and Class A PC nouns are shown in (61).

- (61) a. $\llbracket erupu \rrbracket = \lambda x \lambda d \lambda z [\mathbf{redness}(z) \wedge \pi(x, z) \wedge \mu(z) \geq d]$
 b. $\llbracket bhayam \rrbracket = \lambda z [\mathbf{fear}(z)]$

The predicative structures that ClassA and ClassM nouns form after composing with the entity they are predicated of, non-possessively in the case of ClassA and possessively in the case of ClassM, have the interpretations given in (62).

- (62) a. $\llbracket siita erupu \rrbracket = \exists d \exists z [\mathbf{redness}(z) \wedge \pi(Sita, z) \wedge \mu(z) \geq d \wedge d > d_s]^{10}$
 ‘Sita (is_{eq}) redness.’
 b. $\llbracket siita-ki bhayam \rrbracket = \exists z [\mathbf{fear}(z) \wedge \pi(Sita, z)]$
 ‘Sita has fear.’

After composing with degree intensifiers, ClassA and ClassM constructions have the interpretations, somewhat simplified, given in (63).

- (63) a. $\llbracket siita marii erupu \rrbracket$
 $= \exists d \exists z [\mathbf{redness}(z) \wedge \pi(Sita, z) \wedge \mu(z) \geq d \wedge d > standard_{too}]$
 ‘Sita is too red.’
 b. $\llbracket siita-ki marii ekkuva bhayam \rrbracket$
 $= \exists d \exists z [\mathbf{fear}(z) \wedge \pi(Sita, z) \wedge \mu(z) \geq d \wedge d > standard_{too}]$
 ‘Sita has too much fear.’

Notes

¹In the dative construction, ClassU nouns are better with the copula, and even better in a construction parallel to the ‘genitive with obligatory third term’ in Russian (Borschev & Knorina 1990), as shown in (64).

- (64) siita-ki saripaDaa ettu undi
Sita-DAT enough height is
‘Sita has sufficient height’

In Russian the obligatory third term with a function or attribute constrains or specifies a value of that function as shown in (65).

- (65) celovek srednego rosta
person medium-GEN height-GEN
‘person of medium height’

Without the third term the construction is ungrammatical. The anomaly arises because of extreme redundancy, perhaps pragmatic, since every person has some height (Partee & Borschev 2012).

²The root can take other possessive suffixes like *-Ti/-ni* in adnominal PC constructions, as shown in (66). The possessive nature of the *-Ti/-ni* suffixes is demonstrated in (67).

- | | | | | | | | |
|----------------------------|-------|----------------------------|-------|---------------------|-------|-------------------|-------|
| (66) tiyya-Ti/ni | kuura | tella-Ti/ni | cokka | (67) ninna-Ti | kuura | sneehitu-ni | cokka |
| $\sqrt{\text{sweet}}$ -GEN | curry | $\sqrt{\text{white}}$ -GEN | shirt | yesterday-GEN | curry | friend-GEN | shirt |
| ‘sweet curry’ | | ‘white shirt’ | | ‘yesterday’s curry’ | | ‘friends’s shirt’ | |

³The root here is actually *err*, and gets pronounced as *eru*, a morphophonemic variant, that is selected for by this affix.

⁴There is another nominalizer *-na* which is seen with some of the ClassA nouns:

- | | | |
|----------------------------|----------------------------|-------------------------------|
| (68) metta-na | calla-na | cikka-na |
| $\sqrt{\text{soft}}$ -NOML | $\sqrt{\text{cool}}$ -NOML | $\sqrt{\text{viscous}}$ -NOML |
| ‘softness’ | ‘coolness’ | ‘viscousness’ |

This nominalizer imparts a generic quality to the meaning. This is especially clear with ClassA roots that can take both nominalizers, as shown below, with the *-pu* suffixed root in (69) getting a non-generic reading, and the *-na* suffixed root in (70) getting a generic interpretation.

- | | |
|------------------|---------------------|
| (69) idi telu-pu | (70) duudi tella-na |
| this whiteness | cotton whiteness |
| ‘This is white.’ | ‘cotton is white.’ |

⁵A reviewer objects that the examples in (9) cannot be said to have been derived by suffixing a possessive nominalizer, the *-pu* in these examples is an oblique stem formative on *-am* ending nouns, and that the *-pu* occurring in (8) is a different nominalizing *-pu*, occurring with color and descriptive adjectives.

We contend that the *-pu* in (9) is also possessive, with the suffix on the possessee, and establishing a possessive relation with the head noun, the possessor.

⁶A reviewer observes that on consideration of examples like *bhaya peTTu* ‘to scare’, *santooSa peTTu* ‘to please’, etc., it may be said that the nominalizing suffix is *-m* not *-am* and the roots end in *-a*.

In Balusu (to appear), we note that the *-a* in these complex predicate constructions is also a suffix, a PATH element meaning ‘into’, as shown in (71)-(72). The evidence for this decomposition comes from the directional and main verb frames for these predicates, as shown in (73)-(74). We refer the reader to that paper for further details.

- | | | | |
|--|-----------|------------------------------------|-----------|
| (71) siita nannu bay-a | peTTi-ndi | (72) uma nannu santooS-a | peTTi-ndi |
| Sita I-acc $\sqrt{\text{fright}}$ -a | put-3FSG | Uma I-acc $\sqrt{\text{happy}}$ -a | put-3FSG |
| ‘Sita frightened me.’ | | ‘Uma pleased me.’ | |
| (73) siita baiT/enak-a | paDi-ndi | (74) siita burada/aaloocana-loo | paDi-ndi |
| Sita $\sqrt{\text{out}}$ / $\sqrt{\text{back}}$ -a | fell-3FSG | Sita mud/thought-into | fell-3FSG |
| ‘Sita fell outside/behind.’ | | ‘Sita fell into mud/thought.’ | |

⁷A reviewer points out that for PC nouns nominalized by *-na*, their oblique stem formative is used attributively, as shown in (75).

- (75) *erra-ni/*na* *cokka* *metta-ni/*na* *dinDu*
 $\sqrt{\text{red}}$ -na.OBLQ/na shirt $\sqrt{\text{soft}}$ -na.OBLQ/na pillow
‘red shirt’ ‘soft pillow’

However, the derivation for these structure just could be through the possessive *-ni* suffix that was discussed earlier, in (66).

⁸A reviewer states that *-aina* here is not analyzable as *-ain-a*, since it does not have process meaning in these examples, and that it should be treated just as an adjectival marker on nouns converting them to adjectives. The reviewer points to the distinction between (76)-(77), with a process meaning, and (78), without a process meaning.

- (76) *paaD-ain-a* *biyyam* (77) *kalekTar-ain-a* *abbaayi* (78) *andam-aina* *pilla*
bad-became-REL rice collector-became-REL boy beauty-aina girl
‘rice that got spoiled’ ‘the boy who became a collector’ ‘beautiful girl’

However, the distinction here is between the process verb *avvu* ‘become/happen’ and the equative copula *avu* ‘to be’. Both these verbs have the past participle form *ai*, and in a relative clause, occur as *ai-n-a* along with an epenthetic consonant *-n-* and the relative marker *-a*, leading to the confound. The process verb has another past participle variant *ayyi*, which can be substituted in the examples in (76)-(77), but not in (78), thus making this difference clear.

The reviewer also notes that there are some ClassA nouns that can take *-aina*, and points to the distinction between (79) and (80).

- (79) *mettani/mettan-aina* *dinDu* *cakkani/cakkan-aina* *bomma* (80) *erupu/?erup-aina* *cokka*
soft-ni/soft-ni-aina pillow nice-ni/nice-ni-aina toy redness/redness-aina shirt
‘soft pillow’ ‘nice toy’ ‘red shirt.’

Why the *-na* nominalizer allows *-aina* modification more readily than the *-pu* nominalizer is not clear. But for our analysis it is sufficient that ClassA nouns can occur adnominally without any supporting structure, whereas ClassM nouns require additional morphology. That some ClassA nouns can also occur in relative clause constructions attributively does not have a direct bearing on the argument being advanced here.

⁹A reviewer objects to this decomposition, but we find support for this derivation from the conditional and concessive morphemes, from historical and comparative grammars like Krishnamurti (2003) p.242 that notes “The comparative postposition is *-kaNTe* (said to be dative *ku* + *aNTee* ‘to’ + ‘if one says’) both in Old and in Modern Telugu.”

¹⁰The degree argument here is bound by *pos*, the null *positive* morpheme that is assumed in the gradability literature to occur in positive sentences with a gradable entity.

References

- Alrenga, Peter, Christopher Kennedy, & Jason Merchant. 2012. A new standard of comparison. In *Proceedings of WCCFL*, ed. N. Arnett & R. Bennett, volume 30, 32–42.
- Amritavalli, Raghavachari, & Karattuparambil Achuthan Jayaseelan. 2003. The genesis of syntactic categories and parametric variation. In *Proceedings of the 4th GLOW in Asia 2003: Generative grammar in a broader perspective*, ed. Hang-Jin Yoon, volume 4, 19–41. The Korean Generative Grammar Circle.
- Balusu, Rahul. to appear. Property concepts in complex predicates in Telugu. In *Proceedings of NELS 45*. GLSA, U.Mass, Amherst.
- Bhatia, Sakshi, Jyoti Iyer, & Gurmeet Kaur. 2013. Comparatives in Hindi-Urdu: Puzzling over *zyaadaa*. *LISSIM Working Papers* 1:15–28.
- Bhatt, Rajesh. 2012. Many or more: the Hindi-Urdu degree word *zyaadaa* and the analysis of bare comparatives. Manuscript, UMass, Amherst.
- Bhatt, Rajesh, & Shoichi Takahashi. 2011. Reduced and unreduced phrasal comparatives. *Natural Language and Linguistic Theory* 29:581–620.

- Borschev, Vladimir, & Barbara H. Partee. 2004. The semantics of Russian genitive of negation: The nature and role of perspectival structure. In *Proceedings of SALT XIV*, ed. Robert B. Young, 212–234. Cornell University, Ithaca, NY: CLC Publications.
- Borschev, Vladimir B, & Lidia V Knorina. 1990. Tipy realij i ix jazykovoe vosprijatie [types of entities and their perception in language]. *Language of Logic and Logic of Language* 106–134.
- Dixon, Robert M.W. 1982. *Where have all the adjectives gone?: and other essays in semantics and syntax*, volume 107. Walter de Gruyter.
- Francez, Itamar, & Andrew Koontz-Garboden. 2013. Semantic variation and the grammar of property concepts. Manuscript, University of Chicago and University of Manchester.
- Heim, Irene. 1985. Notes on comparatives and related matters. Manuscript, University of Texas, Austin.
- Jenks, Peter, Andrew Koontz-Garboden, & Emmanuel-Moselly Makasso. 2013. Basaá and the lexical semantics of property concept nouns. Manuscript, University of California Berkeley, University of Manchester, and ZAS, Berlin.
- Kennedy, Christopher. 1999. *Projecting the adjective: The syntax and semantics of gradability and comparison*. New York: Garland Press.
- Kennedy, Christopher. 2007a. Modes of comparison. In *Papers from the 43rd Annual Meeting of the Chicago Linguistic Society, Volume 1: The Main Session*, ed. Osamu Sawada Eleni Staraki Malcolm Elliott, James Kirby & Suwon Yoon, volume 43, 139–63. Chicago: Chicago Linguistic Society.
- Kennedy, Christopher. 2007b. Standards of comparison. Handout for Colloque de Syntaxe et Semantique de Paris, 6 October 2007.
- Kennedy, Christopher. 2007c. Vagueness and grammar: The semantics of relative and absolute gradable adjectives. *Linguistics and philosophy* 30:1–45.
- Kennedy, Christopher. 2011. Vagueness and comparison. In *Vagueness and language use*, ed. Paul Egge & Nathan Klinedinst, Palgrave Studies in Pragmatics, Language and Cognition, 1–24. Palgrave Macmillan.
- Klein, Ewan. 1991. Comparatives. *Semantik: Ein internationales handbuch der zeitgenössischen forschung* 673–691.
- Krishnamurti, Bhadriraju. 2003. *The Dravidian languages*. Cambridge University Press.
- Link, Godehard. 1983. The logical analysis of plurals and mass terms: A lattice-theoretical approach. In *Meaning, use and interpretation of language*, ed. R. Baeuerle, C. Schwarze, & Arnim von Stechow. DeGruyter.
- Menon, Mythili. 2014. Property concepts and the apparent lack of adjectives in Dravidian. In *The lexicon syntax interface: Perspectives from south asian languages*, ed. Pritha Chandra & Richa Srishti, volume 209, 25–52. Amsterdam: John Benjamins Publishing Company.

- Menon, Mythili, & Roumyana Pancheva. 2014. The grammatical life of property concept roots in Malayalam. In *Proceedings of Sinn und Bedeutung 2013*, ed. A. Irurtzun B. Leferman U. Etxeberria, A. FălăuĒ, 289–302.
- Newman, Paul. 2000. *The Hausa language: An encyclopedic reference grammar*. Yale University Press.
- Partee, Barbara H, & Vladimir Borschev. 2012. Sortal, relational, and functional interpretations of nouns and Russian container constructions. *Journal of Semantics* 29:445–86.
- Schwarzschild, Roger, & Karina Wilkinson. 2002. Quantifiers in comparatives: A semantics of degree based on intervals. *Natural language semantics* 10:1–41.
- Schwarzschild, Roger. 2010. Comparative markers and standard markers. In *Proceedings of the MIT Workshop on Comparatives*, ed. Michael Y. Erlewine & Yasutada Sudo.
- Schwarzschild, Roger. 2012. Directed scale segments. In *Semantics and Linguistic Theory*, 65–82.
- von Stechow, Arnim. 1984. Comparing semantic theories of comparison. *Journal of Semantics* 3:1–77.