Degrees/Intervals as Restricted Entities

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The overall thrust of this talk is that a particular construction with the typical hallmarks of a 'peripheral' one, in particular, a limited cross-linguistic and intra-linguistic distribution, is nonetheless a theoretically interesting object of study. We will argue that it supports the extension of the independently motivated notion 'restricted individual' to degrees.

So far, the construction has been identified in two languages only, Romanian and Albanian, and the talk will rely on Romanian data. Its properties can be best appreciated by comparing it with a superficially very similar and entirely well-behaved restrictive relative construction, which denotes a degree on some scale, and which is illustrated in (1)-(2) with data from a number of languages.

(1) a. [The nine kilos that your hand-luggage **weighs** __] won't prevent you from
    boarding the plane.'   ← **English**
  b. [Tish'a-t ha-kilogramim she-mit'an   ha-yad shelxa **shokel** __] ← **Hebrew**
      nine-CS the-kilos   that luggage-CS the hand your weighs
      lo yimneu   mimxa   la'alot la-matos.
      not prevent from-you to ascend to-the-plane
  c. [Les neuf kilos que **pèse** __ ton baggage à main] ne   t'empêcheront pas de
      the nine kilos that weighs you luggage of hand Neg Cl-prevent.Fut not of
      monter dans l'avion.   ← **French**
      climb in   the plane
  d. [Cele nouă kilograme cât **cântăreşte** __ bagaju-l tău de mână] nu te vor
      the nine   kilos how-much weighs luggage-the your of hand not Cl will
      împiedica să   te urci in avion.   ← **Romanian**
      prevent Subjunctive Cl climb in plane
  e. [Nëntë kile-t   që peshon bagazhi yt] nuk janë problem.   ← **Albanian**
      nine   kilos-the that weigh luggage your not   are problem
      'The nine kilos that your luggage weighs are not a problem.'
(2) a. [The six hours that this movie **lasted** __] were more than the audience
      was able to endure.'   ← **English**
  b. [Shesh ha-shaot she-seret   ze **nimshax** __] hayu yoter mi-ma-she ← **Hebrew**
      six-CS the-hours that film this lasted   were more from what-that
      ha-kaxal haya mesugal lisbol.
      the-audience was able to-endure
  c. [Les six heures qu'a **duré** __ ce film] ont   été   plus que le public
      the six hours that lasts this movie have been more than the audience
      n'a   pu   supporter.   ← **French**
      not has been-able to-endure
  d. [Cele şase ore cât   a **durat** __ filmul   ăsta] au fost mai mult decât
      the six hours how-much lasts   movie-the this have been more much than
      a   putut   suporta   publicul.   ← **Romanian**
      has been-able to-endure audience-the

Note the relative-internal 'gap' serves as internal argument of the predicates *weigh* and *last,* which typically select a degree on the scales of WEIGHT and TEMPORAL DUTRATION respectively. The bracketed complex DPs denote a degree, and exhibit the definite article. The definiteness of these expressions is **unsurprising**, because a piece of luggage has a

unique (total) weight and a movie has a unique (total) duration, and these expressions purport to denote the unique (total) weight or duration of the entities at issue. In this situation of pre-supposed uniqueness, the definite article is the natural determiner to use (see Heim 1991 on this point). In fact, if one were to make use of existential quantification, one would leave open the possibility of non-uniqueness, and a pragmatic conflict, reflected in infelicity, may be expected; this expectation is fulfilled in a number of languages, in particular, in English, Hebrew, and French, as illustrated by the infelicity of the (a)-(c) sub-cases of (3)-(4), which differ from the corresponding sub-cases of (1)-(2) in lacking the definite article.

(3) a.#[Nine kilos that your hand-luggage **weighs** __] won't prevent you from
     boarding the plane.'   **← English**
  b.#[Tish'a kilogramim she-mit'an   ha-yad shelxa **shokel** __] **← Hebrew**
    nine kilos   that luggage-CS the hand your weighs
    lo yimne'u   mimxa la'alot   la-matos.
    not will-prevent from-you to ascend to-the-plane
  c.#[Neuf kilos que **pèse** __ ton baggage à main] ne   t'empêcheront pas de
    nine kilos that weighs your luggage of hand Neg you will.PL   not of
    monter dans l'avion.   **← French**
    climb in the plane
  d. [Nouă kilograme cât **cântăreşte** __ bagajul   tău de mână] nu te   vor
    nine kilos how-much weighs luggage-the your of hand not you will.PL
    împiedica să   te urci in avion.   **← Romanian**
    prevent Subjunctive Cl climb in plane
  e. [Nëntë kile   që peshon bagazhi yt] nuk janë problem.   **← Albanian**
    nine kilos that weigh luggage your not are problem
(4) a.#[Six hours that this movie **lasted** __] were more than the audience
     was able to endure.'   **← English**
  b.#[Shesh sha'ot she-seret   ze **nimshax** __] hayu yoter mi-ma-she
    six   hours that film-CS this lasted   were more from what-that
    ha-kaxal haya mesugal lisbol.   **← Hebrew**
    the-audience was able to-endure
  c.#[Six heures qu'a **duré** __ ce film]   ont   été plus que le public
    six hours that lasts this movie have been more that the audience
    n'a   pu   supporter.   **← French**
    not has been-able-to-endure
  d. [Şase ore cât   a **durat** __ filmul ăsta]   au   fost mai mult decât
    six hours how-much has lasted   movie-the this have been more   than
    a   putut   suporta   publicu-l.   **← Romanian**
    has been-able to-endure audience-the

    Surprisingly, however, suppression of the definite article does not induce infelicity in Romanian and Albanian, as shown in the (d)-(e) sub-cases of (3)-(4). These data illustrate the construction we wish to focus on, and for lack of a better name, we will call it the "Unexpected Romanian Construction" (URC). In contrast to the incoherent (a)-(c) sub-cases of (3)-(4), URCs do not purport to have indefinite force, nor do they purport to be elliptical partitives. For example, the expression in (3d) does not purport to mean 'nine of the kilos that your hand-luggage weighs", rather, it denotes **the weight of nine kilos in the special circumstance where it is the weight of 'your' hand-luggage**, **a state of affairs that holds in (what the speaker takes to be) the real world**. The closest idiomatic English paraphrase might be *nine kilos as the weight of your hand-luggage*, except that the latter does not imply

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that your hand-luggage **actually** weighs nine kilos, while the expression in (3d) does, due to the tense/mood of the relative's predicate. This can be gathered from (5), where the continuation (in boldface) is unproblematic in (5a), but contradictory in (5b).

(5) a. [Nine kilos as the weight of your hand-luggage] won't prevent you from
      boarding the plane. **Unfortunately, your hand-luggage weighs thirty kilos**.
   b. [Nouă kilograme cât cântăreşte __ bagajul   tău de mână] nu te   vor
      nine   kilos how-much weighs luggage-the your of hand not you will.PL
      împiedica să   te urci in avion. #**Din păcate, bagajul   tău**
      prevent Subjunctive Cl climb in plane. Unfortunately luggage-the your
      cântăreşte treizeci de kilograme.
      weighs   thirty of kilos

Concentrating on data from Romanian, the (d) sub-cases of (1)-(2) have the same truth conditions as the corresponding sub-cases in (3)-(4), a state of affairs partly traceable to the fact that the relative clause is a constitutive ingredient of the complex expression in both cases; differently put, the relative clause is not an appositive in the surprising construction any more than it is in the unsurprising one. This can be seen by comparing (7) and (8) with the incontrovertible appositive constructions in (6), where the boldfaced measure phrases denote a degree **in the abstract**, independently of what it may measure. In contrast, in both (7) and (8), this degree is construed as the weight of a piece of luggage.

(6) a. **Nine kilos**, (that is,) what your hand-luggage weighs, {is, are} the weight
      of my dog.
   b. **Tish'a kilogramim**, (zot omeret,) ma she-mit'an   ha-yad shelxa shokel,
      nine kilos   this says   what that luggage-CS the hand your weighs
      hem ha-mishkal shel ha-kelev sheli.
      they the-weight of the-dog   my
   c. **Neuf kilos**, (c'est à dire,) ce   que pèse   ton baggage à main,
      sont le poids   de mon chien
   d. **Nouă kilograme**, (adică,) atât   cât cântăreşte
      bagajul   tău de mână, sunt greutatea câinelui   meu.
(7) a.#The nine kilos that your hand-luggage weighs are the weight of my dog.
   b.#Tish'at   ha-kilogramim she-mit'an   ha-yad shelxa shokel
      nine-CS the-kilos   that luggage-CS the hand your weighs
      hem ha-mishkal shel ha-kelev sheli.
      they the-weight of the-dog   my
   c.#Les neuf kilos que pèse ton baggage à main sont le poids de mon chien.
      sont le poids   de mon chien
   d. #Cele nouă kilograme cât   cântăreşte bagajul   tău de mână sunt
      the nine   kilos how-much   weighs   luggage your of hand are
      greutatea câinelui   meu.
      weight-the dog-the-Gen my
(8) #Nouă kilograme cât   cântăreşte __ bagajul   tău de mână sunt
   nine   kilos how-much weighs   luggage your of hand are
   greutatea câinelui   meu.
   weight-the dog-the-Gen my

In view of these shared properties, should we conclude that URCs are merely elliptical variants of overtly definite construction, ellipsis of the definite article being idiosyncratically licensed in this context in Romanian (and Albanian)? The answer is negative: their shared

properties notwithstanding, the two constructions differ both in their pragmatic felicity conditions, and in the range of denotations they can in principle exhibit. These distinctions, we will argue, are best captured by adopting distinct compositional analyses.

The difference in conditions of use is that the unsurprising construction in (1d) is most naturally usable when not only the uniqueness of the weight of the luggage, but also the specific value of nine kilos, are contextually assumed; the URC in (3d), on the other hand, is most naturally usable where only the former is, the value of nine kilos being presented by the speaker as a contextual novelty, e.g., as an assessment based on the external appearance of the luggage. We will argue that this construal is traceable to the absence of the definite article, which is thus semantically significant.

Concerning differences in denotation, the unsurprising construction may avail itself of (at least) two options that are not open to URCs.

First, it has been known since Carlson's seminal (1977) article that what he called 'amount relatives', a term that was subsequently changed to 'degree relatives' by Heim (1987), can denote not just **degrees**, but also (possibly concrete) **individuals** measured by degrees. In fact, Carlson's most prominent type of example, illustrated in (9a), is precisely of this kind, since what was taken away was books, not abstract numbers (the reason for viewing such data as amount/degree relatives was that, in contrast to essentially synonymous data like (9b), the individual variable associated with the gap is existentially bound, and thus, not available for abstraction; see Grosu & Landman 1998 for a detailed analysis that resorts to degrees, but ultimately assigns an individual denotation to the complex DP).

(9) a. He took away [the three books that *there* were __ on this desk].
    b. He took away [the three books that were __ on this desk].

Now, the individual denotation is also available for overtly definite relative constructions whose gap serves as an internal argument of a degree-selecting predicate, as illustrated in (10)-(11) with respect to spatial and temporal entities. This option is, however, not available to URCs, as shown by the contrast in acceptability between (10)-(11) and (12a)-(12b) respectively.

(10) a. [The fifty kilometers that the road {stretches, goes on for} __ from Arad to
      the Dead Sea] are full of potholes.   **←English**
    b. [Cei cincizeci de kilometri   cât   se întinde __ şoseaua dela Arad
      the fifty   of kilometers how-much Refl stretches road-the from Arad
      la Marea Moartă] sunt plini de hârtoape.   **←Romanian**
      to sea-the dead   are full of potholes
    c. [xamishim ha-kilometrim she ha-kvish nimshax __ mi-arad   **←Hebrew**
      fifty-CS the-kilometers that the-road goes-on   from Arad
      le yam-ha-melax] meleyim be-borot.
      to sea-the-salt   full   in-potholes

(11) a. [The six hours that the movie {lasted, went on for} __] coincided with a
      revolution that took place in Bangla-Desh last week.   **←English**
    b. [Cele şase ore cât   a durat __ filmul]   au coincis   cu o revoluţie
      the six hours how-much has lasted movie-the have coincided with a revolution
      care   a avut loc in Bangla-Deş săptămâna trecută.   **←Romanian**
      which has had place in Bangla-Desh week-the last

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    c. [Shesh ha-shaot she-ha-seret ha-ze   nimshax __] hitraxashu bo-zmanit
        six-CS the-hours that the-film the-this lasted   took-place co-temporally
        im mahapekha she hayta be bangla-desh be-shavua   she avar. ←**Hebrew**
        with revolution that was in Bangla-Desh in-the-week that passed

(12) a. #[Cincizeci de kilometri cât se întinde __ şoseaua dela Arad
        la Marea Moartă] sunt plini de hârtoape.   ←*[cf. with (10b)]*
    b. #[Şase ore cât a durat __ filmul] au coincis cu o revoluţie
        care a avut loc in Bangla-Deş săptâmâna trecută. ←*[cf. with (11b)]*

The second option available to the regular construction is more subtle, and is illustrated by the contrast between (13) and (14a) (we note that a comparable contrast is found between the full and reduced versions of the Albanian example in (14b), providing further evidence for the hypothesis that URCs are also part of the grammar of Albanian).

(13) a. [The *few/too many* kilos that your luggage weighs __] won't/will prevent you
        from boarding the plane.'
    b. [*Puţine*-le/*prea multe*-le kilograme ce cântăreşte __ bagajul tău de mână (nu) te
        few-the too many-the kilos   that weighs   luggage your of hand (not)you
        vor   împiedica să   te urci în avion.
        will   prevent Subjunctive Cl climb in plane
(14) a. [*Puţine/*prea multe* kilograme ce cântăreşte __ bagajul tău de mână nu te
        few too many kilos   that weighs   luggage your of hand not you
        vor   împiedica să   te urci în avion.   ← **Romanian**
        will   prevent Subjunctive Refl climb in plane
    b. [*(Ato) *pak kile*   që peshon bagazhi yt] nuk janë problem. ← **Albanian**
        the few kilos that weigh luggage your not are problem
      '[*(The) few kilos that your luggage weighs] are not a problem.'

The observation is that a number of measure expressions are fine in the regular construction, but not in URCs. In particular, both constructions of Romanian tolerate things like *cel mult zece kilograme* "at most ten kilos", *cel puţin zece kilograme* "at least ten kilos", *câteva kilograme nenorocite* "a mere couple of kilos", but the italicized expressions in (13)-(14) are not tolerated in URCs. We draw attention to the parallel facts in [15]-[16], and will argue later on that the restriction on URCs is reducible to them.

(15) The weight of the luggage is *{({almost, roughly, at least, at most}) nine, a mere couple of}* kilos.
(16) ?*The weight of the luggage is *few kilos*.

A N A L Y S I S

It now remains to outline the compositional analyses of the two constructions, which will be done on the basis of the examples (1d) and (3d). We propose that the **relative clause starts its semantic life in the same way in both cases**. In particular, the verb *weigh* translates as a function from degrees to individuals, as shown in relational notation in (17), and abstraction over the degree variable denoted by the gap yields (18) as the interpretation of the relative CP. Owing to the fact that a specific object has a unique weight, the set of degrees in (18) is a singleton.

(17) [[weigh]] = λδλx.WEIGH(x, δ)
(18) [[that your hand-luggage weighs]] = λδ.WEIGH(YHL, δ)

At this point, CP must combine with NP, and the two derivations part company. We view the expression *nine kilos* as the proper name of a degree, and the overtly definite construction as a straightforward restrictive construction, in which the relative CP combines with NP by intersection.

In the derivation of (1d), NP is lifted by IDENT, as shown in (19), and (18) is shifted to intersective modifier status, as shown in (20):

(19) 9k → λδ.δ = 9k
(20) λδ.WEIGH(YHL, δ → λPλδ.P(δ) ∧ WEIGH(YHL, δ)

Application of (20) to (19) yields (21) as the meaning of the complex NP, and since the non-null intersection of any set with a singleton is itself a singleton, the complex DP requires the definite article and translates as (22).

(21) λδ.δ = 9k ∧ WEIGH(YHL, δ)
(22) σ(λδ.δ = 9k ∧ WEIGH(YHL, δ))

Concerning URCs, we propose to view them as denoting **'restricted degrees'**, and to analyze them by extending the machinery used in Landman (1989) for the analysis of **'restricted individuals'** like the italicized expression in (23).

(23) [Context: John is both the judge and the hangman of some city]
    John as a judge has been on strike for a full month, but as a hangman,
    he has never stopped working

Landman relied on the intensional logic of Thomason (1980), with the basic logical types *e* of individuals and *p* of propositions, predicates being of type <e, p>, and individuals of the type of **intensional generalized quantifiers** <<e, p>, p>. Thus, the unrestricted expression *John* denotes the set of properties that John in all his aspects has, i.e., λP.P(j), and the restricted expression *John as a judge* denotes a possibly different set of properties, namely, the set of properties that John has **as a judge**, which Landman represents as in (24).

(24) j ↑ J(UDGE)

To analyze (3d), there is no need to lift NP, but CP needs to be shifted to modifier status by the rule in (25a), which maps a degree to the set of properties that this degree has when the property of being identical to the unique member of CP is a member of the set (we chose this representation over the simpler conceivable one in (25b), because it **explicitly** indicates the singleton status of CP, which is only **pragmatically inferable** in (25b)). In the concrete case where CP is (18), the mapping is as shown in (26).

(25) a. CP → λδ.δ ↑ (λδ'.δ' = σ(CP))
     b. CP → λδ.δ ↑ (CP)
(26) λδ.WEIGH(YHL, δ) → λδ.δ ↑ (λδ'.δ' = σ(λδ.WEIGH(YHL, δ)))

Application of the output of (26) to NP yields (27), which is the meaning of the URC in (3d). **In words: the set of properties possessed by the degree 'nine kilos' in the special (actual) situation where it is the weight of your hand-luggage.'**

(27) 9kg $\uparrow$ ($\lambda\delta'.\delta' = \sigma(\lambda\delta.$WEIGH$(YHL, \delta)))$

Under the assumption (which, at the moment, constitutes a stipulation) that (25a) is the **only** operation which allows an interpretation of URCs (an assumption we will express in a more general form later on; see (33)), the deviance of data like (12) is predicted, since these data purport to denote something other than degrees. In contrast, there are no grounds for expecting (10)-(11) to be deviant as well, because the stipulation just noted is confined to URCs. – **As for the fact that the specification *nine kilos* is not presupposed in (3d), even though it is in (1d), this is arguably traceable to the fact that in (27), unlike in (22), *nine kilos* is not bound by a definiteness operator.**

The account of the two constructions we have so far provided needs to be generalized in a certain way, in view of the existence of data like (28)-(29), which we hinted at earlier. Specifically, both constructions allow the CP-external measure phrase to denote a scale-interval, rather a single degree, in particular, an interval that include the unique member of the singleton denoted by CP.

(28) [The **at {most, least} ten kilos** that your hand-luggage weighs __]
     {won't, will} prevent you from boarding the plane.
(29) [**Zece kilograme cel {mult, puțin}** cât   cântărește __ bagajul
     ten   kilos   the[1] much little how-much weighs   luggage-the
     tău de mână] (nu) te   vor   împiedica să   te urci în avion.
     your of hand (not) you will.PL prevent SubjM Refl climb in plane

Let the intervals denoted by the boldfaced expressions in (28)-(29) be represented as in (30). To handle (28), these intervals need to be lifted by an extension of IDENT, call it INCLUD, which has the effect shown in (31). The construal of CP is unchanged, and intersection of (31a/b) with the singleton denoted by CP yields singletons, so that the bracketed expressions in (28) end up translated as in (32).

(30) a. *at most ten kilos*: $0 - 10$ kg

     b. *at least ten kilos*: $10 - \infty$ kg

(31) a. $0 - 10$ kg $\rightarrow \lambda\delta.\delta \sqsubseteq 0 - 10$ kg

     b. $10 - \infty$ kg $\rightarrow \lambda\delta.\delta \sqsubseteq 10 - \propto$ kg

(32) a. $\sigma(\lambda\delta.\delta \sqsubseteq 0 - 10$ kg $\wedge$ WEIGH$(YHL, \delta))$

     b. $\sigma(\lambda\delta.\delta \sqsubseteq 10 - \infty$ kg $\wedge$ WEIGH$(YHL, \delta))$

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[1] The glossing of *cel* as 'the' should not lead to the incorrect conclusion that the bracketed expression is definite, and thus not a URC. *Cel* serves as a proclitic definite article in a number of environments, in particular in superlatives. The expression *cel mult* is the standard counterpart of 'at most', and the use of a definite element may be due to a hidden superlative in this expression (note that *this weighs at most nine kilos* is paraphraseable as *the most that this weighs is nine kilos*). In any event, the bracketed constituent in (29) is a *bona fide* URC.

To handle (29), the operation in (25a) needs to be replaced by the more general one in (33), which includes (25a) as a special case. Note that δ variables now need to range over the union of atomic degrees and intervals.

(33) CP → λδ.δ ↑ (λδ'.δ' ⊒ σ(CP))

When CP is (18), (33a) yields the output in (34). Application of (34) to the proper names of intervals in (30) yields (35) as the translations of the URCs in (29).

(34) λδ.δ ↑ (λδ'. δ' ⊒ σ(λδ".WEIGH(YHL, δ")))

(35) a. 0 – 10 kg ↑ (λδ'.δ' ⊒ σ(λδ".WEIGH(YHL, δ")))

    b. 10 – ∞ kg ↑ (λδ'.δ' ⊒ σ(λδ".WEIGH(YHL, δ")))

In words: The interval on the WEIGHT scale that lies between {zero and ten kilos, ten kilos and infinity} and possesses the special property of including the unique actual weight of your hand-luggage as a sub-part.

It remains to offer a comment on the restriction illustrated by (14) and the parallel one in (16). The various versions of (15) point to the conclusion that the copula can express a relation of (not necessarily proper) inclusion of the subject in the post-copular phrase, and this is exactly what we have proposed with respect to the unique member of CP and NP in URCs. To be sure, the copula can also express the relation '∈' (membership in a set), which is the standard case of predication. It appears, however, that neither relation can hold between a degree and the denotatum of an expression like *few kilos*. We conjecture that this expression is, for some reason that remains to be investigated more carefully, unable to be construed as denoting either a set or a plurality of **degrees**. Presumably, it can only denote a set (or generalized quantifier?) of **abstract measure units**, and to the extent that such units are **sortally distinct** from degrees, the inclusion or membership relations seem to be inapplicable.

If this reasoning is on the right track, we must still suggest an explanation for the contrast between *a mere couple of kilos,* which is acceptable in both (15) and URCs (demonstration omitted here, but provided in Grosu, in press), and *few kilos*, which is acceptable in neither. The only conjecture we can offer is that the former, but not the latter, can (also) be construed as expressing something like 'roughly n kilos', where n is a small precise number[2].

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[2] For completeness, we wish to note that in contrast to (13), which is, as far as we can tell, straightforwardly accepted by all, or at least, most informants, using the italicized phrases in (15)-(16) as internal arguments of *weigh* yields a comparable paradigm, for some speakers, as illustrated below.

  (i)   His luggage weighs *{({almost, roughly, at least, at most}) nine, a mere couple of}* kilos.
  (ii) %His luggage weighs *few/many kilos*.

There is, however, a difference between (ii) and (16). When confronted with (ii), speakers who reject it typically add "what I would say is *his luggage weighs little/a lot*". This reaction is found with respect to a number of languages other than English, e.g., French, Romanian, Hebrew, and suggests that the preferred forms in some way block data like (ii). In contrast, speakers of these languages reject data like (iii), which points to the conclusion that the deviance of data like (16) is due not merely to blocking, but to something more 'serious'.

  (iii) *The weight of his luggage is little (Adv)/a lot.

We will conclude this talk by bringing up a question that most of you have probably been dying to ask: Why are URCs restricted cross- and intra-linguistically in the way they are, that is, what licenses them in Romanian and Albanian to the exclusion of other languages, and why can they only denote (restricted generalized quantifiers of) degrees/intervals? To our profound regret, we have no answer to propose at the moment, and can only surmise that a careful examination of the histories of Romanian and Albanian might ultimately shed light on how URCs arose, and thus ultimately offer a 'diachronic explanation.' Nonetheless, we wish to end on a positive note, in particular, by pointing out that if URCs are idiosyncrasies from a cross-linguistic perspective, they are not theoretically uninteresting insofar as they justify the extension of the notion 'restricted individual' to intervals/degrees.

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