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10 A side road to degree interpretations

Abstract: Degrees have traditionally been conceived in one of two ways: either as primitive (abstract) representations of measurement (von Stechow, 1984; Heim, 2001; Kennedy, 2007), or as derivative of sets of objects sharing some relation to each other (Cresswell, 1976; Bierwisch, 1989; Bale, 2006). This paper contributes to this debate by making the case that degree interpretations arise in some cases from mechanisms similar to those of derivative degrees, one in which degrees are related to a particular species of kinds (Landman & Morzycki, 2003; Anderson & Morzycki, 2015; Scontras, 2017; Mendia, 2020), and argues that these mechanisms are useful in understanding pervasive cross-linguistic patterns in equative constructions.

Keywords: Degrees, kinds, amount relatives, equatives

10.1 Foundational questions on degree semantics

Natural languages provide us with the ability to express how much of a certain property an object has. Such grammatical constructions are typically referred to as *degree expressions*, and they constitute the main object of study in degree semantics. Among the most studied natural language phenomena in this area we find comparative, superlative and equative constructions, gradable predication, measurement, etc., but one can find appeals to degree semantics also in areas such as aspect and telicity, modality, metalinguistic expressions, exclamatives, and many more. A natural question arises then: What are the adequate and empirically supported ways of modeling degree expressions in natural languages? And what are the formal properties of the resulting systems? The literature on this area has employed, broadly speaking, two general tactics to go about answering this question.

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Primitive degrees

Perhaps the prevailing view in the literature is that degrees are primitive, highly abstract entities. As primitives, they are atomic and thus lack any parts whatsoever; in addition, being primitive entities, they are not derivative of any other kinds of entities. As such, degrees exist independently of the objects whose measurements they encode, an ontological commitment that some have criticized on the basis of it being metaphysically unnecessary and psychologically implausible (for some discussion along these lines see e. g. Klein, 1991; Moltmann, 2009 a. o.). Despite its price-tag, however, there is little question that enriching our models with the addition of degree-entities, usually represented as belonging to their own type d in the meta-language, has proven very successful in the analysis of all sorts of natural language expressions involving comparisons of extents. Such degrees can be naturally organized into *scales*, tuples $S = \langle D, R, \triangle \rangle$ consisting of a set of degrees D, an ordering relation R and a dimension of measurement $\triangle$. Having defined scales relative to a dimension, we can further link degrees to individuals by means of measure functions μ_S, s. t. for some object x, $\mu_S(x)$ corresponds to the degree $d_i \in D$ that represents x's value on dimension $\triangle$ of S.[1]

Derivative degrees

If degrees are not primitives, then they can only be defined on the basis of other existing entities. There are a number of ways in which one may represent degrees as arising from relations between individuals, but here again we find two main variants:

- **Equivalence classes** It is the oldest variant of such approaches, first popularized by Cresswell (1976). On this view, degrees arise from the comparison of individuals (see also Hoeksema, 1983; Klein, 1991; Bale, 2006, 2008). Succinctly put, "there is no degree without comparison and no comparison without degree" (Bierwisch, 1989, 112). The gist of the idea is that gradability is to be understood in terms of binary relations, where e. g. an adjective like *tall* is characterized as a relation $\{\langle x, y \rangle : x \textit{ has as much height as } y\}$. On the basis of such relations, scales can be build in a few steps and thus comparisons between individuals that are not related by the binary relation can be established.
- **Kinds** A second strand of analyses takes degrees to be a different form of abstraction, one closer to a *kind* (in the sense of Carlson, 1977b). They are thus

1 This is a rather impressionistic lay of the ground, based mostly on ideas present in von Stechow (1984), Heim (2001), Kennedy (2007), Solt (2009) a. m. o. But degrees have also been conceptualized as numbers (e. g. Krifka, 1989), scalar intervals (by e. g. Kennedy, 2001; Schwarzschild & Wilkinson, 2002), and directed segments Schwarzschild (2012, 2020), among other possibilities.

derivative as well – at least if one accepts popular views on the linguistic representation of kinds, e. g. Chierchia (1998), Dayal (2004) a.o. – but they do not intrinsically involve any form of comparison. The motivations for such analogies come from the surprising cross-linguistic similarities between lexemes expressing kinds, manners and degrees (e. g. Landman & Morzycki, 2003; Castroviejo & Schwager, 2008; Anderson & Morzycki, 2015; Scontras, 2017). For example, simplifying somewhat, in Scontras (2017) degrees are conceived as nominalized quantity uniform predicates, that is, the individual correlates of the properties expressed by DPs such as *three books*: $NOM(\lambda x. * books'(x) \wedge |x| = 3)$.

These two views on degrees, primitive *vis-à-vis* derivative degrees, present a dichotomy as to whether we live in a world with or without degrees, and as a consequence the two views have traditionally been presented as standing in opposition. But although the tension is real, there is yet little progress in this respect. For example, if we live in a world with both sorts of degrees, we may wonder how come this is the case, as Anderson & Morzycki (2015) do:

> *. . . a dual analysis . . . would raise the question of why language might have these two systems existing side-by-side, different means to the essentially same end.*
>
> [Anderson & Morzycki, 2015, 821]

The current state of affairs thus points towards a research agenda whereby the goal is to understand the relation, if any, between representations of degree relying on primitive degrees vs. derived degrees. In other words, can we find grammatical evidence that there are "two modes" of achieving degree interpretations? And if so, are there any morphological reflexes of these two modes of degrees? This paper contributes to this debate by arguing that natural languages must allow some way of providing degree *interpretations* in the absolute absence of degree morphology. In addition, the paper argues that achieving degree readings by means of sets of individuals that share the same property along some dimension (height, amount, beauty, spiciness, etc.) is not only ontologically parsimous but also empirically supported by some natural language constructions.[2]

2 The existence of such parsimonious and thus "free" representations of degrees should not be taken as a denial of degrees as grammatical constructs in their own right, regardless of whether these are taken to exist or not. That is, we are not so concerned about whether the best analysis of phenomena that originally spurred the debate on degrees (e. g. vagueness, gradability, comparatives, etc.) should involve degrees as primitive objects or not, and so little to no conclusions on the delineation vs. degree analyses will follow from here. Such discussions must wait until another occasion.

The plan is the following. Section 10.2 establishes a connection between degree and kind reference through an examination of amount relatives, whereby the two interpretations are argued to be one and the same, relying on the same semantic operations, and are modulated only pragmatically by relying on contextually available information. Section 10.3 sketches a formal treatment and Section 10.4 discusses the two modes of degree interpretations by examining equative constructions.

10.2 Degree interpretations without degree expressions

10.2.1 Amount relatives

Example (1) involves an ordinary looking DP modified by a relative clause:

(1) It will take us the rest of our lives to drink the champagne they spilled that evening. [Heim, 1987, 37]

On its is "ordinary" interpretation (1) is pragmatically implausible: it states that it would take us a long time to drink the exact portion of champagne that they spilled that evening. Let us call this the OBJECT INTERPRETATION of (1), as the DP references an object-level entity. This is the interpretation that follows from classical analyses of restrictive relative clauses (stemming from Quine, 1960 and Partee, 1973); it obtains by the intersection of two predicates, corresponding to the NP *champagne* – the set of (portions of) champagne – and the denotation of the CP relative clause – the set of stuff that they spilled that evening.

On its more natural interpretation, however, the sentence simply means that it would take us a long time to drink *an amount of champagne* equal to the amount of champagne that they spilled that evening. This is an instance of an Amount Relative (after Carlson, 1977a; see Grosu & Landman, 2017 for a recent overview). We shall call this the DEGREE INTERPRETATION of (1), after Heim's (1987) own characterization.[3,4]

3 I will use the term degree rather freely, applying to any form of extents such as amounts and quantities but also heights, degrees of beauty, value, etc.

4 Other instances of amount relatives include examples such as the following:

(i) a. Marv put everything he could in his pocket. [Carlson, 1977a]
b. There wasn't the water in the sink that there was in the bathtub. [attrib. to Lisa Selkirk in von Fintel, 1999]

The challenge thus is to explain how a degree interpretation arises seemingly out of nowhere. In explaining how degree interpretations obtain, we must also clarify two important aspects of amount relatives, namely that despite showing the shape and form of ordinary definite descriptions, (*i*) they refer to a definite amount, and not a definite entity; and (*ii*) the NP that is heading the full DP and that is modified by the relative clause is in fact interpreted as an indefinite, despite the seemingly direct action of the definite determiner. These two features of degree interpretations of amount relatives can be brought to light by means of the following paraphrases of (1):

(2) It will take us the rest of our lives to drink...

a. champagne in the amount that they spilled that evening.
b. as much champagne as they spilled that evening.

Although amount relatives remain a rather unexplored corner in the pantheon of relative clause constructions and disagreements about their right characterization abound, there seems to be an emerging consensus that amount relatives involve some form of degree abstraction inside the relative clause, which in turn is responsible for the degree interpretation of the whole DP (see Carlson, 1977a; Heim, 1987; Grosu & Landman, 1998, 2017; von Fintel, 1999; McNally, 2008; Herdan, 2008; Meier, 2015; Scontras, 2017; Mendia, 2017). Generalizing and simplifying somewhat over all these approaches, we could illustrate the main gist of these ideas as involving a covert MUCH predicate in a CP-internal position, as follows:

(3) a. $[_{DP}$ the champagne $[_{CP}$ that they spilled that evening]]
b. $[\![CP]\!] = \lambda d$. they spilled d-MUCH champagne that evening

The trouble now is that we must rethink the composition process between the NP *champagne* and the CP (3-b), as ordinary intersection between the two sortally mismatched sets in (4) would be empty and thus would fail to refer altogether.

(4) $\{x : x \textit{ is champagne}\} \cap \{d : \textit{they spilled } d\text{–MUCH } \textit{champagne}\} = \emptyset$

The two examples above both have natural degree interpretations. Amount relatives are nevertheless a heterogeneous bunch, as they have historically admitted variants of (i) that involve no degree interpretations, such as Carlson's (1977a) original example below:

(ii) I took the books that there were on the table.

For discussions on these types of amount relatives see e. g. Meier (2015) and Grosu & Landman (2017).

There exist two immediate logical options: either the full DP denotes an individual of an ordinary type *e* or it denotes a degree directly, type *d*, as in (5). The first option is a non-starter, for the reasons we saw above: if the full DP denoted a definite description of an entity the head noun *champagne* would reference a specific portion of champagne, instead of denoting any portion of champagne in the specific amount required. The second option, as illustrated in (5) below looks more promising (see von Fintel, 1999; Herdan, 2008; Grosu & Landman, 2017).

(5) $\textit{the}(\{d : \exists x[\textit{champagne}(x) \wedge \textit{they-spilled-that-evening}(x) \wedge \mu_{vol}(x) = d]\})$

Notice that the compositionality problem is still here with us, as we must yet provide the correct semantic glue for an ordinary verb like *drink* to combine directly with the definite description of a degree. Nevertheless, (5) manages to get two facts right: now the DP references a concrete amount of champagne, and the noun *champagne* itself is interpreted as an indefinite.

10.2.2 From objects to degrees and back

Having reached a suitable representation for the degree interpretation of amount relatives, our next natural step is to ask why and how do ordinary relative clauses give rise to two coexisting interpretations, and how the two interpretations relate to each other.[5] It was this sort of question that prompted Grosu & Landman (1998) to propose that, in fact, the notion of degree as a primitive object is hopeless in explaining the semantic behavior of amount relatives, favoring instead a derivative-style conception of degrees. They suggest that degrees should not consist of particulars, but are instead bundles of information keeping track of what degrees are degrees of: degrees are functions that take a plural individual X and map X to a tuple consisting of (*i*) a cardinality corresponding to X, (*ii*) a sortal predicate P that corresponds to what the degree is a degree of, and (*iii*) the plural individual X. That is, for all plural individuals X: $\textsc{degree}_p(X) = \langle |X|, P, X\rangle$. Under this conception, degrees are used to store information about the entity they are measuring. This allows the authors to define a function that "extracts" individuals from a degree denoting expression whenever necessary. For example, $\textsc{substance}(\text{CP}) = \{x : \langle |X|, P, x\rangle \in \text{CP}\}$.

5 The question is far from trivial once we countenance nouns that seem to more naturally denote extents instead of entities, typically abstract mass nouns such as *money*, *effort*, *value*, etc. There are indeed views whereby ordinary nouns are polysemous and contribute two main senses, an individual sense and a degree sense. For instance, Rett (2014, 2018) takes constructions such as *Four pizzas is enough food* to support such dual senses (cf. Brasoveanu, 2009; Mendia & Espinal, 2025). Here I will continue with the simplifying assumption that, all else equal, ordinary nouns simply denote entities.

The operator SUBSTANCE is defined so that given a degree triple, it returns its third coordinate, the individual.[6] Thus, if we were to apply such operator to the DP meaning in (5) (conceived as a structured degree) we would obtain a type *e* element, thereby resolving the sortal mismatch and making it possible for the DP to combine with regular verbal predicates.[7]

A key contribution of Grosu & Landman's (1998) structured degrees is that they permit shifting from degrees to the entities that those degrees are based of by means of semantic operations. If one can extract individuals from degrees, the fact that (1) above has both an object and a degree interpretation is no longer as surprising. More recently, Scontras (2014, 2017) has developed a similar approach based on enriching the notion of degree, albeit from a different perspective. According to Scontras, degrees are closer to kinds, and can thus be conceived of as nominalized quantity uniform properties (cf. Anderson & Morzycki, 2015; Rothstein, 2017). The rationale is the following: Just as kinds must be kinds of something, so must degrees be degrees of something. Applying the same techniques to shift kind-referring terms to the individuals they instantiate,[8] it is possible to shift from degrees to the individuals that those degrees are the result of measuring. This move permits a natural account of the object and degree interpretations of amount relatives such as (1) above.

10.2.3 Rethinking degree interpretations

The main take-away so far is that the object/degree ambiguity of amount relatives best supports a conception of degrees that tracks information well beyond what a primitive degree – understood as a point on a scale – is able to provide. If degrees are able to "see" the sort of individuals they are the result of measuring, it is because they are in some sense derived from individuals. But when it comes to the full semantic behavior of amount relatives, this sort of explanation presents two general shortcomings.

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6 In reality it extracts its maximal individual, incorporating thus the interpretation of the definite determiner and providing a maximal degree.

7 Grosu & Landman (1998) develop their analysis as a general theory of relativization in natural languages. Thus, it is designed so that it derives the ordinary (intersective) interpretation of relative clauses, which begs the question as to why the basic meaning of ordinary looking relative clauses must be degree denoting. In fact, Grosu & Landman (1998) aim at explaining a much wider variety of amount relative constructions than presented here, including many of their syntactic idiosyncratic quirks. See Grosu & Landman (2017) and Mendia (2017) for some discussion on this end.

8 Scontras (2014, 2017) in particular follows Chierchia (1998).

Loss of generality

Object and degree interpretations are not the only possible interpretation of amount relatives – something the early literature on amount relatives already recognized (see e. g. Carlson, 1977b,a; Heim, 1987). Consider for instance the variant of (1) in (6) below, with the verb *find* instead of *drink*:

(6) It will take us the rest of our lives to **find** the champagne they spilled that evening.

The most natural interpretation now is neither an object interpretation – we are not looking for the actual champagne that they spilled – nor a degree interpretation – since we are not intending to find any particular amount of champagne. (6) naturally means that we are searching for a particular kind, class or type of champagne. This is hardly surprising given the ability of the definite descriptions in English to refer to kinds in addition to ordinary objects (e. g. Krifka et al., 1995; Mari et al., 2013). Note that the kind interpretation of (6) shares the same semantic profile we observed for (1) above: just like (1) was about a definite amount of champagne (and not about any specific portion of champagne), so is (6) about some specific kind of champagne (say a Moët & Chandon Rosé Impérial).

Upon closer inspection, however, there could be a myriad of reasons why finding or drinking such champagne may take a long time. It could be that instead of belonging to a rare kind, the champagne they spilled was especially sweet, dry, fizzy, etc. These are interpretations that would not typically fall under our conception of "amount" or "kind." We would not like to say, however, that amount relatives such as (1) are ambiguous in multiple ways. Instead, sentences like (1) – on their non-object interpretations – can be taken to express that there is some property P associated with the actual champagne that they spilled that evening, and that any portion of champagne of which P holds would take us long to drink/find – in fact, that the sole reason why it would take us long to drink it is precisely because of P. What P is then left unspecified and must be retrieved in the context c, P_c. We can then schematize this hypothesis as follows, where P_c expresses that the final value of P must ultimately be retrieved from the context.

(7) the champagne that they spilled that evening $\rightsquigarrow$ champagne with property P_c

Since P_c may be any property associated to the actual portion of champagne that was spilled, we may understand (1) as involving a kind of champagne if P_c corresponds to a categorizing or taxonomic predicate, such as *be a rosé*, *be produced in France*, etc., giving rise the sort of kind interpretation most salient in cases like (6). But nothing prevents P_c from involving a gradable predicate, such as *be as much as*, *be as sweet as*, *be as fizzy as*, etc., as long as the current circumstances support it. It

should therefore be possible to account for the whole range of non-object interpretations of amount relatives – including kind and degree interpretations – without explicitly resorting to degree-based semantics. Instead, what seems to fit the bill is finding the means to talk about portions of champagne that bear a certain property, rather than are *d*-much relative to a certain scale. Resorting to degree semantics alone would miss this generalization.

The footprint of a degree

The second important consequence of degree-based analyses of the sort sketched above is precisely that they are degree-based. All else being equal, we should expect amount relatives *with degree interpretations* to behave like other degree constructions in the grammar; e. g. they should involve degree abstraction at CP level (like *how many* questions, clausal comparatives, superlatives, etc.). But all else is not equal. A direct comparison with comparatives and equatives as representatives of run-of-the-mill degree constructions shows that amount relatives behave quite differently indeed.

Consider for instance what happens in the absence of the relative clause. If the degree interpretations are originated from material inside the relative clause that modifies the head noun, we should expect both, the presence of the relative clause and degree interpretations to go hand in hand. This is not so, however: modifying a noun with a PP still permits object, kind and degree interpretations. For instance, (8) below could mean that the champagne on the top shelf is a large amount, of a particular kind, etc.[9]

(8) It would take us years to drink the champagne on the top shelf.

Clearly, then, degree interpretations should not be anchored to the presence of a relative clause and thus could not originate from covert material in CP-internal position. It seems that the duality in interpretation detected in amount relatives is not a property of amount relatives alone after all.

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9 Below are some more examples (from Mendia, 2020). The examples in (i) involve a NP modified by a PP, whereas those in (ii) involve a bare DP.

(i) PP modification
  a. We used to organize a soccer team, but don't have the students in the department anymore.
  b. We lost the battle because we didn't have the soldiers of the Imperial Army.

(ii) Bare DPs
  a. We used to organize a soccer team, but don't have the students anymore.
  b. We lost the battle because we didn't have the soldiers.

Not only do degree interpretations survive in the absence of a relative clause, they also survive in environments that reject degrees and degree operations altogether. For instance, it has long been noted that degree abstraction interacts poorly with negation, as illustrated below with ordinary degree constructions such as *how many* questions, comparatives and equatives.[10]

(9) a. *How much wine couldn't you drink in one day?
b. *I drank more wine than you couldn't drink in one day.
c. *I drank as much wine as you couldn't drink in one day.

Amount relatives are not only grammatical in such contexts, but the degree interpretation is accessible and quite natural.[11]

(10) I drank in 30 minutes the wine that you couldn't drink in one day.

These general results speak then against degree-based approaches to degree interpretations of amount relatives.

10.2.4 Taking stock

We started off by examining the degree interpretations of amount relatives, as they have been taken to support a derivative notion of degree (Grosu & Landman, 1998; Scontras, 2014, 2017), the main idea being that the relation between object and degree interpretations of amount relatives requires carrying at least in part some information about what such degrees are degrees of. But while intuitively on the right track, we still found a number of shortcomings.

First, a degree-based theory of degree interpretations misses the broad generalization that degree interpretations are not just about amounts or quantities, but about any gradable property that may be retrieved in the context. In fact, amount relatives may give rise to numerous interpretations beyond degree interpretations

10 For discussion, see Rullmann (1995) and Abrusán (2014). The gist of the issue is the assumption that interpreting certain degree constructions, especially those involving degree abstraction, involves a process of degree maximalization. I. e. a question of the form *How much wine did you drink in one day* is interpreted as asking about the maximal amount of wine; MAX{d : *you drank d-much wine in one day*}. Negation flips the direction of the monotonic properties of the predicate, and thus maximalization of {d : *you didn't drank d-much wine in one day*} is no longer defined – as there is no maximal amount of wine you did not drink, and this results in the ungrammaticality of examples such as those in (9). See also Section 10.4.

11 The pattern is quite general, as it applies to tenseless *wh*-islands, factives, response stance verbs, etc. (Mendia, 2017, 2020).

themselves, a fact that escapes explanation if we were to resort to extracting degrees alone out of the relatives clause, as suggested by e. g. von Fintel (1999), Herdan (2008), Grosu & Landman (1998), etc.

Second, if the degree interpretations of amount relatives such as (1) – with a NP modified by a relative clause – and (8) – where the modifier is a PP – are identical, then whatever explanatory burden is placed on the presence of the relative clause in (1) cannot extend to (8), thereby requiring two independent analyses to account for truth-conditionally equivalent sentences.

Finally, developing a degree-based explanation of degree interpretations raises the question as to what to do with the divergent behavior of amount relatives and other degree constructions and their interactions with negation (among other environments). Thus, shaping a theory of degree based on degree interpretations of amount relatives leaves unexplained their grammaticality in environments that comparatives, equatives and other degree constructions uniformly reject.

The take-away from this discussion is thus twofold. On the one hand, there is merit in developing a theory of degree that is in some sense derivative of the individuals. If the significance of the manyfold degree interpretations of amount relatives is to be taken at face value,[12] perhaps it is also worth rethinking whether the usual tools of degree semantics (e. g. such as covert degree operators and quantifiers, like *many*, *much*, *quantity*; see Hackl, 2000; Rett, 2008; Solt, 2009; Wellwood, 2015 etc.) provide the correct tools to account for such degree interpretations.

On the other hand, there is hardly any evidence supporting a unification of all the means required to achieve degree interpretations. The fact that, under certain circumstances, degree interpretations are available in the absence of any degree expression and in grammatical contexts where usual degree operations cannot occur, suggests then that there may indeed be two roads to degree, one more in addition to the mechanics invoked to analyze comparatives, equatives, and other (morphologically realized) expressions of degree. After all, it may be the case that language does have these two systems of expressing degree existing side-by-side, as Anderson & Morzycki (2015) wondered.

The next section sketches a general account of the semantics of amount relatives that supports an explanation of degree interpretations as derivative, bringing them closer to the semantics of kind expressions.

12 Not everyone agrees on this end. While for Grosu & Landman (1998) amount relatives and their degree interpretations are central and deserve full attention, for Scontras (2017), degree interpretations are just a "red herring."

10.3 A partition-based analysis of degree interpretations

Our main goal now is to provide an account of the many interpretations available to amount relatives such as (1) above. Leaving aside the object interpretation, which we would obtain via predicate intersection, the focus is on degree and kind interpretations. The guiding intuition is that degree and kind interpretations of amount relatives emerge in fact by one and the same mechanism. The target truth-conditions of amount relatives like (1) are schematized as follows:

(11) It would take us the rest of our lives to drink champagne with property P_c, where P_c(*the champagne that they spilled last evening*)

These truth-conditions emerge if, by taking the data in Section 10.2.3 at face value, we aim at capturing the observed coexistence between kind and degree interpretations on the one hand, and the different distributions of amount relatives vis-à-vis other well-established degree constructions on the other hand (including the absence of evidence for degree abstraction). If the hope is to account for all the possible interpretations of amount relatives, including degree, amount, taxonomic and other kind interpretations, it seems that we ought to give central stage to whatever properties are attributed to the entities in question. In other words, for (1), what is critical is the identification of whatever salient property in the context that makes the champagne they spilled that evening noteworthy. As we saw above, there could be many such properties. Thus, seeking to be maximally general, let us refer to such unspecified interpretations as "property based" interpretations (*P*-interpretations for short), of which amount and taxonomic kind interpretations are but just special cases.

10.3.1 Partitioning the domain

The starting point is Carlson's (1977b, 346) realization that kind reference requires structuring the domain in a certain way. His reasoning goes as follows: we cannot say there *There are three kinds of dogs in this room* (or *Three kinds of dogs are in this room*) if there is just a single dog, say Fido, that instantiates the three kinds (e. g. a labrador, a shepherd dog and a female dog). He formulated this "disjointness condition" as follows:[13]

13 Schwarzschild (1996, 81) objects that Carlson's (1977b) disjointness condition is perhaps too strong, suggesting that one may say that *Three kinds of professionals will attend this conference*

(12) A kind-referring expression can only refer to a contextually defined subset of all the possible subkinds that the noun is true of, such that:

a. the subkinds in this subset are disjoint and share no realizations,
b. the subkinds collectively cover all the space of realizations of the kind.

In other words, instances of kinds must cover the whole domain (leave no instance without a corresponding kind) without overlap (only one kind per instance). Obviously, since Fido does indeed instantiate more than one kind of dog in the actual world, we must take the disjointness condition to be a limitation imposed by the grammar. Notice too that reference to amounts is subject to the same restriction (Scontras, 2014): I may not say that *There are two amounts of apples in the next room* if there is a bag of seven apples weighing two kilos, and thus satisfying two amount descriptions, one in terms apple quantities and one in terms of kilos.

Nevertheless, while kind reference and quantification involve exhaustive disjoint domains, the actual partitioning of the domain is rather unconstrained. For instance, even the classifier word *kind* in English is not a good indicator of domains structured according to natural (taxonomic) kinds. As a consequence, DPs of the form "DET *kind* of NP" do not necessarily deliver pure taxonomic kind interpretations; instead, such interpretations may be based on a number of relevant relations R between portions of champagne and dogs:[14]

(13) I like this kind of champagne.

a. *Taxonomic* e. g. R = *be the same kind as*
Rosé Champagne, Prestige cuvée, Blanc de noirs...
b. *Sweetness* e. g. R = *be as sweet as*
Brut nature, Extra brut, Brut, Extra dry, Dry...
c. *Sui generis* e. g. R = case-by-case
Champagne that is heavily discounted, Champagne that is very cold, Champagne that comes in a big heavy bottle...

(14) I like this kind of dog.

a. *Taxonomic* e. g. R = *be the same breed as*
Border collie, beagle, pug...
b. *Size* e. g. R = *be the same size as*
d-big, ..., d+i-big

– *doctors, lawyers and college professors* despite the fact that there may be an individual who is both a doctor and a lawyer.

14 This is even more clear with nouns which naturally denote extents; e. g. *I don't have that kind of money*, *I'm not ready for that kind of effort*, etc.

c. *Sui generis* e. g. R = case-by-case
Dogs that come to greet you when you come back home, dogs that lick your face, dogs that bite your ankles...

As with the *P*-interpretations of amount relatives, here too we could paraphrase these *kind* DPs as *champagne/dogs with property P*, where the value of *P* is left unspecified and must be retrieved from the context.

Here is a recipe to derive *P*-interpretations. Let us begin by recasting Carlson's (1977b) disjointness condition in terms of partitions.[15] An *equivalence relation* is a reflexive, symmetric and transitive relation that determines whether any two subsets are sufficiently equal with respect to some measure.[16] For instance, the equivalence relation *have the same parents as* holds of siblings, but it does not hold of any other pairs of relatives.

(15) *Equivalence Relation*: Let R be an equivalence relation. Then:
$a \simeq_R b$ iff $\forall x[(R(a,x) \leftrightarrow R(b,x)) \wedge (R(x,a) \leftrightarrow R(x,b))]$

On the basis of such R one may define an *equivalence class*, a collection of all the elements in the domain that are equal with respect to R. For any equivalence relation R, $[x]_R$ represents the equivalence class containing x. If some other element y is also in $[x]_R$, then $[x]_R = [y]_R$.

(16) *Equivalence Class*: Let $[]_R$ be a function from a domain D to $POW(D)$ s. t.:
$\forall x \in D[[x]_R = \{y : y \in D \wedge x \simeq_R y\}]$.

The set of all equivalence classes, the *quotient set* D/R, is such that $D/R = \{[x]_R : x \in D\}$, and $\bigcup_{x \in D}[X]_R = D$. Equivalence classes are useful because they form partitions: divisions of sets in subsets that jointly cover all the domain without overlap.

(17) *Partition*: Let A be a non-empty set. A partition is a collection of non-empty subsets of A iff (i) for any two subsets X and Y, $X \cap Y = \emptyset$ and (ii) the union of all subsets of A equals A.

The intuition we pursue for *P*-interpretations is that some contextually retrievable property P_c is able to *inform* what R must be. The idea is simple: we aim to

15 In addition to kinds, partitioning the domain has been identified as a prerequisite in a number of semantic areas, such as the proper analysis of pluralities (Schwarzschild, 1996), cardinal numbers (Ionin & Matushansky, 2018), the expressions of amount (Scontras, 2014), questions (Groenendijk & Stokhof, 1984), various phenomena related to modality (Kratzer, 2012).

16 A is a non-empty set and let R be a relation in A. Then: R is reflexive iff $\forall a \in A[R(a,a)]$; R is symmetric iff $\forall a, b \in A[R(a,b) \rightarrow R(b,a)]$; and R is transitive iff $\forall a, b, c \in A[R(a,b) \wedge R(b,c) \rightarrow R(a,c)]$.

partition some domain, e. g. the domain of all portions of champagne in (1), and we do so by collecting all members in the extension of the DP in question inside a single cell of the partition. How so? Because they all have something in common beyond being in the extension of the DP itself, namely they are all in P_c. The result of such operations involve finding a *P-informed equivalence class*, a subset of D including all elements that are equal with respect to each other according to a P-induced equivalence relation, R^{P_c}.

(18) P_c *informed Equivalence Class*: Let $[]_{R^{P_c}}$ be a function from a domain D to $POW(D)$ s. t.: $\forall x \in D[[x]_{R^{P_c}} = \{y : y \in D \wedge x \simeq_{R^{P_c}} y\}]$

(19) P_c *induced Equivalence Relation*: Let P_c be some property. Then R is a P-induced equivalence relation $[]_{R^{P_c}}$ s. t.:
$a \simeq_{R^{P_c}} b$ iff $\forall x \in P_c[(R(a,x) \leftrightarrow R(b,x)) \wedge (R(x,a) \leftrightarrow R(x,b))]$

We will refer to this additional constraint on partitions as the P-constraint: there must be a cell A in a partition of D by R collecting those elements that are also in P_c:

(20) *The P-constraint*
$\exists A \in D/R[\forall x \in D[x \in A \leftrightarrow x \in P_c]]$

Consider (1) once again as working case, with its corresponding P-interpretation paraphrase in (7) under its more natural degree interpretation (i. e. where the whole DP is referencing an amount of champagne). Then D is the set of all (portions of) champagne and the retrieved P_c is the property *be d-much*. There is a cell for the exact portion of champagne in the partition. The role of the relative clause is to provide some explicit, extra information so as to find a suitable equivalence relation that serves to induce the correct partition in the context. In the absence of the relative clause, the context alone must be such that P_c is retrievable without further specification. Accordingly, the P_c-induced equivalence relation R^{P_c} determines whether any two portions of substance or amount of stuff is equal to each other relative to P_c. In the current example, R^{P_c} would correspond to the relation *be as much as*. Then, the P-informed equivalence classes may be formed by collecting in disjoint non-overlapping sets those portions of stuff in D (of champagne in this case) that are equal relative to the relation *be as much as*:[17]

17 Note that R^{P_c} should be explicit enough to avoid overlap, a requirement to properly build any partition. It is in this sense important to recognize that the illustrations in (21)/(22) do not involve a partition of a domain of *degrees*, but of *individuals*, and thus expressions such as $0\,\mathrm{L} \leq d < 1\,\mathrm{L}$ must be understood as shorthands for the subset of entities that meet certain criteria. In the case of (21), this involves all particular champagne portions whose exact measures in volume range between certain illustrative thresholds. A particular portion of champagne whose exact measure is

(21) *Champagne partitioned by volume*

$0\,\text{L} \leq d < 1\,\text{L}$	
$1.1\,\text{L} < d < 2\,\text{L}$	
$2.1\,\text{L} < d < 3\,\text{L}$	
$3.1\,\text{L} < d < 4\,\text{L}$	
$4.1\,\text{L} < d < 5\,\text{L}$	$\rightsquigarrow$ the champagne that they spilled that evening was d-much.
...	

Since P_c must ultimately be retrieved by relying on information that is accessible in the context, any such information may do. If the reason was that such champagne was extremely sweet, then P_c would indicate that the actual spilled champagne was of a certain sweetness, thereby inducing a partition along the following lines, for instance.

(22) *Champagne partitioned by sweetness in gr. of sugar per litre*

$d < 6\,\text{gr}$	
$6.1 < d < 12$	
$12.1 < d < 17$	
$17.1 < d < 32$	
$32.1 < d < 50$	
$50.1 < d < 67$	$\rightsquigarrow$ the champagne they spilled that evening was d-sweet.
...	

And since nothing precludes the selection of any other type of relevant property, champagne belonging to the same kind may also provide a suitable partition.

(23) *Champagne partitioned by taxonomic kinds*

Prestige cuvée	$\rightsquigarrow$ the champagne that they spilled last night was a *prestige cuvée*.
Blanc de noir	
Blanc de blancs	
Rosé Champagne	

There is still one piece missing. Consider (24) example, on one its most prominent interpretations: it expresses, as paraphrased below, that the reason we lost is because we did not have *as many soldiers as* the Imperial Army did. Clearly, then this interpretation entails that the Imperial Army had *more* soldiers than us.

(24) We lost the battle because we didn't have the soldiers that the Imperial Army had. $\rightsquigarrow$ *as many soldiers as the IA had*.

e. g. 5.35*L* will thus only inhabit one of the cells in the partition. What exactly determines the correct granularity of such partitions is however left unspecified, and may possibly vary from context to context.

Partitions can be easily ordered as long as P_c can be sensibly said to be gradable (see Klein, 1991; Rullmann, 1995; Bale, 2006, a. o.). If P_c is gradable, it makes sense to talk about a *P*-informed equivalence class in terms of the relative order of its members:

(25) $a \simeq_{R^{P_c}} b \leftrightarrow a \succeq_{R^{P_c}} b \ \wedge \ b \succeq_{R^{P_c}} a$

Then, the relation $\succeq$ itself may induce a relation $\geq_{R^{P_c}}$ on D such that $[a]_{R^{P_c}} \geq_{R^{P_c}} [b]_{R^{P_c}}$ *iff* $a \succeq_{R^{P_c}} b \wedge b \not\succeq_{R^{P_c}} a$. In other words, $\geq_{R^{P_c}}$ takes the collection of all equivalence classes in D, $[]_{R^{P_c}}$ and orders them linearly. As a result, an equivalence class $[x]_{R^{P_c}}$ is greater-than or equal to an equivalence class $[y]_{R^{P_c}}$ *iff* the members of $[x]_{R^{P_c}}$ bear the relation R^{P_c} to the members of $[y]_{R^{P_c}}$. Thus, if R^{P_c} was *be as sweet as* (in our (1) example), then $[x]_{R^{P_c}}$ would be greater-than or equal to the equivalence class $[y]_{R^{P_c}}$ *iff* the members of $[x]_{R^{P_c}}$ have at least as much sweetness as the members of $[y]_{R^{P_c}}$. The result is that gradable predicates *qua* P_c in amount relatives are inherently ordered by virtue of the very same underlying properties that they express; it only makes sense to do so if it is possible to conceptually express that *a* exceeds *b* relative to P_c. This easy transition from equivalence classes – understood as sets of individuals – and degrees is thus conceptually trivial.

10.3.2 Discussion

P-interpretations are non-object interpretations of seemingly ordinary definite descriptions. They were first described by Carlson (1977a) under the moniker of amount and kind interpretations and, as we have seen, they in fact allow a range of interpretations well beyond what is typically conceived of in terms of mere taxonomic kinds and quantities. In the last two sections we have assessed some of the available evidence and the conclusion seems to be clear: degree interpretations of amount relatives need not be derived by means of the same sort of degree-semantic toolkit typically employed in the analysis of comparatives and other degree constructions. Moreover, it is plausible to analyze amount relatives without resorting to any form of degree operations, degree expressing lexemes, etc. In other words, amount relatives are not degree constructions, *stricto sensu*. The degree interpretation of amount relatives is thus consequence of the need to find whatever relevant properties P_c are available in the context, and arise whenever P_c is conceptually gradable and hence inherently supports comparisons. In this sense, degree interpretations are pragmatically driven in a way that they depend more on extra-linguistic information that must be supplied by the context than on dedicated grammatical (i. e. morphological) means to express degree and comparison.

So, what is there to be learned about the nature of degrees and degree expressions in natural language? On the one hand, amount relatives showed us that

there is a way to achieve degree interpretations that parallels and exploits mechanisms involved in kind interpretations. This is not to say that degrees *are* kinds, as Anderson & Morzycki (2015) and Scontras (2017) do, however. Instead, degree interpretations require structuring the domain in a certain way, just like kinds do. In the process of retrieving the relevant property P_c that hangs elements in the domain together, we may run into a gradable property that conceptually allows establishing a comparison between individuals. This is only the realization, as Anderson & Morzycki (2015) suggest, that certain equivalence classes are inherently ordered. The recipe is the following: given non-empty set A, an equivalence relation R delivers the partition $[A]_R$. The resulting structure is what is required of kind reference (e. g. (6)). If elements in A are conceptually and inherently ordered, we get in addition the linear extension of $[A]_R$, $[A]_R^{\geq}$, a connected, transitive, reflexive and antisymmetric relation on A.

The existence of such indirect means to achieve degree interpretations tells us nothing about the nature of proper, primitive degrees in natural language, although it does carve the space of possibilities in a different fashion. And if we do accept the existence of primitive degrees – unlike delineation theories – we now have two main ways of achieving degree interpretations: either by resorting to dedicated constructions of degree, or pragmatically, by exploiting the semantic underspecification of constructions with more general P-interpretations.[18] The next section looks into equative constructions to make the case that this result is on the right track.

10.4 Scalar and non-scalar equative constructions

10.4.1 Two equative constructions in Spanish

Among the many strategies in the language to compose equative constructions, Spanish has two that are morphologically close to each other (Gutiérrez Ordóñez, 1994; Real Academia de la Lengua Española, 2010; Sáez & Sánchez López, 2013). Ordinary scalar equatives are formed by a pair of parameter and standard markers: *tan(to)/como* – similar to *as/as* equatives in English (terminology from Rett, 2020).

18 Proponents of delineation approaches may object that we are yet to show that primitive degrees do indeed exist, and they would be right in their objection. We are only concerned here with showing that at least some degree interpretations do not require the traditional machinery deployed by degrees-as-primitives approaches, and that our account shares important points of connection with (a subset of) derivative degree approaches. It is therefore possible that a suitable extension of the present account would bring it closer to delineations semantics, a question that we leave unanswered here.

From a semantic standpoint such equatives constructions are "scalar" in that they express the comparison of the extent to which two individuals possess a certain property. Like in many other languages, equatives in Spanish are categorically flexible, and thus permit comparing individuals relative to gradable predicates, but also relative to events as well as other nominal properties (either gradable or non-gradable). In the examples below, the only interpretations possible are the ones indicated by the English translations; e. g. (26-a) states the both Alex and Sam are tall/intelligent to an equal degree, in (26-b) they run/lie to the same extent and in (26-c) each of them is as much of a collector/idiot as the other.

(26) **Scalar equatives**

a. *Adjectival*
Alex es tan { *inteligente* / *alta* } *como Sam.*
Alex is TAN intelligent tall COMO Sam
'Alex is as {intelligent / tall} as Sam.'

b. *Verbal*
Alex { *corre* / *miente* } *tanto como Sam.*
Alex runs lies TANTO COMO Sam
'Alex {runs / lies} as much as Sam.'

c. *Nominal*
Alex es tan { *coleccionista* / *idiota* } *como Sam.*
Alex is TAN collector idiot COMO Sam
'Alex is as much a {collector / idiot } as Sam.'

There are many ways to express the truth-conditions of e. g. (26-a), for instance as stating that the set of degrees representing Sam's intelligence are either contained in or equal to the set of degrees representing Alex's intelligence:

(27) $[\![(26\text{-a})]\!] = 1$ *iff* $\{d : \mathit{intelligence}'(\mathit{Sam}') \geq d\} \subseteq \{d : \mathit{intelligence}'(\mathit{Alex}') \geq d\}$

In addition to these common scalar equatives, Spanish can form variants of (26) simply by dropping the parameter marker *tan(to)*, with quite drastic semantic effects in certain cases. For instance (28-a) does no longer compare the height or intelligence levels of Alex and Sam directly. Instead, it expresses that Alex and Sam are tall/intelligent *in the same way*, or that they are similar in that they share the property of being tall/intelligent, without necessarily stating that they are both *as tall/intelligent as* each other. Non-scalar equatives targeting events like those in (28-b) are more naturally interpreted as involving an equation of manner, whereby Alex and Sam both share a way of running/lying. And finally non-scalar nominal equatives, such as those in (28-c), state similarly that Alex is the same sort of collec-

tor/idiot that Sam is, although the extent to which they are collectors/idiots does not have to be the same.

(28) **Non-scalar equatives**

a. *Adjectival*

Alex es { *inteligente* / *alta* } *como Sam.*
Alex is intelligent tall COMO Sam
'Alex is {intelligent / tall} like Sam.'

b. *Verbal*

Alex { *corre* / *miente* } *como Sam.*
Alex runs lies COMO Sam
'Alex {runs / lies} like Sam.'

c. *Nominal*

Alex es { *coleccionista* / *idiota* } *como Sam.*
Alex is collector idiot COMO Sam
'Alex is a {collector / idiot } like Sam.'

The interpretation of such non-scalar equatives can be explained quite simply as *P*-interpretations of the sort proposed for amount relatives, with the exception that now we do not have to retrieve a property P_c from the context, but it is given to us:

(29) $[\![(28\text{-a})]\!] = 1$ *iff* $Alex' \in [Sam']_{R^{\text{INTELLIGENT}'}}$

Note however that the actual equivalence relation *R* that determines exactly whether any two individuals relate to each other with respect to intelligence is still not fully specified. As a consequence, there may be multiple ways to partition the domain according to intelligence-based relations. It could be that they are *as intelligent as*, but also *intelligent in the same way as*, *intelligent in the same situations as*, *intelligent for the same purposes as*, etc. Crucially, the above representation does not involve any form of degree constituent, no reference to degrees is necessary and no degree sets, operations etc. are required.

There are in addition important differences between the two species of equatives that grant a different analysis. Scalar equatives involve a comparison of extents that simply present a comparison of individuals relative to a certain property, they do not necessarily entail that the compared individuals actually posses such property. That is, in stating (26-a), the speaker is not committing herself to the admission that neither Alex nor Sam are actually tall.

(30) **Scalar equatives constructions and entailment**

a. $[\![(26\text{-a})]\!] \not\Rightarrow$ {Alex / Sam} is {intelligent / tall}

b. ⟦(26-b)⟧ ↛ {Alex / Sam} {runs / lies}
c. ⟦(26-c)⟧ ↛ {Alex / Sam} is a {collector / idiot}

This again contrasts with non-scalar equatives: what statements such as e. g. (28-a) convey is that both Alex and Sam are equal relative to some way of having the relevant property, in this case, being intelligent or tall. Instead, scalar equatives only involve a comparison of the extent to which they both have said property.

(31) **Non-scalar equatives and entailment**

a. ⟦(28-a)⟧ ⇒ {Alex / Sam} is {intelligent / tall}
b. ⟦(28-b)⟧ ⇒ {Alex / Sam} {runs / lies}
c. ⟦(28-c)⟧ ⇒ {Alex / Sam} is a {collector / idiot}

These entailment relations suggest that there may be two distinct semantic strategies to derive equative statements in Spanish, which in turn have two distinct morphological reflexes: scalar equatives involve comparison of the degree to which individuals possess a certain property, and thus are best derived by recruiting ordinary tools from degree semantics. Non-scalar equatives, instead, do not involve any comparison to a degree, but are instead closer to category ascription: they state that some individuals are the same relative to a partition of the domain according to some property.

It is instructive to compare the behavior of the two equative constructions in certain limited cases. Since scalar equatives rely on scales – i. e. linearly ordered domains – , they are much less flexible than their non-scalar counterparts when it comes to determining the dimension along which individuals are to be compared. But in certain cases, those differences vanish, especially in situations where the possible dimensions of comparison are conceptually reduced. This is illustrated by the two pairs in (32)/(33) below, where we no longer find significant semantic differences between the scalar vs. non-scalar variants:

(32) a. *Alex mide tanto como Sam.*
Alex measures TANTO COMO Sam
'Alex is as tall as Sam.'
b. *Alex mide como Sam.*
Alex measures COMO Sam
'Alex is tall like Sam.'

(33) a. *Alex pesa tanto como Sam.*
Alex weighs TANTO COMO Sam
'Alex is heavy as as Sam.'
b. *Alex pesa como Sam.*
Alex weighs COMO Sam
'Alex is heavy like Sam.'

Presumably this is because it is much more difficult to conceptualize how to partition a domain relative to the property of measuring/weighing *d*-much in such a way that it does not involve a partition of the domain according to actual measures/weights. In contrast, partitioning a domain relative to ways of running may involve various dimensions that are plausibly relevant. For instance, (34-a) below may come out true on a number of dimensions, such as frequency, duration, talent, etc. – i. e. if Alex dances more often, for a longer period or simply better than Sam. Scalar equatives are only able to support such interpretations, where the comparison is relative to dimensions that are comparable.[19] There is however nothing wrong with the idea of comparing two individuals' dancing relative to other dimensions; this, however, requires a non-scalar equative, (34-b).

(34) a. *Alex baila tanto como Sam.*
Alex dances TANTO COMO Sam
'Alex dances as much as Sam.'
b. *Alex baila como Sam.*
Alex dances COMO Sam
'Alex dances as much as Sam.'

The consequences of contrasts like those in (32)/(33) (or lack of thereof) are not to be dismissed. They mean that, in certain cases, non-scalar and scalar interpretations are essentially semantically equivalent. This is unsurprising, however, from the perspective of *P*-interpretations: if the only plausible partition in the domain is one along a certain dimension, one coinciding with the dimensions conventionally associated with the scalar variant, then in seeking for a relevant P_c property there is but one option to choose from. In other words, truth-conditions expressed as equivalence classes, $x \in [y]_{R^{P_c}}$, will come out equivalent to those expressed in terms of degree (e. g. (27)) whenever the domain can only be partitioned relative to a single dimension, the very same dimension established by the scalar variant of the equative.[20] As a result, Spanish equative constructions seem to bear a transparent morphological relation to scalarity. In turn, this distinction supports

19 Very likely this will require additional constraints on the denotational space, such as dimensions that induce orderings with specific monotonic properties (see Schwarzschild, 2006; Sassoon, 2013).

20 As an anonymous reviewer suggests, if non-scalar equatives such as (34-b) above are interpreted by the exact same mechanisms exploited by amount relatives to reach their degree interpretations, it should be possible, in principle, for them to give rise to scalar interpretations as well. However, in the general case, these are not so readily available. A plausible reason for this behavior is that, there being a more specific construal tailored to expressing such meanings, the scalar interpretation of non-scalar equatives is somewhat difficult or blocked in ways reminiscent from other phenomena involving competition between simpler vs. complex forms.

the view that there is indeed a fork on the road towards degree interpretations; one may get to them by means of the semantic contribution of degree constructions proper, or as a special case of the more general *P*-interpretations described above.

10.4.2 Some broader cross-linguistic connections

The situation in Spanish resembles the distinction in Mandarin Chinese reported by Sun (2019) and Zhang (2020), which also shows two related means of expressing equatives, one scalar (i. e., only allowing degree interpretations), and a non-scalar, allowing a range of equations across categories. Very much like Spanish non-scalar equatives with the standard marker *como*, Mandarin Chinese has a cross-categorial equative construction that involves the unstressed standard marker *yi-yang*$_{\text{UNSTR}}$ and the parameter marker *xiang*.

(35) a. *xiang Zhanzheng.yu.heping yi-yang*$_{\text{UNSTR}}$ *de shu.*
like War.and.Peace one-kind MOD book
'Such book like War & Peace.'

b. *Yuehan hui xiang houzi yi-yang*$_{\text{UNSTR}}$ *tiaowu.*
John will like monkey one-kind dance
'John will dance in such a way like monkeys.'

c. *Yuehan xiang Bier yi-yang*$_{\text{UNSTR}}$ *gao.*
John like Bill one-kind tall
'John is such tall like Bill.'

[Sun, 2019, ex.12]

The interpretations of the sentences above involve comparisons that rely on contextually relevant aspects of being a book, dancing and ways on being tall, respectively. They show, in addition, the same entailment patterns as Spanish non-scalar equatives (cf. (31-a)); for instance, (36) requires that Bill be tall.

(36) *Yuehan xiang Bier yi-yang*$_{\text{UNSTR}}$ *gao. #suiran Bier hen ai.*
John like Bill one-kind tall though Bill very short
'John is such tall like Bill. #Although Bill is quite short.'

[Sun, 2019, ex.13]

The second form of equative construction in Mandarin Chinese that is of interest involves the same standard marker – but now it must be stressed, *yi-yang*$_{\text{STR}}$ – and the parameter marker *gen* ("as"). Like Spanish scalar equatives with *tan(to)/como*, these only support degree interpretations, although their syntactic distribution is limited to equative constructions that involve gradable predicates:

(37) a. **gen Zhanzheng.yu.heping yi-yang*$_{\text{STR}}$ *de shu.*
as War.and.Peace one-kind MOD book
Int.: 'Such book like War & Peace.'

b. **Yuehan hui gen Bier yi-yang*$_{\text{STR}}$ *tiaowu.*
John will as Bill one-kind dance
Int.: 'John will dance like Bill.'

c. *Yuehan gen Bier yi-yang*$_{\text{STR}}$ *gao.*
John as Bill one-kind tall
'John is as tall as Bill.'

[Sun, 2019, ex.8]

In turn, this second variant of equatives do come with similar entailments as Spanish scalar equatives:

(38) *Yuehan gen Bier yi-yang*$_{\text{STR}}$ *gao. suiran Bier hen ai.*
John as Bill one-kind tall though Bill very short
'John is as tall as Bill. Although Bill is quite short.'

[Sun, 2019, ex.10a]

The take-away is that, modulo their syntactic limitations to appear with gradable predicates, Mandarin Chinese, like Spanish, has an equative construction that involves comparison of degrees only, and a second equative constructions which are highly reminiscent of the sort of expressions that receive *P*-interpretations.

A further point of connection between Mandarin Chinese and Spanish equatives is found in so-called "prototypical comparisons," equative constructions that provide somewhat metaphoric, non-literal meanings. According to Real Academia de la Lengua Española (2010), such uses are only possible with non-scalar *como*. Thus, the figurative interpretations of (39) are lost in (40), which, depending on the naturalness of the actual scalar comparison may be a bit degraded.

(39) a. *Aúllan como lobos.*
howl COMO wolves
Lit.: 'They howl like wolves.' Int.: 'They were very loud.'

b. *Corría como el viento.*
run COMO the wind
Lit.: '(She) run like the wind.' Int.: 'She was very fast.'

(40) a. *Aúllan tanto como lobos.*
howl TANTO COMO wolves
'They howl as much as wolves.'

b. ?*Corría tanto como el viento.*
run TANTO COMO the wind
Lit.: '(She) run as much as the wind.'

Zhang (2020) reports a similar pattern in Mandarin Chinese too, one where literal vs. non-literal interpretations require different parameter markers. The literal interpretation of equatives is possible only with *gen*, whereas non-literal equative (scalar) interpretations require *xiàng*.

(41) a. *méi-guī gēn xuě yī-yàng hóng*.
rose along-with blood same red
'Roses are as red as blood.' (⇝ *literal interpretation*)

b. *méi-guī xiàng xuě yī-yàng hóng*.
rose like blood same red
'Roses are as red as blood.' (⇝ *non-literal, figurative interpretation*)
[Zhang, 2020, ex.8-9]

German *so… wie* equative constructions carve the space of possible scalar vs. non-scalar variants in yet a different way. They morphologically collapse the two classes of interpretations leading to semantically ambiguous statements. For instance, as the two follow-ups indicate, an equative construction like (42) below may obtain at least two such interpretations:

(42) a. *Ingrid sammelt auch so große Gemälde wie Eva.*
Ingrid collects also so big paintings how Eva.
'Ingrid also collects such big paintings as Eva.'

b. *Nämlich alte flämische Meister*.
Namely old Flemish master
'Namely, old Flemish Masters.'

c. *Gemälde ab einer Höhe von 90 Zentimeter*.
paintings from a height of 90 centimenters
'Paintings with a height 90 centimetres or more.'
[Hohaus & Zimmmermann, 2021, ex.17]

Hohaus & Zimmmermann refer to the first of the two interpretations as a "property-reading", echoing our *P*-interpretations. The difference with Spanish *P*-interpretations of non-scalar equatives, however, is that the degree interpretations of *so wie* are limited to their use with gradable adjective complements which, according to the authors, always involve measurement along some scale. Their property-readings and degree interpretations seem to be in complementary distribution, thus presenting a more clear-cut mapping between the type of complements and interpretation than we find in Spanish.

10.5 Conclusion

We started off the discussion asking about what the best representation of degree might be in natural language: either as primitive abstractions in their own right or as abstractions derivative from other existing individuals, such as objects, events, etc. Focusing on the interpretation of amount relatives, a constructions that has often been argued to involve degrees of one sort or other, we reached the conclusion that a form of "degree-less" explanation that unifies various forms of degree and kind interpretations is both plausible and desirable. On itself, this does not advance much the question as to how to better represent degrees as grammatical constructs, but it does suggest that the full space of degree interpretations must be carved differently from what was previously noticed (see also discussion in Mendia & Espinal, 2025).

If these conclusions are on the right track, it should be possible to identify more grammatical contexts where the more general *P*-interpretations allow the more specific degree and kind interpretations. One such intriguing case is posed by *mismo* ("same") in Spanish. Its ordinary uses allow a variety of interpretations, including the usual suspects. For instance, (43) below may convey that I brought apples of the same taxonomic kind as I did last year, but it may also convey that I brought the exact same amount of apples (say, 10 kg). And, in addition, other interpretations are possible too: it could be that I brought apples from the same fruitmonger, apples that are good to make cider or to bake cakes, etc.

(43) *He traído las mismas manzanas que el año pasado.*
AUX brought the.PL same.PL apples that the last year
'I have brought the same apples I brought last year.'

And similar to non-scalar equatives in Spanish, picking out predicates that allow only a single denotational dimension results in the collapse of all those interpretations into the one favored by the dimension in question; the statements in (44) only allow degree interpretations. Instead, (45) below may express that Alex and Sam run equally fast, equally often, equally long, etc.; it cannot have, however, non-scalar (e. g. manner) interpretations.

(44) a. *Alex mide lo mismo que Sam.*
Alex measure the same that Sam
'Alex measures the same as Sam.'
b. *Alex y Sam miden lo mismo.*
Alex and Sam measure the same
'Alex and Sam measure the same.'

(45) a. *Alex corre lo mismo que Sam.*
Alex runs the same that Sam
'Alex runs the same as Sam.'
b. *Alex y Sam corren lo mismo.*
Alex and Sam run the same
'Alex and Sam run the same.'

Exclamative constructions provide a second well-known environment giving rise to *P*-interpretations. As Rett (2008) suggests, exclamatives such as *What languages Mimi speaks!* may convey that Mimi speaks a large amount of languages, or else that the languages Mimi speaks have some surprising property *P*. Indeed, in Rett's (2008) own analysis, the second interpretation – which she dubs the "gradable reading" – requires the presence of a contextually given gradable property P.[21] Castroviejo & Schwager (2008) and Schwager (2009) extend these observations to the DPs complement of the embedding predicate, as in *It's amazing the languages that Mimi speaks*.

This constellation of related phenomena suggests that we ought to make room in the grammar for degree interpretations that arise as a by-product of structuring the domain by means of equivalence classes. For one, such explanations allow a close treatment of degree and kind interpretations (loosely understood). And, indeed, there seem to be close connections in the type of constructions that allow similar interpretations across categories. Importantly, this is not to claim that all degree constructions should be construed on the basis of equivalence relations. A second perhaps more intriguing question concerns the distribution of *P*-interpretations themselves. In Mendia (2020) *P*-interpretations are all treated as *ad hoc* kind interpretations, which resemble somewhat the property readings of German *so wie* constructions that Hohaus & Zimmermann (2021) discuss, with the exception that *so wie* only accepts degree interpretations with gradable predicates. If so, the conclusion would be that, whatever kinds might be, degrees can be construed as a sort of kind species (Anderson & Morzycki, 2015; Scontras, 2017; Rothstein, 2017; c. f. Mendia & Espinal, 2025). Still, the fact that degree interpretations (*i*) survive grammatical contexts that disallow usual degree constructions (e. g. in amount relatives) and that (*ii*) even non-scalar equative constructions may give rise to degree interpretations, indicates that constructing degrees as a sort of kind should be done in addition to, and not in place of, primitive and non-derivative degrees in the grammar.

21 Interestingly, Castroviejo & Schwager (2008) call this second interpretation a kind interpretation, reserving the name degree interpretation only for those readings denoting amounts and quantities.

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