Toward a unified analysis of internal and external comparison

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Abstract. English comparatives in predicative position can be used to compare one individual to itself at a different point in time or space, e.g. in *The river is wider*. I identify grammatical distinctions between these internal comparatives and the more standardly analyzed class of external comparatives. On the basis of these grammatical differences, I argue that expressions of internal comparison are of a different semantic type than those of external comparison, viz. that a sentence containing an internal comparative is a relation between intervals in the domain of the denotation of the subject, conceived of as an individual concept. On this account, internal comparatives are semantically similar to degree-achievement verbs like *widen* in that they express a change in the degree of some property of the subject across an axis of measurement. The grammatical differences between internal and external comparatives then fall out from the semantics of internal comparison.

Keywords: comparatives, individual concepts, degree constructions, value change.

1. Introduction

Comparatives in predicative position in English can be used in two apparently different senses. The first, and more common, use of a predicative comparative is to express what I'll refer to as *external* comparison: the sentence containing the inflected adjective compares one individual to another.[1]

(1)   The river is wider than the footpath.   **External comparative**

In these cases, an individual's degree of some property is compared to another individual's degree of the same property: here, the river and the footpath are compared according to their degree of width. The second use of a comparative, and the focus of this paper, is to compare stages or parts of the same individual—that is, to express *internal comparison*:

(2)   The river is wider.   **Internal comparative**

(2) is most naturally read as predicating of the river that its degree of width now is greater than its degree of width at some (contextually salient) prior point in time.[2] Sheldon (1945) refers to this as an 'incomplete' comparative because it lacks an overt *than*-argument. An internal comparative expresses a meaning very similar to that of a sentence involving a degree-achievement verb like *widen*:

(3)   The river widened.

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[1]Throughout this paper, for the sake of simplicity, I focus on phrasal comparatives, i.e. those whose comparand *than*-arguments are individuals (syntactic DPs).

[2]The external reading is of course still available here, though dispreferred.

The present analysis takes seriously the intuition that internal comparison and degree-achievement verbs are closely related phenomena. More concretely, I argue that sentences containing internal comparatives denote relations between intervals along an axis, following work by Deo et al. (2013). Splitting internal from external comparison in this way accounts for some puzzling differences between the two constructions that have escaped notice in the literature. Most crucially, internal comparison, but not external comparison, licenses the use of certain axis-sensitive adverbial modifiers. In this paper, I'll focus on two: *as*-phrases, such as *as you go north*, and *with*-phrases, such as *with increased smoking*. The relevant pairs follow:

(4) a. ✓ The river is wider as you go north.   **Internal**

   b. # The river is wider **than the footpath** as you go north.   **External**

(5) a. ✓ The risk of cancer is greater with increased smoking.   **Internal**

   b. # The risk of cancer is greater **than the risk of emphysema** with increased smok-
       ing.   **External**

The second sentences in these examples are, if not syntactically malformed, certainly semantically anomalous. (The sense that they are syntactically well-formed is the reason for marking them with a '#' rather than a '*'.) What's wrong with them? As a first pass, the problem with (4b) seems to be that *as you go north* wants to modify something that expresses a change in value. While *being wider than the footpath* doesn't fit the bill, simply *being wider* apparently does. The same goes for the sentences in (5); *with increased smoking* seems to want an expression of value change.

To illustrate this contrast better, we may note the same distinction between the applicability of *be wide* and *widen*. Stative *be wide* is like an external comparative in resisting appearing with axis-oriented modifiers; change-of-state *widen*, however, is fine with them:

(6) a. # The river is wide as you go north.

   b. ✓ The river widens as you go north.

Internal comparison, I argue, expresses a value difference across stages or parts of a structured individual, making an internal comparative a kind of *difference description* in the sense of Deo et al. (2013). Internal *wider* in (4a) is of a different semantic type than external *wider* in (4b), more similar to *widen* than to *be wide*. For type-theoretic reasons, *as you go north* is unable to compose with the phrase containing external *wider*.

The present approach is couched in the Deo et al. (2013) analysis of degree-achievement verbs. On that analysis, DPs denote so-called *generalized individual concepts*, functions from intervals of some ordering dimension to individuals. In the spatial and temporal cases, an individual in the codomain of a generalized individual concept is conceived of as a spatial or temporal 'slice' of that individual, corresponding to the time or location that the individual concept is fed as an argument.

The present proposal, then, is straightforward, positing a systematic ambiguity in the denotation of phrasal comparative adjectives. Internal comparative adjectives accept exactly one individual-concept argument; comparison is then done between two entities that correspond to different spatial or temporal slices of the individual denoted by that individual concept. Crucially, the resulting denotation is a relation between intervals. Internal *wider*, for instance, has the following denotation, where χ is a placeholder type:

(7) $[\![\text{wider}_{int}]\!] : \chi e \rightarrow (\chi \rightarrow \chi t) \equiv$
$\qquad \lambda f_{\chi e} i_\chi j_\chi.\mathbf{max}(\lambda d.\mathbf{wide}(d)(f(j))) > \mathbf{max}(\lambda d.\mathbf{wide}(d)(f(i)))$

This is a function that wants an individual-concept argument f of type $\chi \rightarrow e$ and two intervals i and j of type χ; it returns True just in case $f(j)$ is wider than $f(i)$.

External *wider*, in contrast, wants two individual-concept arguments f and g, corresponding to two individuals. It then evaluates the width of those individuals at the same point of evaluation i:

(8) $[\![\text{wider}_{\text{ext}}]\!] = \lambda f_{\chi e} g_{\chi e} i_\chi.\mathbf{max}(\lambda d.\text{wide}(d)(g(i)) > \mathbf{max}(\lambda d.\text{wide}(d)(f(i))$

The upshot is that the external and internal senses of the comparative morpheme result in expressions of different types. Axis-sensitive adverbials like *as you go north* can only licitly compose with relations between intervals:

(9) $[\![\text{As you go north}]\!] : (\sigma \rightarrow \sigma t) \rightarrow t \equiv$
$\qquad \lambda R_{\sigma \rightarrow \sigma t} \forall l, l' \subseteq L_{s \rightarrow n}.l < l' \rightarrow R(l')(l)$

2. Characterizing the phenomenon

Readings of internal comparison are generally only available in predicative position. Comparatives modifying a subject (10a) or object don't give rise to internal-comparative readings:

(10) Context: *At the beginning of the school year, Alice was taller than Barbara; now, they're the same height.*
    a. # The taller girl took French. (with the meaning *Barbara took French.*)
    b. # The teacher saw a taller girl at recess. (with the meaning *The teacher saw Barbara at recess.*)

Internal comparison is done along an axis in the sense of Gawron (2005): a set of points with a well-ordering. In many cases, perhaps the majority, this axis is time. But an axis can also be spatial, informational, or functional (terms borrowed from Deo et al. 2013):

(11)   a. The river is wider here.   **Spatial axis**

    b. The plot is better after chapter three.   **Informational axis**

    c. The risk of cancer is higher with increased smoking.   **Functional axis**

Why (11a) and (11b) are instances of spatial and informational axes, respectively, is obvious; (11a) asserts that the river is wider here than at some prior point in space, and (11b) asserts that the plot is better after chapter three than at some prior informational point. (11c) is the most interesting example of this set. Deo et al. (2013) refer to this type of reading (for degree-achievement predicates) as 'functional', because it asserts a functional relationship between frequency or severity of smoking and the risk of cancer; here, the axis is individuals ordered by how much they smoke.

Internal readings interact with temporal adjuncts in interesting ways. When a temporal adjunct is universally quantified over, the sentence has a special interpretation:

(12)   The river is wider every year.

The meaning of (12) seems to be that for each pair of years x and y (where x immediately precedes y), the river is wider at y than at x. Note that this sentence does *not* mean that every year, the river is wider than it was at some contextually salient prior time; rather, it entails that each year the river widens. Zwarts et al. (2004) refer to this as a 'consecutive' interpretation. This stands in stark contrast to the analogous externally comparative sentence:

(13)   The river is wider than the footpath every year.

The meaning of (13) is merely that each year, the width of the river exceeds that of the footpath.

Zwarts et al. (2004) consider a construction that is similar to, but crucially distinct from, internal comparison as defined in this paper, which they term *reflexive comparatives*, e.g. the following:

(14)   Every match doesn't get easier.

Crucially, their examples contain the change-of-state verb *get*, which I assume is synonymous (for adjectival complements) with *become*. But much of the data is similar to that for internal comparatives, including the so-called 'consecutive' interpretation for universal quantifiers.

2.1. The missing *than*-argument

Internal comparatives typically occur without an overt comparand (the *than*-argument of a comparative). In many cases they can be paraphrased with one:

(15)   The river is wider here **than back there**.

We might think that internal comparatives *always* have such an argument, but when it doesn't appear overtly, it's pragmatically retrieved or somehow otherwise implicit. But crucially, sometimes expressions of internal comparison may not be paraphrased with any overt *than*-argument. (11c) is an illustrative example. As we noted before, what (11c) expresses is something like *The more you smoke, the higher your risk of cancer is*. It's clear that this meaning isn't preserved with any choice of an overt *than*-argument to the comparative:

(16)   a.   ?? The risk of cancer is higher with increased smoking **than with decreased smoking**.

         b.   ?? The risk of cancer is higher **than before** with increased smoking.

         c.   ?? The risk of cancer is higher with increased smoking **than otherwise.**

None of the sentences in (16) captures the meaning of (11c). The fundamental issue is that inserting an overt *than*-argument seems to force a reading wherein there is some particular degree of cancer risk d, and that degree of risk is being compared to some other particular degree d'. But the interpretation of (11c) plainly doesn't make reference to any *particular* degrees of risk d and d'. Rather, it says that the $>$ relation holds between *any* two degrees d and d' if the individual who has risk d smokes more than the individual with risk d'.

The problem of unparaphrasability with an overt *than*-argument isn't restricted to functional readings; it also appears in internal comparison constructions with *as*-modifiers:

(17)   The river is wider (??than before) as you go north.

Again, (17) doesn't make reference to any particular spatial parts of the river; it says, roughly, that for any two spatial intervals of the river, the *wider* relation holds between them if the first one is more north than the second. This is strikingly similar to the meanings of sentences with degree-achievement verbs like *increase* and *widen*. Indeed, these degree-achievement verbs can occur in the same sentences with no obvious difference in meaning:

(18)   a.   The risk of cancer **increases** with increased smoking.

         b.   The river **widens** as you go north.

2.2. Internal and external comparatives allow different modifiers

The data in the previous section showed that in sentences with internal comparatives modified with *with-* and *as*-phrases, it's difficult to find an overt comparand argument that preserves the meaning of the original sentence. This section shows that internal comparatives are unique among comparative constructions in allowing these modifiers in the first place.

As you go north, according to Deo et al. (2013), quantifies over (pairs of) subintervals of an axis: in this case, the river ordered south-to-north. If *The river is wider* denotes a relation

between subintervals of the river, then it's fairly clear how this proceeds compositionally: *as you go north* imposes the requirement that this relation holds between any two subintervals where the first is more northerly than the second. Crucially, this line of reasoning requires that *The river is wider* denotes a relation between intervals of the river.

What happens in a sentence with external comparison? In this case, the width of the river is being compared to that of some other object:

(19)   The river is wider than the footpath.

Here, the relation that's expressed by the comparative is one between individuals, not intervals. We would then expect that an axis-sensitive modifier like *as you go north* would be illicit: it wants a relation between intervals, not individuals, as an argument. As we have seen, this prediction is borne out:

(20)   # The river is wider than the footpath as you go north.

Deceptively, (20) almost appears acceptable on first glance: it's not obviously syntactically ill-formed. But what kind of situation might it describe? At any given point, the river is either wider than the footpath, or else it isn't; it isn't clear how this relation could hold as one goes north. Other axis-sensitive modifiers, like *with*-phrases, exhibit the same contrast.

(21)   # The risk of cancer is greater than the risk of emphysema with increased smoking.

Here, again, (21) may seem grammatical at first blush. But the sentence is semantically anomalous; *with increased smoking* wants an arugment expressing a change in value, which *The risk of cancer being greater than the risk of emphysema* does not.

3. Analysis

Following Deo et al. (2013), I assume that DPs denote functions from intervals of a contextually-retrieved axis to individuals; Deo et al. refer to these as *generalized individual concepts*. In this framework we can express the meaning of *the river* as follows:

(22) $[\![\text{the river}]\!] : \chi \to e \equiv \lambda i_\chi.\textbf{the.river}(i)$

Here, and in the following discussion, I use χ as a placeholder type for intervals of any arbitrary axis, because *the river* (and in fact any DP) will be polysemous with respect to its axis. For example, χ may be instantiated as σ, the type of spatial intervals, or τ, the type of temporal intervals. The type of this axis is generally pragmatically retrieved, although certain modifiers may force a particular interpretation. (For instance, *As you go north* will force a spatial interpretation of the DP.)

I assume an analysis of gradable adjectives on which they denote functions of type $d \to et$, i.e. relations between degrees and entities, as is a standard assumption in the literature on gradable adjectives, comparatives, and superlatives (see e.g. Heim 1999). For us, this decision doesn't amount to much; a theory on which gradable adjectives denote measure functions (as in e.g. Kennedy 1997) would work just as well. Thus the denotation of bare *wide* is as follows, a function that takes a degree d and individual x, returning True iff x is at least d-wide:

(23) $⟦\text{wide}⟧ : d \to et \equiv \lambda d_d.\lambda x_e.wide(d)(x)$

As an aside, this denotation for gradable adjectives immediately raises the question of how a bare adjective can compose with an individual-concept subject, as in *The river is wide*. Let's assume for simplicity that a **pos** morpheme somehow saturates the degree argument of the bare adjective (how exactly it does so isn't important for our purposes). Then we have an expression **pos** *wide*, which is a property of entities that exceed the contextual determined norm for counting as *wide*:

(24) $⟦\textbf{pos } \text{wide}⟧ \ e \to t \equiv \lambda x_e.wide(\text{norm}_{wide})(x)$

This expression is type $e \to t$, which can't directly compose with something of type $\chi \to e$. There are at least two plausible options: one is to feed the type-χ argument to the individual concept function before composing with the adjective. The other is to invoke a Geach-rule (Geach, 1970) typeshifting rule, which turns $⟦\textbf{pos } \text{wide}⟧$ into a $\chi e \to \chi t$-expression:

(25) **Geach typeshifting**: Any expression of type $e \to t$ can be shifted to an expression of type $\chi e \to \chi t$ by the application of the typeshifting function **g**:
$\mathbf{g} = \lambda P_{et} f_{\chi e} i_{\chi}.P(f(i))$

Although it's not directly relevant for us, I assume the typeshifting rule can freely apply, which means that (untensed) sentences are type $\chi \to t$, i.e. properties of intervals, as Deo et al. (2013) assume:

(26) $⟦\text{The river is } \textbf{pos } \text{wide}⟧ : \chi \to t \equiv \lambda i_{\chi}.wide(norm_{wide})(\textbf{the.river}(i))$

So *The river is wide* is a property of intervals such that the river is wide to at least the degree *norm_{wide}*. The interval argument may be supplied overtly (e.g. by tense, if χ is resolved as τ, the type of temporal intervals), or covertly, by supplying the sentence with the current interval of evaluation. With this as background, we can move on to the positive proposal for internal comparison.

3.1. Two types of comparatives

Typically in the literature, the comparative morpheme *-er* is taken to express a relation between sets of degrees (Cresswell, 1976; von Stechow, 1984), or in the phrasal case (where the comparand argument is a DP), entities. These sets of degrees are the denotations of clauses that abstract over a *d*-type argument by means of a *wh*-operator Op_d; for an overview, see Schwarzschild (2008) or Rett (2014). This results in a denotation for *-er* like the following:

(27) $[\![\text{-er}]\!] : dt \rightarrow dt \rightarrow t \equiv \lambda D'_{dt} D_{dt}.\mathbf{max}(D) > \mathbf{max}(D')$

The underlying structure of a comparative, then, is schematically as follows (adapted from Rett's (34)):

(28)   a. The river is wider than the footpath.
       b. *-er*($[Op_{d'}$ the footpath is d'-wide$]$)($[Op_d$ The river is d-wide$]$)

But if comparatives always denote relations between sets of degrees, then accounting for the grammatical differences between internal and external comparison is difficult. The properties of internal comparison we noted before are wholly unexpected if internal comparison involves the same semantic machinery as external comparison. If the denotation of *-er* always wants the denotation of a *than*-clause as an argument, why should it be impossible to insert one overtly in some instances of internal comparison?

Given this puzzle, I argue that internal-comparison *-er* doesn't accept a *than*-argument at all; when there *is* an overt *than*-argument, *-er* is never interpreted as genuinely internal comparison. Interestingly, an analysis (of phrasal comparatives) that treats comparatives as denoting relations between individuals can shed some light on the relationship between internal and external comparison. Let's entertain a denotation for *-er* as follows:

(29) $[\![\text{-er}]\!] : (d \rightarrow et) \rightarrow (e \rightarrow et) \equiv \lambda G_{d \rightarrow et} x_e y_e.\mathbf{max}(G(y)) > \mathbf{max}(G(x))$

This meaning for *-er* turns out to give us a good basis to develop an analysis of internal and external comparison. As in the case of bare gradable adjectives like **pos** *wide*, here there's a type mismatch between an individual-concept subject (type χe) and the relation denoted by the comparative adjective. But there are multiple ways to typeshift a relation between *e*-type objects into something that takes some number of individual-concept arguments. The solution I adopt here, for ease of explication, is simply to posit an ambiguity in the denotation of *-er*. Both denotations have a shape like that of (29), but they differ with respect to the number of individual-concept arguments they accept. (Another solution would be to have (29) as a single lexical entry for *-er*, and then derive the internal and external variants by means of two typeshifters similar to (25).)

On the ambiguity approach, external *-er* accepts a gradable predicate and two individual-

concept arguments, returning a function from intervals to truth values (i.e. a property of intervals):

(30) $[\![\text{-er}_{\text{ext}}]\!] \equiv \lambda G_{d \to et} f_{\chi e} g_{\chi}, e i_{\chi}.\mathbf{max}(\lambda d.\mathrm{G}(d)(g(i)) > \mathbf{max}(\lambda d.\mathrm{G}(d)(f(i)))$

The river is wider than the footpath will then be a function from an interval of some contextually retrieved axis to True just in case, at that interval, the width of the river exceeds the width of the footpath. This interval might be e.g. the present moment in time, if the individual-concept arguments are interpreted as type τe, functions from temporal intervals to entities; or the current location, if the individual-concept arguments are interpreted spatially.

Internal *-er*, on the other hand, turns a gradable predicate into a relation between subintervals of the domain of a single individual-concept subject:

(31) $[\![\text{-er}_{\text{int}}]\!] \equiv \lambda G_{d \to et} f_{\chi e} i_{\chi} j_{\chi}.\mathbf{max}(\lambda d.\mathrm{G}(d)(f(j))) > \mathbf{max}(\lambda d.\mathrm{G}(d)(f(i)))$

We can think of external *-er* as picking two individuals and comparing them at one point (or, more precisely, one interval) of evaluation. Internal *-er*, in contrast, picks a single individual and varies the point of evaluation. These correspond to two strategies for getting two individuals to compare: by choosing different individual-concept functions and feeding them the same input (external comparison), or by choosing one individual-concept function and feeding it two inputs (internal comparison). The denotation for an internal-comparison sentence is then as follows:

(32) $[\![\text{The river is wider}_{int}]\!] : \chi \to \chi t \equiv$
$\lambda i_{\chi} j_{\chi}.\mathbf{max}(\lambda d.\mathbf{wide}(\mathbf{the.river}(j))) > \mathbf{max}(\lambda d.\mathbf{wide}(\mathbf{the.river}(i)))$

(32) is a relation between two subintervals in the domain of the river; it comes out true just in case the entity that $[\![\text{the river}]\!]$ maps to at the second interval is wider than what it maps to at the first.

There are at least two options for saturating the first interval argument. The first is that it's pragmatically supplied, as in a bare sentence like *The river is wider*; intuitively, the comparand in this sentence is some already salient point in time or space. A second option is for this relation to serve as the argument of an axis-sensitive modifier:

(33) $[\![\text{As you go north}]\!] : (\sigma \to \sigma t) \to t \equiv$
$\lambda R_{\sigma \to \sigma t} \forall l, l' \subseteq L_{s \to n}.l < l' \to R(l')(l)$

This denotation is minimally modified from Deo et al.'s (53). *As you go north* fixes an axis $L_{s \to n}$, a set of spatial points ordered from south to north, and wants a relation between spatial intervals as an argument. It returns True just in case, for every pair of subintervals in $L_{s \to n}$ where the first is more north than the second, that relation holds. Thus we have:

(34) $[\![\text{As you go north}]\!]([\![\text{the river is wider}_{int}]\!]) : t \equiv$
$\forall l, l' \subseteq L_{s \to n}.l < l' \to \mathbf{max}(\lambda d.\mathbf{wide}(\mathbf{the.river}(l))) > \mathbf{max}(\lambda d.\mathbf{wide}(\mathbf{the.river}(l')))$

This expression is true just in case, for all pairs of subintervals of the given south-north axis $L_{s \to n}$, the more northern one is wider than the more southern one. *With*-modifiers work similarly (adapted from Deo et al.'s (34)):

(35) $[\![\text{With increased smoking}]\!] : \chi \to t \equiv \lambda R_{\chi \to \chi t}.\forall x, y \subseteq C_{<smoking}.x < y \to R(y)(x)$

Like the *as*-modifier, *with increased smoking* fixes an axis: this time $C_{<smoking}$, a set of elements type χ ordered by their intensity of smoking. It then takes the relation denoted by the clause it modifies as an argument:

(36) $[\![\text{With increased smoking}]\!]([\![\text{The risk of cancer is higher}]\!]) : t \equiv$
$\forall x, y \in C_{<smoking}.x < y \to \mathbf{max}(\lambda d.\mathbf{high}(d)(\mathbf{risk.of.cancer}(y))) >$
$\mathbf{max}(\lambda d.\mathbf{high}(d)(\mathbf{risk.of.cancer}(x)))$

Here, the individual-concept function $[\![\text{the risk of cancer}]\!]$ is a function from entities to their risk of cancer, i.e. of type $e \to e$. (36) is true just in case, when you order the relevant set of individuals C by its severity of smoking, for every pair of entities $\langle x, y \rangle$ such that x outranks y, x's risk of cancer is higher than y's.

3.2. The connection to degree achievements

The analysis of degree achievements presented by Deo et al. (2013) is in part phrased as a response to Kennedy and Levin (2008). Kennedy and Levin proposed analyzing degree-achievement verbs in terms of degree change over the course of an event. On their view, *The river widened* denotes a property of events in which the river's width is greater at the end than at the beginning.

Deo et al. (2013) argue, in essence, for moving the time argument (which for Kennedy and Levin is more precisely an event argument) into the meaning of the subject of the degree-achievement verb, turning the subject into an individual concept. This allows for an elegant account of e.g. spatial or functional readings of *widen*, which don't plausibly involve change over the course of an event *per se*. Thus the Deo et al. denotation for *The river widen* is as follows, where i_{init} and i_{end} refer to the minimal beginning and ending subintervals of i:

(37) $[\![\text{The river widen}]\!] : \chi \to t \equiv$
$\lambda i_{\chi}.\mathbf{max}(\lambda d.\mathbf{wide}(d)(\mathbf{the.river}(i_{init}))) > \mathbf{max}(\lambda d.\mathbf{wide}(d)(\mathbf{the.river}(i_{end})))$

(Here, the verb is left untensed (*widen* instead of *widens*) to indicate that this is the meaning of an untensed sentence.) The denotation in (37) is crucially different from our denotation for

internal comparatives in that it accepts only one type-χ argument; i.e., it denotes a property of intervals in the domain of $[\![$the river$]\!]$, not a relation between them. One crucial way in which they appear to differ is their interpretation with durative *for*-adverbials:

(38)   a. The river widened for five miles.
       b. The river was wider for five miles.

(38a) expresses that the river continuously increases in width along a particular five-mile subinterval. (38b), on my judgment, lacks this reading; instead, it seems to mean that there's a five-mile subinterval of the river that is wider than some contextually salient other interval. This may be a reason not to totally assimilate degree-achievement verbs and internal comparatives. However, in the presence of certain modifiers, this reading may be available:

(39)   The river was gradually wider for five miles.

(39) seems to have the reading that (38b) lacks. Ultimately, then, it may be that internal comparatives genuinely have the same semantics as their corresponding degree-achievement verbs, i.e. in denoting a property of intervals that exhibit a particular kind of value change; but an exhaustive comparison of internal comparatives and degree-achievement verbs is left for future research.

4. Conclusion

Constructions of internal and external comparison exhibit clear grammatical differences. Internal comparatives can appear with axis-oriented modifiers, while external comparatives may not; and internal comparatives in some contexts may not appear with an explicit *than*-argument. The present analysis treats internal comparatives as expressing a relation between intervals in the domain of their subject, but external comparatives as having the more traditional denotation of a relation between individuals (or sets of degrees in the case of clausal comparatives). On this account, the grammatical differences between internal and external comparatives are reduced to a problem of type mismatch. One consequence of this analysis is that internal comparatives take just one nominal argument, i.e. that no comparatives with overt *than*-arguments are true internal comparatives.

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