Vague predicates, crisp judgments[1]

Amy Rose DEAL — *University of California, Berkeley*
Vera HOHAUS — *University of Manchester*

Abstract. Nez Perce is a language with a dedicated comparative morpheme and crisp judgments in its comparatives, but with no means to express differential measurement in its comparative. These data can be captured by two different types of analyses: either Nez Perce has a negative setting of the Degree Semantics Parameter ([±DSP]) (Beck et al., 2009), along with a comparative operator that allows manipulation of context (Klein, 1980), or it has a positive setting of said parameter, but the comparative operator does not provide a slot for a differential degree argument. We show that the "degreeless" analysis of gradable adjectives in Nez Perce provides a unified and simple explanation for a cluster of additional properties of the language. At the same time, our findings draw attention to hitherto unattested variation within degreeless languages: other [-DSP] languages like Motu (Beck et al., 2009), Washo (Bochnak, 2015) and Warlpiri (Bowler, 2016) lack the Klein-style comparative operator present in Nez Perce.

Keywords: degree, vagueness, comparison, delineation semantics, semantic variation, semantic fieldwork, Degree Semantics Parameter, Nez Perce.

1. Introduction: "degreeless languages" and vague predicates

Recent work on semantic variation in comparison constructions has uncovered significant cross-linguistic differences not just in how languages convey comparison, but in what types of comparisons languages make it straightforward – or even possible – for their speakers to talk about. Most notably, in the course of his thorough study of gradable predicates and comparison in Washo, Bochnak (2015) demonstrates that Washo not only lacks any dedicated linguistic means of expressing comparatives, superlatives, measure phrases, and degree adverbs, but it also makes it difficult to express comparisons between individuals that are very close to one another in terms of the dimension or quantity being measured. In order to compare individuals in Washo, given the absence of any comparative morphology, speakers must use a juxtaposed opposition, what Stassen (1985) dubbed a "conjoined comparative":

(1)   *wíːdiʔ ʔitmáŋa de-l-káykay-iʔ*   *k'-éʔ-i*   *wíːdiʔ*
      this   ladder   NMLZ-ATTR-tall-ATTR 3-COP-IPFV this
      de-l-káykay-iʔ-éːs   *k'-áʔ-a-š*
      NMLZ-ATTR-tall-ATTR-NEG 3-COP-AOR-SR
      lit. 'This ladder is tall, that one is not tall.'   (Bochnak, 2015: p. 12)

Sentence (1), Bochnak reports, is inappropriate in cases where the two items to be compared are very close in height; speakers must use a hedge (e.g. "almost big"). Furthermore, it is entirely impossible in Washo to explicitly express the extent of difference between two individuals, along the lines of the English differential comparative in (2):

(2)   *Vera is exactly 7 centimeters taller than AR.*

Bochnak argues that these difficulties in the expression of crisp judgments (i.e. comparison between two dimensionally similar entities) and differential comparatives trace back to a core linguistic difference between Washo and English in terms of the semantics of gradable predicates. In particular, Washo gradable predicates and their English translations differ in their argument structure, where the English versions but not their Washo counterparts involve degree arguments. This type of cross-linguistic variation was initially posited by Beck et al. (2009) as the *Degree Semantics Parameter* (DSP).

(3) $[\![tall_{\text{Washo}}]\!]^c = \lambda x.x$ counts as tall with respect to context c

(4) $[\![tall_{\text{English}}]\!]^c = \lambda d.\lambda x.x$ is d-tall

(5)   DEGREE SEMANTICS PARAMETER [$\pm$ DSP] (Beck et al., 2009: p. 19):
A language {does/ does not} have gradable predicates (type $\langle d, \langle e, t \rangle \rangle$ and related),
i.e. lexical items that introduce degree arguments.

We will call predicates analyzed in the style of (3) *vague predicates*. In this paper we begin with the observation that the vague predicate analysis (or alternatively, a negative setting on the DSP) is not, by itself, sufficient to explain the absence of comparative morphology in Washo, and the need for hedges in crisp judgment contexts. It is perfectly possible to provide a meaning for comparative morphology that supports crisp judgments and that does not make reference to degree arguments as in (4); this, after all, is exactly the proposal from Klein (1980, 1982). On Klein's analysis, the English comparative morpheme in (6) manipulates the contextual value with respect to which tallness is determined:

(6) $[\![Vera\ is\ taller\ than\ AR]\!]^c = 1$ iff there is a context c' such that Vera counts as tall with respect to c' and AR does not count as tall with respect to c'

A hypothetical language with degreeless adjectives and a Klein-style comparative would be one with *vague predicates but crisp judgments*. In any context containing individuals A and B, if A and B are different in height, there will be a way of assigning one but not the other to the positive extension of the predicate *tall*. (For Klein, this involves manipulating the comparison class provided by the context; see Klein, 1980: §3). Thus, we expect a crisp judgment. By the fact that Washo requires the conjunctive strategy for comparisons, and requires hedges in crisp judgment contexts, we should conclude not only that its adjectives have vague denotations of the style in (3), but also that it lacks a Klein-style comparative morpheme in its functional inventory. In other words, if we describe only the semantics of open class gradable predicates in the language, we fail to capture the complete set of facts that makes Washo so interestingly different from English in what it makes it easy for its speakers to express.

We might ask whether the same situation obtains for the case of differential comparatives, e.g. (2), which Washo makes it entirely impossible to express. Here things are rather different. Differentials, as von Stechow (1984) observed, require something more than the partitioning of entities into two groups, assigning one but not the other to the positive extension of the gradable predicate. We need a notion of measurement which can support addition. If indeed (as argued by Beck et al., 2009 and Bochnak, 2015) there are some languages that make use of degrees in the semantics of their gradable predicates, and others that do not, this richer notion is surely diagnostic of the former class: degrees form scales that support addition automatically,

whereas degreeless, vague predicates do not. Thus the existence of differential comparatives in English leads von Stechow (1984) to reject Klein's degreeless proposal.[2] For the case of Washo, the adoption of a vague predicate analysis for gradable predicates automatically delivers the absence of differential comparatives. Nothing further about the lexicon need be stipulated.

These considerations raise the question of whether we might find language types intermediate between Washo and English with regards to crisp judgment and differential comparative behavior – in particular, languages with comparatives supporting crisp judgments, but without differential comparatives. In principle, two such language types might be expected. One type are [-DSP] languages with a Klein-style comparative operator, as discussed above. Given the semantics for the operator, we expect crisp judgments; given the [-DSP] status, we expect the absence of differential comparatives. The second type are [+DSP] languages with comparative morphology that manipulates degrees, but lacking the particular functional morphology necessary for the expression of the differential comparative. In including this second language type in our discussion here, we note (in parallel to the case of Washo with which we began) that the [+DSP] status of a language like English is not enough to guarantee its ability to express differential comparatives. Differential comparatives require a certain type of comparative operator – functional morphology that may in principle be missing from the functional lexicon of a language even if that language has degreeful gradable predicates.[3] In other words, the implication from differential comparatives to DSP status only works for one polarity: the presence of differential comparatives implies [+DSP] status, but the absence of differential comparatives is compatible with either positive or negative DSP settings.

In the rest of this paper we first introduce an existence proof for languages of this overall intermediate kind. Our evidence comes from Nez Perce (Sahaptian; USA), a language with a dedicated comparative morpheme and crisp judgments in its comparatives but with no means to express differential comparatives of any type. In the second part of the paper, we work to locate the Nez Perce system with respect to the two potential language types described just above by reviewing the evidence for or against degree arguments in gradable predicates independent of the simplex comparison construction. We conclude that a [-DSP] analysis provides the simplest and most unified coverage of a suite of facts concerning measure phrases, degree questions, and "comparison with a degree" in Nez Perce – a line of reasoning parallel to Bochnak's (2015).[4] The end result highlights the internal diversity of [-DSP] languages as well as the variable ways in which we may or may not wish to describe natural languages as "degreeless".

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[2]One notable response to this rejection lies in the development of a richer notion of scale structure for vague predicates that allows addition to be defined without explicit reference to degrees. This is the project of the measurement theorists (Sassoon, 2010, 2013; van Rooij, 2011), who in turn may reject the core hypothesis of cross-linguistic variation encoded by the DSP in favor of an argument-structurally uniform analysis of gradable predicates in natural language. See Bochnak (2015) for discussion.

[3]We assume that ordinary degree-based comparative operators do not always contain an argument slot for a differential (which is perhaps subject to existential closure); a special comparative operator is required for differentials. This point is perhaps clearest when we consider both additive and multiplicative differentials (ratio phrases), e.g. *Vera is 2 cm taller than AR* and *Vera is three times taller than her cousin*; these differentials require different operators in order to ensure addition in one case but not the other. See also Nee (2018) for some morphological evidence from a Zapotec language that differentials require special comparative operators.

[4]Our reasoning is also mostly parallel to Beck et al.'s (2009), with the exception of how we treat "comparison with a degree". As discussed below, we do not take such constructions as automatic evidence for a [+DSP] analysis, and suggest a [-DSP]-compatible approach to them.

2. Comparison in Nez Perce

Nez Perce is a highly endangered Sahaptian language spoken in Idaho, Washington, and Oregon, USA. The data in this paper come from the first author's fieldwork with two speakers, Bessie Scott and Florene Davis, on the Nez Perce Reservation in Lapwai, Idaho, primarily in 2016-2018. Descriptions of various aspects of Nez Perce grammar may be found in Aoki (1970, 1994), Rude (1985 *et seq.*), Crook (1999), and Deal (2010 *et seq.*). To our knowledge, this is the first in-depth description or analysis of comparatives in the language.

Nez Perce has distinct lexical classes of verbs, nouns, adjectives, and quantifiers/numerals (Deal, 2015, 2016). Only verbs bear inflection for tense, aspect, and mood; verbs also show a distinctive system of person and number agreement with their arguments. Quantifiers/numerals can be identified by their distinct morphological reflections of the [±HUMAN] distinction. (Note that Nez Perce lacks articles.) Nouns and adjectives, while subject to numerous morphological similarities, can be distinguished by their patterns of inflection as well: nouns in the [-ANIMATE] class are incapable of bearing plural inflection, but adjectives modifying such nouns do inflect for plurality. Adjectival predication features an obligatory copula, and usually S V A order (though there is some order flexibility, as in Nez Perce in general; see Rude, 1992). Attributive adjectives are reliably prenominal.

(7)   a. *Calvin   hii-wes   tisqa'aw*   b. *himeeq'is picpic*
         Calvin.NOM 3SUBJ-be.PRES fat   big   cat
         'Calvin is fat.'   'a/ the big cat'

In the rest of this section we first turn to the structures used for comparison with adjectives in Nez Perce, and then to key aspects of these structures' interpretation.

2.1. Morphosyntactic properties

Comparatives may be formed both from predicative and attributive adjectives in Nez Perce. The standard of comparison is marked either by *-(p)x* 'to' or *-(p)kin'ix* 'from';[5] we have not observed any grammatical or semantic differences between these two forms. Predicative comparisons are shown in (8)-(9). Note the presence of the comparative word *qetu* 'more' right before the adjective.

(8)   *Pit'iin'   hii-wes   qetu   kuhet* [*ko-nim-x   'aayato-px*]standard
         girl.NOM 3SUBJ-be.PRES MORE tall   [that-OBL-to woman-to   ]
         'The girl is taller than that woman.'

(9)   *Kareem   hii-wes   qetu   kuhet* [*Shaq-kin'ix*]standard
         Kareem.NOM 3SUBJ-be.PRES MORE tall   [Shaq-from   ]
         'Kareem is taller than Shaq.'

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[5]These elements show a mix of case-like and P-like behavior. They are case-like in showing concord across the DP, as in (8). (Also attested is a pattern in which these elements attach only to one element of the standard phrase, often the first word; see (13).) They are P-like in assigning oblique case to their sisters, as in (20); note that oblique case is visible (non-syncretic with nominative) only on pronouns and demonstratives. We will take standard phrases to be PPs, leaving it open whether *-(p)x* and *-(p)kin'ix* realize a P head, a case assigned by such a head, or some mix.

Attributive comparison is shown in (10); note again the word *qetu* right before the adjective.

(10) *Meeli   hi-'nip-e   qetu himeeq'is 'atoc* [*John-nim-kin'ix 'atoc*]_{standard}
      Mary.NOM 3SUBJ-buy-TAM MORE big   car   John-GEN-from car
      'Mary bought a bigger car than John's car.'

Given that the standard morphology is case/P-like, we might expect Nez Perce to have only phrasal comparatives (Bhatt and Takahashi, 2011). This expectation receives support from the fact that clause-like standards are never attested, and attempts to form clause-like standards (e.g., for the expression of a subcomparative) are rejected.

Many languages with dedicated comparative morphology treat that morphology as optional; that is, the comparative word may be present or absent, while preserving the overall sentence meaning (e.g. Hindi, Bhatt and Takahashi, 2011; Samoan, Hohaus, 2012, 2015; Hebrew, Schwarzschild, 2014; see also Stassen, 1985). This is so in Nez Perce as well. The examples below show the availability of a comparative structure without *qetu*, in predicative comparison with *-(p)x* 'to' and *-(p)kin'ix* 'from' as well as attributive comparison.

(11) *'Aayat   hii-wes   kahat'o haama-px*
      woman.NOM 3SUBJ-be.PRES short   man-to
      'The woman is shorter than the man.'

(12) *Taaqc   hii-wes   (qetu) yaw'ic watiisx-kin'ix*
      today.NOM 3SUBJ-be.PRES (MORE) cool   one.day.away-from
      'Today is cooler than yesterday.'

(13) *Meeli   hi-'nip-e   himeeq'is 'atoc* [*John-nim-kin'ix 'atoc*]_{standard}
      Mary.NOM 3SUBJ-buy-TAM big   car   John-GEN-from car
      'Mary bought a bigger car than John's car.'

One exception to the general optionality of *qetu* concerns cases where the standard is not overt. Like many other languages, Nez Perce allows contextual comparatives, i.e. comparatives in which the standard is not made overt (see Hohaus, 2015 for cross-linguistic discussion).[6] In the absence of an overt standard, *qetu* becomes obligatory:

(14) *'Inekiix   'ilcweew'cix hapat'is hii-wes,   'iceyeeye   #(qetu) hapat'is*
      even.though monster.NOM powerful 3SUBJ-be.PRES, coyote.NOM MORE   powerful
      hii-wes
      3SUBJ-be.PRES
      'Even though Monster is powerful, Coyote is more powerful.'

We take such data to indicate that Nez Perce adjectives are not inherently comparative in meaning (cp. Oda, 2008 for Japanese). Some explicit structure – either *qetu*, a standard, or both – is required for a comparative interpretation. We suggest that this pattern arises via a processing

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[6]Such structures are rather less surprising morphosyntactically in Nez Perce than in English, as Nez Perce generally allows *pro*-drop of all nominal arguments (whether or not they are tracked by overt morphological inflection; Deal, 2010). This suggests that the standard in a case such as (14) may simply be an ordinary *pro*.

preference, as follows. First, following Bresnan (1973), Heim (2000), and many others, we propose that the comparative morpheme heads a phrase (a DegP) which attaches as an adjunct in the AP. The standard phrase is base-generated as the sister to the comparative morpheme. Standards of comparison, like other DPs marked by *-(p)x* or *-(p)kin'ix*, behave as though embedded in a PP structure in Nez Perce (Deal, 2017). Therefore, we propose that the Deg head selects a P head, which in turn assigns case to the DP; thus the comparative structure is responsible for case-assignment to the standard, albeit indirectly.

(15)

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                        AP
                       /  \
                    DegP    AP
                   /   \
                Deg⁰    PP
                       /  \
                      P   DP_standard
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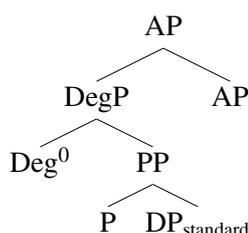
We propose that the comparative Deg head may be realized either as *qetu* or as $\emptyset$; likewise, the standard may be realized as an overt phrase, or as *pro*. Given that the case on the standard is determined by the DegP structure, overt pronunciation of either element is sufficient to signal the presence of DegP. However, the adjunct status of this phrase makes it such that it will be posited in a syntactic structure only given some form of morphosyntactic evidence. In the absence of any overt material, we assume that the parser does not consider the possibility of a DegP projection. Accordingly, (14) is infelicitous in the absence of *qetu*.

2.2. Semantic properties

Adjectival comparisons in Nez Perce have two basic properties reminiscent of their counterparts in English (and in contrast with their counterparts, such as these are, in Washo). First, they are not norm-related, in the sense of Bierwisch (1989): that is, a tallness comparative does not entail that the standard is not tall, nor that the subject (henceforth: the *associate* of the comparative) is tall. The absence of a norm-related inference concerning the standard is shown in (16) and (17). Example (16) compares the tallness of two very tall humans, basketball players Kareem Abdul-Jabbar and Shaquille O'Neal; this sentence is felicitous despite the fact that Shaq is very tall. Similarly, example (17) shows that a tallness comparative may be felicitously followed by an assertion of the tallness of the standard.

(16)   Context: Kareem – 7'2" (218.5cm). Shaq – 7'1" (216cm).

Kareem   hii-wes   qetu   kuhet Shaq-kin'ix
Kareem.NOM 3SUBJ-be.PRES MORE tall   Shaq-from
'Kareem is taller than Shaq.'

(17)   *John   hii-wes   qetu   kuhet Meeli-px met'u/ kaa Meeli   'ipin=k'u*
John.NOM 3SUBJ-be.PRES MORE tall   Mary-to but/and   Mary.NOM 3SG=EMPH

hii-wes   kuhet
3SUBJ-be.PRES tall
'John is taller than Mary but/and Mary is also tall.'

Examples (18) and (19) show the parallel fact for the associate of comparison. (18) shows that a tall person may nevertheless be the associate of a shortness comparison. (19) shows that a single individual may simultaneously be the associate of shortness and tallness comparisons.

(18) *'Aayat   hii-wes   kuhet met'u hii-wes   ∅   kahat'o haama-px*
woman.NOM 3SUBJ-be.PRES tall   but   3SUBJ-be.PRES MORE short   man-to
'The woman is tall but she's shorter than the man.'

(19) *'Aayat   hii-wes   qetu kuhet haacwal-px kaa ∅   kahat'o haama-px*
woman.NOM 3SUBJ-be.PRES MORE tall   boy-to   and MORE short   man-to
'The woman is taller than the boy and shorter than the man.'

These facts speak to the semantic relationship between positive adjectives and their comparative counterparts. Whatever the semantics of the comparative operator, it must be such that the context-dependency of the positive form is reduced or changed.

Second, Nez Perce comparatives support crisp judgments: comparatives are never rejected on grounds of insufficient difference between the individuals compared. Thus comparatives are fully acceptable in the case of a very small difference between the standard and the associate in the compared property. In (16), for instance, the difference is 1 inch ($\sim$2.5cm); the comparative is felicitous. Even smaller differences of height also fail to render comparatives infelicitous:

(20) Context: Drea is 5'8" (172.7cm). I am 5'7 3/4" (172.1cm), just a hair shorter.

Drea   hii-wes   qetu kuhet 'iin-im-x
Drea.NOM 3SUBJ-be.PRES MORE tall   1SG-OBL-to
'Drea is taller than me.'

A related observation is that Nez Perce comparatives are sometimes translated into English with an explicit remark that the difference is small, as in (21). This translation would be surprising if the Nez Perce sentence in fact required a major height difference between the standard and the associate.

(21) *Caan   hi-neki-se,   Sue   hii-wes   qetu kuhet 'iin-im-kin'ix*
John.NOM 3SUBJ-think-TAM Sue.NOM 3SUBJ-be.PRES MORE tall   1SG-OBL-from
Speaker: "John thinks Sue is a little bit taller than himself."

Nez Perce comparatives are also different from their English counterparts in several notable ways. First, as noted above, Nez Perce appears to allow only phrasal comparatives, rather than clausal ones; furthermore, its attributive phrasal comparatives are different from (at least apparently) phrasal comparatives in English in lacking the ambiguity seen in (22).

(22) *Mary bought a bigger car than John.*
    a. External reading: Mary's new car is bigger than John's car
    b. Internal reading: Mary's new car is bigger than John

As the internal reading of (22) may be hard to access, some English examples with prominent internal readings are given in (23):

(23)   a.   *George owns a faster car than this BMW.*   (Lerner and Pinkal, 1995)
       b.   *Mary bought a faster computer than her old one.* (Berezovskaya and Hohaus, 2015)

In contrast to English, Nez Perce attributive comparatives receive only the internal reading.
Two examples of an internal reading are shown in (24) and (25). Note in both cases the genitive
marking of a possessor phrase within the standard phrase. In (24), the possessum *'atoc* 'car' is
overt within the standard phrase. In (25), the possessum ('shirt') is elided.

(24)   *Meeli   hi-'nip-e   (qetu) himeeq'is 'atoc* [*John-nim-kin'ix 'atoc*]standard
       Mary.NOM 3SUBJ-buy-TAM MORE big   car   John-GEN-from car
       'Mary bought a bigger car than John's car.'

(25)   *Beth   hi-'nip-e   qetu sayaq'ic samx̂* [*Taamsas-nim-x   Ø*]standard
       Beth.NOM 3SUBJ-buy-TAM MORE beautiful shirt   Taamsas-GEN-to
       'Beth bought a prettier shirt than Taamsas's (shirt).'

The absence of external readings is shown by the parallel examples that omit the possessive
marking on *John* and *Taamsas*. In (26), for example, the standard is now simply *John*. Ac-
cordingly, the sentence cannot receive an interpretation where Mary's new car is compared to
John's car, rather than to John himself. Similar remarks apply to (27).[7]

(26)   # *Meeli   hi-'nip-e   (qetu) himeeq'is 'atoc* [*John-kin'ix*]standard
       Mary.NOM 3SUBJ-buy-TAM MORE big   car   John-from
       Rejected as: 'Mary bought a bigger car than John did.'

(27)   # *Beth   hi-'nip-e   qetu sayaq'ic samx̂* [*Taamsas-x   Ø*]standard
       Beth.NOM 3SUBJ-buy-TAM MORE beautiful shirt   Taamsas-to
       Rejected as: 'Beth bought a prettier shirt than Taamsas did.'

These judgments are similar to data noted for certain phrasal comparatives in Greek (Merchant,
2012) and Russian (Berezovskaya and Hohaus, 2015). We return to this connection below.

The third notable point of difference is that Nez Perce lacks all differential comparative con-
structions. Differential comparatives are absent with vague quantificational expressions of dif-
ference (e.g. 'a little', 'a lot'), with demonstrations ('this much'), and with precise measures.
Attempts at eliciting vague quantificational differential comparatives and demonstrative differ-
ential comparatives most often just result in the ordinary comparative (sometimes together with
consultant remarks indicating difficulty in translation):

(28)   Prompt: John is a lot taller than Mary

       Hii-wes   Caan   qetu   kuhet Meeli-px
       3SUBJ-be.PRES John.NOM MORE tall   Mary-to
       Comment: "I don't know how you say that little bit more tall. It's just saying he's taller
       than Meeli, I don't know how we'd say more than that. It's just saying he's taller than
       she is."

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[7]We provide overall hashtag judgments for these sentences given that speakers rejected them in contexts that
only supported the external reading. We expect that these examples are indeed felicitous in contexts that make the
internal readings prominent. In addition, for the case of (26), a speaker suggested an alternative (though irrelevant)
parse whereby *Johnkin'ix* is a locative source, resulting in the translation 'Mary bought a bigger car from John'.

(29) Prompt: This table is this much bigger than my table (gesturing to indicate a size difference)

Kii hipinwees hii-wes   qetu   himeeq'is [*'iin-im-kin'ix   hipinwees*]
this table.NOM 3SUBJ-be.PRES MORE big   1SG-GEN-from table
lit. 'This table is bigger than my table.'

Attempts at eliciting precise measures of difference result in an assortment of attempted strategies, which speakers are left unhappy with.

(30) Prompt: Beth is 1 foot taller than Mary

Hii-wes,   *and I don't know how you'd put 1 foot in there, qetu   kuhet*,
3SUBJ-be.PRES   MORE tall,
Meeli-px
Mary-to

(31) Prompt: Mary is 1 foot taller than me

Meeli   'iin-im-x   hii-wes   naaqc sepiinewit (... *kuhet*)
Mary.NOM 1SG-OBL-to 3SUBJ-be.PRES one   measure   (... tall)
Comment: "It explains what you're talking about but sometimes we wouldn't use it that way."[8]

The way that speakers respond to this type of translation task suggests that there is an expressive gap and speakers are looking for ways to plug that gap. We conclude that Nez Perce does not provide its speakers with a grammatical means of expressing differential comparatives.

3. Semantics of the adjective and comparative: two hypotheses

One conclusion from the previous section is that Nez Perce is a language intermediate between Washo and English with respect to crisp judgments and differential comparatives. As discussed above, this state of affairs lends itself to two potential approaches to the semantics of the Nez Perce adjective and the comparative word *qetu* – the first "degreeless", the second "degreeful". Under the first analysis, Nez Perce is [-DSP], with vague predicates as in Washo (3). Nez Perce differs from Washo (and other conjoined-comparative languages such as Motu) in possessing a Klein-style comparative operator, (32b).[9],[10]

(32) Degreeless analysis: Nez Perce as [-DSP]
  a. $[\![$ *kuhet* 'tall' $]\!]^c = \lambda x.x$ counts as tall with respect to context c
  b. $[\![$ *qetu* $]\!] = \lambda x. \lambda P_{\langle \kappa,et \rangle}. \lambda y. \exists C'.P(C')(x) = 0 \wedge P(C')(y) = 1$

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[8]Note that this comment was immediately followed by a comment about how an additional speaker should be consulted about this prompt. In this way, in addition to the comment quoted, the speaker made it very clear that she had significant doubt about her translation from the English, even though she only says "sometimes".

[9]Here we represent contexts as type κ. We assume that composition with the adjectival projection involves a rule of Monstrous Function Application; see Klein (1980: pp. 26-27), Anand (2006) and Deal (2018).

[10]Note that the operator semantics in (32b) potentially raises questions about comparatives with absolute adjectives such as *k'illiinin* 'bent' and *cuuyekilkin'* 'closed'. The issue is whether there is indeed a context such that (say) a partially bent object fails to count as *k'illiinin* 'bent'. See Burnett (2014) for an approach to this problem that remains compatible with the degreeless analysis of adjectives and comparatives.

For an example like (33a), which has schematic syntactic structure (33b), this approach produces the truth conditions in (33c). These conditions are met iff Kareem is taller than Shaq.[11]

(33) a. *Kareem   hii-wes   qetu kuhet Shaq-kin'ix*   (= (9))
         Kareem.NOM 3SUBJ-be.PRES MORE tall   Shaq-from
         'Kareem is taller than Shaq.'

      b.
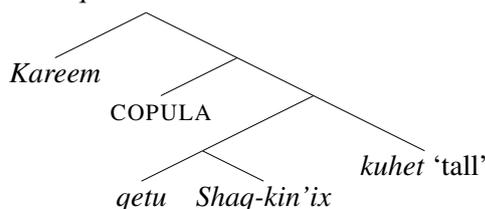
      c. $\llbracket (33a) \rrbracket = 1$ iff $\exists C'. \llbracket kuhet \rrbracket^{C'}(\text{Shaq}) = 0 \wedge \llbracket kuhet \rrbracket^{C'}(\text{Kareem}) = 1$
         iff $\exists C'$. Shaq does not count as tall with respect to C'
         and Kareem counts as tall with respect to C'

This analysis immediately handles the semantic properties of Nez Perce comparatives reviewed in §2.2 without any further stipulations about the lexicon or grammar. It predicts the lack of norm-relatedness in virtue of the fact that $\llbracket qetu \rrbracket$ involves quantification over contexts. For instance, it is certainly true in any ordinary context of speaking about humans that both Shaq and Kareem count as tall. (Recall that Shaq, the shorter of the two, is 7'1", or 216cm.) With respect to such a context, (34a) will come out as true. The comparative in (33), however, does not depend on whether or not one is in an ordinary context of speaking about humans. It requires only that there be *some* context, regardless of how remote, in which Shaq fails to count as tall, in contrast to Kareem.

(34) a. *Shaq   hii-wes   kuhet*
         Shaq.NOM 3SUBJ-be.PRES tall
         'Shaq is tall.'

      b. $\llbracket (34a) \rrbracket^c = 1$ iff Shaq counts as tall with respect to c

The analysis predicts the crisp judgment effect on the plausible assumption that for any two individuals who differ in height, there will be some context that assigns one to the positive extension of a predicate and the other to the negative extension. (This postulate is formalized in Klein, 1980: 23.) Whether or not the difference is substantial plays no role in determining the partitioning of individuals in a context. It predicts the availability of internal readings in attributive comparatives in a straightforward compositional way, as demonstrated below for the relevant part of the LF of (35).

(35) *Meeli   hi-'nip-e   (qetu) himeeq'is 'atoc [John-nim-kin'ix 'atoc]*$_{\text{standard}}$
      Mary.NOM 3SUBJ-buy-TAM MORE big   car   John-GEN-from car
      'Mary bought a bigger car than John's car.'

---

[11] Properly, the biconditional here requires that we assume that the domain of contexts is sufficiently rich so as to ensure that contexts witnessing the quantification in (33c) are not arbitrarily absent from that domain, even though Kareem is indeed taller than Shaq. We assume that this is so.

(36)

$[\![\mathrm{DegP}]\!]^c = \lambda P_{\langle\kappa,et\rangle}.\lambda y.\exists C'[P(C')(\mathrm{J's\ car}) = 0 \wedge P(C')(y) = 1]$

$[\![\mathrm{AP}]\!]^c = \lambda y.\exists C'[\mathrm{J's\ car\ does\ not\ count\ as\ big\ wrt\ C'} \wedge y\ \mathrm{counts\ as\ big\ wrt\ C'}]$

$[\![\mathrm{NP}]\!]^c = \lambda y.\exists C'[\mathrm{J's\ car\ does\ not\ count\ as\ big\ wrt\ C'} \wedge y\ \mathrm{counts\ as\ big\ wrt\ C'}] \wedge y\ \mathrm{is\ a\ car}$
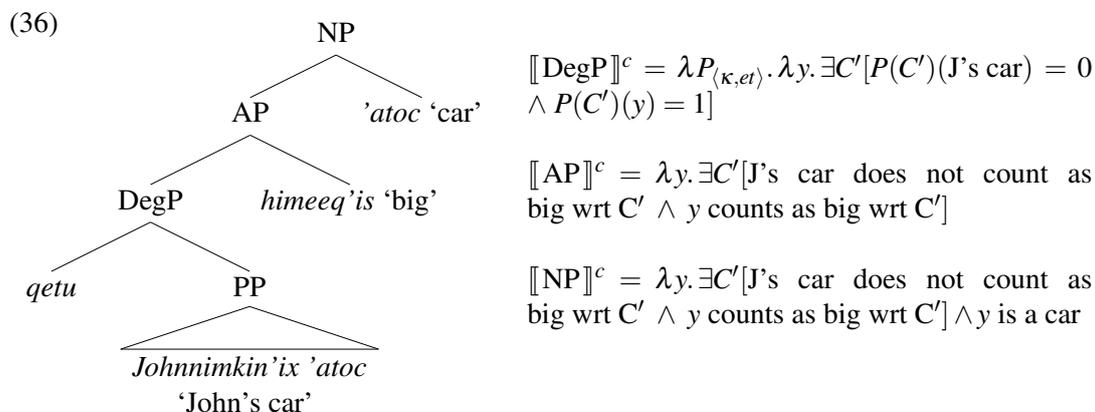
In order to derive an external reading (e.g. in (26)), we would need the compared property not to be bigness, but rather 'bigness of the car (x) bought'. If DegP attaches inside the AP projection, the degreeless semantics for adjectives and predicates provides no straightforward compositional route to such a property. This explains why the external reading is absent.[12] Finally, the absence of differential comparatives is straightforwardly explained by the semantics proposed for Nez Perce adjectives, in exact parallel to the situation for Washo discussed above.

The second hypothesis is a "degreeful" analysis: Nez Perce is a [+DSP] language, with adjective meanings as in English (4). Multiple potential denotations for a phrasal comparative operator are compatible in principle with this analysis (Beck et al., 2012; Berezovskaya and Hohaus, 2015). The proposal in (37b) follows Heim (1985) and Bhatt and Takahashi (2011).

(37) Degreeful analysis: Nez Perce as [+DSP]   (to be revised)

    a. $[\![\mathit{kuhet}\ \text{'tall'}]\!] = \lambda d.\lambda x.x\ \mathrm{is}\ d\text{-tall}$

    b. $[\![\mathit{qetu}]\!] = \lambda y.\lambda P_{\langle d,\langle e,t\rangle\rangle}.\lambda x.\mathrm{MAX}(\lambda d.P(d)(x)) > \mathrm{MAX}(\lambda d'.P(d')(y))$ (v. 1)

    c. $[\![\mathrm{MAX}]\!] = \lambda P_{\langle d,t\rangle}.\iota d.\forall d' \in P : d \geq d'$

This style of analysis accounts for the absence of norm-relatedness in a straightforward way: adjective denotations are not themselves context dependent, and they retain that basic character in comparative constructions. The norm-relatedness of positive forms arises via a POS morpheme that combines with adjective roots and delivers context-sensitive, vague predicate denotations (see e.g. Cresswell, 1976, von Stechow, 1984, 2009). In comparatives, the presence of the comparative Deg head makes the presence of POS impossible, leaving no source for norm-relatedness. Equally straightforward is the approach to crisp judgments. The semantics of the comparative requires only that the maximum degree to which the associate is *P* exceeds the maximum degree to which the standard is *P*. This holds regardless of how small the difference is between the two.

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[12] Assuming that the DegP cannot alternatively be base-generated at some projection above the VP, the external reading could still be derived in a degreeless system if we allowed ourselves to posit a (higher type) Deg^0 operator specifically designed for yielding external readings in attributive comparatives. Given that we know of no evidence for such an element in any language (e.g. in the form of a phrasal comparative type that *only* allows external readings), we do not count the exclusion of this logical possibility as a stipulation about the Nez Perce lexicon.

Turning to attributive comparatives, this analysis makes it straightforward to handle internal readings. However, it is possible to obtain external readings as well: these arise when the associate and the DegP both move, and the DegP takes parasitic scope. This is shown in (38) for the external reading of English example (22).

(38)

```
                            Mary
                      DegP           λd
                  -er than John    λx      vP

                                    x bought a [ [ d big ] car ]
```
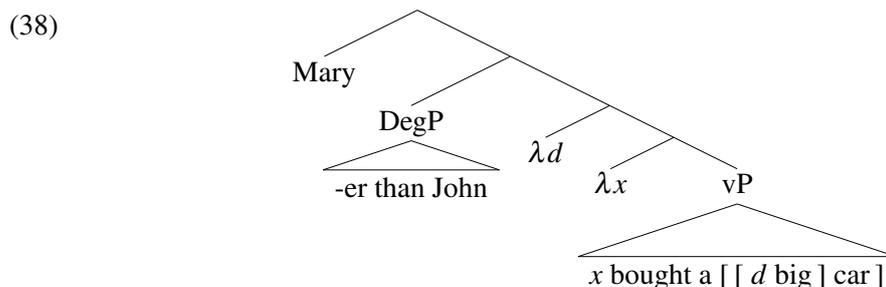
To exclude the external reading of Nez Perce sentences like (26), the LF in (38) must be blocked in some way. One possibility is that Nez Perce does not allow its DegPs to move in the required way.[13] Another possibility is that Nez Perce lacks the Heim-style comparative operator presented in (37b), and instead uses the version of a phrasal operator proposed by Kennedy (1997):

$$(39) \quad [\![qetu]\!] = \lambda P_{\langle d, \langle e,t \rangle \rangle}.\lambda y.\lambda x.\text{MAX}(\lambda d.P(d)(x)) > \text{MAX}(\lambda d'.P(d')(y)) \qquad \text{(v. 2)}$$

As should be transparent, this is merely (37b) with the order of its first two arguments reversed. (Accordingly, the adoption of (39) requires a change to the syntax of the comparative: the Deg head now takes the adjective as its sister and the standard as its specifier.[14]) As discussed by Beck et al. (2012), this little change has a significant effect: the external reading is no longer possible. One possible account for the absence of external readings in Nez Perce attributive comparatives is thus a lexical gap: Nez Perce has only phrasal comparative operator (39) and not its close cousin in (37b). Note that the presence of one but not both is not guaranteed by any principle – and indeed, Greek and English seem to be languages that feature both (39) *and* (37b) (Hohaus et al., 2014; Berezovskaya and Hohaus, 2015).[15]

Partially similar remarks apply to differential comparatives. In order to ensure the absence of differential comparatives under a "degreeful" analysis of Nez Perce, we must stipulate that its lexicon does not include a differential Deg^0 version of (39), as in (40):

$$(40) \quad [\![Deg_\Delta]\!] = \lambda P_{\langle d, \langle e,t \rangle \rangle}.\lambda y.\lambda d''.\lambda x.\ \text{MAX}(\lambda d.P(d)(x)) \geq \text{MAX}(\lambda d'.P(d')(y)) + d''$$

---

[13]This is Merchant's (2012) proposal for the absence of external readings with genitive comparatives in Greek.

[14]We assume that some version of the processing hypothesis presented in section 2.1 could be maintained in this theory, even though DegP is now a projection in the functional spine of the AP rather than an AP adjunct. We will need to ensure in some way, just as before, that a comparative DegP is not posited without any morphosyntactic evidence. In the absence of a visible *qetu* or a standard, the POS version of Deg^0 must be posited. This of course is one difference from the [-DSP] hypothesis, according to which the absence of a comparative DegP structure can be taken by the parser as compatible with no DegP presence at all.

[15]While we will maintain this formulation moving forward, an alternative possibility is that Greek allows one of its comparatives but not the other to QR (see note 13). This requires some information to be attached to the Deg^0 item that determines its QR possibilities, and so the absence of one of the options in a given language would still count as a lexical gap.

Again, we are not aware of any principled reason that such a lexical entry should be absent. In Greek, for instance, the class of comparative structures that disallows external readings in attributive comparatives (viz. genitive comparatives) nevertheless allows differentials (Merchant, 2012: 7). The lack of (40) thus must be posited as an arbitrary gap in the Nez Perce lexicon.

Overall, while the two hypotheses compared in this section are both capable of capturing the basic semantic facts reviewed in section 2.2, there is a difference in the extent to which the facts receive a unified explanation. The difference arises in handling the absence of external readings for attributive comparatives and the absence of differentials. On the [-DSP] analysis, these facts are of a piece with the rest of the system; they could not be otherwise. For attributives, there is no natural degreeless Deg^0 meaning that delivers external readings (and no way to use QR to fill this gap). For differentials, the challenge is that adjective meanings provide not a mapping to points on a degree scale (on which addition might be defined) but rather a simple notion of counting as p (e.g. tall) in a context. Here again there is no natural Deg^0 meaning that combines with a $\langle e, t \rangle$ adjective to produce the desired meaning. This situation contrasts with the [+DSP] analysis, on which the Deg^0 meanings required for external readings and differential comparatives are not only natural but indeed attested in natural language. Accordingly, the [+DSP] analysis of Nez Perce requires that we describe not only what *is* in this language's lexicon but also what natural meanings are *not* in it, in order to provide a full account.

(41) Degreeful analysis: Nez Perce as [+DSP] (to be augmented)

    a. $[\![\textit{kuhet} \text{ 'tall'}]\!] = \lambda d.\lambda x.x \text{ is } d\text{-tall}$

    b. $[\![\textit{qetu}]\!] = \lambda P_{\langle d, \langle e,t \rangle \rangle}.\lambda y.\lambda x.\text{MAX}(\lambda d.P(d)(x)) > \text{MAX}(\lambda d'.P(d')(y))$ (final)

    c. The lexicon lacks Deg_Δ as in (40) and a meaning for *qetu* as in (37b).

This difference in the complexity of the analysis provides a first reason to favor the [-DSP] analysis over the [+DSP] one. Such arguments, of course, are always subject to revision, should we encounter some other phenomena that require added complexity in the opposite direction. Accordingly, we turn next to some additional cases where we might hope to see clear evidence of degree semantics if Nez Perce is indeed [+DSP].[16]

4. In search of degrees beyond comparatives

Degree questions offer a prime opportunity to see a degree semantics for adjectives, as in (41a), at work. In an English question like (42), the *wh*-operator *how* binds the degree argument slot of the adjective, quantifying over degrees; the adjective determines the scale on which the relevant degrees are to be localized.

(42) How big is Calvin?

    $\approx$ What is the maximum degree d such that Calvin is d-big?

Nez Perce does not have a degree question formation strategy parallel to (42). Instead, to express this type of meaning, it has recourse to a special set of *wh*-words that encode both

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[16]Note that, for reasons of space, we set aside superlatives and equatives; Nez Perce does not have dedicated morphology for either, which we take to require a lexical gap on either analysis.

interrogation *and* dimension: *masł* 'how big', *mahal* 'how long' and *mac* 'how many/ much'.[17]
While these dimensional *wh*-words are clearly bi-morphemic, containing *wh*-morpheme *m-*
(also found in *mawa* 'when' and *mine* 'where'), the *wh*-morpheme attaches not to an adjective
but rather to a bound dimensional root. Contrast *masł* 'how big' with the various size adjectives
found in the language:

(43) a. *masł* 'how big', *asł, **'asł*
      b. *himeeq'is* 'big' (sg), *titilu* 'big' (pl), *kuckuc* 'small'

Questions featuring the dimensional *wh*-words do not contain adjectives specifying a dimen-
sion, and such adjectives cannot be added:

(44) a. *Masł   wiseliikt wees?*   b. *Mahal   pi'amx-no'?*
          how.big standing be.PRES   how.long meet-FUT
          'How tall are you?'   'How long will they meet for?'

(45) *Mac   we   'inmiiwit?*
      how.many be/have years
      'How many years do you have? (= 'How old are you?')[18]

We suggest that the bound dimensional roots *-asł*, *-ahal*, and *-ac* denote not sets of individuals
(as adjectives do, on the analysis in (32a)) but rather sets of equivalence classes of individuals in
terms of a specified dimension, as sketched for *-asł* in (46). In (44a), the *m-* question operator
then asks which sized-based equivalence class the addressee falls within when standing.

(46) $[\![\textit{-asł}]\!]^c = \lambda P_{\langle e,t \rangle}.\forall x, y \in P\, [\forall c'\, [x \text{ counts as big wrt } c' \leftrightarrow y \text{ counts as big wrt } c']]$

Of course, reference to equivalence classes of individuals, as in (46), precisely recalls Cress-
well's (1976) understanding of degrees (and so (46) can be easily rewritten in a way that fore-
grounds sameness of degree of size). We conclude, then, that there is a sense in which Nez
Perce is certainly not 'degreeless', even if it is [-DSP]. It makes use in some way of equiva-
lence classes. We do not, however, think that this very strong sense of 'degreeless' is likely to
be a source of cross-linguistic semantic variation, given that recognition of sameness is cog-
nitively fundamental: a truly 'degreeless' language in this sense would need to lack numerals
(which require numerosity equivalence classes), tenses (which require temporal equivalence
classes), etc. In this sense it should perhaps not be surprising to see equivalence classes play a
role in some way even in the semantics of a [-DSP] language. And so we conclude that degree
questions in Nez Perce are compatible with a [-DSP] analysis. What must be stipulated on this
analysis is the absence of a general operator that could map adjective meanings into properties
of equivalence classes as in (46). The [+DSP] analysis must make a parallel stipulation (since

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[17]This seems to be the exhaustive list of such dimensional *wh*-words for current speakers. Further fieldwork is
required to confidently report the way that Nez Perce speakers ask questions about dimensions beyond size, length,
and quantity. Initial evidence suggests that they simply prefer to ask yes/no questions concerning these dimensions
(e.g. difficulty, depth). Note that speakers oftentimes give yes/no translations also for English degree questions
that feature size, length, and quantity – e.g. 'Is B tall?' instead of a form using *masł* 'how big'.

[18]Note that the form of the copula here is only found with 1st/2nd person arguments, indicating a 2nd person
somewhere in the structure. The subject here is plausibly [pro *'inmiiwit*] 'your years'.

meanings like (46) remain possible on this analysis), and it must also stipulate that Nez Perce lacks a *wh*-word like 'how' which can simply combine with adjectives as is (presumably as a Deg^0). Once again, slightly more complexity is required of the [+DSP] analysis.

We turn next to measure phrases, as exemplified by English (47). Here, on a [+DSP] analysis, the measure phrase quantifies over (in the case of *6 feet*) or refers to (in the case of demonstrative *this*) degrees of Mary's height. If pronominal, it may simply saturate the degree argument position provided by the adjective; if quantificational, it may QR and bind a degree variable in this position.

(47)   *Mary is {6 feet / this} tall.*

Nez Perce adjectives do not allow measure phrases. Notably, this is not for a want of ways in which measures themselves may be expressed. Pronominal measure phrases are formed via the bound dimensional roots *-asł* and *-ahal* with the addition of demonstrative morpheme *k-* (also found in a full range of demonstratives, such as *kine* 'here', *kona* 'there', *kawa* 'then'), sometimes preceded by *kii* 'this'.[19] In addition, Nez Perce has two general measure words, *temiinewit* 'weight measure' and *sepiinewit* 'length measure', both formed by nominalization from a basic root *hiinewi* (Aoki, 1994: pp. 150-151). Also possible are more specific units such as *'aatim* 'yard (lit. arm)' and *kicuy* 'dollar (lit. money)'. The crucial observation is that expressions of measure consistently do not include adjectives:

(48)   *(kii) k-asł   wees   ciq'aamqal*
       this DEM-SIZE.EQUIV be.PRES dog
       'My dog is this big' [said with a hand gesture]

(49)   *samq'ayn sepiinewit   hii-wes   lepit 'aatim*
       cloth   length.measure 3SUBJ-be.PRES two arm
       'The cloth is two yards long.'

From the perspective of a [+DSP] analysis, the obligatory absence of adjectives in such predications is surprising. If Nez Perce measure phrases indeed denote or quantify over degrees, some stipulation is required to the effect that measure phrase arguments to adjectives are not permissible syntactically (despite the fact that they would be perfectly appropriate semantically, in the quantificational case with the addition of QR). On a [-DSP] analysis, by contrast, measure phrases may be taken to denote equivalence classes (Klein, 1980; type $\langle e,t \rangle$), such that (for instance) *lepit 'aatim* 'two yards' refers to the equivalence class of two-yard-long objects and *kasł* 'this big' refers to the class of objects equivalent in size to the size being demonstrated. From this perspective, sentence (48) is straightforwardly predicative: the dog is a member of the demonstrated equivalence class. Of course, given an $\langle e,t \rangle$ semantics for Nez Perce measure phrases, we would not expect them to behave as arguments to adjectives. At best we might expect them to be able to modify adjectives (though note that this would produce a reading that is norm-related). A syntactic stipulation is presumably required to rule this out. And of course a hybrid analysis that adopts a [+DSP] analysis of adjectives but an equivalence class analysis of

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[19]Note that there is no *k-ac* 'thus many'.

measure phrases must make both types of stipulations: it must stipulate that degree-based measure phrases are unavailable *and* that equivalence-class-based measure phrases cannot modify adjectives.

Finally, we consider the construction that Beck et al. (2009) call "comparison with a degree":

(50)   *Mary is taller than 5 feet.*

In a language with only phrasal comparatives, we expect the standard of comparison to be of type e. (Indeed, both approaches to Nez Perce we have developed thus far are united in this assumption.) Thus, if the language had pronouns of type d, or quantifiers of type $\langle\langle d,t\rangle,t\rangle$, we would not expect to see them appear as the standard of comparison. By contrast, we have argued above that the language has expressions that refer to equivalence classes of individuals, such as *lepit 'aatim* 'two yards' and *kasł* 'this big'. These classes are natural standards of comparison, given their internal equivalence. One would only need to apply a choice function to these classes to return a type e standard for comparison. And that is exactly what we suggest occurs in Nez Perce sentences such as the following:

(51)   *Samq'ayn hii-wes   qetu   kuhet* [*naaqc 'aatim-kin'ix*]
        cloth   3SUBJ-be.PRES MORE tall   one   arm-from
        'The cloth is longer than one yard.'

(52)   [*Kinee-pkin'ix kasł   ] 'iin-im   ciq'aamqal hii-wes   qetu   himeeq'is*
        this-from   thus.sized 1SG-GEN dog   3SUBJ-be.PRES MORE big
        'My dog is bigger than this.' [gesturing to indicate a standard]

We take the primary upshot of these facts to be a further support for the analysis of Nez Perce measure phrases as referring to equivalence classes. The (misnamed, from this perspective) "comparison with a degree" construction shows us that these measure phrases have an important similarity with individuals. What they do *not* do is behave as arguments for adjectives, as would be expected on a [+DSP] analysis.

An overall conclusion from this section is that the investigation of degree questions, measure phrases, and "comparison with a degree" does not turn up any new evidence tipping the scale of parsimony back in favor of a [+DSP] analysis. Quite to the contrary, the facts of this section show that the overall stipulation scoreboard for the degreeful analysis in (41) must be augmented. The Nez Perce lexicon would contain two additional types of arbitrary lexical gaps, in addition to the curious addition of a workaround for these gaps that does not feature degrees:

(41)   d.   The lexicon lacks a counterpart of English degree *how* and all degree-based measure phrases.
       e.   There are equivalence-class-based dimensional roots and measure phrases.

Again, the [-DSP] analysis provides a more unified account. It explains why degree *how* and degree-based measure phrases are absent; there is no way to compose such elements with adjectives. And it explains why equivalence classes play the role that they do, and their curious similarity to standards of comparison.

5. Conclusions

Beck et al.'s (2009) and Bochnak's (2015) arguments for [-DSP] languages are based on a parsimony argument: the [-DSP] analysis provides a unified explanation for why certain languages lack a whole suite of degree morphology. In this paper, we have made a parallel argument for Nez Perce: the [-DSP] analysis requires fewer independent stipulations about the lexicon than the [+DSP] alternative. Our evidence suggests that the simplex comparative comes apart from the differential comparative, external readings of attributives, adjective-based degree questions, and degree-based measure phrases due to the ease with which the simplex comparative, but not its degree cousins, can be expressed in terms of quantification over contexts. This provides new reason to take seriously the delineation semantics proposal from Klein (1980) as an account of how gradable predicates and comparatives may work in natural language. It points up the need for further investigation of the internal semantic diversity of [-DSP] languages, and in particular, the extent to which such languages use equivalence classes of individuals in place of a full-blown additive and multiplicative system of degrees.

References

Anand, P. (2006). *De* de se. Ph. D. thesis, MIT, Cambridge, MA.

Aoki, H. (1970). *Nez Perce grammar*. Berkeley: University of California Press.

Aoki, H. (1994). *Nez Perce dictionary*. Berkeley: University of California Press.

Beck, S., V. Hohaus, and S. Tiemann (2012). A note on phrasal comparatives. In *Proceedings of SALT 22*, pp. 146–165.

Beck, S., S. Krasikova, D. Fleischer, R. Gergel, S. Hofstetter, C. Savelsberg, J. Vanderelst, and E. Villalta (2009). Crosslinguistic variation in comparison constructions. *Linguistic Variation Yearbook 9*, 1–66.

Berezovskaya, P. and V. Hohaus (2015). The crosslinguistic inventory of phrasal comparative operators: evidence from Russian. In *Proceedings of FASL 23*, pp. 1–19.

Bhatt, R. and S. Takahashi (2011). Reduced and unreduced phrasal comparatives. *Natural Language and Linguistic Theory 29*(3), 581–620.

Bierwisch, M. (1989). The semantics of gradation. In M. Bierwisch and E. Lang (Eds.), *Dimensional adjectives: grammatical structure and conceptual interpretation*, pp. 71–262. Berlin: Springer.

Bochnak, R. (2015). The degree semantics parameter and cross-linguistic variation. *Semantics and Pragmatics 8*(6), 1–48.

Bowler, M. L. (2016). The status of degrees in Warlpiri. In *Proceedings of TripleA 2*, pp. 1–17.

Bresnan, J. (1973). Syntax of the comparative clause construction in English. *Linguistic Inquiry 4*(3), 275–343.

Burnett, H. (2014). A delineation solution to the puzzles of absolute adjectives. *Linguistics and Philosophy 37*(1), 1–39.

Cresswell, M. J. (1976). The semantics of degree. In B. Partee (Ed.), *Montague grammar*, New York, pp. 261–292. Academic Press.

Crook, H. D. (1999). *The phonology and morphology of Nez Perce stress*. Ph. D. thesis, University of California at Los Angeles.

Deal, A. R. (2010). *Topics in the Nez Perce verb*. Ph. D. thesis, University of Massachusetts, Amherst.

Deal, A. R. (2015). A note on Nez Perce verb agreement, with sample paradigms. In *Proceed-*

ings of ICSNL 50, pp. 389–413.

Deal, A. R. (2016). Plural exponence in the Nez Perce DP: a DM analysis. *Morphology 26*(3), 313–339.

Deal, A. R. (2017). Covert hyperraising to object. In *Proceedings of NELS 47*, pp. 257–270.

Deal, A. R. (2018, July). A theory of indexical shift: meaning, grammar, and crosslinguistic variation. Manuscript, UC Berkeley.

Heim, I. (1985). Notes on comparatives and related matters. Manuscript.

Heim, I. (2000). Degree operators and scope. In B. Jackson and T. Matthews (Eds.), *Proceedings of SALT 10*, pp. 40–64.

Hohaus, V. (2012). Directed motion as comparison: evidence from Samoan. In E. Bogal-Allbritten (Ed.), *Proceedings of SULA 6*, pp. 335–348.

Hohaus, V. (2015). *Context and composition: how presuppositions manipulate the interpretation of free variables*. Ph. D. thesis, Universität Tübingen.

Hohaus, V., S. Tiemann, and S. Beck (2014). Acquisition of comparison constructions. *Language Acquisition: A Journal of Developmental Linguistics 21*(3), 215–249.

Kennedy, C. (1997). *Projecting the adjective: the syntax and semantics of gradability and comparison*. Ph. D. thesis, University of California, Santa Cruz.

Klein, E. (1980). A semantics for positive and comparative adjectives. *Linguistics and Philosophy 4*, 1–45.

Klein, E. (1982). The interpretation of adjectival comparatives. *Journal of Linguistics 18*(1), 113–136.

Lerner, J. and M. Pinkal (1995). Comparative ellipsis and variable binding. In *Proceedings of SALT 5*, pp. 222–236.

Merchant, J. (2012). The two phrasal comparatives of Greek. Manuscript.

Nee, J. (2018). Comparatives in Teotitlán del Valle Zapotec. To appear in *Proceedings of SULA 10*.

Oda, T. (2008). *Degree constructions in Japanese*. Ph. D. thesis, University of Connecticut, Storrs.

Rude, N. (1985). *Studies in Nez Perce grammar and discourse*. Ph. D. thesis, University of Oregon, Eugene.

Rude, N. (1992). Word order and topicality in Nez Perce. In D. Payne (Ed.), *Pragmatics of word order flexibility*, pp. 193–208. Amsterdam: John Benjamins.

Sassoon, G. W. (2010). Measurement theory in linguistics. *Synthese 174*, 151–180.

Sassoon, G. W. (2013). *Vagueness, gradability and typicality: the interpretation of adjectives and nouns*. Boston: Brill.

Schwarzschild, R. (2014). Comparative markers and standard markers. In *Proceedings of the MIT workshop on comparatives*, pp. 87–105.

Stassen, L. (1985). *Comparison and Universal Grammar*. Oxford: Blackwell.

van Rooij, R. (2011). Measurement and interadjective comparisons. *Journal of Semantics 28*, 335–358.

von Stechow, A. (1984). Comparing semantic theories of comparison. *Journal of Semantics 3*(1), 1–77.

von Stechow, A. (2009). The temporal degree adjectives *früh(er)* "early(er)"/ *spät(er)* "later" and the semantics of the positive. In A. Giannakidou and M. Rathert (Eds.), *Quantification, definiteness and nominalization*, pp. 214–233. Oxford: Oxford University Press.