Sentence-internal *Different* as Quantifier-internal Anaphora

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Abstract

The paper proposes the first unified account of deictic / sentence-external and sentence-internal readings of singular *different*. The empirical motivation for such an account is provided by a cross-linguistic survey and an analysis of the differences in distribution and interpretation between singular *different*, plural *different* and *same* (singular or plural) in English. The main proposal is that distributive quantification temporarily makes available two discourse referents within its nuclear scope, the values of which are required by sentence-internal uses of singular *different* to be distinct, much as its deictic uses require the values of two discourse referents to be distinct; thus, we take sentence-internal readings to be a form of 'association with distributivity' that is similar to association with focus. The contrast between singular *different*, plural *different* and *same* is explained in terms of several kinds of quantificational distributors that license their internal readings. The analysis is executed in a stack-based dynamic system couched in classical type logic, so we get compositionality in the usual Montagovian way; quantificational subordination and dependent indefinites in various languages provide additional motivation for the account. Investigating the connections between items with sentence-internal readings and the quantificational licensors of these readings opens up a larger project of formally investigating the typology of quantificational distributors and distributivity-dependent items and the fine-grained contexts of evaluation needed to capture this typological variation.

1 Deictic / Sentence-external and Sentence-internal *Different*

The two main goals of this paper are to (*i*) argue that deictic / sentence-external and sentence-internal readings of morphologically singular *different* should receive a unified account and (*ii*) provide such an account which, furthermore, is compositional. These two kinds of readings, exemplified in (1), (2) and (3) below, have been known to exist at least since Carlson (1987), but no unified account has been proposed to date; see Alrenga (2007) and Barker (2007) for recent discussions.

(1) a. Mary recited 'The Raven'.
b. Then, Linus recited a different poem.
(deictic / sentence-external: different from 'The Raven')

(2) a. Mary recited 'The Raven'.
b. Then, every boy recited a different poem.
(deictic / sentence-external: different from 'The Raven')

(3) Every boy recited a different poem.
(sentence-internal: for any two boys a and b, a's poem is different from b's poem)

The interpretation of *different* in (1b)/(2b) is sentence-external in the sense that it is anaphoric to the discourse referent (dref) introduced by the proper name 'The Raven' in the previous sentence (1a)/(2a): in (1)/(2), *different* relates two drefs and requires their values, i.e., the actual entities, to be distinct.

The interpretation of *different* in (3) is sentence-internal in the sense that it relates values of only one dref, namely the dref introduced by the narrow-scope indefinite *a poem*.[1] These values, i.e., the recited poems, covary with the values of the dref introduced by the universal quantifier *every boy*—and *different* requires the poems to be distinct relative to distinct boys.

The unified compositional account of these two kinds of readings is formulated in a dynamic system that, crucially:

(i) provides the semantic values of natural language expressions in terms of sets of sequences of individuals and not single sequences as classical Tarskian semantics would have it and

(ii) models these sequences of individuals as stacks and not as total or partial variable assignments.

Using sets of sequences instead of single sequences enables us to store the entire set of boys that sentence (3) quantifies over (each boy is stored in a particular sequence / assignment) and simultaneously constrain multiple members of this set.

Modeling these sequences as stacks enables us to consider multiple $\langle boy, poem \rangle$ pairs simultaneously because we can concatenate them in one bigger stack. The concatenation operation $*$ is easily definable over stacks, but not over total / partial variable assignments. We need both these components, i.e., simultaneous access to multiple members of the quantified-over set and stack concatenation, to capture the meaning of *different* in sentence (3) above: *different* states that, for any two distinct individuals in the set of boys that we quantify over, their corresponding poems are also distinct.

Sentence (3) above will be analyzed as follows:

(4)
$$\varnothing \xRightarrow{\text{Every boy}} \begin{array}{|c|}\hline boy_1 \\ \hline boy_2 \\ \hline boy_3 \\ \hline \end{array} \xRightarrow{\textbf{dist}(\text{recited a different poem})}$$

$$\left\{ \begin{array}{l} \begin{array}{|c|c|}\hline boy_1 & poem_1 \\ \hline \end{array} * \begin{array}{|c|c|}\hline boy_2 & poem_2 \\ \hline \end{array} \;\&\; poem_1 \neq poem_2 \\ \\ \begin{array}{|c|c|}\hline boy_1 & poem_1 \\ \hline \end{array} * \begin{array}{|c|c|}\hline boy_3 & poem_3 \\ \hline \end{array} \;\&\; poem_1 \neq poem_3 \\ \\ \begin{array}{|c|c|}\hline boy_2 & poem_2 \\ \hline \end{array} * \begin{array}{|c|c|}\hline boy_1 & poem_1 \\ \hline \end{array} \;\&\; poem_2 \neq poem_1 \\ \\ \begin{array}{|c|c|}\hline boy_2 & poem_2 \\ \hline \end{array} * \begin{array}{|c|c|}\hline boy_3 & poem_3 \\ \hline \end{array} \;\&\; poem_2 \neq poem_3 \\ \\ \text{etc.} \end{array} \right\} \xRightarrow[\text{sequences}]{\text{collect}}$$

$$\begin{array}{|c|c|}\hline boy_1 & poem_1 \\ \hline boy_2 & poem_2 \\ \hline boy_3 & poem_3 \\ \hline \end{array} \quad \text{where} \quad \begin{array}{l} boy_1 \text{ recited } poem_1 \\ boy_2 \text{ recited } poem_2 \\ boy_3 \text{ recited } poem_3 \end{array} \quad \text{and} \quad \begin{array}{l} poem_1 \neq poem_2 \\ poem_1 \neq poem_3 \\ poem_2 \neq poem_3 \end{array}$$

We start with no discourse information, represented by the empty discourse-initial information state $\varnothing$. The quantifier *every boy* introduces a new dref that stores the restrictor set of the quantifier, i.e., the set of boys. Then, we temporarily introduce two new drefs, each storing one and only one boy in this restrictor set, and we predicate the nuclear scope of the quantification of each temporary dref and simultaneously make all the necessary updates. In particular, we associate each of the two boys under consideration with their corresponding poems.

[1] As these examples show, sentence (2b)/(3) is in fact ambiguous between a sentence-internal and a deictic / sentence-external reading.

The adjective *different* is anaphoric to the dref introduced by the immediately preceding indefinite article and is interpreted *in situ*, i.e., within the indefinite *a . . . poem*: *different* tests that, for the two boys that we are currently considering, their corresponding poems are distinct. Both poems are available for anaphoric retrieval because of the concatenation operator $*$ that concatenates boy-poem sequences. The result of one instance of sequence concatenation is provided below.

(5) $\boxed{boy_1 \mid poem_1} * \boxed{boy_2 \mid poem_2} = \boxed{boy_1 \mid poem_1 \mid boy_2 \mid poem_2}$

The final steps of the update in (4) are: repeat this procedure for any two distinct individuals stored in the restrictor set and, when done checking all pairs of such individuals, sum together all the sequences thus obtained. The resulting set of sequences is the output information state relative to which subsequent sentences like *They knew them by heart* are interpreted.

The account of singular *different* generalizes to plural *different* and *same*, opening up a larger project of formally investigating the typology of quantificational distributors and distributivity-dependent items and the rich contexts of evaluation needed to capture this typological variation.

The paper is structured as follows. Section 2 introduces the main generalizations. Section 3 provides a unified account of sentence-external and sentence-internal singular *different* and explores (some of) its more salient consequences. We take a closer look at the formalization of this account in section 4. Section 5 examines in more detail the contrast between sentence-internal singular *different* and bound pronouns, particularly with respect to Weak Crossover effects. Finally, section 6 compares this account with previous analyses and indicates how plural *different* and singular / plural *same* can be analyzed in the same framework. The appendix contains cross-linguistic data about the morphological realization of *different* in three environments.

2 The Phenomena: Varieties of Items with Internal and External Readings and Varieties of Distributivity

This section provides a basic map of the generalizations correlating distributive interpretations and internal and external readings in a variety of languages (see the appendix for a list of these languages). We then focus on English, in particular on the differences between the distribution and interpretation of singular *different*, plural *different* and singular / plural *same*.

2.1 The Cross-linguistic Correlation between Internal and External Readings

In English and cross-linguistically, the distribution of singular *different*, plural *different* and *same* are not completely parallel, although they are largely similar. In this subsection, we will focus only on singular *different* and its counterparts in other languages. The differences between the distribution of singular *different*, plural *different* and *same* in English will be discussed in the following subsection.

The cross-linguistic generalizations about the morphological realization of sentence-internal and sentence-external readings of singular *different* are as follows (see the appendix for the primary data).

First, if a language has a lexical item that can have sentence-internal readings under quantifiers like *every / each boy* that are morphologically singular and semantically distributive, then that item can also have sentence-external readings, e.g., the English singular *different* or the German *anders*. Some languages, e.g., Russian, do not have such lexical items, so they express sentence-internal

readings by means of an item like *own*.[2]

Second, a language can have a lexical item that allows only for sentence-external readings, e.g., the English *other / another*, the French *autre* or the Russian *drugoe*.

Finally, a language can have a lexical item that can be used with morphologically plural DPs like *the boys* that have a distributive interpretation, but not with morphologically singular and semantically distributive quantifiers. When used with such plural distributive DPs, the item can have sentence-internal readings, e.g., the German *verschieden*.[3]

Thus, cross-linguistically, sentence-internal readings under morphologically singular and semantically distributive quantifiers pattern together with sentence-external readings, but not with sentence-internal readings under morphologically plural and semantically distributive DPs. Moreover, we seem to have the following implicational universal:

(6) **Implicational universal**: if a language has a lexical item that can have sentence-internal readings under singular and distributive quantifiers, then that item can also have sentence-external readings.

The converse implication, however, does not hold—there are items that can only have sentence-external readings even when they occur under singular and distributive quantifiers.

These generalizations, in particular, the implicational universal we have tentatively identified, indicate that we need a semantics for singular *different* that can derive both sentence-external and sentence-internal readings from the same meaning. On one hand, this meaning should be closely related to the meaning of anaphoric, sentence-external only items like *other* and, on the other hand, it should contain some additional meaning component ensuring that only anaphoric *different*, but not anaphoric *other*, can have a sentence-internal reading.

We will turn to a specific proposal to this effect after a discussion of the distribution and interpretation of singular and plural *different* and *same* in English.

2.2 Varieties of Distributivity and *Different* vs. *Same*

2.2.1 Singular *Different*

Sentence-internal readings of singular *different* are licensed in English by distributive expressions, as Carlson (1987) observes. Subsequent discussions in the literature all accept this generalization and make it an essential part of the proposed analyses of *different*, e.g., Moltmann (1992) simultaneously distributes over plural events and plural individuals, Beck (2000) invokes cumulativity and distributivity relativized to covers (building on Schwarzschild 1996) and the analysis in Barker (2007) incorporates distributivity over plural individuals.

More precisely, sentence-internal readings of singular *different* are licensed by:

(*i*) distributive quantifiers (Carlson 1987), e.g., *every boy* in (3) above, *each boy* in (7) below and *every / each day* in (8)

(7) Each boy recited a different poem. (sentence-internal ✓)

(8) Linus recited a different poem every / each day. (sentence-internal ✓)

(*ii*) distributively interpreted plurals with an overt distributor like *each* (Carlson 1987), as in (9)

[2]See example (26) in the appendix. *Own* or similar possessive items can be used to express sentence-internal readings even in languages like English, German, Romanian etc. that have a sentence-internal *different*.

[3]See Moltmann (1992) and Beck (2000) for more discussion of German and Tovena & van Peteghem (2002) and Laca & Tasmowski (2003) for more discussion of French.

(9) The boys each recited a different poem.
(or: The boys recited a different poem each.) (sentence-internal ✓)

(*iii*) the construction *N after N* (*week after week* etc.)—e.g., (10) and (11) below; (10) is from the Corpus of Contemporary American English (COCA, `www.americancorpus.org`)

(10) [Two companies, Xerox and E Ink, which is owned in part by the Hearst Corporation and Motorola, are manufacturing early models of a paperlike plastic sheet whose tiny black capsules can be formed and reformed into letters and symbols. An electric impulse or radio wave alters the configuration.] Eventually, you'll be able to read a different book on the same sheet of paper week after week. (sentence-internal ✓)

(11) Year after year / Time after time, Linus submitted a different grant proposal, but they were never accepted. (sentence-internal ✓)

(*iv*) *whenever*—e.g., the COCA examples below[4]

(12) Whenever those TV cameras come into the ice rink, you see a different young man. (sentence-internal ✓)

(13) [The father told the deputy that the son drove off in his car. The deputy advised the couple to kick their son out of their home. The deputy has crossed paths with the son before. On those occasions, the son had told the deputy that he doesn't get along with his family.]
He seems to have a different job whenever the deputy has spoken to him. (sentence-internal ✓)

The generalizations in (*iii*) and (*iv*) above seem to have gone unnoticed in the previous literature.

Correspondingly, sentence-internal readings of singular *different* are not licensed by:

(*i*) singular DPs (Carlson 1987)—e.g., (14) below (this is also true for plural *different* and singular / plural *same*)

(14) Mary recited a different poem. (sentence-external only)

(*ii*) collectively interpreted plurals (Carlson 1987)—e.g., (15) below (this is also true for plural *different* and singular / plural *same*)

(15) The boys gathered around a different fire. (sentence-external only)[5]

Moltmann (1992), Johnson (1996)[6], Beghelli & Stowell (1997) and Beck (2000) push these generalizations further and begin to systematically distinguish between different kinds of distributive interpretations and different kinds items that can have sentence-internal readings.

In particular, Moltmann (1992:446) observes that sentence-internal readings of singular *different* require an overt distributor like *every* or *each* to be licensed. They cannot be licensed by covert distributivity operators of the kind usually assumed to derive the distributive interpretation of the second VP-conjunct *had an espresso* in examples like (16) below.

[4] I am indebted to Jorge Hankamer for this observation.

[5] The sentence-internal reading is available for the plural *different fires* in the sentence *The boys gathered around different fires* or for singular / plural *same* if *the boys* denotes a set of groups of boys—and each group gathered around a different fire. But the interpretation of the definite plural *the boys* is not collective in this kind of cases: it is distributive at the group level. Such group-level distributivity is basically the same as individual-level distributivity, modulo the fact that groups license collective predicates like *gather*.

[6] Apud Beck (2000).

(16) The girls met and had an espresso.

Thus, sentence-internal singular *different* is also not licensed by:

(*iii*) covert distributivity operators needed for examples like (16) above—e.g., (17) below (Moltmann 1992)

(17) The boys / Two boys / The two boys recited a different poem. (sentence-external only)

(*iv*) morphologically plural distributors like *all (of) the* or *both*—e.g., (18) below

(18) All (of) the / Both boys recited a different poem. (sentence-external only)

(*v*) conjunctions (Moltmann 1992:441)—e.g., (19), (20) and (21) below

(19) Linus and Mary recited a different poem. (sentence-external only)

(20) Linus chose and recited a different poem. (sentence-external only)

(21) A different boy went to the store and bought ice cream. (sentence-external only)

(*vi*) distributors like *one by one*, *one at a time*, *one after another*, *one after the other*, *separately* or *individually*—e.g., (22) and (23)[7]

(22) One by one / One at a time / One after another / One after the other, the boys recited a different poem. (sentence-external only)

(23) Linus and Mary separately / individually chose a different poem. (sentence-external only)

An interesting, previously unnoticed fact is that the construction *N after N*, e.g., *week after week*, patterns with *every / each* and not with the more closely related construction *one by one*: *week after week* licenses sentence-internal singular *different*, but *one by one* does not.

Adding an overt *each* to some of the above sentences is felicitous and, as expected, sentence-internal readings of singular *different* are licensed in such cases, e.g., *The boys / Two boys / The two boys recited a different poem each* or *Linus and Mary each recited a different poem.*

The table below summarizes the English generalizations about the distribution of sentence-internal singular *different* introduced above. We see that the class of licensors of sentence-internal singular *different* exhibits an interesting heterogeneity, the closer examination of which, however, will be left for a future occasion.

[7] I am indebted to Robert Henderson for bringing the contrast between *every / each* and *one by one* to my attention.

	sing. *different*
every, each	✓
day after day, week after week, time after time	✓
whenever	✓
pl. (in)definites	#
on those n occasions	#
DP conjunction	#
VP conjunction	#
both, all(?)	#
one by one, one at a time, one after another, one after the other	#
separately, individually	#

2.2.2 Plural *different*

Sentence-internal readings of plural *different*—or singular / plural *same*—are not licensed exclusively by *each / every*-type distributors. They are licensed by:

(*i*) distributors in the class of *each / every*

(24) Every boy recited (three) different poems. (sentence-internal ✓)

(25) Every boy recited the same poem / the same (three) poems. (sentence-internal ✓)

(*ii*) distributively-interpreted plurals with covert distributivity operators (Carlson 1987)

(26) The boys / Two boys / The two boys recited different poems. (sentence-internal ✓)

(27) The boys / Two boys / The two boys recited the same poem(s). (sentence-internal ✓)

(*iii*) conjunctions (Carlson 1987)

(28) Linus and Mary recited different poems / the same poem(s). (sentence-internal ✓)

(29) Linus chose and recited different poems / the same poem(s). (sentence-internal ✓)

(30) Different boys / The same boy(s) went to the store and bought ice cream. (sentence-internal ✓)

It is not possible to test whether sentence-internal plural *different* or singular / plural *same* is licensed by items like *one by one*, *one at a time* etc. or by *separately / individually*. The reason is that these items themselves need a semantically plural phrase to be licensed and that very same phrase can also license sentence-internal readings.

Sentence-internal readings of plural *different* are not licensed by:

(*i*) morphologically plural distributors like *both / all*

(31) Both boys / All (of) the boys recited different poems. (sentence-external only)

(*ii*) aspectual modifiers like *(continuously) for six hours*,[8] *twice*, *repeatedly* and *over and over (again)*; these aspectual modifiers also fail to license singular *different*

(32) Linus recited different poems (continuously) for six hours / a different poem (continuously) for six hours. (sentence-external only)

(33) Different people / A different person entered my house twice. (Carlson 1987,[9] sentence-external only)

(34) Linus repeatedly recited different poems / a different poem. (sentence-external only)

We will ignore the 'various' / 'a diversity' reading of plural *different* until the very end of the paper—and this should be kept in mind when judging the above sentences and any subsequent ones featuring plural *different*.

The generalizations contrasting the distribution of sentence-internal readings for singular and plural *different* are summarized in the table below.

[8] I am indebted to Judith Fiedler for bringing this kind of examples to my attention.

[9] As Carlson (1987) observes, the adverb *twice* contrasts with *on those two occasions*, which licenses sentence-internal plural *different* (*On those two occasions, different people searched my house*), and with *on each of those two occasions*, which licenses sentence-internal singular *different* (*On each of those two occasions, a different person searched my house.*)

	sing. *different*	pl. *different*
every, each	✓	✓
day after day, week after week, time after time	✓	✓
whenever	✓	✓
pl. (in)definites	#	✓
on those n occasions	#	✓
DP conjunction	#	✓
VP conjunction	#	✓
both, all(?)	#	#
one by one, one at a time, one after another, one after the other	#	N/A
separately, individually	#	N/A
(continuously) for n hours	#	#
twice, repeatedly, over and over (again)	#	#

2.2.3 Singular / plural *same*

As opposed to plural *different*, sentence-internal readings of singular / plural *same* are licensed by:

(i) morphologically plural distributors like *both / all*[10]

(35) Both boys / All (of) the boys recited the same poem(s). (sentence-internal ✓)

(36) [The cost issue is addressed to some degree in the TV commercial, which compares 100 potato chips and 100 Pringles crisps.]
Both cost the same. (COCA, sentence-internal ✓)

(37) "Your eyes are as bright as the twin moons, but both the same size," he said. She giggled. (COCA, sentence-internal ✓)

(38) Tradition requires that the carver give both memorials the same facial features. (COCA, sentence-internal ✓)

[10] *Both* might marginally license sentence-internal readings for plural *different* (in addition to *same*). Anna Szabolcsi and Jane Grimshaw (p.c.) suggest that this ability might correlate with its distributive or collective readings. In addition, it might be that there are two distinct items for *both*, one that has only distributive readings and one that also allows for collective readings (see Szabolcsi 2011:119 and references therein for more discussion of this in English, Dutch and Swiss German) and this could correlate with the ability of *both* to license sentence-internal readings for various classes of items.

(39) I couldn't scream and I couldn't breathe and I was trying to do both at the same time. (COCA, sentence-internal ✓)

(40) [Glasses are often an important identifier in a portrait.]
The challenge is to get both lenses the same shape and make sure they add to, rather than dominate, the face. (COCA, sentence-internal ✓)

(*ii*) aspectual modifiers like *(continuously) for six hours*, *twice*, *repeatedly* and *over and over (again)*

(41) Linus recited the same poem / the same (two) poems (continuously) for six hours. (sentence-internal ✓)

(42) The same person / The same people entered my house twice. (sentence-internal ✓)

(43) Linus repeatedly recited the same poem / the same (two) poems. (sentence-internal ✓)

2.2.4 Summary of the English Generalizations

To summarize, we extracted a three-level generalization about the licensors of sentence-internal readings of singular *different* vs. plural *different* vs. *same*: sentence-internal *same* is the most permissive with respect to distributive licensors, sentence-internal singular *different* is the most restrictive and sentence-internal plural *different* is somewhere in between.

An overview of these findings is provided in the table below, which also includes *similar* and comparatives as two other items that can have sentence-internal readings. Interestingly, *similar* behaves like sentence-internal plural *different*, not like *same*, and sentence-internal comparatives, e.g., *Every day I get better*, behave like sentence-internal singular *different*. We will discuss these two additional items in section 6 below.

The first level of this generalization, i.e., the observation that sentence-internal singular *different* requires overt quantificational distributivity of the *every* / *each* kind to be licensed, sharpens the cross-linguistic implicational universal introduced in the previous subsection. We will first focus on this first level and on the unification of sentence-internal and sentence-external singular *different* and return to plural *different* and *same* when we discuss previous approaches.

The present analysis of *same* and *different* and the investigation of the various kinds of distributivity that license their internal readings provide support for the idea that natural language quantification is a composite notion, to be analyzed in terms of discourse reference to dependencies that is multiply constrained by the various components that make up a quantifier. Thus, the present investigation can be subsumed under a larger project of decomposing natural language quantification, identifying how these quantificational components and the way they are assembled varies cross-linguistically and formally investigating the resulting typology of quantificational distributors and distributivity-dependent items.

	sing. *different*	pl. *different*	*same*	*similar*	comparatives
every, each	✓	✓	✓	✓	✓
day after day, week after week, time after time	✓	✓	✓	✓	✓
whenever	✓	✓	✓	✓	✓
pl. (in)definites	#	✓	✓	✓	#
on those n occasions	#	✓	✓	✓	#
DP conjunction	#	✓	✓	✓	#
VP conjunction	#	✓	✓	✓	#
both, all(?)	#	#	✓	#	#
one by one, one at a time, one after another, one after the other	#	N/A	N/A	N/A	#
separately, individually	#	N/A	N/A	N/A	#
(continuously) for n hours	#	#	✓	#	#
twice, repeatedly, over and over (again)	#	#	✓	#	#

We conclude this subsection with a brief aside on the quantifier *no*. It seems that singular *no* can license only sentence-internal *same*, despite the fact that its quantificational force could in principle be classified as universal and distributive. This is very much in line with the findings in Dotlačil (2010) about the Dutch counterpart of *no*, namely *geen*. Plural *no* seems to be able to license sentence-internal plural *different* in addition to *same*, as the examples from COCA below show.[11]

(44) No ceiling was the same height (from room to room).

(45) No teams from the same region / different regions will meet in the first round.

(46) No parents are exactly the same / really different.

(47) No mission is ever the same.

(48) No faiths come to share the same spaces.

(49) No one seems to eat the same thing (anymore).

(50) No one ever sees the same scene in the same way, and that is one of the many joys of being an artist.

(51) And what she said over and over again and what everybody could walk away with was that everybody has tendencies, but nobody, no one race does the same thing, but we all have tendencies.

[11] I am indebted to an anonymous reviewer for bringing the issues raised by *no* to my attention.

(52) One problem with accessibility is that no one disability is the same.

The investigation of *no* as well as of the licensing properties of non-universal quantifiers like *most*, *few* etc. is left for a future occasion.

2.3 Singular *Different* vs. Sentence-internal Only Items

The existence of sentence-internal only items like *mutual/ly*, *consecutive/ly* and *unlike* has been argued to support accounts that do not tie sentence-internal and sentence-external readings too closely together—see Carlson (1987), Keenan (1992) and Barker (2007) among others.

More precisely, the existence of such items, in conjunction with the existence of sentence-external only items like *other*, makes ambiguity-based accounts of *same* and *different* that postulate distinct and largely unrelated sentence-external and sentence-internal meanings more plausible, thereby raising doubts with respect to the viability of the unified account pursued here.

While these observations may support an ambiguity account of *same* and plural *different*, they are not directly relevant to our specific goal of unifying sentence-external and sentence-internal readings of singular *different*. Recall that what we are trying to capture is an implicational universal stating that an item with sentence-internal readings under singular and distributive quantifiers necessarily allows for sentence-external readings.

So, the existence of items that can only have sentence-external readings is compatible with this universal and so is the existence of sentence-internal only items that are not licensed by singular and distributive *every / each*. The English items mentioned above fall in the latter category, as the examples below show.

(53) a. *Every / Each claim was mutually incompatible.
b. The claims were mutually incompatible.

(54) a. *Every / Each talk was scheduled consecutively.
b. The talks were scheduled consecutively.

(55) a. *Every / Each expression means an unlike thing.
b. These expressions mean unlike things. (Carlson 1987)

The fact that these items are licensed by plural DPs, just like the sentence-internal readings of plural *different* and *same* are, suggests that ambiguity-based accounts might be correct for *same* or plural *different*. At the same time, they reinforce the idea that there is a close connection between overt quantificational distributors and sentence-internal singular *different* and therefore provide additional support for the hypothesized implicational universal.

This separation between singular *different* and plural *different* or *same* is cross-linguistically supported. On one hand, singular *different* and plural *different* can be realized by morphologically distinct items, as for example in German. On the other hand, *different* and *same* are not always part of the same morpho-syntactic class. For example, in Romanian, singular and plural *different* are adjectival in nature (*alt* and *diferit*, respectively), while *same* is a determiner—the so-called demonstrative article (or pronoun) of identity *acelaşi*, which is the counterpart of the English *the+same* rather than just *same*.

Thus, there seems to be sufficient empirical motivation for an account of singular *different* that unifies its internal and external readings and connects its internal readings to overt quantificational distributivity of the *every / each* kind (as opposed to other kinds of distributivity).

3 Sentence-internal *Different* as Quantifier-internal Anaphora

This section provides a unified account of sentence-internal and sentence-external singular *different*. The main proposal is that distributive quantification temporarily makes available two drefs within its nuclear scope, the values of which are required by sentence-internal singular *different* to be distinct, much as its deictic uses require the values of two drefs to be distinct. The account is formalized in a stack-based dynamic system couched in classical type logic.

3.1 Sentence-external Readings as Cross-sentential Anaphora

Deictic / sentence-external readings are just an instance of cross-sentential anaphora, of the same kind as the typical discourse in (56) below.

(56) a. A^{u_0} man came in.
b. He$_{u_0}$ sat down.

This discourse is analyzed in DRT (Kamp 1981, Kamp & Reyle 1993) / FCS (Heim 1982) / DPL (Groenendijk & Stokhof 1991) as follows: the indefinite in sentence (56a) introduces a dref u_0, which is symbolized by the superscript on the indefinite article; this dref is then retrieved by the pronoun in (56b), which is symbolized by the subscript on the anaphoric pronoun.

Discourse (56) as a whole is represented by the two Discourse Representation Structures (DRSs), a.k.a. (linearized) boxes, in (57) below.

(57) $[u_0 \mid \textsc{man}\{u_0\}, \textsc{come-in}\{u_0\}]$;
$[\textsc{sit-down}\{u_0\}]$

DRSs are pairs of the form [**new drefs** | **conditions**], the first member of which consists of the newly introduced drefs, while the second member consists of the conditions that the previously introduced drefs have to satisfy.

The first DRS in (57) is contributed by sentence (56a): we introduce a new dref u_0 and require its value to be a man that came in. In the spirit of the Montagovian brace convention, I use curly braces in the representation of conditions to indicate that predicates apply to their dref arguments only after an index of evaluation—in this case, a variable assignment of the kind used in DRT / FCS / DPL—is supplied (the formal details will be provided in due course).

The second DRS, contributed by sentence (56b), does not introduce any new drefs (the first member of the pair is empty, so we omit it), it just further constrains the previously introduced dref u_0 to store an individual that sat down. The two DRSs are dynamically conjoined, symbolized as ";". Dynamic conjunction ensures that the anaphoric information contributed by the first DRS, i.e., the fact that u_0 stores a man that came in, is available to the second DRS.

The analysis of deictic / sentence-external readings follows the same general format. The proper name 'The Raven' in (58a) below introduces a new dref u_1 storing the poem 'The Raven'. This dref is subsequently retrieved by the adjective *different* in (58b).

(58) a. Mary^{u_0} recited 'The Raven'^{u_1}.
b. Then, every^{u_2} boy recited a^{u_3} different$_{u_1}$ poem.

The adjective *different* constrains the value of the anaphorically retrieved dref u_1 in two ways.

First, it requires u_1 to satisfy the conditions contributed by the nominal phrase following *different*. In this case, it requires u_1 to be a poem. To see this, replace the indefinite *a poem* in (58b) with the indefinite *a different passage of Scripture*—this yields the infelicitous sentence in (59b) below.

(59) a. Mary^{u_0} recited 'The Raven'^{u_1}.
b. Then, every^{u_2} boy recited a^{u_3} different$_{u_1}$ passage of Scripture.
(sentence-external reading not available)

This requirement is a presupposition, as shown by the standard S-tests for presupposition projection,[12] e.g., the question in (60b) is also infelicitous in the context of sentence (58a) (on the external reading of singular *different*).

(60) a. Mary^{u_0} recited 'The Raven'^{u_1}.
b. Did every^{u_2} boy recite a^{u_3} different$_{u_1}$ passage of Scripture?
(sentence-external reading not available)

Second, *different* requires the value of the anaphorically retrieved dref u_1 to be distinct from the value of the dref contributed by the indefinite article that precedes *different*—in this case, u_3. This requirement is part of the asserted / at-issue content, as the S-tests also show. Consider, for example, *different* under negation in sentence (61b) below. This sentence is interpreted as saying that the poem recited by Linus is not distinct from 'The Raven'—that is, the distinctness requirement contributed by *different* is in the scope of negation.

(61) a. Mary^{u_0} recited 'The Raven'^{u_1}, as she$_{u_0}$ promised ...
b. ... but Linus^{u_2} didn't recite a^{u_3} different$_{u_1}$ poem, despite what he$_{u_2}$ promised.

The representation that is compositionally assigned to discourse (58) above is provided in (62) below. The basic translations for the lexical items are provided in (63); they will be explained in more detail in section 4.

(62) $[u_0, u_1 \mid u_0 = \textsc{mary}, u_1 = \textsc{the-raven}, \textsc{recite}\{u_0, u_1\}]$;
$\mathbf{max}^{u_2}([\mathbf{atoms\text{-}only}\{u_2\}, \textsc{boy}\{u_2\}])$;
$\mathbf{dist}_{u_2}([u_3 \mid \mathbf{atoms\text{-}only}\{u_3\}, \mathbf{singleton}\{u_3\}, \textsc{poem}\{u_3\}]$;
$\ast([\mathbf{disjoint}\{u_1, u_3\}])$; $[\textsc{recite}\{u_2, u_3\}])$

(63) a. $Mary^{u_0} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [u_0 \mid u_0 = \textsc{mary}];\ P(u_0)$
b. $recite \rightsquigarrow \lambda Q_{(\mathbf{et})\mathbf{t}}.\lambda v_{\mathbf{e}}.\ Q(\lambda v'_{\mathbf{e}}.\ [\textsc{recite}\{v, v'\}])$
c. $poem \rightsquigarrow \lambda v_{\mathbf{e}}.\ [\textsc{poem}\{v\}]$
d. $every^{u_2} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_2}([\mathbf{atoms\text{-}only}\{u_2\}];\ P(u_2));$
$\mathbf{dist}_{u_2}(P'(u_2))$
e. $a^{u_3} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_3 \mid \mathbf{atoms\text{-}only}\{u_3\}, \mathbf{singleton}\{u_3\}];$
$P(u_3);\ P'(u_3)$

The $\mathbf{max}^{u_2}$ operator in (62) introduces the dref u_2 and requires it to store the (maximal) set of boys, i.e., the restrictor set of the quantifier $every^{u_2}$ *boy*. The distributivity operator $\mathbf{dist}_{u_2}$ and the concatenation operator $\ast$ will be discussed in the next subsection.

We conclude the discussion of sentence-external singular *different* with the observation that the proposed analysis can also account for sentences like (64) below,[13] where the antecedent is not overtly expressed. We can account for this example if we take the author of the book read by Gabby to be bridged in much the same way as, in typical bridging examples like (65) below (from COCA), the definite *the driver* is anaphoric to the driver of the bus implicitly brought to salience by the previous indefinite *a bus*.

[12] To the extent that the S-tests actually test for presuppositional status as opposed to other kinds of not-at-issue content.

[13] I am indebted to Chris Barker for bringing this kind of examples to my attention.

(64) Gabby read a book and Linus read a book by a different author.

(65) Last October, a mother climbed aboard a bus and screamed at the driver.

3.2 Sentence-internal Readings as Quantifier-internal Anaphora

The main idea of the analysis is that the sentence-internal readings of singular *different* are parallel to the sentence-external ones: they also involve anaphora and relate two drefs, requiring their values to be distinct.

The crucial ingredient is that singular distributive quantifiers like *every*^{u_0} *boy* introduce a distributive operator $\mathbf{dist}_{u_0}$ relative to which the nuclear scope of the quantifier is evaluated, as shown in (66) below. The $\mathbf{dist}_{u_0}$ operator checks in a *distributive, pointwise* manner whether the restrictor set of the quantifier (stored in the dref u_0) satisfies the nuclear scope of the quantification and this distributive update proceeds as shown in (67) below.

(66) Every^{u_0} boy $\quad \mathbf{dist}_{u_0}$(recited a^{u_1} different$^2_{u_1}$ poem).

(67)

$$\varnothing \xRightarrow{\text{Every}^{u_0}\text{boy}} \begin{array}{|c|}\hline u_0 \\ \hline boy_1 \\ \hline boy_2 \\ \hline boy_3 \\ \hline \end{array} \xRightarrow{\mathbf{dist}_{u_0}(\text{recited a}^{u_1}\text{different}^2_{u_1}\text{poem})}$$

$$\left\{ \begin{array}{l} \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_1 & poem_1 \\ \hline \end{array} * \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_2 & poem_2 \\ \hline \end{array} \;\&\; poem_1 \neq poem_2 \\ \\ \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_1 & poem_1 \\ \hline \end{array} * \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_3 & poem_3 \\ \hline \end{array} \;\&\; poem_1 \neq poem_3 \\ \\ \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_2 & poem_2 \\ \hline \end{array} * \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_1 & poem_1 \\ \hline \end{array} \;\&\; poem_2 \neq poem_1 \\ \\ \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_2 & poem_2 \\ \hline \end{array} * \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_3 & poem_3 \\ \hline \end{array} \;\&\; poem_2 \neq poem_3 \\ \\ \text{etc.} \end{array} \right\}$$

$$\xRightarrow{\text{sum all updates}} \begin{array}{|c|c|}\hline u_0 & u_1 \\ \hline boy_1 & poem_1 \\ \hline boy_2 & poem_2 \\ \hline boy_3 & poem_3 \\ \hline \end{array} \quad \text{where} \quad \begin{array}{l} boy_1 \text{ recited } poem_1 \\ boy_2 \text{ recited } poem_2 \\ boy_3 \text{ recited } poem_3 \end{array} \quad \text{and} \quad \begin{array}{l} poem_1 \neq poem_2 \\ poem_1 \neq poem_3 \\ poem_2 \neq poem_3 \end{array}$$

The sequence of updates in (67) starts with no discourse information, represented by the empty discourse-initial information state $\varnothing$. The quantifier *every*^{u_0} *boy* introduces a new dref u_0 that stores the restrictor set of the quantifier, i.e., the set of boys.

Then, we temporarily introduce two new drefs, each storing one and only one boy in the restrictor set u_0, we predicate the nuclear scope of each temporary dref and we simultaneously make all the necessary updates. In particular, we associate each of the two boys under consideration with their corresponding u_1-poems.

The adjective *different*$^2_{u_1}$ is anaphoric to the dref u_1 introduced by the immediately preceding indefinite article and is interpreted *in situ*, i.e., within the indefinite *a*^{u_1} ... *poem*: *different*$^2_{u_1}$ tests that, for the two u_0-boys that we are currently considering, their corresponding u_1-poems are

distinct. The superscript 2 on *different* is the one that tells us where to look for the poems: they are stored by the drefs u_1 and u_{1+2}, i.e., u_3.

This is a consequence of the fact that the concatenation operator $*$ in (67) above concatenates boy-poem sequences, thereby displacing the second poem under consideration two positions to the right. The result of one instance of sequence concatenation is provided in (68) below; we see that $poem_2$ is the value of dref u_3 after the two boy-poem sequences are concatenated.

(68)

u_0	u_1
boy_1	$poem_1$

$*$

u_0	u_1
boy_2	$poem_2$

$=$

u_0	u_1	u_2	u_3
boy_1	$poem_1$	boy_2	$poem_2$

The superscript 2 and the corresponding addition operation u_{1+2} should not be taken too seriously. They are just technical ways to say that *different* needs to be properly indexed so that the presupposition it contributes is resolved. Recall that *different* contributes a presupposition that the property contributed by the following noun is satisfied by the contextually retrieved dref u_{1+2}.

The final steps of the update in (67) are: repeat this procedure for any two distinct individuals stored in the restrictor set u_0 and, when done checking all pairs of u_0-individuals, sum together all the updates thus obtained. The resulting set of sequences is the output information state relative to which subsequent sentences are interpreted.

The procedural flavor of this informal description of (67) is just an expository device. The actual definition of the **dist** operator (provided and discussed in detail in section 4) directly encodes the non-procedural, guiding intuition that sentence-internal *different* provides a window into the internal structure of distributive quantification.

Distributivity—more precisely, this particular quantificational variety of distributivity—does not merely involve selecting one individual at a time from the restrictor set and checking that the nuclear scope holds of this individual, but it involves selecting *pairs* of distinct individuals and simultaneously evaluating the nuclear scope relative to each individual.

This is why sentence-internal singular *different* is licensed only in the nuclear scope of overt distributive quantifiers like *every* and *each*: the very process of distributively evaluating their nuclear scope temporarily constructs the same kind of contexts that license anaphoric, sentence-external readings. Thus, in a nutshell, the analysis is just this: sentence-internal readings are quantifier-internal / distributivity-internal anaphora.

The compositionally obtained representation of sentence (66) above is provided in (69) below. The sequence of updates depicted in (67) above is just a way of visualizing the interpretation of the sequence of DRSs in this representation.

(69) $\mathbf{max}^{u_0}([\mathbf{atoms\text{-}only}\{u_0\}, \textsc{boy}\{u_0\}]);$
$\mathbf{dist}_{u_0}([u_1 \mid \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}];$
$\ast([\mathbf{disjoint}\{u_{1+2}, u_1\}]);\ [\textsc{recite}\{u_0, u_1\}])$

The translation of singular *different* is provided in (70) below. *Different* is analyzed as an adjective, i.e., a nominal modifier, reflected in the $(\mathbf{et})(\mathbf{et})$ type of its translation.

(70) a. $different^2_{u_1} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$\ast(\underline{P(u_{1+2})};\ [\mathbf{disjoint}\{u_{1+2}, u_1\}])$

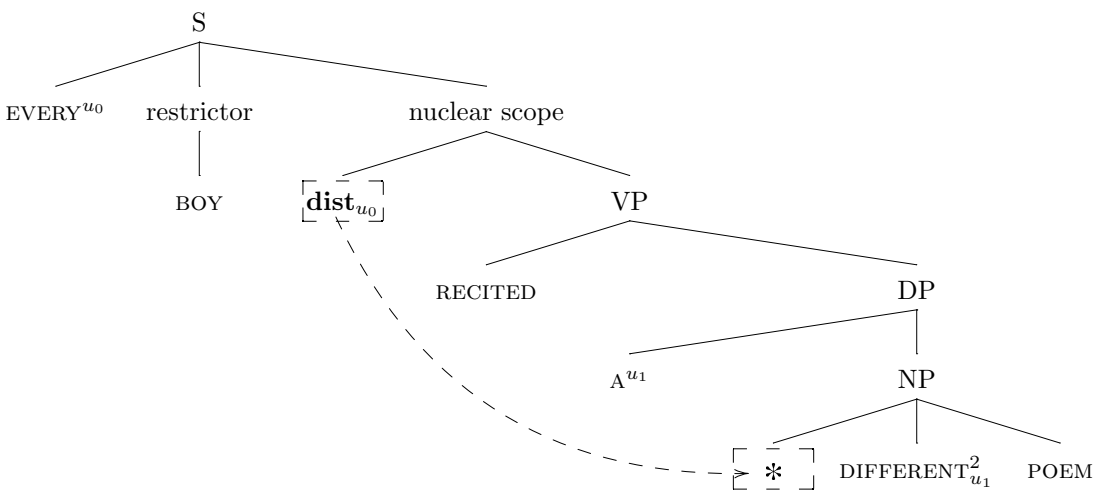
b. In general:
$different^m_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$\ast(\underline{P(u_{n+m})};\ [\mathbf{disjoint}\{u_{n+m}, u_n\}]),$
where u_n has to be the dref introduced by the indefinite article immediately preceding *different*.

The presupposition contributed by *different* is underlined (I assume a presupposition resolution procedure of the kind proposed in van der Sandt 1992). This presupposition is automatically satisfied in sentence-internal cases, i.e., in the scope of **dist** operators, as long as *different* has the correct superscript—and it is therefore omitted in the representation provided in (69). The presupposition constrains the possible values for the superscript on *different* and plays a crucial role in ruling out many incorrect resolutions for this superscript.

The adjective *different* also contributes an operator $\circledast$ that concatenates the pairs of stacks introduced by the distributivity operator $\mathbf{dist}_{u_0}$ contributed by the quantifier *every*. It is this $\circledast$ operator that enables *different* to 'associate with distributivity' and take advantage of the *pair* of stacks introduced by distributive quantifiers, in much the same way that items like *only* are able to associate with focus and take advantage of non-ordinary / focus semantic values.

Thus, one way to understand the account of sentence-internal readings proposed here is to think of it as a form of 'association with distributivity' that is similar to association with focus: **dist** operators introduce non-ordinary semantic values in their scope (pairs of stacks instead of single stacks) and items that contain $\circledast$ operators can access these non-ordinary values, as schematically represented in the tree below.

(71)



3.3 *Different* vs. *Other*

Importantly, both sentence-external and sentence-internal readings involve the same meaning for singular *different*. Thus, we formally capture the (hypothesized) implicational universal that, if a language has a lexical item that can have sentence-internal readings under morphologically singular and semantically distributive quantifiers, then this item can also have sentence-external readings.

Items like $other_{u_n}$ can only have sentence-external readings. For example, sentence (72b) below can only be anaphorically interpreted and cannot have the sentence-internal reading that is possible for *Every boy recited a different poem.*

(72) a. Mary^{u_0} recited 'The Raven'^{u_1}.

b. Then, every^{u_2} boy recited an^{u_3}other$_{u_1}$ poem.

(73) $other_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v)$;
$\underline{P(u_n)}$; $[\mathbf{disjoint}\{u_n, v\}]$

Under the present view, this is due to the fact that *other* does not have the additional meaning component encoded by the operator $\circledast$ (plus the superscript), which enables *different* to access the second dref / stack that is available in the scope of **dist** operators.

This additional meaning component that *different* has and *other* lacks (compare (70) and (73) above) allows for both sentence-internal and sentence-external readings as follows.

For sentence-internal readings, m is a positive integer and the analysis proceeds as shown in the previous subsection.

For sentence-external readings, m is a suitable *negative* integer[14] and the dref u_{n+m} is in fact one of the drefs introduced in the previous discourse. In this case, the dref u_{n+m} contributed by $\mathit{different}^{m}_{u_n}$ functions very much like the dref u_n contributed by sentence-external only other_{u_n}.

For example, in (74) below (repeated from (58) above), *different* has a sentence external reading because it is anaphoric to the dref $u_{3+(-2)}$, which is none other than u_1.

(74) a. Mary^{u_0} recited 'The Raven'^{u_1}.

b. Then, every^{u_2} boy recited a^{u_3} different$^{-2}_{u_3}$ poem.

That is, we obtain:

(i) the sentence-external reading in (58/74) above if the superscript is -2 and

(ii) the sentence-internal reading in (66) above if the superscript is 2.

Thus, items that can have both sentence-external and sentence-internal readings have a special ability encoded by $\circledast$ to access the second stack made available by **dist** operators and concatenate it to the first stack, and also the ability encoded by the superscript to look either 'downstream' or 'upstream' in the resulting concatenated stack.

In contrast, items that can have only sentence-external readings, which include all ordinary anaphoric items, e.g., pronouns, definites etc., in addition to *other*, can only access the ordinary stack / sequence of evaluation constructed up to the point where they are interpreted and cannot see the second stack made available by **dist** operators.

While alternative formalizations may be possible, we formalized this special ability of items like *different* by letting them contribute a concatenation operator $\circledast$ and indexing them with an extra superscript m that is used in a specific way: the superscript can be a positive or a negative integer and is always added to the index of the dref u_n introduced by the immediately preceding indefinite article.

That is, *different* is always anaphoric to the drefs u_n and u_{n+m}. The concatenation operator $\circledast$ and the superscript are the devices that enables *different* to take advantage of the particular environment temporarily created by distributive quantifiers, i.e., to be 'bound' in this way and have sentence-internal readings.

In contrast, *other* is not lexically specified as having this ability. Formally, there is no superscripted parameter on *other* and most importantly, there is no concatenation operator $\circledast$, so *other* can only have sentence-external readings.

In particular, bound-pronoun readings count as sentence-external in this sense, since they arise by dref-based (not superscript-based) coindexation. For example, as (75) below shows, *other* can be bound by a universal quantifier just as regular pronouns can be.

(75) a. Every^{u_0} boy was playing with an^{u_1}other$_{u_0}$ boy.

b. Every^{u_0} boy was playing with his$_{u_0}$ friend.

We return to the distinction between sentence-internal and bound-pronoun readings in section 5.

[14]The negative integer m must be such that $0 \leqslant n + m$. This ensures that the index on the dref u_{n+m} is 0 or a positive integer so that the dref u_{n+m} refers to a valid position in the current stack; recall that stack positions are numbered left-to-right, starting at 0.

3.4 The Scope of Distributive Quantifiers and Sentence-internal *Different*

In this subsection, we examine the connection between the scopal properties of quantifiers like *every* and sentence-internal singular *different*. The emerging generalizations provide additional support for the proposed connection between sentence-internal readings and distributive quantification.

The syntactic relation between sentence-internal *different* and its licensor has been examined in detail in Moltmann (1992) (see in particular 447 et seqq), building on Dowty (1985) and Carlson (1987). The basic generalization is that sentence-internal singular *different* requires its licensor to be able to take scope in / over the clause containing *different*. This is shown by the unavailability of sentence-internal readings for the examples in (76) and (77) below (from Moltmann 1992) and, also, for their finite-clause variants in (78) and (79).

(76) A different witness believed every defendant to be guilty. (sentence-external only)

(77) A different professor wrote a book about every artist. (sentence-external only)

(78) A different witness believed that every defendant was guilty. (sentence-external only)

(79) A different professor wrote a book that was about every artist. (sentence-external only)

This observation is closely parallel to the generalization about the scopal properties of *every* in Farkas (1981): the scope of *every* is clause-bounded, i.e., even more local than movement. This is shown by the sentences in (80), (81) and (82) below (from Farkas 1981), where the universal quantifier cannot take scope over the indefinite despite the fact that extraction is possible from the position of the universal quantifier.

(80) John told a reporter that Peter lives in every French town.
[compare with: Where did John tell a reporter that Peter lives?]

(81) A man said that John loves every woman in my class.
[compare with: Who did a man say that John loves?]

(82) A professor wants every student to get a job.
[compare with: Who does a professor want to get a job?]

The parallel between the licensing of sentence-internal singular *different* and the scope of *every* extends to non-surface scope. It is well-known that universal quantifiers can take scope over indefinites in the same clause even if they do not c-command them (think of the typical example *A woman loves every man*). Similarly, universal quantifiers do not have to c-command *different* to license its sentence-internal reading.

Beck (2000:130 et seqq) makes observations to the same effect. She attributes the following generalization to Johnson (1996): singular *different* can have a sentence-internal reading only when the universal quantifier takes scope over it. The examples in (83) through (86) below (see Beck 2000:131, (82) and (83)) provide evidence for this generalization.

(83) A different girl met the man that everyone admired. (sentence-external only)

(84) A different girl claimed that Joe admired everyone. (sentence-external only)

(85) I gave a different girl every marble. (sentence-external only)

(86) I gave every girl a different marble. (sentence-internal ✓)

Particularly notable are the double object constructions in (85) and (86). As Larson (1990:603 et seqq) observes (following D. Lebeaux), only surface-order based scope is possible in double-object

constructions (Larson's example is *The teacher assigned one student every problem*)—and this is the likely explanation for the contrast between sentences (85) and (86) above.

In contrast, oblique dative constructions allow for non-surface scope (Larson's example is *The teacher assigned one problem to every student*). As expected, sentence-internal readings are possible in this case, as shown by the example in (87) below.

(87) Linus sent a different paper to every journal. (sentence-internal ✓)

Furthermore, the same scope asymmetries can be observed with *spray-load* pairs—see Larson (1990:604 et seqq) and references therein. For example, *The worker loaded one box on every truck* is scopally ambiguous, while *The worker loaded one truck with every box* can have only the surface-scope reading (*one>>every*). Similarly, *Max sprayed some slogan on every wall* is scopally ambiguous, while *Max sprayed some wall with every slogan* is not (all four examples are from Larson 1990:604). The (un)availability of sentence-internal readings for singular *different* patterns in a parallel way, as shown by the examples below.

(88) The worker loaded a different box on every truck. (sentence-internal ✓)

(89) The worker loaded a different truck with every box. (sentence-external only)
[compare with: The worker loaded every box on a different truck.]

(90) Max sprayed a different slogan on every wall. (sentence-internal ✓)

(91) Max sprayed a different wall with every slogan. (sentence-external only)
[compare with: Max sprayed every slogan on a different wall.]

The present account captures this parallel between sentence-internal singular *different* and the scope of *every* because of the connection between the richer, pair-based context contributed by distributive quantifiers and the fact that *different* is able to exploit this temporarily created context.

However, as Moltmann (1992) observes, scoping a distributive quantifier over singular *different* is a necessary but not a sufficient condition for licensing sentence-internal readings. While the example in (92a) below (from Moltmann 1992) and its finite counterpart in (92b) can have a sentence-internal reading, the examples in (93a) through (93e) (all from Moltmann 1992) are reported to be increasingly degraded on their sentence-internal reading.

(92) a. Everybody believes a different person to have come. (sentence-internal ✓)
b. Everybody believes that a different person has come. (sentence-internal ✓)

(93) a. Everybody believes Mary to have seen a different man.
b. Everybody saw a man who was riding a different horse.
c. Everybody heard a rumor that a different horse was killed.
d. Everybody believes that Mary saw a different man.
e. Everybody believes that Mary received flowers that were sent by a different man.

Furthermore, distributive quantifiers cannot license sentence-internal readings in factive clauses, indirect questions or clausal complements of non-bridge verbs, as the examples in (94a), (95a) and (96a) below show. This contrasts with the fact that bound readings of pronouns are possible. Once again, all these examples are from Moltmann (1992).

(94) a. Everybody knows that a different person has come. (sentence-external only)
b. Everybody knows that his mother has come. (bound pronoun ✓)

(95) a. Everybody asked whether a different student had stolen the book. (sentence-external only)
b. Everybody asked whether his book had been stolen. (bound pronoun ✓)

(96) a. Everybody whispered that a different student was guilty. (sentence-external only)
b. Everybody whispered that his book had been stolen. (bound pronoun ✓)

The present proposal is in principle able to capture these generalizations: we only have to assume that the operators intervening between distributive quantifiers and *different* override the second member of the pair of stacks contributed by distributors but leave the first member of the pair untouched. This will ensure that sentence-internal readings are disrupted, but not bound readings. An investigation of this conjecture is left for another occasion.

4 A Closer Look at the Formalization

This section discusses the formal analysis in more detail. The final two subsections provide additional empirical motivation for the two main components of the analysis, namely:

(*i*) the fact that we interpret expressions relative to *sets* of assignments / sequences of individuals and not single assignments (the assignments are the rows storing boys and poems in (67) above; **dist** operators distribute over such sets of assignments) and

(*ii*) the fact that we distribute over *pairs* of individuals instead of single individuals.

Additional motivation for these two features of the analysis is provided by:

(*i*) quantificational subordination, the analysis of which also requires a semantics based on sets of assignments and not merely single assignments and

(*ii*) the interpretation of dependent indefinites, e.g., indefinites preceded by the item *cîte* in Romanian or reduplicated indefinites in Hungarian (see Farkas 1997, 2007), which seem to also require the simultaneous availability of multiple entities in the scope of distributive quantifiers.

4.1 Stacks

We formally capture the fact that we need to have pairs of individuals, i.e., pairs of drefs, simultaneously available in the scope of distributive quantification—e.g., when we simultaneously consider multiple boys and their corresponding poems in the scope of **dist** operators—by defining semantic values in terms of pairs of assignments / sequences that can be concatenated.

The fact that we need to define a concatenation operation over sequences of individuals requires us to formally model such sequences as stacks, following Bittner (2007), Nouwen (2007) and references therein (in particular Vermeulen 1993 and Dekker 1994)—instead of modeling them in the customary way, i.e., in terms of total or partial variable assignments.

The most important difference between total / partial variable assignments and stacks is that we always add information to a stack: we never override old drefs, that is, we never lose previously introduced anaphoric information, even in the cases in which we reuse a dref. And we do this in an orderly manner, based on the particular position in the stack that the update targets.

It is this feature of stack manipulation that enables us to define the concatenation operation $*$ that we need for sentence-internal *different*. For example, in (67) above, stack concatenation

enables us to make simultaneous reference to two poems, e.g., $poem_1$ and $poem_2$, and require them to be distinct.

We indicate the empty positions in a stack i by storing the dummy individual $\star$ there. The dummy individual $\star$ makes any lexical relation false, i.e., $\star$ is the universal falsifier.[15]

0	1	...	$n-1$	n	$n+1$	...
α_0	α_1	...	α_{n-1}	$\star$	$\star$	...

The length of a stack i, abbreviated $\mathbf{len}(i)$, is provided by the rightmost / greatest position in which the stack stores an individual different from the dummy $\star$, to which we need to add 1 because the first position in the stack is the 0-th position.

(97) Projection functions over stacks: $(i)_n$ is the individual stored at position n in stack i.

(98) Stack length:[16]

$$\mathbf{len}(i) := \begin{cases} 1 + \iota n.\ (i)_n \neq \star \wedge \forall n' > n((i)_{n'} = \star) & \text{if } \exists n((i)_n \neq \star \wedge \forall n' > n((i)_{n'} = \star)) \\ 0 & \text{if } \forall n((i)_n = \star) \\ \star & \text{otherwise} \end{cases}$$

An example of a stack i of length 4 (formally, $\mathbf{len}(i) = 4$) is provided in (99) below. The cells storing the dummy individual $\star$ are omitted. The positions in a stack can be indicated either by natural numbers or, as we will do from now on, by drefs that have natural numbers as indices. Indices on drefs are essential: they indicate the stack position where the value of the dref is stored.

(99)

0	1	2	3
α	β	γ	δ

or more explicitly:

u_0	u_1	u_2	u_3
α	β	γ	δ

4.2 Dynamic Ty2

We work with a Dynamic Ty2 logic, i.e., basically, with the Logic of Change in Muskens (1996), which reformulates dynamic semantics (Kamp 1981, Heim 1982) in Gallin's Ty2 (Gallin 1975). We have three basic types:

(*i*) e (individuals, including the set of natural numbers $\mathbb{N}$)—variables: x, y, ...; constants: LINUS, MARY, ...; variables over natural numbers: m, n, ...

(*ii*) t (truth values)—$\mathbb{T}$, $\mathbb{F}$

(*iii*) s (stacks)—variables: i, j, ...

The domain of type e is taken to be the power set of a given non-empty set IN of entities together with the dummy individual $\star$, i.e., $D_e = \wp^+(\mathsf{IN}) \cup \{\star\}$, where $\wp^+(\mathsf{IN}) := \wp(\mathsf{IN}) \backslash \varnothing$.[17]

The sum of two individuals $x \oplus y$ is the union of the sets x and y. For a set of atomic and / or non-atomic individuals X, the sum of the individuals in X (i.e., their union) is $\oplus X$. The part-of

[15] We ensure that any n-ary relation R (of type $e^n t$, where $e^0 t := t$ and $e^{m+1} t := e(e^m t)$) yields falsity whenever $\star$ is one of its arguments by letting $R \subseteq (D_e \backslash \{\star\})^n$, where D_e is the domain of individuals.

[16] The "otherwise" case covers stacks of infinite length, for example, the stack storing the dummy $\star$ at all odd-numbered positions and individuals different from $\star$ at the even-numbered positions.

[17] See Schwarzschild (1996), for example, for more discussion of domain-level plurality.

relation over individuals $x \leqslant y$ (x is a part of y) is the partial order induced by inclusion $\subseteq$ over the set $\wp^+(\mathsf{IN})$; note that the dummy individual $\star$ is not a part of any individual. The atomic individuals are the singleton subsets of IN, identified by the predicate $\mathbf{atom}(x) := \forall y \leqslant x(y = x)$; note that the predicate **atom** does not apply to the dummy individual $\star$.

Discourse referents (drefs) u_0, u_1 etc. of type se are just projection functions over stacks.

(100) $u_n := \lambda i.\ (i)_n$,
e.g., $u_0 := \lambda i.\ (i)_0$, $u_1 := \lambda i.\ (i)_1$ etc.

New dref introduction, i.e., random assignment of values to drefs / variables, is defined as follows:

(101) $i[u_n]j := \forall m < n((j)_m = (i)_m) \wedge \forall m > n((j)_m = (i)_{m-1})$

Thus, introducing the dref u_n relative to an input stack i yields an output stack j obtained by:

(i) shifting all the individuals stored in i at positions greater than or equal to n by one position to the right and

(ii) introducing a new (random) individual at position n.[18]

Four axioms ensure that the entities of type s behave as stacks.

Ax1 (stack identity in terms of projection functions):
$\forall i \forall i'(\forall n((i)_n = (i')_n) \rightarrow i = i')$

Ax2 (stacks have finite length):
$\forall i \exists n(\mathbf{len}(i) = n)$[19]

Ax3 (the empty stack exists):
$\exists i(\mathbf{len}(i) = 0)$

Ax4 (enough stacks):
$\forall i \forall n \forall x(x \neq \star \rightarrow \exists j(i[u_n]j \wedge (j)_n = x))$

4.3 Plural Information States and Concatenation

Just as in Dynamic Plural Logic (van den Berg 1996), information states I, J etc. are modeled as *sets* of stacks $\{i_1, i_2, i_3, \dots\}$, $\{j_1, j_2, j_3, \dots\}$ etc. Such *plural* info states can be represented as matrices with stacks (sequences) as rows, as shown in (102) below.

(102) Plural info state I:

	u_0	u_1	u_2	$\dots$
i_1	α_1	β_1	γ_1	$\dots$
i_2	α_2	β_2	γ_2	$\dots$
i_3	α_3	β_3	γ_3	$\dots$
$\dots$	$\dots$	$\dots$	$\dots$	$\dots$

or simply:

u_0	u_1	u_2	$\dots$
α_1	β_1	γ_1	$\dots$
α_2	β_2	γ_2	$\dots$
α_3	β_3	γ_3	$\dots$
$\dots$	$\dots$	$\dots$	$\dots$

[18] A stricter version is possible in which we are allowed to update a position in a stack only if all the previous positions have already been updated, i.e., only if none of the previous positions stores the dummy $\star$: $i[u_n]j := \forall m < n((j)_m = (i)_m \wedge (i)_m \neq \star) \wedge \forall m > n((j)_m = (i)_{m-1})$.

[19] This is equivalent to $\forall i(\mathbf{len}(i) \neq \star)$.

Plural info states enable us to encode discourse reference to both quantifier domains and quantificational dependencies. Quantifier domains (sets of objects) are stored columnwise, e.g., in (102) above, the dref u_0 stores the set of individuals $\{\alpha_1, \alpha_2, \alpha_3, \dots\}$, the dref u_1 stores the set $\{\beta_1, \beta_2, \beta_3, \dots\}$ etc. Quantifier dependencies (n-ary relations between objects) are stored stackwise / rowwise, e.g., the individual assigned to the dref u_0 by each stack / row i_1, i_2, i_3, … in (102) is correlated with the individual assigned to the dref u_1 by the same stack and we obtain the binary relation $\{\langle\alpha_1, \beta_1\rangle, \langle\alpha_2, \beta_2\rangle, \langle\alpha_3, \beta_3\rangle, \dots\}$. In a similar way, the drefs u_0, u_1 and u_2 induce the ternary relation $\{\langle\alpha_1, \beta_1, \gamma_1\rangle, \langle\alpha_2, \beta_2, \gamma_2\rangle, \langle\alpha_3, \beta_3, \gamma_3\rangle, \dots\}$ etc.

The empty info state that stores no anaphoric information, previously symbolized as $\varnothing$, is the singleton set containing only the empty stack, i.e., $I_\star := \{i_\star\}$. We take $I_\star$ to be the default discourse-initial info state, which enables us to capture the fact that using pronouns out of the blue is infelicitous.

(103) The empty stack $i_\star$:
$i_\star := \iota i.\ \mathbf{len}(i) = 0$

(104) The empty info state $I_\star := \{i_\star\}$:

$I_\star$	…	u_1	u_2	u_3	…
$i_\star$	…	★	★	★	…

or simply:

…	u_1	u_2	u_3	…
…	★	★	★	…

New dref introduction relative to plural info states $I[u_n]J$ is defined as the cumulative-quantification style generalization of the notion of new dref introduction relative to stacks $i[u_n]j$.

(105) $I[u_n]J := \forall i \in I(\exists j \in J(i[u_n]j)) \wedge \forall j \in J(\exists i \in I(i[u_n]j))$

Stacks and plural info states can be concatenated. For example, concatenating two stacks of length 2 yields a stack of length 4 and concatenating two info states of length 2 yields an info state of length 4, as shown below.

(106)

u_0	u_1
boy_1	$poem_1$

$*$

u_0	u_1
boy_2	$poem_2$

$=$

u_0	u_1	u_2	u_3
boy_1	$poem_1$	boy_2	$poem_2$

(107)

u_0	u_1
boy_2	$poem_2$

$*$

u_0	u_1
boy_1	$poem_1$
boy_2	$poem_2$
boy_3	$poem_3$

$=$

u_0	u_1	u_2	u_3
boy_2	$poem_2$	boy_1	$poem_1$
boy_2	$poem_2$	boy_2	$poem_2$
boy_2	$poem_2$	boy_3	$poem_3$

The definitions of stack and plural info state concatenation can be more transparently stated if they are defined in terms of a more basic operation of concatenating stacks and individuals: the stack $i * x$ is obtained by appending the individual x at the end of stack i—see (108) below.

(108) Concatenating stacks and individuals (based on Bittner 2007, Nouwen 2007):
$i * x \ := \ \iota j.\ i[u_{\mathbf{len}(i)}]j \wedge (j)_{\mathbf{len}(i)} = x$

Concatenating two stacks is just a generalization of this operation, as shown in (109) below: the stack $i * j$ is obtained by appending the first individual in stack j, namely $(j)_0$, at the end of stack i, then appending the second individual in j at the end of the resulting stack etc.

(109) Concatenating stacks (based on Nouwen 2007):
$i * j \ := \ (i * (j)_0) * \dots * (j)_{\mathbf{len}(j)-1}$

Finally, concatenating plural info states is a generalization of stack concatenation.

(110) Concatenating plural info states (Nouwen 2007):
$I * J := \{i * j : i \in I \wedge j \in J\}$

4.4 Pair-based DRT

Lexical relations are interpreted distributively relative to plural info states. For example, the property of being a BOY has to be satisfied relative to each stack i in a plural info state I and similarly, the binary relation RECITE has to be satisfied relative to each $i \in I$—as shown in (111) and (112) below and depicted in (113) for the binary relation RECITE.

(111) $\text{BOY}\{u_0\} := \lambda I.\ I \neq \varnothing \wedge \forall i \in I(\text{BOY}(u_0 i))$
(prelim. version)

(112) $\text{RECITE}\{u_0, u_1\} := \lambda I.\ I \neq \varnothing \wedge \forall i \in I(\text{RECITE}(u_0 i, u_1 i))$
(prelim. version)

(113) Info state I satisfying the binary relation RECITE:

I	u_0	u_1
i_1	$\alpha_1\ (= u_0 i_1)$	$\beta_1\ (= u_1 i_1)$
	$\overbrace{\qquad\qquad}^{\text{RECITE}(\alpha_1, \beta_1)}$	
i_2	$\alpha_2\ (= u_0 i_2)$	$\beta_2\ (= u_1 i_2)$
	$\overbrace{\qquad\qquad}^{\text{RECITE}(\alpha_2, \beta_2)}$	
i_3	$\alpha_3\ (= u_0 i_3)$	$\beta_3\ (= u_1 i_3)$
	$\overbrace{\qquad\qquad}^{\text{RECITE}(\alpha_3, \beta_3)}$	
$\ldots$	$\ldots$	$\ldots$

or simply:

u_0	u_1
α_1	β_1
α_2	β_2
α_3	β_3
$\ldots$	$\ldots$

where α_1 recited β_1
α_2 recited β_2
α_3 recited β_3
$\ldots$

Given the presence of the dummy individual $\star$ in our system, we actually need to complicate the above definitions slightly and interpret lexical relations distributively relative to the non-dummy sub-state of the input plural info state I, as shown below.

(114) $I_{u_0 \neq \star} := \{i \in I : u_0 i \neq \star\}$

(115) $\text{BOY}\{u_0\} := \lambda I.\ I_{u_0 \neq \star} \neq \varnothing \wedge$
$\forall i \in I_{u_0 \neq \star}(\text{BOY}(u_0 i))$
(prelim. version)

(116) $I_{u_0 \neq \star, u_1 \neq \star} := \{i \in I : u_0 i \neq \star \wedge u_1 i \neq \star\}$

(117) $\text{RECITE}\{u_0, u_1\} := \lambda I.\ I_{u_0 \neq \star, u_1 \neq \star} \neq \varnothing \wedge$
$\forall i \in I_{u_0 \neq \star, u_1 \neq \star}(\text{RECITE}(u_0 i, u_1 i))$
(prelim. version)

The general definition of lexical relations is as follows:

(118) $I_{u_{m_1} \neq \star, \ldots, u_{m_n} \neq \star} := \{i \in I : u_{m_1} i \neq \star \wedge \ \ldots \ \wedge \ u_{m_n} i \neq \star\}$,
for any natural numbers $m_1, \ldots, m_n$.

(119) Lexical relations (prelim. version): for any n-ary relation R,
$R\{u_{m_1}, \ldots, u_{m_n}\} := \lambda I.\ I_{u_{m_1} \neq \star, \ldots, u_{m_n} \neq \star} \neq \varnothing \wedge$
$\forall i \in I_{u_{m_1} \neq \star, \ldots, u_{m_n} \neq \star}(R(u_{m_1} i, \ldots, u_{m_n} i))$

This definition is still preliminary because we need to make one final addition: we need to interpret lexical relations—and everything else along with them—relative to pairs of info states $\langle I, K\rangle$. These pairs are the essential ingredient of our analysis of sentence-internal readings.

Interpreting expressions relative to pairs of info states $\langle I, K\rangle$ rather than single info states I is very straightforward most of the time. Generally, we only care about the left member of the pair I and leave untouched the right member of the pair K. The only two kinds of expressions that manipulate the right member of the pair K are distributive quantifiers and sentence-internal items.

The parallel with association-with-focus phenomena is once again be helpful: the left member of the pair I encodes the ordinary semantic value of expressions, while the right member of the pair K encodes the 'non-ordinary' contribution that only specific classes of items introduce and are sensitive to.

Pairs of info states $\langle I, K\rangle$ can be added to our system in various ways. For example, we could add product types in addition to the usual functional types used in Montagovian semantics; or we could think of them as functions from the set of natural numbers $\{0, 1\}$ to the set of info states. We will assume that some suitable formalization has been agreed upon and simply start using them to provide the interpretation of lexical relations, DRSs etc.

The final definition of lexical relations is provided below. It is exactly like the preliminary definition above except that we λ-abstract over pairs of info states $\langle I, K\rangle$ instead of I.

(120) Lexical relations (final version): for any n-ary relation R,
$R\{u_{m_1}, \ldots, u_{m_n}\} := \lambda\langle I, K\rangle.\ I_{u_{m_1} \neq \star, \ldots, u_{m_n} \neq \star} \neq \varnothing \wedge$
$\forall i \in I_{u_{m_1} \neq \star, \ldots, u_{m_n} \neq \star}(R(u_{m_1} i, \ldots, u_{m_n} i))$

Identity between a dref and an individual, needed for proper names, is defined below.

(121) $u_n I := \{u_n i : i \in I_{u_n \neq \star}\}$

(122) Identity between drefs and individuals:
$u_n = x := \lambda\langle I, K\rangle.\ u_n I = \{x\}$

We also define atomic DRSs (DRSs containing a single condition C), tests (DRSs that do not introduce new drefs), dynamic conjunction (relation composition), single and multiple dref introduction and DRSs in general. Finally, we provide the definition of truth.

In all these definitions, provided below, the right member of the input pair of info states is required to be identical to the right member of the output pair of info states, formalized by the conjunct $K = K'$. That is, these updates affect only the left member of the input pair of info states. We can imagine more liberal definitions in which the second member of the input and output pairs are not always required to be identical but this is not necessary for our current purposes, so we keep the definitions as constrained as possible.

(123) a. Atomic DRSs:
$[C] := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge I = J \wedge C\langle I, K\rangle$

b. Tests:
$[C_1, \ldots, C_m] := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge I = J \wedge C_1\langle I, K\rangle \wedge\ \ldots\ \wedge C_m\langle I, K\rangle$

c. Single dref introduction:
$[u_n] := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge I[u_n]J$

d. Dynamic conjunction:
$D; D' := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge \exists H(D\langle I, K\rangle\langle H, K\rangle \wedge D'\langle H, K\rangle\langle J, K\rangle)$

e. Multiple dref introduction:
$[u_{m_1}, \ldots, u_{m_n}] := [u_{m_1}];\ \ldots\ ; [u_{m_n}]$

f. DRSs:
$[u_{m_1}, \ldots, u_{m_n} \mid C_1, \ldots, C_m] := [u_{m_1}, \ldots, u_{m_n}]; [C_1, \ldots, C_m]$

(124) Truth:
A DRS D is *true* with respect to an input pair of info states $\langle I, K\rangle$ iff there exists an output pair of info states $\langle J, K'\rangle$ such that $K = K'$ and $D\langle I, K\rangle\langle J, K'\rangle$.

We can now define the three operators we need to account for sentence-internal readings: maximization **max**, distributivity **dist** and concatenation $*$.

Consider the preliminary definition of $\mathbf{max}^{u_n}$ in (125) below first (it is preliminary because we need to add pairs of info states).

(125) Maximization (prelim. version):
$\mathbf{max}^{u_n}(D) := \lambda I.\lambda J.\ ([u_n]; D)IJ \wedge$
$\forall H(([u_n]; D)IH \rightarrow u_nH \subseteq u_nJ)$

The first conjunct $([u_n]; D)IJ$ introduces u_n as a new dref and makes sure that each u_n-individual stored in the output state J satisfies D. So, we ensure that u_nJ stores *only* individuals that satisfy D. The second conjunct enforces maximality: for any output state H that stores u_n-individuals satisfying D, the set of individuals u_nH is a subset of u_nJ. That is, we ensure that u_nJ stores *all* the individuals that satisfy D.

We now reformulate this definition in terms of pairs of info states:

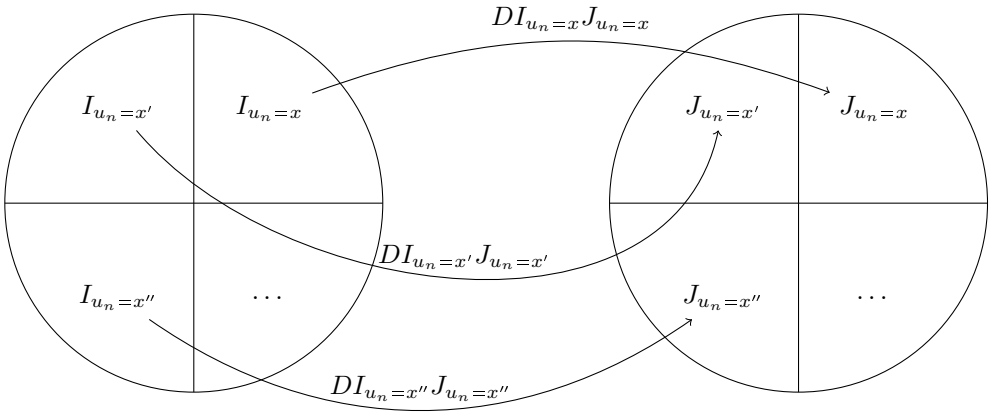
(126) Maximization (final version):
$\mathbf{max}^{u_n}(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge ([u_n]; D)\langle I, K\rangle\langle J, K\rangle \wedge$
$\forall H(([u_n]; D)\langle I, K\rangle\langle H, K\rangle \rightarrow u_nH \subseteq u_nJ)$

Let us turn now to distributivity. The distributivity operator is the first one that actually needs to take advantage of both members of the pairs we have been working with. We will nonetheless start with a simpler, preliminary version defined in terms of single info states to introduce the main operation that distributivity contributes.

This preliminary definition is provided and graphically depicted in (128) below.

(127) $I_{u_n=x} := \{i \in I : u_n i = x\}$, where x is an individual.

(128) Distributivity (prelim. version):
$\mathbf{dist}_{u_n}(D) := \lambda I.\lambda J.\ u_nI = u_nJ \wedge I_{u_n=\star} = J_{u_n=\star} \wedge$
$\forall x \in u_nI(DI_{u_n=x}J_{u_n=x})$



The first conjunct in (128), i.e., $u_nI = u_nJ$, is required to ensure that there is a bijection between the partition induced by the dref u over the input state I and the one induced over the output state J. Without this conjunct, we could introduce arbitrary new values for u in the output state J, i.e., arbitrary new partition cells.

The second conjunct $I_{u_n=\star} = J_{u_n=\star}$ is just bookkeeping: the dummy parts of the input and output info states are identical.

The third conjunct in (128), i.e., $\forall x \in u_nI(DI_{u_n=x}J_{u_n=x})$, is the one that actually defines the distributive update: the DRS D relates every partition cell in the input state I to the corresponding partition cell in the output state J, as shown in the figure above. That is, we update the input sub-state $I_{u_n=x}$ with D and obtain the output sub-state $J_{u_n=x}$, then we update the input sub-state $I_{u_n=x'}$ with D and obtain the output sub-state $J_{u_n=x'}$, then we update the input sub-state $I_{u_n=x''}$ with D and obtain the output sub-state $J_{u_n=x''}$ and so on, for every individual x, x', x'' etc. in the set of individuals u_nI.

The final definition of distributivity, provided in (129) below, preserves this idea and adds the one thing we need to account for sentence-internal readings: pairs of info states, the second member of which makes available other individuals in the set u_nI we distribute over.

(129) Distributivity (final version):
$$\begin{aligned}\mathbf{dist}_{u_n}(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ & K = K' \wedge u_nI = u_nJ \wedge I_{u_n=\star} = J_{u_n=\star} \wedge \\ & (|u_nI| = 1 \rightarrow D\langle I_{u_n\neq\star}, K\rangle\!\rangle\langle J_{u_n\neq\star}, K\rangle) \wedge \\ & \forall x, x' \in u_nI(x \neq x' \rightarrow D\langle I_{u_n=x}, J_{u_n=x'}\rangle\!\rangle\langle J_{u_n=x}, J_{u_n=x'}\rangle)\end{aligned}$$

The first conjunct $K = K'$ in (129) is the usual one: we leave untouched the second member of the input pair and pass it on.

The second and third conjuncts, i.e., $u_nI = u_nJ$ and $I_{u_n=\star} = J_{u_n=\star}$, are identical to the ones in the preliminary definition of distributivity.

The fourth conjunct $|u_nI| = 1 \rightarrow D\langle I_{u_n\neq\star}, K\rangle\!\rangle\langle J_{u_n\neq\star}, K\rangle$ is just more bookkeeping: if the set of individuals u_nI that we distribute over is in fact a singleton set, the DRS D simply relates the non-dummy sub-states of the input state I and output state J, while leaving the second member K of the input pair untouched.

The fifth and final conjunct is the crucial one. We assume that the set of individuals u_nI contains at least two individuals. For any two distinct individuals x and x' in this set:

(i) the DRS D relates the input sub-state $I_{u_n=x}$ and output sub-state $J_{u_n=x}$ associated with x, just as it did in the simpler, preliminary definition of distributivity

(*ii*) but, at the same time, the output sub-state $J_{u_n=x'}$ associated with x' is available as the right member of both the input and output pairs.

That is, the update mostly proceeds as if we did not have pairs of info states, but single info states: we always update the left member of every pair of info states. But distributive quantification, while updating the left member of every pair in the expected way, stores in the right member additional information about the set of individuals that it distributes over.

This additional information is only temporarily available: we can access it only in the nuclear scope of the distributive quantifier. Once the distributive update is over, the information disappears: as the definition in (129) above shows, we simply pass on to the output pair whatever K was the right member of the input pair of info states.

Furthermore, this additional information is usually not accessed, even when it is available in the scope of distributive quantification. Pretty much all the updates, including the ones contributed by indefinites, pronouns, lexical relations etc., target the left member of any input pair of info states. With one exception: items like *different* that can have sentence-internal readings.

These items introduce a concatenation operator $\circledast$ that makes the right member of the input pair available by concatenating it to the left member of the pair and passing the result of this info-state concatenation to the DRS D in its scope. The definition is provided in (130) below.

(130) $\circledast(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge D\langle I * K, I_{\bigstar}\rangle\rangle\langle J * K, I_{\bigstar}\rangle$

4.5 The Compositional Account of Sentence-internal Singular *Different*

Given the underlying type logic, compositionality at sub-clausal level follows easily and standard techniques from Montague semantics become available. The compositional aspect of interpretation in a Montagovian framework is largely determined by the types for the semantic values of 'saturated' expressions, i.e., names and sentences. Call them **e** and **t**, respectively.

We interpret sentences as DRSs, so **t** abbreviates the type of DRSs, i.e., the type of binary relations between pairs of info states. We interpret names as drefs, so **e** abbreviates the type of drefs, i.e., *se*. We can now assign translations to lexical items that have the expected type (subscripts on variables indicate their type).

(131) a. $poem \rightsquigarrow \lambda v_{\mathbf{e}}.\ [\textsc{poem}\{v\}]$

b. $recite \rightsquigarrow \lambda Q_{(\mathbf{et})\mathbf{t}}.\lambda v_{\mathbf{e}}.\ Q(\lambda v'_{\mathbf{e}}.\ [\textsc{recite}\{v, v'\}])$

The condition **atoms-only** in (132) below requires the info state I to store only atomic individuals in each stack $i \in I$. This captures the intuition that the quantifier *every* quantifies over atomic individuals only.

(132) $\mathbf{atoms\text{-}only}\{u_n\} := \lambda\langle I, K\rangle.\ I_{u_n \neq \bigstar} \neq \varnothing \wedge \forall i \in I_{u_n \neq \bigstar}(\mathbf{atom}(u_n i))$

(133) $every^{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_n}([\mathbf{atoms\text{-}only}\{u_n\}];\ P(u_n));\ \mathbf{dist}_{u_n}(P'(u_n))$

The condition **singleton** in (134) requires the info state I to store only one individual (atomic or non-atomic), i.e., any two stacks $i, i' \in I$ will store the same individual relative to u_n. This condition is needed to capture the intuition that the singular indefinite *a* brings to salience a single individual. The additional condition **atoms-only** ensures that this individual is atomic.

(134) $\mathbf{singleton}\{u_n\} := \lambda\langle I, K\rangle.\ |u_n I| = 1$

(135) $a^{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_n \mid \mathbf{atoms\text{-}only}\{u_n\}, \mathbf{singleton}\{u_n\}];$
$P(u_n);\ P'(u_n)$

(136) $Mary^{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [u_n \mid u_n = \textsc{mary}];\ P(u_n)$

The translations for *other* and *different* are repeated from above. They both involve the **disjoint** condition defined in (137) below. This condition requires the drefs u_n and $u_{n'}$ to contain distinct atoms: the individual $\oplus u_n I$ is the sum of all the individuals (atomic or not) in the set $u_n I$; the individual $\oplus u_{n'} I$ is the sum of all the individuals (atomic or not) in the set $u_{n'} I$; the **disjoint** condition ensures that the sum individuals $\oplus u_n I$ and $\oplus u_{n'} I$ have no atoms in common.

(137) $\mathbf{disjoint}\{u_n, u_{n'}\} := \lambda\langle I, K\rangle.\ I_{u_n \neq \star, u_{n'} \neq \star} \neq \varnothing \wedge$
$\{x \leqslant \oplus u_n I : \mathbf{atom}(x)\} \cap \{x' \leqslant \oplus u_{n'} I : \mathbf{atom}(x')\} = \varnothing$

(138) $other_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$\underline{P(u_n)};\ [\mathbf{disjoint}\{u_n, v\}]$

(139) $different^{m}_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$*(\underline{P(u_{n+m})};\ [\mathbf{disjoint}\{u_{n+m}, u_n\}]),$
where u_n has to be the dref introduced by the indefinite article immediately preceding *different*

Consider again the sentence we used to exemplify sentence-internal singular *different*, repeated in (140) below for convenience. The sentence is compositionally translated as shown in (141).

(140) Every^{u_0} boy recited a^{u_1} different$^{2}_{u_1}$ poem.

(141) a. $every^{u_0}$ *boy*
$\rightsquigarrow \lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_0}([\mathbf{atoms\text{-}only}\{u_0\}, \textsc{boy}\{u_0\}]);\ \mathbf{dist}_{u_0}(P'(u_0))$

b. $different^{2}_{u_1}$ *poem*
$\rightsquigarrow \lambda v_{\mathbf{e}}.\ [\textsc{poem}\{v\}];\ *(\underline{[\textsc{poem}\{u_{1+2}\}]};\ [\mathbf{disjoint}\{u_{1+2}, u_1\}])$
$\rightsquigarrow \lambda v_{\mathbf{e}}.\ [\textsc{poem}\{v\}];\ *(\underline{[\mathbf{disjoint}\{u_3, u_1\}]})$

c. a^{u_1} $different^{2}_{u_1}$ *poem*
$\rightsquigarrow \lambda P'_{\mathbf{et}}.\ [u_1 \mid \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}];$
$*([\mathbf{disjoint}\{u_3, u_1\}]);\ P'(u_1)$

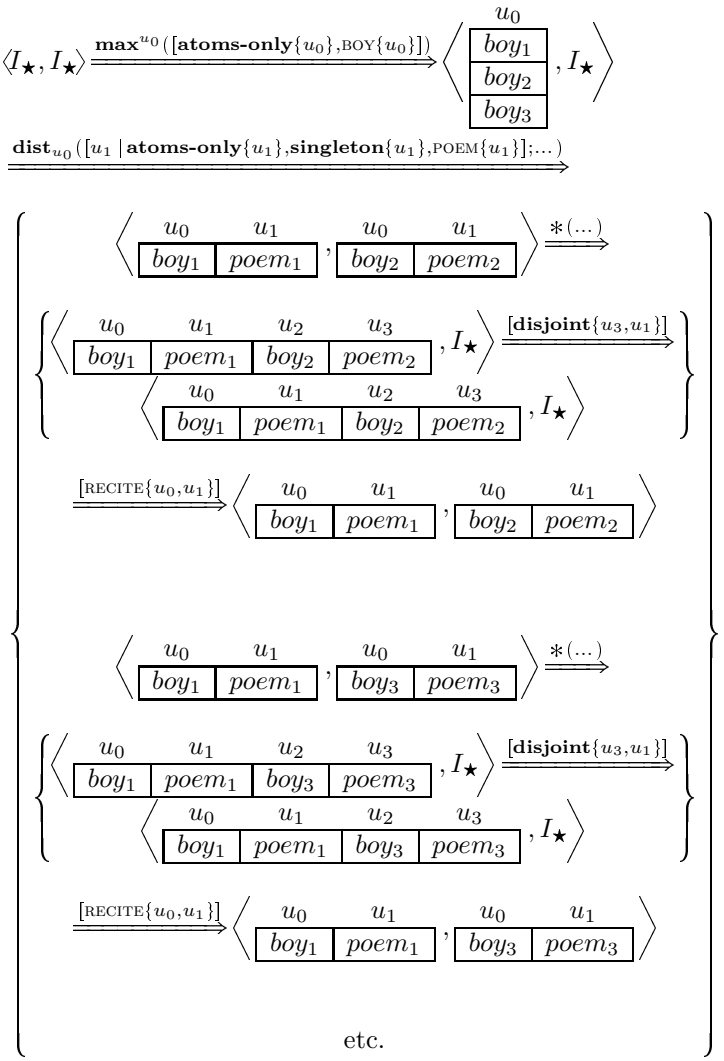
d. *recite* a^{u_1} $different^{2}_{u_1}$ *poem*
$\rightsquigarrow \lambda v_{\mathbf{e}}.\ [u_1 \mid \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}];$
$*([\mathbf{disjoint}\{u_3, u_1\}]);\ [\textsc{recite}\{v, u_1\}]$

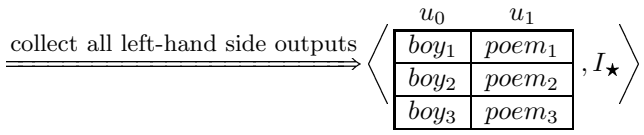
Let us examine the translation of *different poem* in (141b) more closely. First, note that *different* is subscripted with the dref u_1 because the immediately preceding indefinite article introduces that dref.

The first translation we obtain simply plugs in the translation of the noun *poem* in both the asserted / at-issue part $\textsc{poem}\{v\}$ and the presupposed part $\underline{\textsc{poem}\{u_{1+2}\}}$. It is this presupposed part that constrains the superscript on *different*. If we choose 2, the presupposition is satisfied: the dref u_3 is indeed a poem and this dref is contextually available only because the presupposition is embedded under the concatenation operator $*$ which, in its turn, is embedded under the distributivity operator $\mathbf{dist}_{u_0}$ contributed by the universal quantifier—see the final representation in (142) below. The second translation in (141b) omits the presupposed part because it has successfully accomplished its main purpose, namely that of identifying the dref u_3 as the one targeted by *different*.

(142) *every*^{u_0} *boy recite* a^{u_1} *different*$^2_{u_1}$ *poem*
$\rightsquigarrow$ $\mathbf{max}^{u_0}([\mathbf{atoms\text{-}only}\{u_0\}, \textsc{boy}\{u_0\}])$;
$\mathbf{dist}_{u_0}([u_1 \,|\, \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}]$;
$*([\mathbf{disjoint}\{u_3, u_1\}])$; $[\textsc{recite}\{u_0, u_1\}])$

The compositionally obtained sequence of updates in (142) above is interpreted as depicted in (143) below. We start with the empty initial context $\langle I_\star, I_\star \rangle$. Regular updates leave the right-hand side info state $I_\star$ untouched and simply pass it on. The distributivity operator $\mathbf{dist}_{u_0}$ overrides it so that it can store pairs of stacks; each stack contains a boy and its corresponding poem. The concatenation operator $*$ takes advantage of this, concatenates the two stacks and places the result on the left-hand side. Now the $\mathbf{disjoint}\{u_3, u_1\}$ condition can be interpreted in the regular way: we simply check that the drefs u_1 and u_3 store distinct values. Once we are outside the scope of the concatenation operator $*$, we revert to the pair of stacks contributed by the $\mathbf{dist}_{u_0}$ operator. Finally, once we are outside the scope of the $\mathbf{dist}_{u_0}$ operator, we simply collect all the left-hand side output stacks obtained in its scope and pass them on as a single info state relative to which subsequent sentences will be interpreted.

(143)




4.6 Additional Motivation for Plural Info States: Quantificational Subordination

Quantificational subordination provides additional motivation for a semantics based on plural info states, as van den Berg (1996), Krifka (1996), Nouwen (2003, 2007) and Brasoveanu (2010) among others argue. Consider the example of quantificational subordination in (144) below (from Karttunen 1976). One of the interpretations of discourse (144) is that Harvey courts a possibly different woman at every convention and, at each convention, the woman courted by Harvey at that convention comes to the banquet with him. That is, the singular pronoun she_{u_1} and the adverb of quantification $always_{u_0}$ in sentence (144b) elaborate on the quantificational dependency between conventions and women introduced in sentence (144a) by the indefinite a^{u_1} *woman* and the universal quantifier $every^{u_0}$ *convention*.

(144) a. Harvey courts a^{u_1} woman at every^{u_0} convention.
b. She_{u_1} always_{u_0} comes to the banquet with him.
c. [The_{u_1} woman is usually_{u_0} also very pretty.]

Plural info states enable us to give a semantics for sentence (144a) that, as a result of the very process of interpreting it, has the following anaphoric effects:

(*i*) we introduce two quantifier domains (the set of conventions and the set of courted women) and a quantificational dependency between them (the 'being courted by Harvey' relation),
(*ii*) we store the quantifier domains and the quantificational dependency in a plural info state and, finally,
(*iii*) we pass this info state on to sentence (144b), which further elaborates on it.

Thus, we need plural info states not only for the quantifier-internal dynamics that licenses sentence-internal *different*, but also for the quantifier-external dynamics involved in quantificational subordination and in any other kind of anaphora across quantificational structures.[20]

4.7 Additional Motivation for Pair-based Distributivity: Dependent Indefinites

The interpretation of dependent indefinites provides additional support for the availability of two drefs in the scope of distributive quantification. Such indefinites were first discussed by Farkas (1997), who noted that the indefinite determiner and cardinal numerals in Hungarian may reduplicate, in which case the DP must be interpreted as covarying with an individual or event / situation variable bound by a quantifier within the same clause. Farkas (2007) shows that the same effect is obtained in Romanian by having the item *cîte* precede an indefinite or numeral, as exemplified in (145) below.

(145) Fiecare^{u_0} băiat a recitat cîte un^{u_1} poem.
Every boy HAS recited CÎTE a poem.
'Every boy recited a possibly different poem.'

[20] For arguments that we also need plural info states to account for modal subordination and mixed weak & strong donkey sentences, see Brasoveanu (2008a, 2010).

The English translation in (145) above captures the exact meaning of the Romanian particle *cîte*, which (we will argue) means the same thing as the sentence-internal reading of *possibly different*. That is, *cîte* requires possible covariation, which is the semantic counterpart of the syntactic notion of narrow scope. To see this, consider the Romanian example in (146) below. The particle *cîte* is licensed by the quantification over times contributed by *din cînd în cînd*^{u_0} (every now and then).

(146) Din cînd în cînd^{u_0}, Linus scotea cîte o^{u_1} bilă din pungă, se
From when to when, Linus take.out.impf.3.sg CÎTE a marble out bag, REFL
uita la ea cu atenţie, după care o punea la loc.
look.impf.3.sg at it with care, after which it put.impf.3.sg at place.
'Every now and then, Linus would take out a marble from the bag, look at it carefully, then put it back.'

Importantly, this example is felicitous and true in a situation in which there are several marbles in the bag that are indistinguishable from each other and Linus happens to take the same marble out of the bag, over and over again. What is important for semantic covariation and the licensing of *cîte* is that every time he takes out a marble, it *can* be a marble that is different from the marble he took on a different occasion—not that it *actually is* a different marble.

Thus, the analysis I want to propose for dependent indefinites crucially relies on the simultaneous availability of multiple individuals (i.e., multiple quantificational alternatives) in the scope of distributive quantifiers. This analysis assimilates dependent indefinites to sentence-internal readings of *possibly different* indefinites in English. That is, the contribution of the Romanian *cîte* is the same as the contribution of sentence-internal *possibly different*.

We therefore rule out situations in which there is a single marble in the bag or in which we know that Linus took out the same marble over and over again, but we allow for situations in which Linus ends up taking out the same marble over and over again as long as, for all we know, situations in which he takes out distinct marbles are also possible. Semantic covariation requires only that on any two occasions, the two marbles can be different as far as we know, i.e., as far as the common ground knowledge is concerned, not that they actually are different.

In sum, the present dynamic system provides a framework in which we can define the notion of covariation, i.e., the semantic counterpart of the syntactic notion of narrow scope—while classical (first-order) semantics can only distinguish between lack of covariation and actual covariation, but cannot express the *possibility* of covariation. So, we can give a novel analysis of dependent indefinites in terms of *possibly different*—and, conversely, dependent indefinites provide additional motivation for the analysis of sentence-internal *different* proposed here.

A representation for example (145) above is provided in (147) below. The diamond operator $\diamond$ expresses possibility relative to the common ground and it requires the DRS in its scope to be satisfied relative to some common-ground world. I assume for simplicity that DRSs of the form $\diamond(D)$ are tests, but I will not attempt here to explicitly extend the system with modal quantification.

(147) $\mathbf{max}^{u_0}([\mathbf{atoms\text{-}only}\{u_0\}, \textsc{boy}\{u_0\}]);$
$\mathbf{dist}_{u_0}(\diamond([u_1 \mid \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}, \textsc{recite}\{u_0, u_1\}];$
$\ast([\mathbf{disjoint}\{u_{1+2}, u_1\}]));$
$[u_1 \mid \mathbf{atoms\text{-}only}\{u_1\}, \mathbf{singleton}\{u_1\}, \textsc{poem}\{u_1\}, \textsc{recite}\{u_0, u_1\}])$[21]

[21] A possible translation for *cîte* that would yield this representation is provided in (i) below:
i. $c\hat{i}te^{m}_{u_n} \rightsquigarrow \lambda Q_{(\mathbf{et})\mathbf{t}}.\lambda R_{((\mathbf{et})\mathbf{t})(\mathbf{et})}.\lambda v_{\mathbf{e}}.\ \diamond(R(Q)(v);\ \ast([\mathbf{disjoint}\{u_{n+m}, u_n\}]));\ R(Q)(v),$
where the subscripted dref u_n is the dref introduced by the indefinite article immediately following *cîte*.

5 *Different* vs. Pronouns

This section discusses in more detail the differences between *different*, with its sentence-internal and sentence-external readings, and pronous, with their dependent / bound and independent / anaphoric readings.

5.1 Internal / External *Different* vs. Dependent / Independent Pronouns

Stacks and stack-concatenation operations have been used in Nouwen (2003, 2007) to capture the availability of both dependent and independent readings for anaphoric pronouns in the scope of distributors like *each*. Consider, for example, the discourse in (148) below (based on Nouwen 2007).

(148) a. Every^{u_0} boy chose a^{u_1} poem.
b. Then, they$_{u_0}$ each recited it$_{u_1}$ / them$_{u_1}$.

In sentence (148b), we can refer back to the narrow-scope indefinite a^{u_1} *poem* with the singular pronoun it_{u_1} or with the plural pronoun $them_{u_1}$. If the singular pronoun is selected, (148b) says that each boy recited the poem he chose—that is, we elaborate on the quantificational dependency between boys and poems introduced in sentence (148a). If the plural pronoun is selected, (148b) says that each boy recited all the poems under consideration.

Thus, in the scope of the distributor *each* in sentence (148b), we need to have access to both the dependency between boys and poems and the entire set of poems introduced in sentence (148a). Nouwen (2007) proposes to give a semantics for *each* in terms of stack concatenation to account for the availability of both distributive / dependent and collective / independent anaphora in its scope. This analysis, reformulated slightly to allow for an easier comparison with our account of *different*, is as follows.

(149) $\varnothing \xRightarrow{\text{Every}^{u_0}\text{ boy chose a}^{u_1}\text{ poem}}$

u_0	u_1
boy_1	$poem_1$
boy_2	$poem_2$
boy_3	$poem_3$

$\xRightarrow{\text{They}_{u_0}\text{ each (recited it}_{u_1}\text{ / them}^2_{u_1}\text{)}}$

u_0	u_1	u_2	u_3
boy_1	$poem_1$	boy_1	$poem_1$
boy_1	$poem_1$	boy_2	$poem_2$
boy_1	$poem_1$	boy_3	$poem_3$

u_0	u_1	u_2	u_3
boy_2	$poem_2$	boy_1	$poem_1$
boy_2	$poem_2$	boy_2	$poem_2$
boy_2	$poem_2$	boy_3	$poem_3$

u_0	u_1	u_2	u_3
boy_3	$poem_3$	boy_1	$poem_1$
boy_3	$poem_3$	boy_2	$poem_2$
boy_3	$poem_3$	boy_3	$poem_3$

The update contributed by sentence (148a), schematically represented in (149) above, relates an input and an output plural info state. The input state $\varnothing$ contains no anaphoric information. The output state is a set of stacks that stores all the boys in its first column and their corresponding poems in the second column; the boy-poem dependency is stored rowwise.

The update contributed by sentence (148b) and, in particular, by the distributor *each*, further elaborates on this output info state. First, we temporarily introduce each boy, one at a time, and his corresponding poem and concatenate this stack with the entire input info state; we use a double line to indicate the two parts of the resulting info state, which now holds four drefs. Then, we check that the update in the scope of *each* holds relative this info state of length 4, which can now license both distributive / dependent anaphora (i.e., the singular pronoun) and collective / independent anaphora (i.e., the plural pronoun). The plural pronoun $them^{2}_{u_1}$ is marked as independent / collective by its superscript 2. This superscript indicates that the pronoun does not retrieve the single u_1-poem currently under consideration, but all the poems, which are stored two positions to the right of u_1, i.e., by the dref $u_{1+2} = u_3$.

Thus, in Nouwen's analysis, the cross-sentential availability of multiple drefs in (148) is made possible by the fact that the distributor *each* temporarily introduces new drefs by selecting a subset of stacks from the input info state and concatenating this subset of stacks with the entire input info state. And we used the same stack-concatenation technique to define the meaning of singular *different* and give a unified account of its sentence-internal and sentence-external readings.

Although the parallel between the internal / external readings of *different* and the dependent / independent readings of pronouns is initially appealing (Brasoveanu 2008b,c in fact attempts to establish it), the two phenomena are fundamentally different. This is shown by the fact that we can never use pronouns to anaphorically access the drefs that sentence-internal *different* can access. That is, we can never use pronouns to access the drefs in the right member of the pair of info states that distributors like *every* or *each* temporarily make available in their scope.

Examples showing this are provided in (150), (151) and (152) below. In sentence (150), the singular pronoun *him* (or the plural pronoun *them*, for that matter) cannot anaphorically access a boy or a set of boys different from the u_0-boy that we quantify over.

(150) Every^{u_0} / Each^{u_0} boy was looking at him$^{1}_{u_0}$ / them$^{1}_{u_0}$ / himself$^{1}_{u_0}$ / themselves$^{1}_{u_0}$.
(unavailable reading: every boy was looking at every other boy)

Similarly, the singular pronoun *it* in sentences (151) and (152) below (or the plural pronoun *them*) cannot anaphorically access a poem or a set of poems different from the u_1-poem recited by each u_0-boy that we quantify over.

(151) Every^{u_0} / Each^{u_0} boy recited a^{u_1} poem and hated it$^{2}_{u_1}$ / them$^{2}_{u_1}$.
(unavailable reading: every boy hated the poem recited by any other boy)

(152) Every^{u_0} / Each^{u_0} boy recited a^{u_1} poem and each$_{u_0}$ boy / they$_{u_0}$ each hated it$^{2}_{u_1}$ / them$^{2}_{u_1}$.
(unavailable reading: every boy hated the poem recited by any other boy)

The fact that pronouns cannot anaphorically access the drefs that sentence-internal singular *different* accesses should not come as a surprise. We have already seen that there are anaphoric items like *other* that can only have sentence-external readings—and we included bound readings like the one exemplified in (75) above among these sentence-external readings. Similar examples can be provided to show that deictic, anaphoric, bound, donkey and E-type readings of pronouns and definites also count as sentence-external readings, i.e., as readings that simply access a previously introduced dref.

From the perspective of our analysis of *different*, none of these readings involves a concatenation operator $\ast$ of the kind *different* contributes. Given that a concatenation operator is the only way to access the drefs that are temporarily made available in the scope of quantificational distributivity, the readings in (150), (151) and (152) above are unavailable.

That is, any readings that pronouns, definites and *other* can have (be they deictic, anaphoric, bound, donkey or E-type) are fundamentally distinct from the sentence-internal reading that *different* and related items can have and should be formally captured by distinct mechanisms. This fundamental distinction between sentence-internal and (various kinds of) sentence-external readings can in principle be formalized in two ways:

(i) we can use stack concatenation exclusively for *different* (contra Nouwen 2003, 2007) or

(ii) we can put stack concatenation to use in two distinct ways for external / internal *different* vs. dependent / independent pronouns (contra Brasoveanu 2008b,c).

Partly for expository simplicity, we pursue the first option here. That is, we use stack concatenation and the 'look-downstream' option provided by superscripts only for *different* and take pronominal anaphora and the anaphoric component of items like *other* to be exclusively dref based. They can retrieve only previously introduced drefs and no concatenation & superscript based readings are possible.

In contrast, *different* is rigidly anaphoric to the dref introduced by the immediately preceding indefinite article—and it is the superscript that enables it to have a sentence-external like freedom of reference in addition to its sentence-internal reading.

The remaining question is: how can we capture the dependent / independent readings associated with pronominal anaphora that Nouwen (2003, 2007) analyzes in terms of stack concatenation?

Building on a proposal in Kamp & Reyle (1993), I suggest the following answer: plural pronouns like *them* in (148b) above can be optionally interpreted as introducing the sum of the individuals stored by a previously introduced dref—or by multiple drefs that were previously introduced, as the case may be. For this purpose, we need a Link-style ontology that countenances both atomic and non-atomic individuals and a sum operation $\oplus$ defined over such individuals. The following examples (from Brasoveanu 2008a) support the idea that plural pronouns can introduce sum drefs.

(153) a. Linus bought an^{u_1} alligator purse for every^{u_0} girl in his class.
b. They$^{u_2}_{\oplus u_1}$ were identical except for the color.
c. [vs.: They$_{u_1}$ (each) had exactly the color they$_{u_0}$ wanted.]

(154) a. I saw John^{u_0} / a^{u_0} man and Mary^{u_1} / a^{u_1} woman yesterday.
b. They$^{u_2}_{u_0 \oplus u_1}$ had just gotten married.

Sentence (153a) introduces a quantificational dependency between girls and purses that is encoded in an output info state I: this info state is such that $u_0 I$ is the set of all girl-atoms and $u_1 I$ is the set of all purse-atoms and, for each stack $i \in I$, $u_1 i$ is the purse-atom that Linus bought for the corresponding girl-atom $u_0 i$. As (153c) shows, we can further elaborate on this quantificational dependency: each purse-atom $u_1 i$ has the color that the corresponding girl-atom $u_0 i$ wanted.

Alternatively, however, we can collectively elaborate on the set of all purses, as in sentence (153b). There, we consider the sum individual $\oplus u_1 I$ consisting of all and only the previously introduced purse-atoms and we predicate of this sum individual that its atoms are identical except for the color. This collective predication involves the dref u_2, which is introduced by the plural pronoun *they* and which stores the sum individual $\oplus u_1 I$ in each stack $j \in J$, where J is the plural info state obtained after the update with u_2.

The discourse in (154) above provides additional evidence that sum-based interpretations for plural pronouns are optionally available. Intuitively, the collective property *get married* in sentence (154b) is attributed to the plural individual consisting of the man and the woman brought to salience by the proper names / singular indefinites in the preceding sentence (154a).

Similarly, plural donkey anaphora with split antecedents, exemplified in sentence (155) below (see Kanazawa 2001:397,(65)), further supports the idea that sum-based interpretations are available for plural pronouns.

(155) Every man who introduced a^{u_0} friend to me^{u_1} thought we$^{u_2}_{u_0 \oplus u_1}$ had something in common.

Given that sum-based interpretations of plural pronouns are available, we do not need to say anything special about *each* or about pronouns to derive the dependent and independent readings of sentence (148b). The distributor *each* contributes the same kind of pair-based distributivity as *every* does and pronouns are sentence-external only items (just like *other*) that can optionally sum over previously introduced drefs.

The analysis of the dependent reading of (148b) is schematically represented in (156) below. The independent reading of (148b) is schematically represented in (157): it involves scoping the plural pronoun $them^{u_2}_{\oplus u_1}$ outside the $\mathbf{dist}_{u_0}$ operator contributed by *each* (leaving a trace t_{u_2} *in situ*) and interpreting it as introducing the sum of all the u_1-poems under consideration.

(156) $\text{they}_{u_0}\ \mathbf{dist}_{u_0}(\text{recited it}_{u_1})$

(157) $\text{them}^{u_2}_{\oplus u_1}\ (\text{they}_{u_0}\ \mathbf{dist}_{u_0}(\text{recited } t_{u_2}))$

For expository simplicity, the 'scoping-out' mechanism in (157) above is represented as a form of quantifier raising. The translations for singular and plural pronouns are provided below.

(158) $it_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [\mathbf{atoms\text{-}only}\{u_n\}, \mathbf{singleton}\{u_n\}];\ P(u_n)$

(159) $u_n \neq \varnothing := \lambda\langle I, K\rangle.\ u_n I \neq \varnothing$

(160) $they_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [u_n \neq \varnothing];\ P(u_n)$

(161) $u_{n'} = \oplus u_n := \lambda\langle I, K\rangle.\ I_{u_n \neq \star} \neq \varnothing \wedge I_{u_n = \star} = I_{u_{n'} = \star} \wedge$
$\forall i \in I_{u_n \neq \star}(u_{n'} i = \oplus u_n I)$

(162) $they^{u_{n'}}_{\oplus u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [u_n \neq \varnothing];\ [u_{n'} \mid u_{n'} = \oplus u_n];\ P(u_{n'})$

(163) $u_{n''} = u_n \oplus u_{n'} := \lambda\langle I, K\rangle.\ I_{u_n \neq \star} \neq \varnothing \wedge I_{u_n = \star} = I_{u_{n'} = \star} = I_{u_{n''} = \star} \wedge$
$\forall i \in I_{u_n \neq \star}(u_{n''} i = u_n i \oplus u_{n'} i)$

(164) $they^{u_{n''}}_{u_n \oplus u_{n'}} \rightsquigarrow \lambda P_{\mathbf{et}}.\ [u_n \neq \varnothing, u_{n'} \neq \varnothing];$
$[u_{n''} \mid u_{n''} = u_n \oplus u_{n'}];\ P(u_{n''})$

Despite what the above representations and translations suggest, sum-based interpretations of plural pronouns do not necessarily involve a scoping mechanism and they also do not require us to postulate multiple meanings for plural pronouns. We can take the introduction of sum drefs like u_2 in (157) above (or (153b), (154b) and (155) above) to be a result of bridging. The fact that we can bridge new drefs by summing over previously introduced drefs is licensed by the ontological (lattice) structure of the domain of individuals, in much the same way that bridging a new 'author'-dref or a new 'driver'-dref in (64) and (65) above is licensed by the properties of books and buses: they (usually) have authors and drivers, respectively. In fact, bridging plural drefs should be much more easily available given that no domain-specific world knowledge is required for their inference.

This bridging analysis allows us to give only one meaning to plural pronouns: they are anaphoric to a previously introduced dref that stores plural individuals relative to each stack in the current plural info state (or more conservatively: a previously introduced dref that stores a plural individual relative to at least one stack in the current plural info state).

In addition, we avoid making the incorrect prediction that plural pronouns have the same scoping capabilities as regular quantifiers. For example, the sentence in (165c) below has a reading

in which the indefinite a^{u_3} *girl* ... has narrow scope relative to the distributive quantifier $each_{u_0}$ *boy*, yet the sum-based plural pronoun $them_{u_2}$ can 'scope out' of the restrictive relative clause and be interpreted outside the scope of the distributive quantifier. Such island-escaping interpretations are not available for regular quantifiers.

(165) a. Every^{u_0} boy chose a^{u_1} poem.
b. [we bridge / introduce the dref u_2 summing over u_1-poems]
c. Then, each$_{u_0}$ boy talked with a^{u_3} girl that happened to know all of them$_{u_2}$ by heart.

To summarize, the present analysis of sentence-internal readings makes use of Nouwen-style concatenation, but the concatenation operators are used in crucially different ways than in Nouwen (2007). In particular, the concatenation-based semantics of sentence-internal *different* should be formally distinguished from the semantics of sentence-external only items like *other* or pronouns (whether they have dependent or independent readings), which does not involve concatenation.

5.2 Weak Crossover Effects and Sentence-internal *Different*

Analyzing singular *different* and pronominal items in distinct ways correctly predicts that they pattern differently with respect to weak crossover (WCO). Pronouns exhibit WCO effects—for example, *his* in (166) below cannot have a bound reading, i.e., sentence (166) cannot be interpreted as: every boy is such that his mother loves him.

(166) His mother loves every boy.

The bound reading of the pronoun is unavailable despite the fact that the quantifier *every boy* can take scope over the subject. For example, the sentence in (167) below can be interpreted as: every boy is such that someone loves him.

(167) Someone loves every boy.

In contrast, sentence-internal singular *different* does not exhibit WCO effects, as shown by the COCA examples below. This fact has been known at least since Dowty (1985).

(168) A different production team staged each of the four operas independently, with four different casts.
[compare with: Its composer staged each opera.]

(169) A different team of scientists works on each ecoregional plan, resulting in a proliferation of methods.

(170) Use a different knife to serve each cheese.

(171) A different wine was served with every course.

(172) In fine-grained multithreading, a different thread is executed every cycle.

(173) Heat distribution from a boiler is clean, quiet and easily zoned - a different thermostat can be placed in every room.

We predict the presence of WCO effects with pronouns (or sentence-external only items like *other*) because their anaphoric potential is analyzed in terms of dref coindexation. We can therefore state the usual WCO constraint, e.g., a pronoun can be bound by a quantifier it is coindexed with only if the quantifier c-commands the pronoun from an A-position.

We correctly predict the absence of WCO effects with sentence-internal singular *different* because no dref coindexation is established between *different* and the distributive quantifier licensing it (as opposed to pronouns, where such coindexation is a necessary condition for bound readings). Singular *different* is always coindexed with the immediately preceding indefinite article, so the WCO constraint does not apply. It is the distinct meaning component encoded as the superscript on *different* that introduces referential 'freedom'—and this superscript does not enter dref-coindexation relations of the kind needed for bound readings of pronouns.

6 Comparison with Previous Approaches

The contribution made by the present paper is largely complementary to the previous literature. While this literature provides a wealth of generalizations and a variety of proposals for the semantics of *different* and *same*, it either fails to explicitly distinguish between singular *different* and plural *different* or *same* or, if such a distinction is made, it does not provide an explicitly formalized compositional account of singular *different* that unifies its sentence-external and sentence-internal readings and captures the close connection between its sentence-internal readings and distributive quantification.

The main goal of this section is to briefly discuss the connections between the present analysis of singular *different* and the recent, formally articulated accounts of plural *different* and *same* in Beck (2000) and Barker (2007), respectively. The section is therefore organized along the lines of the three-way distinction between singular *different*, plural *different* and *same* introduced at the beginning of the paper.

6.1 Singular *Different* and Pair-based vs. Complement-based Distributivity

We will first discuss the analysis of singular *different* in Beck (2000). Building on Heim (1985), Beck (2000) analyzes sentence-internal singular *different* as literally equivalent to the comparative *different* with an overt prepositional complement, exemplified in (174) below.

(174) Luise owns a different car than / from Otto.

(175) $\exists z(\textsc{car}(z) \wedge \textsc{own}(\textsc{luise}, z) \wedge \textbf{different}(z, \oplus\{z' : \textsc{car}(z') \wedge \textsc{own}(\textsc{otto}, z')\}))$

As the formula in (175) above shows, *different* relates the referent introduced by the indefinite article, i.e., a car z that Luise owns, and the maximal sum individual consisting of all and only the individuals that satisfy the complement clause, i.e., the cars that Otto owns, formally represented as $\oplus\{z' : \textsc{car}(z') \wedge \textsc{own}(\textsc{otto}, z')\}$.

The comparison operator associated with *different*, which Beck (2000:112,(31)) dubs **anders** based on the German counterpart of English singular *different*, expresses a relation between a pair of individuals and a binary relation between individuals, as shown in (176) below. The LF of sentence (174) above is assumed to be of the form provided in (177).

(176) $\textbf{anders} := \lambda x.\lambda y.\lambda R.\ \exists z(R(x)(z) \wedge \textbf{different}(z, \oplus\{z' : R(y)(z')\}))$

(177) $\textbf{anders}(\textsc{luise})(\textsc{otto})(\lambda x.\lambda z.\ \textsc{car}(z) \wedge \textsc{own}(x, z))$

Then, Beck (2000:132 et seqq) proceeds to sketch an analysis of sentence-internal singular *different* along the same lines. The sentence-internal reading of sentence (178) below is paraphrased as shown in (179) and formalized as in (180) (see Beck 2000:132,(87)). I use corner quotes around an expression, e.g., around *read a different book than* in (180) below, to indicate that we need to

provide an appropriate translation of that expression in our logical language. Beck (2000), however, does not provide that translation.

(178) Every girl read a different book.

(179) Every girl read a book that was different from the book that every / any other girl read.

(180) $\forall x \forall y(\textsc{girl}(x) \wedge \textsc{girl}(y) \wedge x \neq y \rightarrow x \ulcorner\text{read a different book than}\urcorner\ y)$

The analysis does not proceed much further than this. The main problem is that "we need to quantify over a pair of [girls] with *every* [*girl*]. Even if we assume that *every* is an unselective binder, as has been argued for on the basis of [donkey sentences], it is not clear how to accommodate the restriction on a second [girl]-variable. I have not been able to resolve this and will leave it open."(Beck 2000:194)[22]

Assuming that the pair-problem can ultimately be resolved, the LF of sentence (178) will have the form in (181) below (see Beck 2000:134,(96)). The universal quantifier needs to scope over the comparison operator **anders** to bind the two individual-level variables that are the first two arguments of the comparison operator.

(181) $\ulcorner\text{every girl}\urcorner(x, y)\ [\mathbf{anders}(x)(y)(\lambda x.\lambda z.\ \textsc{book}(z) \wedge \textsc{read}(x, z))]$

Solving the pair-of-variables problem left open in Beck (2000) is one of the main contributions of the present paper. Moreover, the compositionality of the resulting account of sentence-internal *different* falls out automatically—we do not need covert morphology and / or covert LF operations to build LFs like (181) above.

Importantly, assimilating sentence-internal singular *different* to comparative *different*, i.e., to *different* with an overt complement, incorrectly predicts that sentence-internal *different* should exhibit WCO effects. This is due to the fact that, under Beck's analysis, sentence-internal *different* contains the covert comparison operator **anders** together with two covert pro-forms bound by the universal quantifier (translated as the variables x and y in (181) above).

The lack of WCO effects (which follows from the present proposal) indicates that, although closely related, sentence-internal singular *different* and comparative singular *different* are distinct. Their distinct surface forms, i.e., the absence vs. presence of an overt complement, are not semantically irrelevant epiphenomena but are associated with distinct semantic representations.

Under the present view, the overt complement of comparative *different* forces a particular value for the superscript on *different*. Thus, the superscript is the common meaning component that unifies the three uses of singular *different*: the anaphoric / sentence-external use, the sentence-internal use and the comparative / overt-complement use. What singular *different* requires is a value for this superscript that retrieves a suitable referent—i.e., a referent that 'corresponds to' the referent introduced by the indefinite containing *different*.

For example, in the sentence-external example in (1) above, the corresponding referent is the previously mentioned poem 'The Raven'. In the comparative example in (174) above, the corresponding referent is Otto's car(s). And in the sentence-internal example in (178) above, the corresponding referent is any other book that any other girl read.

The fact that a corresponding referent needs to be selected is common to all three uses of *different* and the meaning for *different* proposed in the present paper enables us to capture this commonality. What makes these uses distinct is how this selection happens—and the different properties of each use arise as a consequence of this selection process.

[22] The original quote talks about the universal quantifier *every year* instead of *every girl*; this is the reason for the modifications indicated by square brackets.

It should be mentioned at this point that, within the present dynamic framework, we can formulate an alternative account of sentence-internal singular *different* that is closer to Beck's account of comparative *different* in (175) above and, also, to Beck's informal paraphrase of sentence-internal singular *different* in (179). Both of these involve collecting *all* the relevant corresponding entities, which *different* requires to be disjoint from the referent introduced by the immediately preceding indefinite article. For example, in (179) above, for each girl, *different* relates the book that she read and the books that *all the other* girls read and requires them to be distinct.

We can minimally modify our account to make it much closer to this paraphrase. We only need to switch from pair-based distributivity, where we quantify over pairs of entities in the quantificational domain, to complement-based distributivity, where we quantify over pairs whose first member is one of the entities in the domain and whose second member is the set of all the other entities in the domain. For example, in (179) above, any one girl is paired with all the other girls.

Formally, instead of using the pair-based distributivity operator defined in (129) above, we use the complement-based operator defined in (183) below. The only difference between them is that, instead of having an info state $J_{u_n=x'}$ storing only one entity x' different from x as the right member of the pair, we have an info state $J_{u_n\neq x}$ storing *all* the entities in the domain of quantification different from x.

(182) $I_{u_n\neq x} := \{i \in I_{u_n\neq \star} : u_n i \neq x\}$

(183) $\mathbf{dist\text{-}COMP}_{u_n}(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge$
$u_n I = u_n J \wedge I_{u_n=\star} = J_{u_n=\star} \wedge$
$(|u_n I| = 1 \rightarrow D\langle I_{u_n\neq\star}, K \between J_{u_n\neq\star}, K\rangle) \wedge$
$(|u_n I| \geqslant 2 \rightarrow$
$\forall x \in u_n I(D\langle I_{u_n=x}, J_{u_n\neq x} \between J_{u_n=x}, J_{u_n\neq x}\rangle))$

Everything else in our account, including the meaning of singular *different*, stays the same. We only need to substitute **dist-COMP** for **dist** in the meaning of *every* and *each*. Moreover, the complement-based analysis still has all the desirable properties of the pair-based account: we distinguish between *different* and *other* (or pronouns) in the same way, we derive the close connection between sentence-internal readings and the scope of distributive quantifiers, we account for the lack of WCO effects with sentence-internal singular *different* in the same way etc.

6.2 Deciding between Pair-based and Complement-based Distributivity

It is not obvious how to decide between the pair-based and the complement-based analyses. The account of sentence-internal singular *different* sketched in Beck (2000) is pair-based (see (181) above), hence closer to our pair-based distributivity account. At the same time, her overarching goal of unifying sentence-internal and comparative *different* seems to favor an account in terms of complement-based distributivity. Moreover, as we have just seen, the framework and analysis proposed in the present paper is neutral between a pair-based and a complement-based account.

One argument in favor of complement-based distributivity is provided by the adjective *similar*.

As the COCA examples below show, *similar* is systematically parallel to *different*: it occurs in the same environments and, depending on the environment it occurs in, it exhibits the same range of readings. So a unified account of their interpretation and licensing conditions is desirable. And, given the fact that similarity seems to be a global notion whose interpretation is relative to the entire domain of quantification and not only to pairs of entities in this domain, complement-based distributivity may be the better way to account for sentence-internal readings.

The following examples show that singular *similar* can have sentence-internal readings in the scope of *every* / *each* distributors.

(184) Swearing sounded remarkably similar in every language in the galaxy.

(185) [Frontier Development is divided into three parts that cover land use and distribution, the role of labor, and capital formation on the frontier.]
Within these parts, every chapter has a similar general structure and content that analyze the evolution of each production factor in Canada and Argentina.

(186) The sex of the subjects in each condition was similar (29 males and 24 females received the mastery induction; 26 males and 31 females received the outcome induction).

(187) To give each key a similar feel, action parts are held to tolerances within +/- 0.005 inch.

(188) Each participating school had similar physical education facilities and equipment.

(189) The system was tested using a similar number of tokens for each group of speakers.

Sentence-internal *similar* can also be licensed by the same kind of licensors as plural *different*, e.g., conjoined or distributively interpreted plural DPs.

(190) The anthocyanin and flavone look similar: each contains a three-ring core.

(191) The two groups were led to separate but similar classrooms.

The adjective *similar* can also have sentence-external readings.

(192) [Pfizer got its start in the 1850s by combining almond toffee with santonin to make the medicine for intestinal worms palatable. The result was one of the industry's first blockbusters.]
Medimmune looks to have a similar innovation.

(193) [For example, prior to age 65, men suffer heart attacks at almost four times the rate of women. By age 65, 1 in 3 of us will suffer from hypertension, a primary risk for heart attacks, yet we're less likely to be checked for high blood pressure than women are. We're also less likely to have annual tests such as cholesterol screenings.]
When it comes to cancer, the statistics tell a similar story.

Finally, *similar* can have an overt prepositional complement.

(194) In a homogeneous universe, every position is similar to every other one, like the contents of a glass of homogenized milk.

(195) The women's stories are strikingly similar to each other.

(196) Space your reviews. Do not review subjects that are similar to each other one right after the other.

(197) Yet their sets of genes are much more similar to each other than they are to those carried by more distant relatives.

We conclude this subsection by mentioning one more phenomenon that is closely related to singular *different* and that could also help us decide between pair-based and complement-based distributivity accounts. As Beck (2000) observes, comparatives can also have sentence-internal readings. An example of a sentence-internal comparative is provided in (198) below. The interpretation of sentence (198) is that, for any two consecutive years, the extent / maximal degree to which Linus is morose in the first year is less than the extent to which he is morose in the following year.

(198) Linus was getting more morose every year / each year / year after year.

Naturally occurring examples of sentence-internal comparatives (from COCA) are provided below; see also the examples in Beck (2000:132-133). The availability of sentence-internal readings with comparatives shows that such readings are not restricted to arguably symmetric predicates like *different*, *same* or *similar*.

(199) Every component has become both more powerful and cheaper year after year with one exception: the cost of the operating system—Windows—has remained steady.

(200) Every day I'm learning more, and I think my girls feel the same way.

(201) Every second I am becoming more outnumbered.

(202) It's more dangerous every day that they appear in court.

(203) Every day Dikate was putting more pressure on me.

(204) Each job makes me more frightening to others and more passionate.

(205) [The industrial system robs her of joyful hope, and unless a helping hand is reached out to invite her away from the killing pace of monotony,]
each year finds her more depleted and nearer exhaustion.

(206) We're going to tighten the screws each day a little more.

(207) Each generation inhabits a progressively more Orwellian world.

(208) [Until 1973 Britain tried hard to settle with Salisbury.]
In each settlement proposal London offered more concessions.

(209) [The years of performing, hustling and drinking have taken their toll on Hank's body.]
Each year his eyes seem to sink further into his head. Each grin seems to take more effort.

Just as sentence-internal singular *different* has a meaning that relates two distinct values of the same indefinite DP, sentence-internal comparatives relate two maximal degrees[23] obtained based on the same clause. For example, in (198) above, the relevant clause is something like the one provided in (210) below. The resulting interpretation for the sentence-internal comparative in (198) is schematized in (211).

(210) d is the maximal degree to which Linus is morose in year t

(211) a. Take any two years t and t' in the contextually salient period of time.
b. Let d and d' be the maximal degrees to which Linus is morose in t and t', respectively.
c. If $t < t'$, then $d < d'$.

As (211) indicates, the sentence-internal readings of comparatives are both stronger and weaker than the sentence-internal readings of singular *different*. They are stronger because the maximal degrees d and d' are not simply required to be distinct, but they need to be ordered—see (211c) above. Sentence-internal comparatives are (consequently) weaker because the maximal degrees d and d' are only *conditionally* related: the degrees need to be ordered *if* the corresponding values of the licensing distributive quantifier are also ordered.

Thus, the inherent meaning of the comparative together with the licensing mechanism of sentence-internal readings conspire to place an additional requirement on the quantificational domain of the distributive quantifier: this domain has to be associated with a contextually salient scale

[23] Or two (maximal) intervals; deciding between a degree-based and an interval-based semantics for comparatives is not crucial to establishing a parallel between them and singular *different*.

that induces an ordering on the entities (see Beck 2000:134 for a way to capture this interaction between sentence-internal comparatives and their licensing distributive quantifiers).

For example, the interpretation of the quantifier *every year* in (198) above is implicitly relativized to temporal order, yielding an interpretation along the lines of *every passing year*.

Just as in the case of the adjective *similar*, the entire domain of quantification rather than pairs considered one at a time seems to be needed for such orderings. And, once again, this seems to favor an account in terms of complement-based rather than pair-based distributivity.

Finally, as Beck (2000:133) remarks, the availability of sentence-internal readings with comparatives and in particular, the possibility of extracting a pair of degrees based on a single clause seems to be closely connected to the possibility of constructing comparative correlatives like the ones in (212) and (213) below (from COCA).

(212) The more difficult it is to find workers, the more valuable they become.

(213) The more he complimented me on the house, the more irritated Gisselle grew.

Such constructions[24] establish a correlation between two scales by means of two 'scale-internal' comparisons. For example, sentence (212) is interpreted as saying that, for any two maximal degrees of difficulty d and d' such that $d < d'$, their corresponding maximal degrees of being valuable d'' and d''' are such that $d'' < d'''$.

The idea would be to analyze comparative correlatives along the lines of the present account of sentence-internal *different*. Such an analysis would predict that, cross-linguistically, the availability of 'single-clause' comparative correlative constructions like the English ones above is closely connected to the availability of sentence-internal readings for comparatives.

Brasoveanu (2008d) provides an analysis of comparative correlatives in a dynamic system that is very similar to the one used here to account of sentence-internal *different*. The analysis crucially relies on the fact that plural info states pass full quantificational domains between the protasis and apodosis of comparative correlatives, so it also seems to support complement-based rather than pair-based distributivity as the crucial ingredient for the account of sentence-internal readings.

6.3 Plural *Different*, Covers and Domain-level vs. Discourse-level Plurality

The goal of this subsection is to show that the analysis of plural *different* in Beck (2000), which I take to be correct, can be reformulated in the present framework. The resulting reformulation is closely related to our analysis of singular *different*, captures the intuitive parallel between plural *different* and reciprocals like *each other* without assimilating one to the other (as Beck 2000 does) and does not require cover-based distributivity or cumulativity (essential for Beck 2000).

6.3.1 Covers and Distributivity

We start with the observation that our two notions of plurality, namely domain-level plurality (non-atomic individuals) and discourse-level plurality (plural info states), enable us to encode the notion of cover-based distributivity proposed in Schwarzschild (1996).

Given a plural info state I and a dref u_n, the various u_n-values stored in each row $i \in I$ constitute a cover. For example, the atomic and / or non-atomic individuals $\{\alpha_1, \alpha_2, \dots\}$ stored in each cell of the plural info state I in (214) below form a cover for the plural individual $\oplus u_0 I = a_1 \oplus a_2 \oplus a_3 \oplus \dots$.

[24] Also known as comparative conditionals, see McCawley (1988) and Beck (1997) among others.

(214) Plural info state I:

u_0	u_1
$\alpha_1(= a_1)$	$\beta_1(= b_1 \oplus b_2)$
$\alpha_2(= a_2 \oplus a_3)$	$\beta_2(= b_3 \oplus b_4 \oplus b_5)$
...	...

Thus, we can think of plural info states as covers and encode distributivity relative to the cover associated with a dref u_0 by means of the (familiar) distributivity operator $\mathbf{dist}_{u_0}$. This operator distributes over the values in the set $\{u_0 i : i \in I\}$, and this set is none other than the I-based cover of the plural individual $\oplus u_0 I$.

Moreover, we can use the cover induced by one dref to distribute over another dref. For example, if we have an update of the form provided in (215) below and we try to update the info state I in (214) above, we distribute over the dref u_1 in a u_0-based way. That is, the distributive interpretation of u_1 is based on the relational cover for both u_0 and u_1 induced by the info state I above.

(215) $\mathbf{dist}_{u_0}(\dots u_1 \dots)$

Encoding covers by means of plural info states enables us to account for examples in which we distribute relative to covers that are contributed by non-c-commanding conjoined DPs (in a way that is very similar to donkey anaphora).

Consider, for example, the sentence in (216) below (see Beck 2000:115,(39)). We are interested in the reading in which the books that Sue bought would fill the whole trunk and the books that Molly bought would also fill the whole trunk (following Beck 2000:115-116). The representation for this sentence is provided in (217) below.

(216) The_{u_0} books that Sue^{u_1} and^{u_3} Molly^{u_2} bought would fill the whole trunk.

(217) $[u_1, u_2, u_3 \mid u_1 = \textsc{sue}, u_2 = \textsc{molly}, u_3 = u_1 \cup u_2, \textsc{buy}\{u_3, u_0\}]$;
$[\textsc{fill-trunk}\{u_0\}]$

We interpret DP conjunction as contributing a union condition $u_3 = u_1 \cup u_2$. This is just building a sum individual at the discourse / info state level. DP conjunctions can also build sum individuals at the domain / non-atomic entity level by means of conditions of the form $u_3 = u_1 \oplus u_2$ (see (163) above).

(218) $u_3 = u_1 \cup u_2 := \lambda\langle I, K\rangle.\ I_{u_1 \neq \star, u_2 \neq \star} \neq \varnothing \wedge u_3 I = u_1 I \cup u_2 I$

Lexical relations are interpreted just as before, i.e., they have to be satisfied by each stack i in a plural info state I. This automatically delivers cumulativity for binary relations like $\textsc{buy}\{u_3, u_0\}$, so we do not need to define it as a separate notion, unlike Beck (2000:116 et seqq).

For simplicity, we interpret the definite article as anaphoric to a previously introduced dref u_0:

(219) the_{u_0} (anaphoric) $\rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_0 \neq \varnothing];\ P(u_0);\ P'(u_0)$

According to the representation in (217), the interpretation of sentence (216) proceeds as shown in (220) below.

(220)

u_0
$books_1$
$books_2$

$\Longrightarrow$ The_{u_0} books that Sue^{u_1} and^{u_3} Molly^{u_2} bought...

u_0	u_1	u_2	u_3
$books_1$	*sue*	*molly*	*sue*
$books_2$	*sue*	*molly*	*molly*

where *sue* bought $books_1$
molly bought $books_2$

	...would fill the whole trunk ⟹			
	u_0	u_1	u_2	u_3
	$books_1$	*sue*	*molly*	*sue*
	$books_2$	*sue*	*molly*	*molly*

where $books_1$ would fill the whole trunk
$books_2$ would fill the whole trunk

The restrictor of the definite requires the u_0-entities to satisfy two conditions. First, they need to be books. Second, they need to have been bought by Sue and Molly. The latter condition needs to be satisfied in a rowwise manner: for each row, the u_3-individual in that row bought the u_0-books in that row. Finally, the nuclear scope of the definite requires us to check in a rowwise manner that the u_0-books satisfy the 'fill the whole trunk' predicate.

Thus, the desired interpretation of the sentence—in particular, the introduction of covers in a syntactically non-local way (donkey-anaphora style)—arises naturally out of the interaction of domain-level and discourse-level plurality without any need for a separate notion of cover, cover-based distributivity and cumulativity of binary lexical relations.

6.3.2 The Analysis of Plural *Different* in Beck (2000)

Beck (2000) analyzes sentence-internal plural *different* as covertly identical to *different from each other*, i.e., as basically containing a covert reciprocal complement.

Her analysis of reciprocals integrates the notion of cover-based distributivity in Schwarzschild (1996) and the analysis of reciprocals proposed in Heim et al (1991). For example, the sentence in (221) below (see Beck 2000:119,(51)) is analyzed as shown in (222) (see Beck 2000:120,(54)).

(221) The books that Diane and William discussed complement each other.

(222) $\forall x(x \leqslant X \wedge x \in \mathbf{COVER}(X) \rightarrow$
$\forall y(y \leqslant X \wedge y \in \mathbf{COVER}(X) \wedge x \neq y \rightarrow$
$\textsc{complement}(x, y)))$
where:

a. $X :=$ ⌜the books that Diane and William discussed⌝ =
$\bigoplus \{y : \textsc{books}(y) \wedge {}^{**}\textsc{discuss}(\textsc{diane} \oplus \textsc{william}, y)\}$,
where ${}^{**}\textsc{discuss}$ is the cumulative closure of the binary predicate DISCUSS.

b. $\mathbf{COVER}(X) = \{$⌜the books that Diane discussed⌝,
⌜the books that William discussed⌝$\}$

The account of sentence-internal plural *different* builds on this cover-based analysis of reciprocals. Consider, for example, the sentence in (223) below (see Beck 2000:122,(60)). The reading we are interested in is paraphrased in (224). Beck (2000:122) analyzes sentence (223) as effectively identical to sentence (225) below, where there is an overt reciprocal complement.

(223) Frank and Bärbel read different books.

(224) The books that Frank read are different from the books that Bärbel read.

(225) Frank and Bärbel read books that are different from each other.

The final formula is provided in (226) below (see Beck 2000:122,(61)). Given the contextually-supplied cover specified in (227), this formula says that there is a set of books X read by Frank and Bärbel, and the books in X that Frank read are different from the books in X that Bärbel read.

(226) $\exists X(\textsc{books}(X) \wedge {}^{**}\textsc{read}(\textsc{frank} \oplus \textsc{bärbel}, X) \wedge$
$\forall x(x \leqslant X \wedge x \in \mathbf{COVER}(X) \rightarrow$
$\forall y(y \leqslant X \wedge y \in \mathbf{COVER}(X) \wedge x \neq y \rightarrow$
$\mathbf{different}(x, y))))$

(227) $\mathbf{COVER}(X) = \{$⌜the books that Frank discussed⌝,
⌜the books that Bärbel discussed⌝$\}$

A welcome consequence of the cover-based analysis of plural *different* in Beck (2000) is that the (semantically quasi-vacuous) 'various' reading of *different* is captured if the cover targets the indefinite that *different* itself is a part of. Consider, for example, the sentence in (228) below (see Beck 2000:125,(69)). Since the cardinal indefinite *five* brings a plural individual to salience, we can construct a (non-trivial) cover for it and let *different* be interpreted relative to this cover.

(228) John went to five different plays.

6.3.3 Plural *Different* and Optional Discourse-level Distributivity

I take the basic idea of the analysis in Beck (2000), i.e., the crucial use of covers, to be on the right track. Ideally, such an analysis should be reformulated in our current dynamic framework in such a way that the reformulation is closely related to our account of singular *different*.

Moreover, following the discussion in Moltmann (1992:450 et seqq), the analysis should capture the intuitive parallel between plural *different* and reciprocals without conflating them as Beck (2000) does. One of the main arguments against such a conflation is that plural *different* can be non-locally licensed, while reciprocals need a chain of local antecedents—as shown by the contrast between the sentences in (229) and (230) below (see Moltmann 1992:450,(101)).

(229) *John and Mary expect Sue to believe them to exceed each other.

(230) John and Mary expect Sue to believe different men to be guilty.

We now turn to our analysis of plural *different*. The proposal is just this: the fact that plural *different* is plural allows it to optionally contain a distributivity operator **dist** with scope over the **disjoint** condition contributed by *different*. This is just a reformulation of the received wisdom that plurals generally come associated with covers, and we encode by means of **dist** operators.

That is, the English adjective *different* is underspecified for the presence vs. absence of such an operator. In contrast, German (and other languages), has two distinct items, one for *different* without a distributivity operator, morphologically realized as *anders*, and one for *different* with a distributivity operator, morphologically realized as *verschieden*.

The translation for plural *different* with the optional $\mathbf{dist}_{u_{n'}}$ operator present is provided in (231) below. The operator $\mathbf{dist}_{u_{n'}}$ is the counterpart of Beck's cover-based distributivity.

(231) ${}_{u_{n'}}\mathit{different}^{m}_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$\mathbf{dist}_{u_{n'}}(\ast(\underline{P(u_{n+m})};\ [\mathbf{disjoint}\{u_{n+m}, u_n\}]))),$
where the dref $u_{n'}$ that we distribute over is contextually supplied just like a cover is.

When plural *different* appears by itself without any preceding determiner, we can either assume that there is a null indefinite determiner with a translation like the one provided in (232) below or that plural *different* has an alternative determiner-type translation (possibly obtained by a suitable type-shifting) like the one in (233) below.

(232) $\mathit{null\text{-}plural\text{-}indef}^{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_n \mid u_n \neq \varnothing];\ P(u_n);\ P'(u_n)$

(233) ${}_{u_{n'}}$*different*^{u_n,m} (determiner)
$\rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_n \mid u_n \neq \varnothing];\ P(u_n);$
$\quad \mathbf{dist}_{u_{n'}}(*(\underline{P(u_{n+m})};\ [\mathbf{disjoint}\{u_{n+m}, u_n\}]));\ P'(u_n)$

The representations that we compositionally derive for the two examples in (223) and (228) above are provided in (234) and (236) below. The presuppositions are correctly resolved, so the underlined presuppositional updates are omitted.

(234) Frank^{u_0} and^{u_2} Bärbel^{u_1} read ${}_{u_2}$different^{u_3,4} books.
$[u_0, u_1, u_2 \mid u_0 = \textsc{frank}, u_1 = \textsc{bärbel}, u_2 = u_0 \cup u_1];$
$[u_3 \mid u_3 \neq \varnothing, \textsc{books}\{u_3\}];\ \mathbf{dist}_{u_2}(*([\mathbf{disjoint}\{u_{3+4}, u_3\}]));$
$[\textsc{read}\{u_2, u_3\}]$

(235) a. $\mathbf{5\text{-}atoms}\{u_1\} := \lambda\langle I, K\rangle.\ |\{x \leqslant \oplus u_1 I : \mathbf{atom}(x)\}| = 5$
b. *five*$^{u_1} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_1 \mid \mathbf{5\text{-}atoms}\{u_1\}];\ P(u_1);\ P'(u_1)$

(236) John^{u_0} went to five^{u_1} ${}_{u_1}$different$^2_{u_1}$ plays.
$[u_0 \mid u_0 = \textsc{john}];\ [u_1 \mid \mathbf{5\text{-}atoms}\{u_1\}, \textsc{plays}\{u_1\}];$
$\mathbf{dist}_{u_1}(*([\mathbf{disjoint}\{u_{1+2}, u_1\}]));\ [\textsc{go-to}\{u_0, u_1\}]$

Importantly, the distributive operators contributed by *different* are anaphoric to the intuitively-correct 'cover-inducing' drefs: dref u_2 in (234) and dref u_1 in (236). In (236), we derive the (almost vacuous) 'various' reading of *different* because the 'cover-inducing' dref u_1 is the same as the dref introduced by the plural indefinite that *different* is a part of. We therefore correctly predict that this 'various' reading is always available when the indefinite that *different* is a part of is plural.

The above analysis of *different* in terms of a freely available, yet optional distributivity operator captures the intuitive parallel between plural *different* and reciprocals like *each other*: both of them involve a distributivity operator and a disjointness condition. However, we do not conflate the two.

On one hand, *different* and *other* make use of the **disjoint** condition in distinct ways, as we have already noticed in subsection 3.3 above. On the other hand, the **dist** operator contributed by reciprocals is obligatory and has to have a syntactically local antecedent, while the **dist** operator contributed by *different* is optional and can anaphorically retrieve a non-local dref—or even the dref introduced by the very indefinite that *different* is a part of.

It is these specific properties of *different* that enable us to capture the fact that examples with double, covarying *different* like (237) below are felicitous.

(237) ${}_{u_0}$Different^{u_0,1} boys recited ${}_{u_0}$different^{u_1,2} poems.

6.3.4 Why Optional Distributivity is Incompatible with Singular *Different*

Importantly, the **dist** operator optionally contributed by *different* is incompatible with singular indefinites despite the fact that it is in principle freely available. The reason for this is that we can distribute only over discourse-level pluralities and singular indefinite articles contribute a **singleton** condition enforcing discourse-level singularity.

Consider, for example, the sentences in (238) and (239) below, which are exactly like the felicitous ones above except that we now have singular indefinites.

(238) Frank^{u_0} and^{u_2} Bärbel^{u_1} read a^{u_3} ${}_{u_2}$different$^4_{u_3}$ book.
$[u_0, u_1, u_2 \mid u_0 = \textsc{frank}, u_1 = \textsc{bärbel}, u_2 = u_0 \cup u_1];$
$[u_3 \mid \mathbf{atoms\text{-}only}\{u_3\}, \mathbf{singleton}\{u_3\}, \textsc{book}\{u_3\}];$
$\mathbf{dist}_{u_2}(*([\mathbf{disjoint}\{u_{3+4}, u_3\}]));\ [\textsc{read}\{u_2, u_3\}]$

(239) John^{u_0} went to a^{u_1} $_{u_1}$different$^2_{u_1}$ play.
$[u_0 \,|\, u_0 = \text{JOHN}]$;
$[u_1 \,|\, \textbf{atoms-only}\{u_1\}, \textbf{singleton}\{u_1\}, \text{PLAY}\{u_1\}]$;
$\textbf{dist}_{u_1}(*([\textbf{disjoint}\{u_{1+2}, u_1\}]))$; $[\text{GO-TO}\{u_0, u_1\}]$

The **singleton** condition in (238) requires the dref u_3, which is the one targeted by *different*, to store only one value. Therefore, when we 'duplicate' this dref by means of info state concatenation (as required by the operator $\textbf{dist}_{u_2}$), we store the same value in both dref u_3 and its 'duplicate' dref u_{3+4}—and the $\textbf{disjoint}\{u_{3+4}, u_3\}$ condition cannot be satisfied.

The update in (239) fails for an even more basic reason. Once again, the **singleton** condition requires the dref u_1 to store only one value. But now the distributivity operator $\textbf{dist}_{u_1}$ attempts to distribute over a singleton set, in which case there are no info states to concatenate (see the definition in (129) above). So, there is no dref u_{1+2} (more precisely, u_{1+2} stores only the dummy $\star$) and, yet again, the $\textbf{disjoint}\{u_{1+2}, u_1\}$ condition cannot be satisfied.

Thus, the combination of **dist** and **disjoint** contributed by *different* can only work if both the dref targeted by **dist** and the dref targeted by **disjoint** (which can be identical) are plural at the discourse level. Otherwise, we can only have the two readings we discussed for singular *different*, namely a sentence-external reading or a sentence-internal reading that is licensed by an overtly realized quantificational distributor like *every / each*. Given that there are no such overt distributors in (238) and (239) above, we correctly predict that the only available reading for these examples is the sentence-external one.[25]

Similarly, we correctly predict that the only available readings for sentences with plural *different* but no plural antecedents like (240) below are the sentence-external reading or the 'various', i.e., 'self-distributivity', reading.

(240) Linus recited different poems.

This is because a **dist** operator anaphoric to the singleton dref introduced by the proper name *Linus* would not contribute info state concatenation and the update would fail for the same reason as the update in (239) above.

We are also able to capture the fact that a VP containing plural *different* can distribute over a plural antecedent while, at the same time, allowing for another conjoined VP to be collectively interpreted, as in sentence (241) below.

(241) Frank^{u_0} and^{u_2} Bärbel^{u_1} met, went shopping together and bought $_{u_2}$different^{u_3,4} books.

The interpretation of plural *different* proceeds exactly as outlined above, while the collective predicates *met* and *went shopping together* are interpreted collectively relative to the entire plural info state, i.e., they are predicated of the plural individual $\oplus u_2 I$, which is none other than the sum individual $\text{FRANK} \oplus \text{BÄRBEL}$.

As we already observed in section 2, sentence-internal readings for singular *different* are not available in such cases despite the fact that it is generally assumed that VP-modifying distributivity operators like Δ in sentence (242) below can be covertly inserted.

(242) Frank^{u_0} and^{u_2} Bärbel^{u_1} met, went shopping together and Δ(bought a^{u_3} book).

[25] Dotlačil (2010:219-222) observes that sentence-internal readings under plural definites or DP conjunctions are available for one of the counterparts of singular *different* in Dutch and Czech. One way to capture this in the present framework is to assume that, for these particular items and / or usages, singular morphology does not contribute a **singleton** condition, but only an **atoms-only** condition.

We capture this fact if we take the covert distributivity operator Δ to not make available pairs of info states in its scope: just like all the other regular updates, this operator targets only the left info state and leaves the right one untouched.

The relevant definitions are provided below. The definition of the distributivity operator δ_{u_n} is very similar to the distributivity operator in van den Berg (1996).

(243) Frank^{u_0} and^{u_2} Bärbel^{u_1} met, went shopping together and Δ(bought a^{u_3} different book).

(244) $\delta_{u_n}(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge$
$u_n I = u_n J \wedge I_{u_n=\star} = J_{u_n=\star} \wedge$
$\forall x \in u_n I(D\langle I_{u_n=x}, K\rangle\langle J_{u_n=x}, K\rangle)$

(245) $\Delta \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ \delta_v(P(v))$

Finally, we capture the fact that plural *different* cannot have the same kind of sentence-internal readings when it is in the scope of quantificational distributors like *every / each* and when it is dependent on a plural DP. This contrast is exemplified in (246) and (247) below.

(246) Every boy recited different poems.

(247) The boys recited different poems.

While (247) is intuitively true in a situation in which every boy recited exactly one poem and the poems were distinct for distinct boys, sentence (246) disallows this. This is because in (246), the plural morphology on (the DP containing) *different* is in the scope of the discourse-level distributivity operator contributed by *every*, so the plurality requirement has to be satisfied relative to individual boys. In contrast, plural definites like *the boys* in (247) above do not contribute discourse-level distributivity, so the plurality requirement can be satisfied at the discourse level, i.e., relative to the entire plural info state, while allowing individual stacks / rows to store atomic individuals.

6.4 *Same* and Whole-set Based Distributivity

The goal of this subsection is to discuss *same* and show that the basic analysis in Barker (2007) (who builds on Dowty 1985)—namely that *same* is associated with distributivity over whole quantificational domains, as opposed to pair-based or complement-based distributivity—can be unified with our account of singular and plural *different*.

The resulting analysis of *same* and *different* captures the intuitive parallels between the two while, at the same time, accounting for their different distribution.

In particular, we want to account for the previously unnoticed fact that sentence-internal *same* is licensed by *both*, but sentence-internal plural (or singular) *different* is not.[26] This is exemplified by the sentences in (248) through (251) below and by the naturally occurring (COCA) sentences in (252) and (254) (repeated from (38) and (40) above) and their minimally different counterparts in (253) and (255).

(248) Both Gabby and Linus / Both children recited the same poem(s). (sentence-internal ✓)

(249) Both Gabby and Linus / Both children recited different poems. (sentence-external only)

(250) They both recited the same poem(s). (sentence-internal ✓)

(251) They both recited different poems. (sentence-external only)

[26] Unlike *both*, the expression *the two* licenses sentence-internal plural *different*.

(252) Tradition requires that the carver give both memorials the same facial features. (sentence-internal ✓)

(253) Tradition requires that the carver give both memorials different facial features. (sentence-external only)

(254) [Glasses are often an important identifier in a portrait.]
The challenge is to get both lenses the same shape and make sure they add to, rather than dominate, the face. (sentence-internal ✓)

(255) The challenge is to get both lenses different shapes / a different shape and make sure they add to, rather than dominate, the face. (sentence-external only)

The distributor *all* seems to be similar to *both*, but the judgments are less sharp.

6.4.1 The Analysis of *Same* in Barker (2007)

The analysis of sentence-internal *same* in Barker (2007) builds on the one in Dowty (1985), which is provided in (256) below (apud Barker 2007:415,(11)). Dowty (1985) takes *same* to be an adjective, i.e., a nominal modifier. The analysis has three main components. First, we introduce existential quantification over choice functions f (for technical reasons, this function chooses a singleton set $\{x\}$ and not a single entity x out of the set N). Second, we have two contextual variables, one for the comparison class C (which is a non-atomic individual) and the other for the relation R between the elements in the comparison class and the single entity x chosen by *same*. Finally, we distribute over the comparison class C and relate all of its parts c to x.

(256) $same \rightsquigarrow \lambda N.\lambda x.\ \exists f(\{x\} = f(N)) \wedge \forall c < C(Rxc)$

For example, in sentence (257) below, the set N is provided by the noun *book*, the comparison class C is the sum individual GABBY $\oplus$ LINUS and the relation R is provided by the transitive verb *read*. The adjective *same* requires that there should be a single book x such that all the parts of the plural individual GABBY $\oplus$ LINUS read it.

(257) Gabby and Linus read the same book.

While resolving the variables C and R in this way derives the intuitively correct truth conditions, the fact that the values of these variables are contextually provided leads to both overgeneration and undergeneration, as Barker (2007:415 et seqq) observes.

To see that this leads to overgeneration, consider the sentence in (258b) below.

(258) a. The men discussed a house.
b. John read the same book.

If C is the set of men and R the relation DISCUSS, we incorrectly predict that (258b) can be interpreted as saying that there is a book that each of the men discussed and John read that same book. If C is the set of men and R the relation READ, we incorrectly predict that (258b) can be interpreted as saying that there is a book that each of the men read and John also read that same book.

To see that this leads to undergeneration, consider the sentences in (259) and (260) below (also from Barker 2007).

(259) The men or the women read the same book.

(260) Ann read and Bill reviewed the same book.

The values for C in (259) can be the set of men, the set of women or the set of men and women, but neither of these three possible values provide the correct, disjunctive truth conditions. Similarly, the values for R in (260) can be READ, REVIEW, READ $\sqcap$ REVIEW and READ $\sqcup$ REVIEW. Our best shot is the disjunctive relation READ $\sqcup$ REVIEW, but the resulting truth conditions are overly weak since there is no way of guaranteeing that Ann read (rather than reviewed) the book or that Bill reviewed (rather than read) it.

As Barker (2007:416) remarks (following up on an observation in Carlson 1987), the values of the variables C and R seem to be provided by the compositional semantics of the very sentence in which *same* appears. First, if either C or R gets its value from an element in the clause containing *same*, so does the other variable (this is what it ultimately means to say that *same* has a sentence-internal reading). Second, the value of R is provided by the full portion of the clause that remains after removing the element that contributes the value of C. For example, in *Anna and Bill must have read the same book*, the value of R has to be MUST-HAVE-READ and cannot simply be READ.

Therefore, Barker (2007) proposes an analysis of sentence-internal *same* in which the values of C and R are supplied automatically as part of the compositional interpretation of the sentence that contains *same*. The translation for *same* is provided in (261) below (see Barker 2007:426,(33)).

(261) $same \rightsquigarrow \lambda F_{\langle \mathrm{Adj,N} \rangle}.\lambda y.\ \exists f_{\mathrm{choice}} \forall x < y(Ffx)$

The variable F takes an adjective-type argument and returns a noun-type value, i.e., F is of type $\langle\langle et, et\rangle, et\rangle$. It is by means of this variable and the way its high type drives semantic composition that the value of the variables C and R are automatically supplied. For example, the resulting translation for the sentence-internal reading of *two men with the same name* is provided in (262) below, and it derives the intuitively correct truth conditions in (263) (see Barker 2007:426,(34))

(262) *two men with the same name* $\rightsquigarrow$ $\mathbf{two}[\lambda y.\ \exists f \forall x < y(\textsc{men}(x) \wedge \textsc{with}(x, \mathbf{the}[f(\textsc{name})]))]$

(263) a. Objects y with cardinality 2 consisting of men such that we can choose a name by means of a choice function f such that each proper subpart of y has f(NAME).

b. That is, pairs of men where both members have the same name.

This analysis correctly predicts that the trivial scope of *same* in a DP like *two same men* is unacceptable. The reason is that the choice function f together with the distributivity $\forall x < y$ contributed by *same* require the property denoted by *same men* to be true of an object y only if any subpart x of y is identical to f(MEN). That is, the object y consists of only one atom f(MEN), which contradicts the requirement that y should be non-atomic (also contributed by *same*).

In sum, the analysis of sentence-internal *same* in Barker (2007) modifies only one of the three components of Dowty's analysis: it does away with the contextual variables for the comparison class C and the relation R, but it preserves the choice function and distributivity components more or less intact. While these conspire to correctly rule out DPs like *two same men*, they make it difficult to see how the analysis can be extended in two important directions.

First, using choice functions makes the meaning of sentence-internal *same* essentially non-relational, so it is not clear how to extend this account to sentence-external and overt-complement uses of *same* exemplified in (264) and (265) below respectively.

(264) a. Gabby recited 'The Raven'.

b. Linus recited the same poem.

(265) Linus recited the same poem as Gabby.

Moreover, it is not clear how *same* is related to other, crucially relational items like *different*, *similar* or comparative morphology.

Second, as Barker (2007:432 et seqq) observes, the distributivity built into the meaning of *same* requires a non-atomic individual, so the quantifier that *same* is parasitic on, e.g., *two* in (262) above, has to quantify over such non-atomic individuals. This incorrectly predicts that sentence-internal *same* is not licensed by morphologically-singular quantificational distributors like *every* or *each*. However, sentence-internal *same* is licensed in such cases, as the examples in (266) and (267) below show. In fact, such quantificational distributors seem to be the cross-linguistically paradigmatic examples of licensors for sentence-internal readings of (singular) *same* and *different*.

(266) Every boy / Each boy recited the same poem.

(267) The boys each recited the same poem.

To capture sentences like (266) and (267), Barker (2007:433,(49)) proposes to relativize the distributivity contributed by *same* to covers, thus making room for pragmatic intrusion and retreating toward a more Dowty-style account. It therefore remains unclear how to derive the fact that distributors like *every* / *each* always require sentence-internal *same* to be relative to the atomic cover they introduce, since the value for this cover variable is supposed to be pragmatically supplied and could in principle vary from context to context.

Moreover (as noted in Barker 2007:433), the cover-based account of *different* in Beck (2000) is crucially *not* meant to apply to quantificational distributors like *every* and *each*. Otherwise, we fail to capture the cross-linguistically stable distinction between singular and plural *different*, e.g., the contrast between *anders* and *verschieden* in German.

Finally, even if *every* / *each* require us to take covers into account, it is not clear how to capture the contrast between different distributors with respect to the licensing of sentence-internal *different* and sentence-internal *same*. In particular, *each* can license either of them, while *both* can license only sentence-internal *same*, as already shown by sentences (248) through (251) above.

6.4.2 *Same* and Whole-set Based Distributivity

We can solve these problems if we give *same* an account strictly parallel to the account of singular and plural *different* proposed above.

Moreover, we will be able to capture the contrast between *same* and *different* with respect to *both* (and *all*) if we take *both* to contribute whole-set distributivity, wherein each individual is paired with the (info state storing) the entire set that we distribute over.

Thus, whole-set based distributivity is different from pair-based or complement-based distributivity because in the last two cases, we pair each individual either with another *distinct* individual or with all the other *distinct* individuals in the set that we distribute over. In contrast, whole-set based distributivity pairs each individual with *all* the individuals in the set we distribute over, including itself.

The translations for singular and plural *same*, the definition of whole-set distributivity and the translation for *both* in its determiner guise are provided below (a parallel translation for *all* that differs only with respect to the cardinality requirement can easily be provided).

(268) $\mathbf{identical}\{u_n, u_{n'}\} := \lambda\langle I, K\rangle.\ I_{u_n \neq \star, u_{n'} \neq \star} \neq \varnothing \wedge$
$\{x \leqslant \oplus u_n I : \mathbf{atom}(x)\} = \{x' \leqslant \oplus u_{n'} I : \mathbf{atom}(x')\}$

(269) $same^{m}_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$*(\underline{P(u_{n+m})};\ [\mathbf{identical}\{u_{n+m}, u_n\}]),$

where u_n has to be the dref introduced (or anaphorically retrieved) by the definite article immediately preceding *same*.

(270) ${}_{u_{n'}}same^{m}_{u_n} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ P(v);$
$\mathbf{dist}_{u_{n'}}(\circledast(\underline{P(u_{n+m})};\ [\mathbf{identical}\{u_{n+m}, u_n\}]))$,
where the dref $u_{n'}$ that we distribute over is anaphorically retrieved.

(271) $\mathbf{dist\text{-}WHOLE}_{u_n}(D) := \lambda\langle I, K\rangle.\lambda\langle J, K'\rangle.\ K = K' \wedge$
$u_nI = u_nJ \wedge I_{u_n=\star} = J_{u_n=\star} \wedge$
$(|u_nI| = 1 \rightarrow D\langle I_{u_n\neq\star}, K\rangle\langle J_{u_n\neq\star}, K\rangle) \wedge$
$(|u_nI| \geqslant 2 \rightarrow$
$\forall x \in u_nI(D\langle I_{u_n=x}, J_{u_n\neq\star}\rangle\langle J_{u_n=x}, J_{u_n\neq\star}\rangle))$

(272) $both^{u_n}$ (determiner)
$\rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_n}([\mathbf{atoms\text{-}only}\{u_n\}];\ P(u_n));$
$[\mathbf{2\text{-}atoms}\{u_n\}];\ \mathbf{dist\text{-}WHOLE}_{u_n}(P'(u_n))$[27]

Everything that we said about singular and plural *different* also applies to *same*. That is, we have a compositional, unified account of sentence-external and sentence-internal *same*—which is what Dowty (1985) sets out to do. Our account, however, does not use (higher-order) contextual variables, so it avoids the objections raised in Barker (2007).

We also straightforwardly account for the availability of sentence-internal *same* under quantificational distributors like *every* and *each*. And we have a parallel account of *same* and *different*, which at least for English is empirically adequate.

The account captures the sentence-external, sentence-internal and overt-complement uses of *same* without conflating them. In particular, we correctly predict the lack of WCO effects with sentence-internal *same*, e.g., *The same waiter served everyone* (Stump 1982, Heim 1985), just as we do for the corresponding examples with *different*.

Moreover, we correctly predict the lack of sentence-internal readings with singular DPs, e.g., in *Linus recited the same poem*, by the very same reasoning that rules out sentence-internal (singular or plural) *different* with singular DPs.

We account for the sentence-internal reading of *same* in Barker's example *two men with the same name* by letting the distributivity operator (optionally) contributed by *same* to be anaphoric to the dref introduced by the cardinal indefinite *two*, as shown in (274) below. This analysis is parallel to the analysis of sentence-internal plural *different* in (234) above.

(273) the^{u_n} (Russell)
$\rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_n}([\mathbf{atoms\text{-}only}\{u_n\}];\ P(u_n));$
$[\mathbf{singleton}\{u_n\}];\ P'(u_n)$

(274) Two^{u_0} men with the^{u_1} ${}_{u_0}\text{same}^{2}_{u_1}$ name left.
$[u_0 \mid \mathbf{2\text{-}atoms}\{u_0\}, \textsc{men}\{u_0\}];$
$[u_1 \mid \textsc{name}\{u_1\}];\ \mathbf{dist}_{u_0}(\circledast([\mathbf{identical}\{u_{1+2}, u_1\}]));$
$[\textsc{with}\{u_0, u_1\}];\ [\textsc{leave}\{u_0\}]$

We rule out *two same men* by a reasoning that is parallel to the one in Barker (2007)—and to the one we used to derive the felicitous, 'various' reading for *different* in examples like *two different men* (e.g., (236) above). More precisely, the **dist** operator (optionally) contributed by *same* needs

[27] A translation for *both* in its guise of floating quantifier (assumed to have the syntax of a VP modifier) is provided in (i) below:

i. $both \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda v_{\mathbf{e}}.\ [\mathbf{atoms\text{-}only}\{v\}, \mathbf{2\text{-}atoms}\{v\}];\ \mathbf{dist\text{-}WHOLE}_v(P(v))$.

to distribute over a non-singleton dref to induce concatenation—but, if the **identical** condition, also contributed by *same*, targets the same dref, it effectively requires it to be a singleton (as opposed to the **disjoint** condition contributed by *different*, which requires the dref to be a non-singleton). Hence, if the **dist** operator and the **identical** condition target the same dref, we have a *same*-internal contradiction that leads to update failure.

Finally, the fact that *both*, but not *each*, contributes whole-set based distributivity correctly predicts that sentence-internal *same* is licensed under *both*, but sentence-internal *different* is not. The reason for this is that the **identical** condition contributed by *same* can be satisfied in the scope of any distributivity operator, be it pair-based, complement-based or whole-set based. In contrast, the **disjoint** condition contributed by *different* cannot be satisfied in the scope of whole-set based distributors because the concatenated info state includes the info state we concatenate to, so the sets of individuals targeted by the **disjoint** condition cannot by definition be disjoint.

The account of *same* we just sketched captures two of its specific properties noticed in Barker (2007:428 et seqq), namely:

(*i*) we have to use the definite article with *same*—the indefinite DP *a same poem* is not acceptable;

(*ii*) definite descriptions containing sentence-internal *same* do not trigger existence presuppositions, unlike typical definite descriptions like *the long poem*—compare, for example, (275) and (276) below.

(275) Did every boy recite the same poem?

(276) Did every boy recite the long poem?

Our analysis captures both observations. We use the definite article (in its Russellian guise provided in (273) above) because the **identical** condition contributed by *same* guarantees uniqueness (or determined reference, to use the terminology of Farkas 2002) and, *ceteris paribus*, we will use the strongest possible article; note that, in a generalized sense of entailment, the definite article entails / is stronger than the indefinite one.

We also account for the fact that no existence presuppositions are associated with sentence-internal readings of *same*. In contrast, sentence-external readings are associated with existence presuppositions (this generalization, not mentioned in Barker 2007, complements the generalization in (*ii*) above). The correlation between the non-projection of the existence presupposition and the sentence-internal reading of *same* follows from our analysis: there is no existence presupposition with sentence-internal readings because this presupposition is by definition locally satisfied in the nuclear scope of the distributive quantifier that licenses the sentence-internal reading.

We conclude this subsection with a brief discussion of the 'partitive' *same* example in (277) below introduced and discussed in Solomon (2009). This example is interpreted as: some of the people John knows and some of the people Mary knows are the same.

(277) John and Mary know some of the same people.

Crucially, we want to avoid the overly weak interpretation that the set of people John knows some of is the same as the set of people Mary knows some of. This is trivially true if this set of people is simply the set of all people. But we derive precisely this interpretation if *same* is indexed in the way we argued for up until now. This indexation and the corresponding representation are provided in (278) and (280) below.

(278) John^{u_0} and^{u_2} Mary^{u_1} know some^{u_3} of the^{u_4} $_{u_2}$same$^{5}_{u_4}$ people.

(279) a. $some^{u_3} \rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ [u_3 \,|\, u_3 \neq \varnothing];\ P(u_3);\ P'(u_3)$

b. the^{u_4} (Link) $\rightsquigarrow \lambda P_{\mathbf{et}}.\lambda P'_{\mathbf{et}}.\ \mathbf{max}^{u_4}(P(u_4));$
$[u_4 \neq \varnothing];\ P'(u_4)$

c. $u_n \leqslant u_m := \lambda\langle I, K\rangle.\ I_{u_n\neq\star,u_m\neq\star} \neq \varnothing \wedge$
$\forall i \in I_{u_n\neq\star,u_m\neq\star}(u_n i \leqslant u_m i)$

(280) $[u_0, u_1, u_2 \mid u_0 = \textsc{john}, u_1 = \textsc{mary}, u_2 = u_0 \cup u_1];\ [u_3 \mid u_3 \neq \varnothing];$
$\mathbf{max}^{u_4}([\textsc{people}\{u_4\}];\ \mathbf{dist}_{u_2}(*([\mathbf{identical}\{u_{4+5}, u_4\}])));$
$[u_4 \neq \varnothing];\ [u_3 \leqslant u_4];\ [\textsc{know}\{u_2, u_3\}]$

But we derive the correct interpretation if we relax the constraint that *same* has to be indexed with the dref introduced by the immediately preceding definite article, i.e., u_4 in this case. If *same* can also be indexed with the dref introduced by the determiner heading the entire partitive structure, i.e., $some^{u_3}$ in our case, we obtain the intuitively correct representation, provided in (281) below. Thus, in the end, 'partitive' *same* seems to support the anaphoric account proposed here.

(281) a. John^{u_0} and^{u_2} Mary^{u_1} know some^{u_3} of the^{u_4} $_{u_2}\text{same}^5_{u_3}$ people.

b. $[u_0, u_1, u_2 \mid u_0 = \textsc{john}, u_1 = \textsc{mary}, u_2 = u_0 \cup u_1];\ [u_3 \mid u_3 \neq \varnothing];$
$\mathbf{max}^{u_4}([\textsc{people}\{u_4\}];\ \mathbf{dist}_{u_2}(*([\mathbf{identical}\{u_{3+5}, u_3\}])));$
$[u_4 \neq \varnothing];\ [u_3 \leqslant u_4];\ [\textsc{know}\{u_2, u_3\}]$

6.5 Varieties of Distributivity and Varieties of Sentence-internal Items

It is worth stepping back at this point to consider the varieties of distributivity proposed here. If we focus exclusively on *same* and *different*, the postulation of such distributors might seem as an *ad hoc* stipulation. However, from the perspective of the larger theoretical and empirical landscape that the present analysis of *same* and *different* is a part of, we actually expect to encounter such varieties of distributivity.

Theoretically, we expect to have a variety of distributors given the fact that our framework countenances both domain-level plurality (i.e., sum individuals) and discourse-level plurality (i.e., plural info states) and these two kinds of plurality can interact in various ways.

Empirically, the diversity of items with distributive interpretations goes well beyond the usually mentioned *each* vs. *all* vs. *both* vs. *every* contrast. If we limit ourselves to English only (and there is no reason to do so except for convenience), we have a long series of distributive expressions in addition to the above four, whose similarities and differences have not been systematically studied: *one by one*, *one at a time*, *one after another*, *one after the other*, *year after year*, *coffee after coffee*, *brick by brick*, *individually*, *separately*, *in turn*, *respectively*, *apiece* etc. Thus, there seems to be no compelling reason to expect that distributivity comes in only one flavor, i.e., universal quantification over (possibly contextually specified) subparts of a non-atomic individual.

Another payoff of countenancing a diversity of distributors is an account of the fact that sentence-internal *same* is compatible with collective predicates like *gather*, but not *elect*. This contrast, exemplified in (282) through (285) below, is captured if we follow Brisson (2003) (and references therein) and take verbs like *gather* to contribute, by virtue of their inherent aspect, a form of sublexical distributivity that is whole-set based distributivity. Verbs like *elect* are different from *gather* in precisely this respect: they lack such a sublexical distributor.

(282) The students (all) gathered around the same fire. (sentence-internal ✓)

(283) Everyone gathered around the same fire. (sentence-internal ✓)

(284) The students elected the same president. (sentence-external only)

(285) Everyone elected the same president. (sentence-external only)

The hypothesis that the distributor contributed by *gather* is whole-set based derives the fact that sentence-internal *different* is incompatible with both kinds of collective predicates, while *same* is only incompatible with *elect*.

The compatibility between sentence-internal *same* and collective predicates like *gather* is problematic for the account in Barker (2007) because the distributivity inherent to sentence-internal *same* should make sentences like (282) and (283) above infelicitous.[28]

Finally, just as the landscape of distributors is typologically diverse, there seems to also be a variety of items with sentence-internal readings. I will only mention here the adjective *similar*, which has an intermediate position between *same* and *different*. Although its meaning is closely related to the meaning of *same*, its distribution is closer to the adjective *different*. For one thing, it requires an indefinite article and not a definite: *a/*the similar poem*. For another, just like plural *different* and unlike *same*, its sentence-internal reading is not licensed by *both*, e.g., *Both boys recited similar poems* can have only a sentence-external or a 'various'-type reading.[29]

7 Conclusion

The account of singular *different* proposed in this paper is the first compositional, unified account of deictic / sentence-external and sentence-internal readings. The account captures the (hypothesized) implicational universal that, if a language has an item with a sentence-internal reading under morphologically singular and semantically distributive quantifiers like *every / each*, then that item can also have a sentence-external reading. Various other properties of *different* are captured, including the close connection between sentence-internal readings and the scope of quantificational distributors and the differences between *different* and anaphoric items like *other* or pronouns (e.g., the absence / presence of WCO effects). Additional motivation for the account is provided by quantificational subordination and dependent indefinites in various languages.

The account of singular *different* generalizes to plural *different* and *same*, thereby opening a larger project of formally investigating the typology of quantificational distributors and distributivity-dependent items and the fine-grained contexts of evaluation needed to capture this typological variation.

The resulting analysis of *same* and *different* generalizes to sentence-internal readings in the scope of distributive quantification over times, e.g., *Linus read a different poem / the same poem every day* and *Linus took a different path / the same path each time he went for water*, or in the scope of distributively-interpreted pluralities of events, e.g., *Linus wrote and read different poems / the same poem(s)*. We only need to add two basic types, one for times and one for events,[30] and we will be able to distribute over a set of times or events stored in a plural info state just as we distribute over a set of individuals.

Acknowledgments

I am grateful to Scott AnderBois, Peter Alrenga, Daniel Altshuler, Pranav Anand, Rajesh Bhatt, Sandy Chung, Uriel Cohen Priva, Cleo Condoravdi, Sam Cumming, Michael Ellsworth, Donka Farkas, Jane Grimshaw, Junko Ito, Anubha Kothari, Sven Lauer, Marie-Catherine de Marneffe, Jim McCloskey, Armin Mester, Megan Moodie, Rick Nouwen, Roumyana Pancheva, Asya Pereltsvaig, Jessica Rett, Ivan Sag, Oana Săvescu, Roger Schwarzschild, Anna Szabolcsi, Luis Vicente, Matt Wagers and the audiences at WCCFL 27, the UC Berkeley

[28] I am indebted to Robert Henderson for this observation.

[29] When *both* appears in its floating quantifier guise, the acceptability of the sentence-internal reading seems to be improved, e.g., *They both recited similar poems*.

[30] See Muskens (1995) for a way to do this in a closely related framework.

S-Circle and Rutgers Colloquium series for comments and / or discussion and / or judgments. I am particularly indebted to Chris Barker, Jakub Dotlačil and an anonymous *Linguistics and Philosophy* reviewer for their detailed comments and suggestions for improvement, to Robert Henderson for bringing the close connection between sentence-internal singular *different* and *every / each* vs. *one by one* to my attention and various insightful conversations on related topics over the last three years, to the participants in the *Decomposing Quantification* seminar (Fall 2008) and Semantics B course (Winter 2009) at UC Santa Cruz for various examples, judgments and discussion, to Ede Zimmermann for his advice and support throughout this project and to Megan Moodie-Brasoveanu and Elena Brasoveanu for their support during the final stages of writing this paper. I am grateful for the financial support provided by an IHR fellowship (fall 2010, UC Santa Cruz) that enabled me to complete the paper much sooner than otherwise would have been possible. The usual disclaimers apply.

A Three Uses of *Different*, Cross-linguistically

A.1 Bulgarian

(1) Meri izrecitira *Garvanăt*. Sled tova, vsjako momče izrecitira (po) (edno) različno/drugo
Mary recited *Raven.the*. After that, every boy recited (DIST) (one) different
stihotvorenie.
poem.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(2) Vsjako momče izrecitira (edno) različno stihotvorenie.
Every boy recited (one) different poem
'Every boy recited a different poem.'[31]

(3) Momčetata izrecitiraha različni stihotvorenija.
Boys.the recited different.pl poems
'The boys recited different poems.'[32]

A.2 French

(4) Marie a récité *Le Corbeau*. Puis, chaque garçon a récité un autre poème / un
Maria HAS recited "The Raven". Then, every boy HAS recited an other poem /
poème différent.
a poem different.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(5) Chaque garçon a récité un poème différent.
Every boy HAS recited a poem different
'Every boy recited a different poem.'

(6) Les garçons ont récité des poèmes différents.
The.pl boys HAVE recited DE.pl poems different.pl
'The boys recited different poems.'

A.3 German

(7) Maria sagte *Der Rabe* auf. Dann sagte jeder Junge ein anderes Gedicht auf.
Maria said 'The Raven' PART. Then said every boy an other poem PART.

[31] This is also possible: *Vsjako momče izrecitira po edno različno stihotvorenie* (Every boy recited DIST one different poem).

[32] This is also possible: *Momčetata izrecitiraha po edno različno stihotvorenije* (Boys.the recited DIST one different poem).

'Mary recited "The Raven". Then, every boy recited a different poem.'

(8) Jeder Junge sagte ein anderes Gedicht auf.
Every boy said an other poem PART
'Every boy recited a different poem.'[33]

(9) Die Jungen sagten verschiedene Gedichte auf.
The boys said different poems PART
'The boys recited different poems.'[34]

A.4 Greek

(10) I Maria apingile *To Koraki*. Meta kathe aghori / ta aghoria apingil-e/an ena
The Mary recited 'The Raven'. Then every boy / the boys recited-3sg/pl
dhiaforetiko piima.
one different poem.
'Mary recited "The Raven". Then, every boy / the boys recited a different poem.'

(11) Kathe aghori apingile apo ena dhiaforetiko piima.
Every boy recited DIST(lit.:from) one different poem
'Every boy recited a different poem.'

(12) Ta aghoria apingilan dhiaforetika piimata.
The boys recited.pl different.pl poems
'The boys recited different poems.'

A.5 Hebrew

(13) meri diklema et ha-orev. ve-az kol yeled diklem šir axer.
Mary recited.3.sg.fem Acc DEF-raven. and-then every boy recited-3.sg.masc poem not-the-same.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(14) kol yeled diklem šir axer
every boy recited-3.sg.masc poem not-the-same
'Every boy recited a different poem.'

(15) ha-y(e)ladim diklemu širim šonim
DET-boys recited-3.pl poems different
'The boys recited different poems.'

A.6 Hindi

(16) Mary-ne 'The Raven' recite kii. phir har laRke-ne ek alag
Mary-Erg *The.Raven*.fem recite do.pfv.fem. then every boy-Erg a different poem.fem
kavita recite kii.
recite do.pfv.fem.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(17) har laRke-ne ek alag kavita recite kii
every boy-Erg a different poem.fem recite do.pfv.fem
'Every boy recited a different poem.'

(18) aRkoN-ne alag alag kavitaaeN recite kiiN
boys-Erg different different poems.fem recite do.pfv.fem.pl
'The boys recited different poems.'

[33]This is also possible: *Jeder Junge sagte ein eigenes Gedicht auf* (Every boy said an own poem PART).
[34]This is also possible: *Die Jungen sagten unterschiedliche Gedichte auf.* (The boys said different poems PART).

A.7 Hungarian

(19) Mari el-szavalta *A Hollo*-t. Aztan minden fiu el-szavalt egy mas verset.
Mari away-recite 'The Raven'-Acc. Then every boy away-recite an other poem.Acc.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(20) Minden fiu mas-mas verset szavalt el.
Every boy other-other poem.Acc recite away
'Every boy recited a different poem.'

(21) A fiuk mas-mas verseket szavaltak el.
The boys other-other poem.pl.Acc recite away
'The boys recited different poems.'

A.8 Romanian

(22) Maria a recitat *Corbul*. Apoi, fiecare băiat a recitat un alt poem.
Mary HAS recited *Raven.the*. Then, every boy HAS recited a different poem.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(23) Fiecare băiat a recitat cîte un alt poem.
Every boy HAS recited CÎTE a different poem.
'Every boy recited a different poem.'

(24) Băieţii au recitat poeme diferite.
Boys.the HAVE recited poems different.pl
'The boys recited different poems.'

A.9 Russian

(25) Mary pro-chita-la *Voron*. Potom kazhdyj mal'chik pro-chita-l drugoe stixotvorenie.
Mary pfv-read-pst.3s.fem *Raven*. Afterwards every boy pfv-read-pst.3s different poem.
'Mary recited "The Raven". Then, every boy recited a different poem.'

(26) Kazhdyj mal'chik pro-chita-l svoje stixotvorenie.
Every boy pfv-read-pst.3s own poem
'Every boy recited a different poem.'[35]

(27) Mal'chiki pro-chita-li raznye stixotvorenija.
Boys pfv-read-pst.3pl different poems
'The boys recited different poems.'[36]

A.10 Spanish

(28) María recitó *El Cuervo*. Después de eso, cada chico recitó un poema distinto / diferente.
Mary recite.pst.3s 'The Raven'. After DE that, each boy recite.pst.3s a poem distinct / different.
'Mary recited "The Raven". Then, every boy recited a different poem.'

[35] This is also possible: *Kazhdyj mal'chik prochital po stixotvoreniju* (every boy read DIST poem.Dat).
[36] See also Matushansky (2007).

(29) Cada chico recitó un poema distinto / diferente.
Each boy recite.pst.3s a poem distinct.masc.sg / different.masc.pl
'Every boy recited a different poem.'

(30) Los chicos recitaron poemas distintos / diferentes
The boys recited poems distinct.masc.pl / different.masc.pl
'The boys recited different poems.'

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