

Modes of Comparison*

Christopher Kennedy
University of Chicago

1 Introduction

The ability to establish orderings among objects and make comparisons between them according to the amount or degree to which they possess some property is a basic component of human cognition. Natural languages reflect this fact: all languages have syntactic categories that express gradable concepts, and all languages have designated comparative constructions, which are used to express orderings between two objects with respect to the degree or amount to which they possess some property (Sapir 1944).

In many languages, comparatives are based on specialized morphology and syntax. English exemplifies this type of system: it uses the morphemes *more/-er*, *less* and *as* specifically for the purpose of establishing orderings of superiority, inferiority and equality, respectively, and the morphemes *than* and *as* to identify the STANDARD against which an object is compared, as illustrated by (1a-c).

- (1) a. Mercury is closer to the sun than Venus.
- b. The Mars Pathfinder mission was less expensive than previous missions to Mars.
- c. Uranus doesn't have as many rings as Saturn.

Languages like English also allow for the possibility of expressing more complex comparisons by permitting a range of phrase types after *than/as*. For example, (2a) expresses a comparison between the degrees to which the same object possesses different properties; (2b) compares the degrees to which different objects possess different properties; and (2c) relates the actual degree that an object possesses a property to an expected degree.

- (2) a. More meteorites vaporize in the atmosphere than fall to the ground.
- b. The crater was deeper than a 50 story building is tall.
- c. The flight to Jupiter did not take as long as we expected.

However, not all languages have comparatives with the same range of features illustrated by the English examples above. First, many languages lack specialized comparative morphology, at least in the case of comparisons of superiority (such

*Thanks to Sigrid Beck, Jonathan Bobaljik, Gennaro Chierchia, Guglielmo Cinque, Ringe Hayashisita, Osamu Sawada, John Whitman and audiences at Università di Milano-Bicocca, Università degli Studi di Venezia, University of Connecticut, Cornell University, Harvard University and the Chicago Linguistic Society for very helpful discussion of the issues and data discussed in this paper, which remains very much a work in progress. This paper is based upon work supported by the National Science Foundation under Grant No. BCS-0620247.

as English *more* comparatives): according to Ultan's (1972) typological survey, the ratio of languages that have overt comparative morphology to those that don't is roughly 3/1 (though this may not be representative, as a significant portion of the languages in Ultan's survey are Indo-European). Italian and Hungarian are like English in having such a morpheme, as illustrated in (3) (the comparative morphemes are underlined), while (4) shows that Javanese and Malagasy lack such a morpheme.

- (3) a. Giovanni è piu grande di Giulano.
Giovanni is more tall of Giulano
'Giovanni is taller than Giulano.' ITALIAN
- b. Istvan magasa-bb mint Peter
Istvan tall-MORE than Peter
'Istvan is taller than Peter.' HUNGARIAN
- (4) a. Enak daging karo iwak
is-good meat than fish
'Meat is better than fish.' JAVANESE
- b. Lehibe noho ny zana-ny Rabe
tall than the son-his Rabe
'Rabe is taller than his son.' MALAGASY

Second, many languages lack comparative construction specific standard markers analogous to English *than*. The most commonly used alternative is a morpheme that also has a directional meaning, though different options are possible. As documented by Stassen (1985) and illustrated by the examples in (5), the standard may be marked by a morpheme expressing separation, one used to identify goals, or one used to identify a location. (The crucial morphemes are underlined.)

- (5) a. Nihongo-wa doitsgo yori muzukashi
Japanese-TOP German from difficult
'Japanese is more difficult than German.' JAPANESE
- b. Sapuk ol-kondi to l-kibulekeny
is-big the-deer to the-waterbuck
'The deer is bigger than the waterbuck.' MAASAI
- c. A ka gya ni ma
he is big me on
'He is bigger than me.' MANDINKA

Third, many languages do not permit 'multi-perspectival' comparisons of the sort encoded in so-called COMPARATIVE SUBDELETION constructions such as French (6) and its English translation.

- (6) La table est plus longue qu'elle n'est large.
the table is more long than-it NEG-is wide
'The table is longer than it is wide.'

Such structures are robustly ungrammatical in Japanese and Chinese, for example:

- (7) a. *Kono tana-wa ano doa-ga hiroi yori takai
 this shelf-TOP that door-NOM wide YORI tall
 ‘This shelf is taller than that door is wide.’
 b. *Jitysu he bi shen kwan.
 this river BI deep wide
 ‘This river is wider than it is deep.’

It is of course possible to convey the information expressed by the English translations of (7a-b) in these languages, but a very different kind of structure involving nominal scale terms has to be used:

- (8) a. Kono tana-no taka-sa-wa ano doa-no haba yori ookii.
 this shelf-GEN height-NOM-TOP that door-GEN width YORI great
 ‘The shelf’s height is greater than the door’s width.’
 b. zhe tiao he de kuandu bi shendu da.
 this CL river DE width BI depth great
 ‘The width of this river is greater than its depth.’

What underlies cross-linguistic variation in the syntactic expression of comparison? Does this variability indicate a corresponding variability in the underlying semantics of comparison, or is it possible to maintain a universal semantics of comparison and explain the variability in some other way? If the former, what is the range of semantic variation? Are there any universal semantic features of comparatives and gradable predicates? If the latter, what are the universal semantic features of comparatives and gradable predicates, and what (syntactic, morphological, pragmatic/functional) factors give rise to the observed cross-linguistic variation?

The goal of this paper is to develop some initial answers to these questions through a detailed look at some differences in comparatives in Japanese and English, following up on a recent study by Beck *et al.* (2004). Specifically, I will consider two potential parameters of variation:

- **Individual vs. degree comparison:** Do comparatives express orderings between arbitrary individuals (individual comparison), or do they (also) express orderings between individuals and arbitrary degrees, the value of which may be conveyed syntactically by complex degree descriptions?
- **Explicit vs. implicit comparison:** Does comparison involve specialized morphology that expresses arbitrary ordering relations (explicit comparison), or does comparison involve taking advantage of the inherent context sensitivity of the positive (unmarked) form (implicit comparison)?

I will begin by outlining Beck *et al.*’s analysis, which captures the contrasts between Japanese and English, but makes use of principles (or parameters) of variation that don’t make strong predictions about typological variation. I will then show that the contrasts between the two languages can be more perspicuously explained in terms of the individual/degree comparison distinction. Next I will turn to the explicit/implicit distinction, showing that this could also account for the differences between Japanese and English, and I will provide some independent reasons to

think that this distinction could be another point of cross-linguistic variation. In order to decide between the two approaches, I will develop a set of diagnostics to distinguish between explicit and implicit comparison, and use these to show that both Japanese and English comparatives involve explicit comparison. This will support the conclusion that the crucial difference between the two languages is with respect to the first parameter: individual vs. degree comparison. I will conclude with some discussion of what might underlie this distinction.

A warning: like most of the work on this topic, I am going to focus exclusively on comparatives of superiority. In fact, I believe that it is crucial to also look at comparatives of inferiority, equatives and superlatives at the same time as we're looking at comparatives, but doing that would take us well beyond the scope of this paper.

2 Comparison in English and Japanese

2.1 The 'standard' analysis of comparatives in English

Let us take as our starting point the following assumption about the universal semantics of gradable predicates, which is the foundation of most analyses of comparatives and gradable predicates:

- (9) Gradable predicates map objects onto abstract representations of measurement (SCALES) formalized as sets of values (DEGREES) ordered along some dimension (HEIGHT, LENGTH, WEIGHT, etc.).

For the purpose of this paper, I will adopt the most common analysis of gradable predicate meaning within this tradition, which treats such expressions as relations between individuals and degrees and assigns them denotations like (10), where $\mathbf{tall}(x)$ represents x 's height (see e.g., Cresswell 1977; von Stechow 1984; Heim 1985, 2000; Schwarzschild 2005; Kennedy & McNally 2005).

$$(10) \quad \llbracket tall \rrbracket = \lambda d \lambda x. \mathbf{tall}(x) \succeq d$$

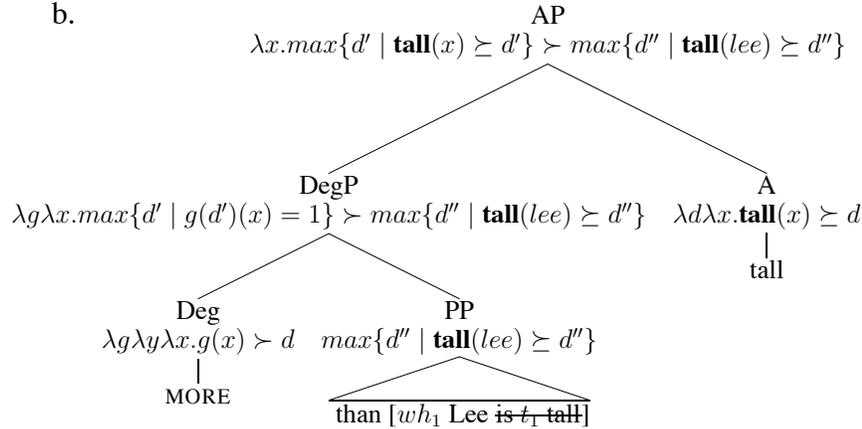
A feature of this analysis is that a gradable predicate does not itself denote a property of individuals, but must instead combine with something to generate a property of individuals. Let's call this something DEGREE MORPHOLOGY, and see how it works by looking at a canonical example: comparative morphology. One common way of characterizing the denotation of *more/-er* in English (relativized to a measure function semantics for gradable predicates) is as in (11). (I use MORE to represent the comparative morpheme independent of its surface realization as a word, bound morpheme, or zero.)

$$(11) \quad \llbracket \text{MORE} \rrbracket = \lambda d \lambda g_{\langle d, et \rangle} \lambda d \lambda x. \max\{d \mid g(d)(x) = 1\} \succ d$$

This analysis involves two assumptions about the syntax-semantics interface. The first is that the comparative morpheme and the *than*-phrase are a constituent at LF; the second is that the complement of *than* is a clausal constituent that denotes a maximal degree, which may be targeted by ellipsis (see e.g. Chomsky 1965, 1977; Bresnan 1973; von Stechow 1984; Heim 1985, 2000; Bhatt & Pancheva 2004).

(12b) shows the details of the composition of the comparative predicate in (12a) (see Kennedy (2002) for a detailed compositional analysis of the comparative clause).

- (12) a. Kim is taller than Lee (is).
 b.



2.2 Comparatives in Japanese

Japanese comparatives are superficially distinct from English comparatives in two ways. First, there is no overt comparative morpheme (no overt cognate of *more*). Second, the ‘standard’ is introduced by the word *yor*i, which also has a use as a separative preposition (like *from*). These differences are illustrated in (13a-b).

- (13) a. Nihongo-wa doitsgo yori muzukashi.
 Japanese-TOP German YORI difficult
 ‘Japanese is more difficult than German.’
 b. Taroo-wa Hanako yori takusan(-no) hon-o katta.
 Taroo-TOP Hanako YORI many(-GEN) book-ACC bought
 ‘Taroo bought more books than Hanako.’

These are in fact common options in comparatives: 32 of 108 languages surveyed by Ultan (1972) do not have (overt) comparative morphology, and ‘separative comparatives’ constitute of of several broad classes documented by Stassen (1985). But they do not themselves present a challenge to extending an English-style analysis of comparatives to Japanese (see e.g. Ishii 1991), provided we simply assume that the comparative degree morpheme in Japanese is phonologically null.

However, Beck *et al.* (2004) discuss three more substantive differences between Japanese and English comparatives, that call such an analysis into question. The first is a puzzling difference in acceptability between (14a-b) on the one hand, and (14b-c) on the other, first observed by Ishii (1991).

- (14) a. Taroo-wa [Hanako-ga katta yori] takusan(-no) kasa-o katta.
 Taroo-TOP [Hanako-NOM bought YORI] many(-GEN) umbrella-ACC bought
 ‘Taroo bought more umbrellas than Hanako did.’
 b. ?*Taroo-wa [Hanako-ga katta yori] nagai kasa-o katta.
 Taroo-TOP [Hanako-NOM bought YORI] long umbrella-ACC bought
 ‘Taroo bought a longer umbrella than Hanako did.’

- c. Taroo-wa [Hanako-ga kaita yori] nagai ronbun-o kaita
 Taroo-TOP [Hanako-ACC wrote YORI] long paper-ACC wrote
 ‘Taroo wrote a longer paper than Hanako did.’

The second is that Japanese comparatives do not show ‘negative island’ effects (von Stechow 1984; Rullmann 1995). Compare the acceptable (15a) with the unacceptable English example in (15b).

- (15) a. John-wa [dare-mo kawa-naka-tta no yori] takai hon-o katta
 John-TOP anyone buy-Neg-Past NO YORI expensive book-ACC bought
 ‘J bought a book that is more expensive than the book that nobody bought.’
 b. *John bought a more expensive book than nobody did.

The third is that Japanese does not allow subdeletion with adjectival comparatives, as we saw in section 1:

- (16) *Kono tana-wa [ano doa-ga hiroi yori] takai
 this shelf-TOP [that door-NOM wide YORI] tall
 ‘This shelf is taller than that door is wide.’

These facts are puzzling if Japanese has a (null) comparative morpheme that has the same semantics we assumed for English *more* in (11). To see why, consider the analysis of the English sentences corresponding to (14b), (15a), and (16). (In the following examples, ~~strikeout~~ represents material that is elided in the surface form, and the denotations given are just for the underlined comparative predicates.) In (17a), we have abstraction over a degree variable in an attributive adjective. There are interesting interactions with ellipsis here (see Kennedy & Merchant 2000), but otherwise nothing remarkable.

- (17) a. Taroo bought a longer umbrella [wh_1 than Hanako did ~~buy a t_1 long umbrella~~]
 b. $\llbracket more \rrbracket(\llbracket [wh_1 \text{ than Hanako bought a } t_1 \text{ long umbrella}] \rrbracket)(\llbracket long \rrbracket) =$
 $\lambda x.max\{d' \mid \mathbf{long}(x) \succeq d'\} \succ max\{d'' \mid H \text{ bought an umbrella at least as long as } d''\}$

If the Japanese example in (14b) has the same analysis as English (17a), then it should also be perfectly acceptable.

Negative island effects in English comparatives can be explained in terms of the maximality semantics of the comparative clause (von Stechow 1984; Rullmann 1995). The reason that (18a), for example, is unacceptable is because there is no maximal degree that satisfies the description in (18b).

- (18) a. *John bought a more expensive book [wh_1 than nobody did ~~buy a t_1 expensive book~~]
 b. $\llbracket more \rrbracket(\llbracket [wh_1 \text{ than nobody bought a } t_1 \text{ expensive book}] \rrbracket)(\llbracket expensive \rrbracket) =$
 $\lambda x.max\{d' \mid \mathbf{expensive}(x) \succeq d'\} \succ max\{d'' \mid \text{nobody bought a book at least as expensive as } d''\}$

Finally, subdeletion constructions just require commensurate predicates; otherwise, they are unremarkable:

- (19) a. This shelf is taller [wh_1 than that door is t_1 wide]

- b. $\llbracket more \rrbracket(\llbracket [wh_{t_1} \text{ than that door is } t_1 \text{ wide}] \rrbracket)(\llbracket tall \rrbracket)$
 $\lambda x.max\{d' \mid \mathbf{tall}(x) \succeq d'\} \succ max\{d'' \mid \mathbf{wide}(that \text{ door}) \succeq d''\}$

Clearly, there is some difference between Japanese and English, but what is it?

2.3 Beck, Oda and Sugisaki's analysis

Beck *et al.* (2004) argue that the facts presented above implicate an analysis of Japanese comparatives that has the following crucial features. First, Japanese comparatives express an ordering not to a degree that is compositionally provided by a constituent of the sentence (such as the English *than*-phrase), but rather to a contextual standard. Second, the function of the *yor*i-constituent is to provide a basis for computing this standard, so that the meaning of (20a) is something like (20b).

- (20) a. Kono peepaa-wa ano peepaa-yori nagai.
 this paper-top that paper-YORI long
 b. Compared to that paper, this paper is longer.

Specifically, they propose that Japanese has a (null) comparative morpheme with the denotation in (21a); this differs from (21b), which is what they assume as the denotation for English *more*.

- (21) a. $\llbracket MORE_J \rrbracket = \lambda g \in D_{\langle d, et \rangle} \lambda x.max\{d' \mid g(d')(x) = 1\} \succ \mathbf{c}$
 b. $\llbracket MORE_E \rrbracket = \lambda d \lambda g \in D_{\langle d, et \rangle} \lambda x.max\{d' \mid g(d')(x) = 1\} \succ d$

(21a) is similar to (21b) in expressing an asymmetric ordering, but different in not selecting an explicit standard argument. Instead the standard is provided by a contextual variable over degrees **c**. In effect, **c** is a kind of degree anaphor whose value must be fixed in the context of utterance. One way to do this is to use a *yor*i-phrase, which makes a particular object highly salient; this object may then be used to calculate the value of **c**.

On this view, the variability facts can be explained as follows: the problem with (22) is that there isn't a well defined mapping from the the set of objects that Hanako bought (the denotation of the bracketed constituent) to lengths, so the value of **c** can't be determined.

- (22) ?*Taroo-wa [Hanako-ga katta] yori nagai kasa-o katta.
 Taroo-TOP [Hanako-NOM bought] YORI long umbrella-ACC bought
 'Taroo bought a longer umbrella than Hanako did.'

The lack of negative island effects follow if we further assume that the complement of *yor*i in all the relevant examples is a relative clause, rather than an English-style comparative clause, i.e., a degree abstraction structure. If the complement of *yor*i cannot be a degree abstraction structure, we would also rule out adjectival sub-deletion, since such constructions necessarily involve degree abstraction. However, something more needs to be said to derive this result, since this does not follow merely from the the fact that the standard in (21a) is 'contextual' alone. That is, nothing about (21a) is incompatible with making a degree salient by referring to an object's width, length, etc., and then fixing the value of the variable **c** to it. That this

is possible is shown by (23a) (which presumably involves such an interpretation); the fact that (23b) is ungrammatical must therefore be due to something other than the hypothesized meaning of Japanese MORE in (21a).

- (23) a. Compared to how wide that door is, this shelf is taller.
 b. *Kono tana-wa [ano doa-ga hiroi yori] takai
 this shelf-TOP [that door-NOM wide YORI] tall
 ‘This shelf is taller than that door is wide.’

In order to rule out reference to degrees in the *yori* constituent, Beck *et al.* introduce a second crucial difference between Japanese and English, stated as the parameter in (24).

- (24) *Degree Abstraction Parameter* (DAP)
 A language {does, does not} have binding of degree variables in the syntax.

In particular, they propose that English and Japanese have different settings: English allows binding of degree variables, and Japanese does not. This eliminates the possibility of analyzing the bracketed constituent in (23b) as a degree description, ruling out an interpretation along the lines of (23a).

To summarize, Beck *et al.* (2004) claim that Japanese differs from English in two ways: with respect to the semantics of the comparative morphology itself, which is ‘contextual’ in Japanese but ‘compositional’ in English, and with respect to the possibility of abstraction over degree positions in the syntax. However, it is important to observe that these points of variation are logically independent of each other, so if they represent true points of cross-linguistic variation, we expect a four-way typology:

(25)

	COMPOSITIONAL	CONTEXTUAL
+ DAP	English	???
- DAP	???	Japanese

But we won’t find one, which is a problem for this proposal, at least to the extent that positing these two points of cross-linguistic variation is supposed to make interesting typological predictions. A language that falls in the upper right box in (25) (contextual and +DAP) would actually look just like English, because the availability of degree abstraction would allow the generation of subdeletion structures and attributive degree binding structures. Such structures, which would be sensitive to negative islands, could then be used to make salient particular degrees as potential values for the contextual standard *c*, as in (23a) above, resulting in exactly the same truth conditions that we see in a ‘compositional’ language.

Conversely, a language that is compositional and -DAP (the bottom left box) turns out to look just like Japanese, as I will show in the next section. To preview the conclusion, the crucial factor is whether standards denote degrees or individuals (perhaps because of a +/- setting for the DAP, or perhaps for some other reason), and not whether the comparative standard is ‘contextual’ or ‘compositional’. This is the distinction between individual and degree comparison that I outlined at the beginning of the paper, and describe in more detail in what follows.

3 Individual vs. degree comparison

3.1 English and Japanese have different standards of comparison

Let us assume with Beck *et al.* (2004) that the impossibility of adjectival subdeletion in Japanese indicates that standards cannot be degree abstraction structures, while the possibility of subdeletion in English indicates that they can be. In purely descriptive terms, then, the crucial difference is the following:

- (26) a. Complex standards in Japanese are (only) type *e*.
b. Complex standards in English are (potentially) type *d*.

This difference could be due to the DAP. However, it could also be due to a difference in the semantics of the comparative morphology in the two languages: whether it selects a standard of type *e* or type *d*, i.e., whether it expresses individual or degree comparison.

To see what I mean by this, first consider the fact that the semantics of the comparative morpheme MORE that I gave in (11), repeated in (27), will not work for Japanese if in fact standards are always individual denoting, because it expects a standard of type *d*.

$$(27) \quad [\text{MORE}] = \lambda d \lambda g \in D_{\langle d, et \rangle} \lambda x. \max\{d' \mid g(d')(x) = 1\} \succ d$$

However, there is strong evidence that (27) is not the only option even in English. As noted originally by Hankamer (1973), English standards may be either degree abstraction structures or simple DPs. This is the ‘phrasal’ vs. ‘clausal’ distinction illustrated by data like (28)-(29) (see also Hoeksema 1983; Heim 1985; Kennedy 1999).

- (28) a. Noone₁ is taller [PP than [DP himself₁]]
b. *Noone₁ is taller [PP than [CP himself₁ is]]

The fact that the reflexive in (28a) can be bound by the subject indicates that these constituents are coarguments; similarly, the fact that we can extract the complement of *than* in (29a) suggests that it is the complement of a preposition rather than the subject of an embedded *wh*-construction, as in the ungrammatical (29b).

- (29) a. Kim doesn't know who₁ Lee is taller [PP than *t*₁]
b. *Kim doesn't know who₁ Lee is taller [PP than [CP *t*₁ is]]

This distinction is illustrated even more dramatically in languages that have both ‘fixed case’ and ‘derived case’ comparatives, such as Russian (30a-b).

- (30) a. Dmitri starše Ivana.
Dmitri-NOM older Ivan-GEN
b. Dmitri starše čem Ivan.
Dmitri-NOM older than Ivan-NOM
Dmitri is older than Ivan.

There is little doubt that the standard in (30a) is a simple DP. But if this is true for fixed case comparatives and for phrasal comparatives in the (a) sentences in

(28) and (29), then it cannot be the case that explicit comparative morphology is restricted to the denotation in (27). Instead, it should allow for both type *d* or type *e* standards.

To implement this idea, let us hypothesize two lexical entries for the explicit comparative morpheme MORE: one with the denotation in (27), which expresses degree comparison, and one with the denotation in (31), which expresses individual comparison (Hoeksema 1983; Heim 1985; Kennedy 1999; Bhatt & Takahashi 2007).

$$(31) \quad \llbracket \text{MORE}_I \rrbracket = \lambda y \lambda g \lambda x. \max\{d' \mid g(d')(x) = 1\} \succ \max\{d'' \mid g(d'')(y) = 1\}$$

In terms of truth conditions, both individual comparison and degree comparison encode asymmetric ordering relations between arbitrary degrees, and introduce interpretations that are independent of the semantics of the positive form. They thus have the same core meaning, but differ in the semantic type of their standards. Individual comparison involves a syntactic standard of type *e*, and derives a standard degree by applying the meaning of the gradable adjective to this individual. Degree comparison, on the other hand, expects a syntactic standard that is already type *d*.

Returning to Japanese vs. English, if we assume that Japanese has only individual comparison, while English has both types, this would entail a corresponding difference in the syntactic expression of standard arguments: standard arguments in Japanese would have to be individual denoting expressions, while standards in English could denote either individuals or degrees.

3.2 Explaining the facts

If Japanese has individual standards, it follows that complex *yor*i-constituents must be relative clauses, an idea that was (to my knowledge) first suggested by Ayumi Ueyama (1998). This is a conclusion that Beck *et al.* also arrive at. This distinction — together with the corresponding semantic difference between individual and degree comparison — is enough to explain the differences between comparatives in Japanese and English discussed above.

First, the absence of negative island effects and the impossibility of subdeletion follow immediately: both of these phenomena arise from the specific syntax and semantics of degree abstraction structures like English comparative clauses, but by hypothesis, these structures are not involved in the construction of Japanese comparatives. The more interesting case concerns the variability effects documented by Ishii (1991). Given the assumption that Japanese has individual comparison, these effects can be explained in terms of the interaction of the semantics of MORE_I in (31) with the specific type of relative clauses seen in examples like (32a)-(32c).

- (32) a. Taroo-wa [Hanako-ga katta yori] takusan(-no) kasa-o katta.
 Taroo-TOP [Hanako-NOM bought YORI] many(-GEN) umbrella-ACC bought
 ‘Taroo bought more umbrellas than Hanako did.’
- b. ?*Taroo-wa [Hanako-ga katta yori] nagai kasa-o katta.
 Taroo-TOP [Hanako-NOM bought YORI] long umbrella-ACC bought
 ‘Taroo bought a longer umbrella than Hanako did.’

- c. Taroo-wa [Hanako-ga kaita yori] nagai ronbun-o kaita
 Taroo-TOP [Hanako-ACC wrote YORI] long paper-ACC wrote
 ‘Taroo wrote a longer paper than Hanako did.’

Let’s focus first on the unacceptable example (32b). Following Beck et al., I assume that the clausal complement of *yori* in this example is a relative clause that denotes the maximum plurality of things that Hanako bought (or possibly the plurality of umbrellas that she bought, if there is a deleted internal head). The semantics of individual comparison derives the denotation for the comparative predicate shown in (33).

$$(33) \quad \lambda x. \max\{d' \mid \mathbf{long}(x) \succeq d'\} \succ \max\{d'' \mid \mathbf{long}(\max\{y \mid H \text{ bought } y\}) \succeq d''\}$$

The value of the expression to the right of the ordering relation should be the result of applying the measure function **long** to the plurality of things (or umbrellas) that Hanako bought, but what is the length of such a plurality? Is it the maximal length of all the objects laid on the ground one after the other? Is it the length of the longest object? Is it something more abstract? In fact, I would like to simply claim that this notion is simply undefined: the measure function **long** expects an atom as its argument (cf. Schwarzschild 2002), not a plurality, so this is simply an anomalous denotation.

Support for this view comes from the fact that *long* in (34a) has only a distributive interpretation: this DP can be used to refer to a plurality of long umbrellas, but it is extremely hard to understand it (except maybe as a joke) as referring to a long line of umbrellas ordered end-to-end. Compare this to what we see with *many* in (34b), which can be interpreted collectively: (34b) could be used to refer to a plurality of umbrellas whose cardinality is large.

- (34) a. the long umbrellas
 b. the many umbrellas

The fact that **many** can (and presumably must) take pluralities as its argument in turn explains the acceptability of (32a), in which the denotation of the comparative part should be something like (35).

$$(35) \quad \lambda x. \max\{n \mid \mathbf{many}(x) \succeq n\} \succ \max\{m \mid \mathbf{many}(\max\{x \mid H \text{ bought } x\}) \succeq m\}$$

If this explanation for the difference between (32a) and (32b) is on the right track, then we predict that if we can modify the latter example so that the argument of **long** is something whose length can be measured, it should become fine. One way to do that is to ensure that the complement of *yori* is singular; this can be achieved through the definiteness effect of the nominalizer *no* or by adding an external head, as in (36).

- (36) Taroo-wa [Hanako-ga katta no/kasa] yori nagai kasa-o katta.
 T-TOP [H-NOM bought NO/umbrella] YORI long umbrella-ACC bought
 ‘Taroo bought a longer umbrella than the one/umbrella that Hanako bought.’

Finally, the acceptability of (32c) can be explained in terms of the contribution

of the incremental theme verb *write*. Such verbs allow for an interpretation of the yori-constituent as the maximum plurality of incremental objects created over the course of the event described by the verb; such a plurality corresponds to a single atomic object, and so is the kind of thing that can be measured by a measure function like **long**.¹

3.3 Summary

I have argued that the differences between Japanese and English can be explained if we assume that Japanese has individual comparison only, while English has both individual and degree comparison. The initial plausibility of this distinction as a potential ‘parameter’ of variation was motivated by the fact that some languages appear to have both types of comparison (English, Russian, etc.); further support comes from the fact that other languages have also been claimed to have only individual comparison: Xiang (2003, 2005) makes this case for Mandarin, and Bhatt & Takahashi (2007) argue convincingly that Hindi-Urdu is of this type. The question that we now need to address is what is responsible for this distinction. One option is that languages can simply choose between the two denotations for (abstract, possibly unpronounced) MORE given in (27) (for degree comparison) and (31) (for individual comparison), or some logically equivalent variations thereof (I am not committed to these particular characterizations of the meaning of comparative morphology). This is the approach taken by Bhatt & Takahashi (2007), for example. Another option is that the variation has something to do with independent constraints on the syntax/semantics of the standard constituent; this is the idea that underlies Beck et al.’s (2004) Degree Abstraction Parameter.

An indication that the latter solution is not the correct one comes from additional data in Ishii (1991). Ishii observed that an unacceptable example like (32b) becomes perfectly acceptable when the standard is a simple DP, as in (37).

- (37) Taroo-wa Hanako yori nagai kasa-o katta.
 Taroo-TOP Hanako YORI long umbrella-ACC bought
 ‘Taroo bought a longer umbrella than Hanako (bought).’

The meaning of (37) is precisely what we were trying to get with (32b); the difference is that here, the standard is a simple DP *Hanako* rather than a plurality-denoting relative clause. The surface form of (37) does not license the interpretation indicated in the gloss; to derive this meaning, we need to assume that the comparative constituent raises out of the AP and adjoins to a position just below the ‘target’ of comparison *Taroo-wa* but above the property-denoting expression that

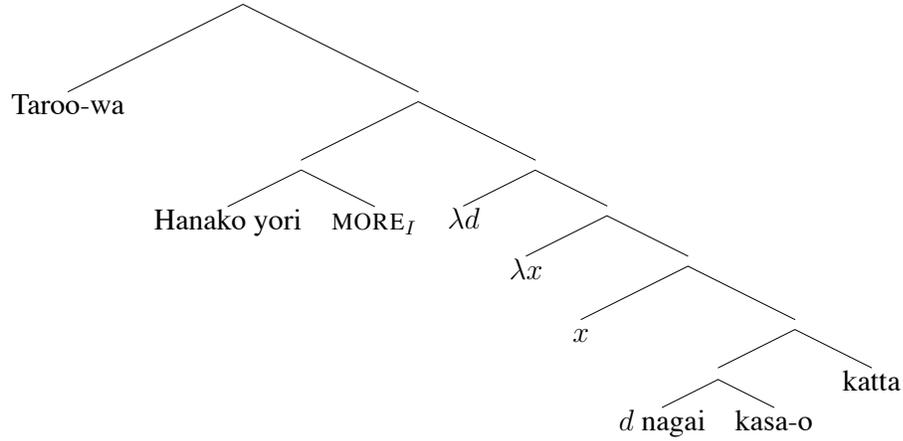
¹We see the same effect with the verb *make*, which provides more of a true minimal pair with (32b):

- (i) Taroo-wa [Hanako-ga tukutta] yori nagai kasa-o tukutta.
 Taroo-TOP [Hanako-NOM made] YORI long umbrella-ACC made
 ‘Taroo made a longer umbrella than the one that Hanako made.’

The fact that incremental theme verbs ‘fix’ the anomalous examples was also noticed by Ishii, though his explanation of this effect was not stated in terms of the verbs’ incrementality.

corresponds to the target’s scope, as shown in (38) (this is thus an instance of ‘parasitic scope’; see Heim 1985; Bhatt & Takahashi 2007; Barker in press; Kennedy & Stanley 2008).

(38)



The interpretation of this structure is shown in (39a-b), which is the meaning we wanted for (14b).

- (39) a. $\llbracket \text{MORE}_I \rrbracket(\text{hanako})(\lambda d \lambda x. x \text{ bought an umbrella at least as long as } d)(\text{taroo})$
 b. $\max\{d \mid \text{Taroo bought an umbrella at least as long as } d\} \succ \max\{d' \mid \text{Hanako bought an umbrella at least as long as } d'\}$

Crucially, scoping the *yori*+ MORE_I and binding a degree variable in its base position gives us a new degree relation: one that, when plugged in as the $\langle d, et \rangle$ argument of MORE_I , derives truth conditions for the individual comparison structure that are equivalent to what we can build directly using a clausal, degree-denoting standard in English. The fact that (37) is acceptable on the interpretation represented by the LF in (38), provides an argument that Japanese does in fact allow degree abstraction in the syntax, contrary to expectations if it has a negative setting for the DAP. The generalization is instead more narrow: Japanese evidently does not allow degree abstraction in the syntactic standard constituent (the complement of *YORI*), which is exactly what we would expect if the semantics of comparison requires an individual-denoting, rather than degree-denoting, standard.²

Given these considerations, the most straightforward way to capture the individual/degree distinction is to assume that languages may lexicalize either MORE_D and MORE_I .³ A prediction (or at least an expectation) of this hypothesis is that any

²The denotation of the DP *Hanako* can also be supplied directly as the semantic standard here, but then the truth conditions for (39) are as in (i), which is true iff the umbrella than Taroo bought is longer than Hankao.

(i) $\max\{d \mid T \text{ bought an umbrella at least as long as } d\} \succ \max\{d'' \mid \mathbf{long}(\mathbf{hanako}) \succeq d''\}$

In fact, (37) can have this meaning, though it requires imagining that Hankao is lying down and Taroo’s umbrella is placed next to her, which is a somewhat odd scenario to consider.

³In Kennedy (2007a), I propose an alternative means of capturing this distinction, in which the elements that introduces the comparative semantics is the *standard* morphology rather than the

language that has degree comparison will have individual comparison too, because MORE_I can be defined in terms of MORE_D :

$$(40) \quad \llbracket \text{MORE}_I \rrbracket = \lambda y \lambda g_{\langle d, et \rangle} \lambda x. \llbracket \text{MORE}_D \rrbracket (\max\{d \mid g(d)(y) = 1\})(g)(x)$$

The reverse is not the case, however, so there should be languages that have only individual comparison. Bhatt & Takahashi (2007) claim that this is the case in Hindi, Xiang (2003, 2005) makes this case for Mandarin, and if I am correct, then Japanese is such a language as well. Future work will no doubt turn up other examples of languages that have only individual comparison.

4 Implicit vs. explicit comparison

I argued in the previous section that Beck *et al.*'s (2004) distinction between compositional and contextual standards does not actually make significant predictions about differences between English and Japanese, and that instead the crucial point of variation between these two languages is in the semantic type of the standard: whether it corresponds either to a degree or individual (English), or only to an individual (Japanese). It is possible that Japanese and English also differ with respect to Beck *et al.*'s characterization of the contextual/compositional standard distinction, but the data we have seen so far do not decide this question.⁴

However, there is an alternative, more radically contextual analysis that might do just as good a job at predicting the differences between Japanese and English as the individual/degree distinction presented in the previous section, which also represents an independently plausible candidate for a point of variation between languages in the way that they express comparison. Before we accept the conclusion reached in the previous section, then — that English and Japanese differ with respect to the individual/degree comparison distinction — we need to consider this option. In short, the hypothesis is that some languages do not have English-like comparative morphology and semantics at all. Instead, they express comparison by taking advantage of the inherent context dependence and implicit ordering properties of the positive (unmarked) form (cf. Wheeler 1972)

4.1 The positive form

There are two apparently universal features of the positive form. The first is semantic: with some important exceptions, one of which I will describe shortly, the interpretation of the positive form is context dependent. For example, whether (41) is true or not depends in large part on the context in which it is uttered.

comparative morphology. This view has the distinct advantage of capturing the fact that the choice between (what I am referring to here as) MORE_D and MORE_I is overtly reflected by the standard morphology in many languages (Russian, Greek, Romance) and that comparative morphology is cross-linguistically optional. However, it also requires rethinking and reanalyzing a number of basic assumptions about the morphosyntax of the comparative morphology (in languages that have it), which I do not have the space to do here.

⁴To determine whether the languages differ in Beck *et al.*'s sense, we would have to find evidence involving the syntactic relation between the predicate and the standard, the expectation being that in English, the relation between MORE and the standard is a predicate/argument relation, while in Japanese it is an anaphoric one, perhaps comparable to dislocation structures in the language.

(41) The coffee in Rome is expensive.

(41) could be judged true if asserted as part of a conversation about the cost of living in various Italian cities, as in (42a), but false in a discussion of the cost of living in Chicago vs. Rome, as in (42b).

- (42) a. In Rome, even the coffee is expensive!
b. The rents are high in Rome, but at least the coffee is not expensive!

One account for this variability is that the positive form expresses a relation between the degree to which the subject of the predicate manifests the relevant property and a contextually variable STANDARD OF COMPARISON, whose value is determined both as a function of the meaning of the predicate and of features of the context of utterance — what is being talked about, the interests/expectations of the participants in the discourse, and so forth (see e.g. Lewis 1970; Fara 2000; Barker 2002; Kennedy & McNally 2005; Kennedy 2007b). For example, in Kennedy (2007b), I argue that the positive form denotes the property of having the minimal degree of the property measured by the adjective that is required to ‘stand out’ in the context of utterance relative to the kind of measurement expressed by the adjective. Thus even though the denotation of the positive form is fixed, its truth conditions can vary in the different examples according to the contextual features that determine how high a degree of the measured property is required in order to stand out.

The second (possibly) universal feature of the positive form is the absence of overt degree morphology. For some researchers, this fact calls into question a degree-based semantics of gradable adjectives (see in particular Klein 1980), but working within the assumptions adopted here, we have two options for the compositional semantics of the positive form. The first is to assume a degree morpheme *pos* with a denotation along the lines of (43), where **stnd** is a context sensitive function that takes a gradable predicate meaning as input and returns a standard of comparison appropriate for the context as output (cf. Cresswell 1977; von Stechow 1984; Kennedy & McNally 2005).

(43) $\llbracket pos \rrbracket = \lambda g \in D_{\langle d, et \rangle} \lambda x. max\{d \mid g(d)(x) = 1\} \succeq \mathbf{stnd}(g)$

The second is to assume a lexical type-shifting rule that has the same effect:

(44) For any lexical item A, if $\llbracket A \rrbracket \in D_{\langle d, et \rangle}$, then there is a lexical item A' such that: $\llbracket A' \rrbracket = \lambda x. max\{d \mid \llbracket A \rrbracket(d)(x) = 1\} \succ \mathbf{stnd}(\llbracket A \rrbracket)$

I think it is an open question as to which analysis is the correct one. Even more interesting is the possibility that both options are possible — that languages may differ on whether they lexicalize the positive form type shifting rule (cf. Chierchia 1998).

4.2 Implicit comparison

The semantics of the positive form already supports the expression of comparison, an observation that goes back to Sapir (1944). Since the standard of comparison

is context sensitive, one way to convey the fact that an object x has a higher degree of gradable property g than an object y is to modify the context so that the standard makes the positive form true of x but false of y . This will be the case only if the degree to which x is g exceeds the standard while the degree to which y is g does not; given the inherent ordering on degrees, it will follow that $x \succ y$ relative to g .

With these considerations in mind, let us consider the possibility that languages might differ in whether they use IMPLICIT or EXPLICIT comparison, adapting some terminology of Sapir (1944), which I define as follows:

- (45) *Implicit Comparison*
Establish an ordering between objects x and y with respect to gradable property g using the positive form by manipulating the context in such a way that the positive form true of x and false of y .
- (46) *Explicit Comparison*
Establish an ordering between objects x and y with respect to gradable property g using a morphosyntactic form whose conventional meaning has the consequence that the degree to which x is g exceeds the degree to which y is g .

All languages have positive form gradable adjectives — this is a fundamental component of the inventory of natural language — so all languages have some way of expressing implicit comparison. Is it possible that some languages have only implicit comparison?

At a theoretical level, this seems like a distinct possibility. Explicit comparison requires special degree morphology, such as $MORE_D$ and $MORE_I$, as defined in section 3. However, if the positive form is (at least potentially) lexically derived, implicit comparison could be achieved without degree morphology. We therefore have the potential to ground this parameter in a familiar distinction: the presence/absence of functional (degree) morphology.

Furthermore, the typological data also clearly show that the primary means of expressing comparison in some languages are constructions that (superficially, at least) appear to involve implicit comparison. For example, in Samoan, comparison involves setting two objects in an adversative relation through conjunction of antonymous predicates:

- (47) Ua tele le Queen Mary, ua la'itiiti le Aquitania.
is big the Queen Mary, is small the Aquitania
'The *Queen Mary* is bigger than the *Aquitania*.'

Further investigation will determine whether such constructions have the semantic properties of implicit comparison that I will outline below; what I want to consider first is whether the differences between English and Japanese that we saw above could be explained in terms of the explicit/implicit distinction.

In order to do this, we first need a semantics of implicit comparison constructions whose predictions we can test. English constructions involving positive form adjectives modified by adverbials like *compared to*, *with respect to*, and so forth, such as (48a-b), provide the starting point we need.

- (48) a. Compared to Lee, Kim is tall.
 b. With respect to Lee, Kim is tall.

Let us assume that *compared to*, *with respect to*, and similar types of expressions modify the contextual parameters with respect to which the standard of comparison used to fix the extension of the positive form is computed. In particular, let us assume that *compared to* constructions have truth conditions along the lines of (49), where *A* is a positive form gradable predicate.

- (49) $\llbracket \text{compared to } y \rrbracket(\llbracket A \rrbracket)$ is true of *x* in a context *c* iff $\llbracket A \rrbracket$ is true of *x* in any context *c'* just like *c* except that the domain includes just *x* and *y*.

In other words, the semantic function of *compared to x* is to manipulate the context relative to which the positive form is evaluated so that it only includes the argument of the adjective and the argument of *compared to*; the rest of the sentence constitutes an assertion that *x is A* in this revised context. If we add to this a general constraint that the standard of comparison always imposes a non-trivial partitioning on the adjective's domain such that its negative as well as positive extension should be non-empty (Klein 1980), then *x is A compared to y* will further entail that *y* is not *A*. But if there is some context in which *x is A* is true and *y is A* is false, it follows from the truth conditions of the positive form and the relative ordering on the scale that $x > y$ relative to *A* in *any* context, as already pointed out above. So an implicit comparison construction like (48a) will entail of the context of utterance that Kim is taller than Lee (though not that Kim is tall), which is exactly what we want. (I assume that similar considerations hold for related constructions like (48b).)

4.3 Japanese as an implicit comparison language?

Returning to Japanese, let us start from the observation that Japanese has no overt comparative morphology and consider the hypothesis that it lacks explicit comparison morphology (and possibly true degree morphology altogether), and that adjectives come out of the lexicon with positive form semantics. On this view, the English and Japanese versions of the word for 'long' have distinct meanings and semantic types: English *long* denotes a degree relation of type $\langle d, et \rangle$; Japanese *nagai* denotes a (context-dependent, vague) property of type $\langle e, t \rangle$. If this is correct, then *yor*i constructions in Japanese must be semantically parallel to English implicit comparison constructions like (48a-b): they serve to restrict the context in which the positive form is evaluated in such a way that the domain includes only the complement of *yor*i and the argument of the gradable predicate.⁵ What does this alternative hypothesis about the difference between English and Japanese predict about the facts we examined in section 2?

⁵The idea that the *yor*i constituent is similar to English *compared to* comes from Beck *et al.* (2004), though they ultimately adopt the position that the gradable predicate should be assigned *comparative* semantics, as shown in the paraphrases I gave in section 2.3 (see (20)), rather than a *positive* semantics, as considered here. This is a crucial distinction, as the tests I discuss in section 4.4 below are relevant only in the latter case: in all of the crucial examples, if we change *compared to y, x is A* to *compared to y, x is Aer*, the judgments parallel those of explicit comparative constructions. This further indicates that the observed facts are not due to the meaning of *compared to*, but to the difference in meaning between *Aer* and *A*, i.e., between the (explicit) comparative and positive forms.

At first glance, this hypothesis also does a good job of accounting for the data. First, as with the individual/degree distinction, the assumption that Japanese has implicit comparison (in the way assumed here) should derive the absence of negative island effects in comparatives and the impossibility of subdeletion: if Japanese gradable predicates do not even have degree arguments in the first place, as the implicit comparison hypothesis states, then we certainly would not expect to see constructions and grammatical effects that require such arguments.

Turning to variability effects, the implicit comparison hypothesis makes essentially the same predications for Japanese that the individual comparison hypothesis made. Given the semantics of implicit comparison outlined above, statements of the form in (50a-b) presume that both x and y are in the domain of the adjective A .

- (50) a. [compared to y] x is A
 b. x [y yori] (is) A

This means that we should see semantic anomaly when either x or y is not the kind of thing that A can be predicated of. If we maintain our earlier assumptions about the denotations of the complements of *yori* in the examples in (14), then (14b) is out because it requires the domain of *nagai* ‘long’ to include pluralities of umbrellas (the hypothesized denotation of the *yori* constituent), which will never be the case if this predicate is restricted to apply to atoms.

4.4 Diagnostics for implicit comparison

The previous section showed that the hypothesis that Japanese has implicit comparison makes the same predications about the facts discussed in section 2 as the hypothesis that it has individual (explicit) comparison. This is not surprising, since the place where the two hypotheses agree — and where they both make Japanese distinct from English — is in assuming that the constituents that are involved in calculating the standard, whether it be an explicit one used in evaluating the comparative form or an implicit one used to evaluate the positive form, denote (sets or pluralities of) individuals rather than degrees. In order to decide between the two proposals, then, we need to consider the kinds of distinctions that would tell us whether we have explicit or implicit comparison. I outline several such distinctions below, all of which stem from the crucial difference between the two modes of comparison, as defined in (45) and (46): implicit comparison involves the semantics of the positive form; explicit comparison expresses an arbitrary ordering relation.

4.4.1 Crisp judgments

A fundamental semantic property of the positive form is that it is vague: it gives rise to borderline cases (objects for which it is unclear whether or not the predicate holds) and the Sorites Paradox, which in essence involves an unwillingness to use the positive form to make distinctions between objects that are extremely similar relative to the gradable property expressed by the positive form (i.e., objects that are very close to each other with respect to the degree to which they hold the property). Let us assume, following Fara (2000) and Kennedy (2007b), that these features of vagueness are due to the conventional meaning of the positive form. In particular, let us assume that they arise from its semantics: the requirement that its argument

‘stand out’ relative to the kind of measurement encoded by the adjective. Borderline cases arise because of uncertainty about what exactly this degree is; the Sorites Paradox arises from a more general ‘similarity constraint’ such that if x and y are very similar relative to gradable property g , then if x stands out relative to g , y does too.

How exactly this constraint is derived is an important question, but not one that is crucial to the current discussion. What matters for the explicit/implicit comparison distinction is that given this constraint, implicit comparison of x and y relative to A (i.e., an assertion that x is A compared to y) actually makes a stronger claim than explicit comparison of x and y (x is more A than y): in the former case, the degree to which x is A must exceed the degree to which y is A by enough to avoid the similarity constraint discussed above. This is because an assertion of x is A compared to y includes a commitment to the truth of x is A and the falsity of y is A (relative to contexts containing just x and y); if x and y are too close along the A continuum, this sort of commitment cannot be made.⁶

This feature of implicit comparison makes it distinct from explicit comparison, which just requires an asymmetric ordering between two degrees. This difference results in different predictions about the acceptability of explicit and implicit comparison in contexts involving very slight differences between the compared objects, which I will call CRISP JUDGMENTS:

- (51) CONTEXT: A 600 word essay and a 200 word essay
- a. This essay is longer than that one.
 - b. Compared to that essay, this one is long.
- (52) CONTEXT: A 600 word essay and a 597 word essay
- a. This essay is longer than that one.
 - b. #Compared to that essay, this one is long.

Explicit comparison in (52a) simply requires an asymmetric ordering between the degrees to which two objects possess the relevant property, so a crisp judgment is no problem. Implicit comparison in (52b) requires the first novel to have a degree of length that stands out relative to the measure expressed by *long* in the context. Given the discussion above, if a 600 word essay is judged to stand out in length, then we’re committed to a 597 word essay standing out in length too, so *long* ends up true of both objects. But this violates the condition that we have a non-trivial partitioning of the domain, which consists of just these two essays, resulting in infelicity.

4.4.2 Negative implicatures to the positive form

Implicit comparisons, like explicit comparisons, do not entail that the positive form is true of the compared objects:

⁶Let me emphasize again that I am speaking descriptively here; an explanation of *why* this constraint holds will ultimately come from the analysis of vagueness, and it is not my goal to present such an analysis here. See Kamp (1981); Williamson (1994); Soames (1999); Fara (2000); and Kennedy (2007b) for recent discussion of this issue.

- (53) a. That essay isn't long, but it's long compared to this one.
 b. That essay isn't long, but it's longer than this one.

However, implicit comparison, but not explicit comparison, generates an implicature that the positive form is false of the subject, as observed by Sawada (2007), who provides a pragmatic explanation of this effect.

- (54) a. ??That essay is long compared to this one, and it's already quite long.
 b. That essay is longer than this one, and it's already quite long.

4.4.3 Minimum standard gradable adjectives

Not all gradable adjectives have context dependent standards in the positive form. As discussed by Rotstein & Winter (2004), Kennedy & McNally (2005) and Kennedy (2007b), adjectives like *wet*, *open*, *bent*, *impure* and so forth are special in having positive forms in which the standard of comparison is a *minimum* value on the scale: *x is bent* is true as long as *x* has a non-zero degree of bend. Since the standard of comparison is not dependent on the context, we predict that a *compared to* constituent should have no semantic effect on the interpretation of such adjectives, and so should be infelicitous. This is indeed the case: while (56a) is a perfectly good way to describe the scenario in (55), (56b) is quite odd.

- (55) Rod A:  Rod B: 

- (56) a. B is more bent than A.
 b. ??Compared to A, B is bent.

4.4.4 Differential measurements

Measure phrases override the semantics of the positive form. For our purposes, we can assume that this is because they have meanings that allow them to combine directly with a gradable adjective, as in (57).

- (57) $\llbracket 10cm \rrbracket = \lambda g \in D_{d,et} \lambda x. \max \{ d \mid g(d)(x) = 1 \} = \mathbf{10\ cm}$

In effect, composition of a MP and a gradable adjective generates a predicate that, like the minimum standard adjectives discussed above, is no longer context dependent (cf. Pinkal 1995). This predicts that implicit comparison should be impossible: once a (non-comparative) adjective combines with a measure phrase, there is no standard of comparison left over to manipulate. This is correct:

- (58) a. ??Compared to Lee, Kim is 10cm tall.
 b. Kim is 10 cm taller than Lee.

MPS are acceptable with explicit comparatives, and crucially have a specific type of meaning: they denote the difference between two degrees on a scale; in (58b), the difference between Kim's and Lee's heights. There are a number of different semantic analyses of differential comparatives on the market; for our purposes, it is

enough to observe that the acceptability of a measure phrase and the corresponding differential interpretation are diagnostics for explicit vs. implicit comparison.

4.5 Japanese has explicit comparison after all

With these tests in hand, we can evaluate whether the right account of the differences between Japanese and English is one that assumes Japanese to have implicit comparison, while English has explicit comparison, or one that posits Japanese to have individual (explicit) comparison, while English has (both individual and) degree comparison. The following set of facts clearly rule in favor of the latter position, by showing that Japanese *yori* constructions involve explicit comparison.

First, Japanese comparatives are felicitous in crisp judgment contexts. For example, (59) is a perfectly good way of describing the relation between a 600 word paper and a 597 paper, though the corresponding *compared to* construction in English is not.

- (59) Kono peepaa-wa ano peepaa yori nagai.
this paper-TOP that paper YORI long
'This paper is longer than that one.'

Second, in the context in (60), the Japanese comparative in (61), which involves a minimum standard adjective, is perfectly felicitous.

- (60) Rod A:  Rod B: 

- (61) Ano sao-wa kono sao yori motto magatte-iru.
that rod-TOP this rod YORI much bent-be
'That rod is more bent than this rod.'

In particular, (61) is comparable in meaning to the English explicit comparative in (56a).

Finally, as shown by (62), Japanese comparatives allow measure phrases, and the MPs are assigned differential interpretations, again pointing to the conclusion that Japanese has explicit comparison.⁷

- (62) Gozira-wa Rodan yori hyaku-ton omoi.
Godzilla-TOP Rodan from 100-tons heavy
'Godzilla is 100 tons heavier than Rodan.'

⁷In fact, measure phrases in Japanese are impossible in the positive form; to the extent that (i) are acceptable, they force a comparative interpretation.

- (i) Gozira-wa hyaku-ton omoi.
Godzilla-TOP 100-tons heavy
'Godzilla is 100 tons heavy*(ier than some contextually salient object).'

4.6 Summary

The conclusion to be drawn from these facts is that Japanese, like English, has explicit comparison, and in particular, *yori*-constructions involve explicit comparison.⁸ We can therefore be secure in our original conclusion that the crucial difference between Japanese and English has to do with the semantic type of the comparative standard: English has both individual and degree standards, while Japanese has only individual standards.

5 Conclusion

The central conclusion of this paper is that the distinction between individual and degree comparison is a real point of typological variation. It accounts for the differences between Japanese and English observed by Ishii (1991) and Beck *et al.* (2004), is needed to account for other languages that have only individual comparison (Xiang 2003, 2005; Bhatt & Takahashi 2007), and is arguably independently needed within many languages to account for differences between (so-called) phrasal and clausal comparatives (Hankamer 1973; Hoeksema 1983; Heim 1985; Kennedy 1999). I suggested here that this distinction is best captured as a lexical one between $MORE_D$ and $MORE_I$, but this is a hypothesis that should definitely be subjected to further scrutiny in future work.

A second hypothesis that should be the focus of future work is whether the implicit/explicit distinction represents a real point of cross-linguistic variation. While this did not turn out to be the right way to capture the differences between Japanese and English, it remains to be seen whether there are in fact languages that are best characterized as having only implicit comparison. Given the existence of languages in which the primary means of comparison involves adversative predication of (what look like) positive form adjectives as in the Samoan construction in (47) (other languages with this type of comparative are Dakota, Miskito, Maori, Cayapo and Washo; see Stassen 1985), it seems quite likely that this will turn out to be the case. This paper provides some important tests for distinguishing between explicit and implicit comparison, as well as a guide for how to construct others: look for constructions and contexts that exploit the fact that the positive form is vague while the comparative form is not.

References

- Barker, Chris. 2002. The dynamics of vagueness. *Linguistics and Philosophy* 25.1–36.
- , in press. Parasitic scope. To appear in *Linguistics and Philosophy*.
- Beck, Sigrid, Toshiko Oda, & Koji Sugisaki. 2004. Parametric variation in the

⁸Japanese does have other constructions to express implicit comparison, such as *kurabe-tara* ‘compare-conditional’; as shown by Sawada (2007), these constructions behave just like the English *compared to* constructions with respect to the tests described above and other diagnostics for implicit vs. explicit comparison.

- semantics of comparison: Japanese vs. English. *Journal of East Asian Linguistics* 13.289–344.
- Bhatt, Rajesh, & Roumyana Pancheva. 2004. Late merger of degree clauses. *Linguistic Inquiry* 35.1–46.
- , & Shoichi Takahashi. 2007. Direct comparisons: Resurrecting the direct analysis of phrasal comparatives. In *Proceedings of SALT 17*, Ithaca, NY. CLC Publications.
- Bresnan, Joan. 1973. Syntax of the comparative clause construction in English. *Linguistic Inquiry* 4.275–343.
- Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural Language Semantics* 6.339–405.
- Chomsky, Noam. 1965. *Aspects of the Theory of Syntax*. Cambridge, Mass.: MIT Press.
- . 1977. On wh-movement. In *Formal Syntax*, ed. by Peter Culicover, Tom Wasow, & Adrian Akmajian, 71–132. New York: Academic Press.
- Cresswell, M. J. 1977. The semantics of degree. In *Montague Grammar*, ed. by Barbara Partee, 261–292. New York: Academic Press.
- Fara, Delia Graff. 2000. Shifting sands: An interest-relative theory of vagueness. *Philosophical Topics* 20.45–81.
- Hankamer, Jorge. 1973. Why there are two ‘than’s in English. In *Proceedings of the 9th Annual Meeting of the Chicago Linguistics Society*, ed. by Claudia Corum, T. Cedric Smith-Stark, & Ann Weiser, Chicago, IL. Chicago Linguistics Society.
- Heim, Irene, 1985. Notes on comparatives and related matters. Ms., University of Texas.
- . 2000. Degree operators and scope. In *Semantics and Linguistic Theory 10*, ed. by Brendan Jackson & Tanya Matthews, 40–64, Ithaca, NY. CLC Publications.
- Hoeksema, Jack. 1983. Negative polarity and the comparative. *Natural Language & Linguistic Theory* 1.403–434.
- Ishii, Yasuo, 1991. *Operators and Empty Categories in Japanese*. University of Connecticut dissertation.
- Kamp, Hans. 1981. The paradox of the heap. In *Aspects of Philosophical Logic*, ed. by U. Mönnich. Dordrecht: Reidel.
- Kennedy, Christopher. 1999. *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. New York: Garland. (1997 UCSC Ph.D thesis).

- . 2002. Comparative deletion and optimality in syntax. *Natural Language & Linguistic Theory* 20.3.553–621.
- , 2007a. Standards of comparison. Paper presented at the Colloque de Syntaxe et Sémantique de Paris, 6 October, 2007.
- . 2007b. Vagueness and grammar: The semantics of relative and absolute gradable predicates. *Linguistics and Philosophy* 30.1–45.
- , & Louise McNally. 2005. Scale structure and the semantic typology of gradable predicates. *Language* 81.345–381.
- , & Jason Merchant. 2000. Attributive comparative deletion. *Natural Language and Linguistic Theory* 18.89–146.
- , & Jason Stanley, 2008. *On average*. Ms., University of Chicago and Rutgers University.
- Klein, Ewan. 1980. A semantics for positive and comparative adjectives. *Linguistics and Philosophy* 4.1–45.
- Lewis, David K. 1970. General semantics. *Synthese* 22.18–67.
- Pinkal, Manfred. 1995. *Logic and Lexicon*. Dordrecht: Kluwer.
- Rotstein, Carmen, & Yoad Winter. 2004. Total adjectives vs. partial adjectives: Scale structure and higher-order modifiers. *Natural Language Semantics* 12.259–288.
- Rullmann, Hotze, 1995. *Maximality in the Semantics of Wh-Constructions*. Amherst, MA: University of Massachusetts dissertation.
- Sapir, Edward. 1944. Grading: A study in semantics. *Philosophy of Science* 11.93–116.
- Sawada, Osamu, 2007. Pragmatic aspects of implicit comparison: An economy based approach. ms. University of Chicago.
- Schwarzschild, Roger. 2002. The grammar of measurement. In *Semantics and Linguistic Theory 12*, ed. by Brendan Jackson, 225–245, Ithaca, NY. CLC Publications.
- . 2005. Measure phrases as modifiers of adjectives. *Recherches Linguistiques de Vincennes* 35.207–228.
- Soames, Scott. 1999. *Understanding Truth*. Oxford: Oxford University Press.
- Stassen, Leon. 1985. *Comparison and Universal Grammar*. Oxford: Basil Blackwell.

- Ueyama, Ayumi, 1998. Are clausal comparatives in Japanese really ‘clausal’? Paper presented at Comparative Workshop on Japanese, Chinese, Korean and English, Fukuoka National University, Fukuoka, Japan.
- Ulan, Russell. 1972. Some features of basic comparative constructions. In *Working Papers on Language Universals, No. 9*, 117–162. Stanford, CA: Language Universals Project, Committee on Linguistics.
- von Stechow, Arnim. 1984. Comparing semantic theories of comparison. *Journal of Semantics* 3.1–77.
- Wheeler, Samuel. 1972. Attributives and their modifiers. *Noûs* 6.310–334.
- Williamson, Timothy. 1994. *Vagueness*. London: Routledge.
- Xiang, Ming, 2003. A phrasal analysis of Chinese comparatives. Paper presented at the 39th Annual Meeting of the Chicago Linguistic Society.
- , 2005. *Some Topics in Comparative Constructions*. East Lansing, MI: Michigan State University dissertation.

Department of Linguistics
University of Chicago
1010 E. 59th St.
Chicago, IL 60637
ck@uchicago.edu