

Scalar additive operators in Transeurasian languages:

A comparison with Europe

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This article provides a survey of scalar additive operators such as Turkish *bile*, Japanese *sae*, Korean *cocha* ‘even’, etc. and related expressions in a sample of thirteen Transeurasian languages. The data is presented and interpreted against the background of evidence from European languages and with the question of shared grammaticalization in mind. It is shown that Transeurasian languages differ from European ones in their systems of scalar additive operators in at least two respects. First, all languages of our sample have “general additive operators”, i.e. additive operators which are used in both scalar and nonscalar contexts. Second, Transeurasian languages show patterns of distribution which differ systematically from those characteristic of European languages. The consequences of these findings for a general typology of scalar additive operators are considered.

Keywords: polarity, scale, scale reversal, scope, typology

1. Introduction¹

The term “scalar additive operator” is here used for elements such as English *even*, French *même*, Dutch *zelfs*, German *sogar*, etc. These operators indicate that a given focus value (or the proposition containing it) ranges higher on a scale of “pragmatic strength” than any alternative value under discussion (cf. Gast & van der Auwera 2010, 2011). An example is given in (1) (from Luke 8, 25):²

- (1) Who is this? He commands even the winds and the water, and they obey him!

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² New International Version, from <http://www.bibleserver.com>.

While the scalar additive operators of European languages are relatively well studied (see, e.g., König 1991; Gast & van der Auwera 2010, 2011 as well as references cited there), our knowledge of the syntactic and semantic properties of scalar additive operators in other parts of the world is quite limited, with East and Southeast Asia probably constituting the regions (beyond Europe) whose scalar additive operators have received most attention (e.g. Hole 2004 on Mandarin Chinese and Hole 2008 on Vietnamese). Among the Transeurasian languages, Japanese and Korean are rather well documented (e.g. Kuroda 1992; Nakanishi 2006, 2008 on Japanese; and Lee 2004, Han 2010 on Korean). For ‘major’ Transeurasian languages such as (Turkey) Turkish or Mongolian, some information can be found in reference grammars (e.g. Göksel & Kerslake 2005 for Turkish and Gaunt & Bayamandakh 2004 for Mongolian). No or little information is available on most of the “minor” Transeurasian languages, however.

In this contribution, we aim to provide a survey of the scalar additive operators found in a sample of eight Turkic languages³ as well as Khalkha Mongolian, Evenki, Udihe, Japanese, and Korean. Moreover, we will consider the most important contact languages of the central Asian area, i.e. Arabic, Persian, and Russian. By comparing Transeurasian languages to European ones, we aim to examine to what extent the generalizations made on the basis of European languages in Gast & van der Auwera (2011) apply to languages from another region as well.

³ Azeri, Gagauz, Kumyk, Turkey Turkish, Sakha, Tatar, Uzbek, and Uyghur, in alphabetical order.

While the present study largely supports these generalizations, it also brings to light differences between Transeurasian languages and European ones. First, all Transeurasian languages of our sample have “general additive operators”, i.e. operators which can be used in scalar as well as nonscalar contexts. Even though such operators are also found in European languages, they are highly characteristic of Transeurasian languages, both because of their pervasive distribution in the area and because of the striking morphological and structural similarities of the various operators found. A second difference concerns the “system architecture” of scalar operators. While European languages tend to make distributional differentiations according to the parameter “upward entailing” vs. “downward entailing”, Transeurasian ones seem to differentiate rather between operators with clause-internal scope and operators with clause-external scope. Even though these differences between Transeurasian and European languages can at least partly be related to universal tendencies (e.g. differences in word order, in particular, VO vs. OV), there is strong evidence that the patterns found in Transeurasian languages have resulted from parallel processes of evolution and thus represent instances of shared grammaticalization as defined by Robbeets & Cuyckens (this volume).

We start in Section 2 with introducing the type of expression under study, scalar additive operators. In Section 3, a distributional typology of scalar additive operators is introduced. Section 4 summarizes some of the observations made by Gast & van der Auwera (2011) on European languages as background information for the analysis of Transeurasian languages. Section 5 provides a summary of general additive operators in the sample of Transeurasian languages under

discussion as well as in the major contact languages Russian, Arabic, and Persian. Section 6 deals with a structural type of specialized scalar additive operator that we call “bimorphemic”, and that is found — with the possible exception of Turkish — in all Turkic and Tungusic languages of our sample as well as in Mongolian. In Section 7, the “monomorphemic” scalar additive operators of Turkish, Japanese, and Korean are surveyed. Section 8 addresses some implications of our findings for a general typology of scalar additive operators.

2. The semantics of scalar additive operators

According to Gast & van der Auwera (2011), scalar additive operators indicate that a given focus value occupies the highest position (or a position beyond a certain threshold value) on a scale of “pragmatic strength”, which is constituted by the “focus alternatives” made available in the discourse context (cf. Rooth 1985). For example, (1) can be assumed to form a scale with alternative propositions like those in (2) (cf. Gast & van der Auwera 2011 for details).

(2) $\left. \begin{array}{l} \text{The winds} \\ \text{His children} \\ \text{His dogs} \end{array} \right\} \text{obey him.}$

In (1), *even* occurs in an “upward entailing context”, i.e. in a context in which the degree of pragmatic strength exhibited by the “minimal proposition” (“The winds obey him”) correlates positively with the degree of strength of the entire proposition (which is coextensive with the minimal proposition in this case). This is different in “downward entailing contexts”, where the degree of strength of the minimal proposition correlates negatively with that of the sentence-level proposition, i.e. there is “scale-reversal”. Consider (3):

(3) If [you even $\left\{ \begin{array}{l} \text{look at} \\ \text{talk to} \\ \text{kiss} \end{array} \right\}$ my wife], you’ll get into trouble.

The minimal proposition of *even* in (3) is “You look at/talk to/kiss my wife”. In this case, the predicate *kiss* delivers the strongest proposition and can therefore combine with *even*:

(4) He not only talked to my wife, he even kissed her!

When the minimal propositions “You look at/talk to/kiss my wife” are embedded within a conditional clause, however, the ordering of focus values is reversed, and it is *look at* which gives rise to the strongest assertion at the sentence level (cf. (3) above).

While *even* is found both with and without scale reversal, many other operators are specialized for one type of context. For example, English *so much as* is only found in downward entailing contexts (note that this makes it a negative polarity item). It can therefore be used in (5) but not in (6).

(5) If you so much as look at my wife, you'll get into trouble.

(6) *So much as the winds obey him.

Similarly, there are operators that are only found in upward entailing contexts. However, the situation is a bit more complicated here than in downward entailing contexts. Let us consider German *sogar* for illustration. It is used in cases like (1) and (4) (cf. (7)), but not normally under negation (cf. (8)).

(7) *Sie haben meine Frau sogar geküsst!*

'You even kissed my wife!'

(8) **Aber nein! Ich habe sie nicht sogar angesehen!*

'That's not true! I didn't even look at her!'

Sogar is not generally ungrammatical in downward entailing contexts, but it is not sensitive to scale reversal when occurring in such contexts. It is simply interpreted against the background of the minimal proposition. Consider (9):

(9) *Wenn du meine Frau ansprichst, bekommst du Ärger.*

Wenn du sie aber sogar küsst, bringe ich dich um.

‘If you talk to my wife, you’ll get into trouble. If you even kiss her, I will kill you.’

As in (3), the scalar additive operator (here, *sogar*) occurs in the protasis of a conditional. The scale is not based on the sentence-level proposition, however, but only on the protasis. Therefore, “You kiss my wife” is (pragmatically) stronger than “You talk to my wife”. It is irrelevant to the interpretation of *sogar* that the minimal clause containing it functions as the protasis of a conditional. Put differently, *sogar* always takes local scope, while *auch nur* and similar operators can be assumed to take wide scope over some scale-reversing operator (see, for instance, Guerzoni 2003 for a scope-based analysis of German *auch nur*).

So far, we have distinguished two types of contexts, upward entailing ones and downward entailing ones. A further distinction needs to be made within the downward entailing contexts. The reason is that there are scalar additive operators that are only found in a subset of downward entailing contexts, i.e. with clause-mate negation. This applies to German *einmal* (literally ‘once’), as illustrated in (10):

(10) *Ich habe sie nicht einmal angesehen!*

‘I didn’t even look at her!’

The two distributional parameters introduced in this section — (i) upward entailing vs. downward entailing contexts and (ii) the presence vs. absence of clause-mate negation — provide the basis of our typology of scalar additive operators, which is outlined in the next section.

3. A distributional typology of scalar additive operators

3.1 Major types of scalar additive operators

As the discussion above has shown, at least three major types of scalar additive operators can be distinguished: (i) those that occur only in upward entailing contexts (German *sogar*), (ii) those that occur only in downward entailing contexts (English *so much as*, German *auch nur*), and (iii) those that can occur in either context (English *even*). Operators of type (i) will be called “BEYOND-operators”, those of type (ii) “BENEATH-operators”, and those of type (iii) “universal scalar additive operators”. The terms “BEYOND”- and “BENEATH”-operator are based on the position of the focus values on the relevant scales — at the top, or “beyond” a certain (contextually determined) threshold value, or at the bottom, i.e. “beneath” such a threshold value.

Within the class of BENEATH-operators, we can furthermore distinguish between those operators that require a local negation (German *einmal*) and those

that do not (English *so much as*, German *auch nur*). In addition, there are BENEATH-operators that cannot be used with local negation. An example of such an operator is provided by Greek *esto* (*ke*). As Giannakidou (2007: 43) remarks, “*Esto* looks like a curious P[olarity] I[tem] — bad in both positive and negative sentences ... [while] improv[ing] in polarity environments that are not negative, but nonveridical”.⁴ This is shown in (11) and (12):

(11) ?#I *Maria dhen efaje esto to pagoto.*

DET Maria NEG ate even the icecream

‘Maria didn’t even eat the ice cream.’ (Giannakidou 2007: 43)

(12) *An diavasis esto ke mia selida ap’ afto to*

if you.read even and one page P DEM DET

vivlio, kati tha mathis.

book something FUT you.learn

‘If you read even a single page of that book, you will learn something.’

(Giannakidou 2007: 66)

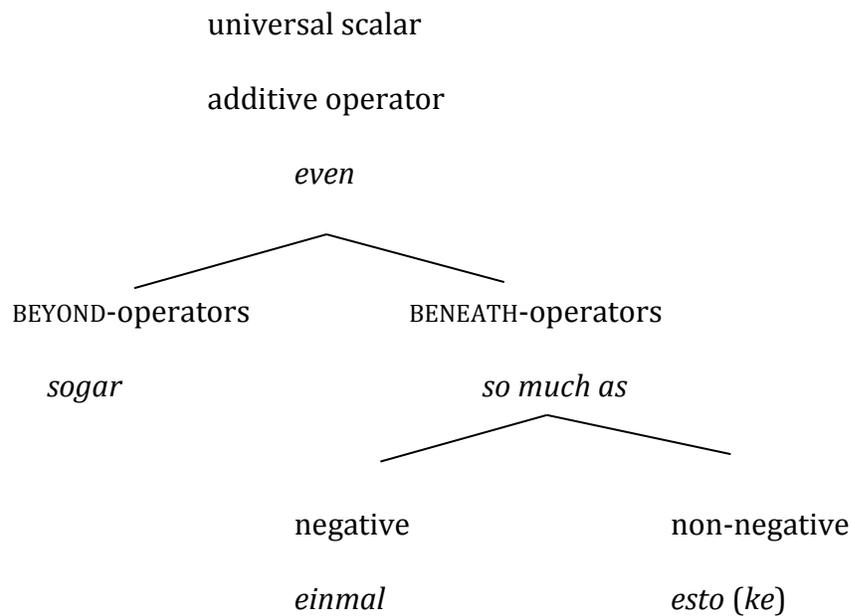
We can thus distinguish three types of BENEATH-operators: (i) operators like German *einmal*, which require a local negation, (ii) operators like Greek *esto*, which can only

⁴ The class of nonveridical sentences is not coextensive with the class of downward entailing contexts but largely overlaps with it. The differences are irrelevant to the typology presented here.

be used if there is no negation, and (iii) operators like German *auch nur*, which are compatible with, but do not require, negation.

Our typology can be summarized as shown in Figure 1.

Figure 1. Five types of scalar additive operators



Note that Figure 1 represents a “distributional” typology, insofar as it is based on types of contexts licensing the relevant operators. For example, *sogar* is not a type of *even*; but it is used in a set of contexts which form a subset of the contexts where *even* is used.

3.2 General additive operators

The typology introduced in Section 3.1 does not cover all types of operators that are of interest to a typological investigation of scalar additive operators. Some languages have additive operators that can be used in scalar as well as nonscalar contexts (i.e. covering the function of both *even* and *also*). In Gast & van der Auwera (2011), we have called such elements “general additive operators” (without, however, providing a detailed study of their semantic or syntactic properties). An example from Latin, which uses *et* in both scalar and nonscalar contexts, is given in (13).

(13) Latin

Fas est et ab hoste doceri.

right is also/even from enemy learn

‘It is rightful to learn even from an enemy.’ (Ovidius, *Metamorphoses* IV, 428)

Note that some expressions categorized as “general additive operators” by us cover an even broader range of functions. Often, they are also used as markers of coordination. For example, the “primary” function of Latin *et* is arguably that of coordination, and similar patterns of polyfunctionality can be observed in Transeurasian languages (cf. Section 5).

While the facts of English and many other European languages (e.g. French, Spanish) suggest that scalar and nonscalar operators can easily be differentiated (French *meme* vs. *aussi*, Spanish *aun* vs. *tambien*), this distinction turns out to be far from trivial if we look at other languages. For example, German *auch* has both scalar and nonscalar readings, but its interpretation is sensitive to the syntactic and prosodic properties of the relevant sentences. In general, *auch* can only have a scalar reading when it precedes the focus and when the latter is stressed. In (14) and (15), stress is marked by small caps.

(14) *Auch der DÜMMSTE könnte diese Frage beantworten.* (scalar)

‘Even the most stupid person could answer this question.’

(scalar presupposition: ‘Anyone can answer this question.’)

(15) *Der Dümme hat diese Frage AUCH beantwortet.* (nonscalar)

‘The most stupid person, too, answered the question.’

(existential presupposition: ‘Someone else answered the question.’)

As will be seen, the relation between the order of operator and focus, the placement of stress, and the interpretation of general additive operators allow for some generalizations in our comparison of European and Transeurasian languages (cf. Section 8.1).

4. Patterns of polysemy in European languages

As we have aimed to show in Gast & van der Auwera (2011), the patterns of polysemy found in European languages are *prima facie* somewhat unexpected. Our typology is based on two parameters, i.e. the “direction of entailment” (upward entailing vs. downward entailing) and the “presence or absence of local negation”. Let us assume that these parameters can be represented as features [\pm DE] (downward entailing) and [\pm NEG] (local negation). One might be led to expect that the distribution of operators directly mirrors the feature specifications of the relevant contexts. The three major types of context can be represented in terms of the features [\pm DE] and [\pm NEG], as shown in (16) ([- DE] and [+ NEG] are incompatible).

- | | | | |
|------|----|----------------------------------|-----------------|
| (16) | a. | upward entailing: | [- DE], [- NEG] |
| | b. | downward entailing/non-negative: | [+ DE], [- NEG] |
| | c. | downward entailing/negative: | [+ DE], [+ NEG] |

(16) suggests that context a. (upward entailing) is more similar to context b. (downward entailing/non-negative) than it is to context c. (downward entailing/negative). Accordingly, one might expect to find that contexts a., b., and c. form an implicational hierarchy or semantic map. In other words, one might expect

to find scalar additive operators that can be used in contexts a. and b., but not in context c. Moreover, there would be no operator that can be used in context a. and in context c. while not being used in context b. But this is not what we have found. Instead, it turned out that scalar additive operators are distributed in accordance with the semantic map shown in (17), where negative downward entailing contexts are closer to upward entailing ones than non-negative downward entailing contexts.

(17)	(i)	upward	(ii)	downward	(iii)	downward
		entailing	—	entailing	—	entailing
				negative		non-negative

Let us consider one example of an operator lending support to the semantic map in (17). The Czech operator *dokonce* is used in upward entailing contexts and in negative downward entailing contexts, but not in non-negative downward entailing contexts. This is illustrated by the examples in (18)–(20). Note first that *dokonce* is used both in upward entailing contexts and in the scope of negation (it should be mentioned that the presence of the “scalar negator” *ani* in (19) plays a role here; cf. Gast & van der Auwera 2011 for more information).

(18) Czech

Kdo to jen je, že dokonce odpouští hříchy?

who this only is COMP even forgives sins

‘Who is this? He even forgives sins?’ (V. Elšík, p.c.)

(19) *Není tady dokonce ani voda k napítí.*

NEG.EX there even not.even water PREP drink

‘There is not even water to drink.’ (V. Elšík, p.c.)

Dokonce can also be used in downward entailing contexts, e.g. in conditionals, but it is interpreted within the upward entailing context constituted by the protasis in this case, i.e. relative to the minimal clause containing it (cf. the discussion of German *sogar* in Section 2). Consider (20):

(20) *O tom, co oni dělají potají, je odporné dokonce mluvit.*

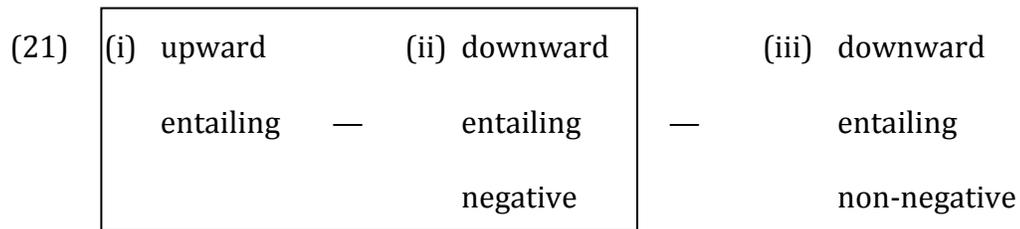
PREP that REL they do secretly is disgusting even speak

Literally: ‘It is shameful to even_{BEYOND}/*so much as speak about what

they do in secret.’ (V. Elšík, p.c.)

(20) presupposes that “speaking about” the topic in question constitutes a pragmatically strong value, in comparison to focus alternatives (e.g. “think about”). This is because *dokonce* is interpreted relative to the local clause “x (even) secretly

speaks about these things”, i.e. with narrow scope. In a German translation, we would therefore have to use *sogar*, rather than *auch nur*, and English *so much as* could not be used as a translational equivalent of *dokonce*, either. What this shows is that *dokonce* is a BEYOND-operator. Unlike German *sogar*, it can be used under negation, however. We have called *dokonce* and other operators of this type (e.g. Bosnian-Croatian-Serbian *čak* and Romanian *chiar*) “extended BEYOND-operators”. The distribution of an extended BEYOND-operator can be represented as is shown in (21).



Extended BEYOND-operators are so called because they are basically BEYOND-operators with a distribution that has been extended from upward entailing contexts to negative downward entailing contexts. The participle “extended” has both a synchronic and a diachronic interpretation. Synchronically, extended BEYOND-operators have a broader distribution than “canonical” BEYOND-operators like German *sogar*. From a diachronic point of view, they are even more literally “extended”, insofar as they seem to represent the result of a process of distributional extension.

5. General additive operators in Transeurasian languages

5.1 Polarity properties

All Transeurasian languages of our sample have general additive operators, i.e. operators that may have a scalar as well as a nonscalar interpretation. We will provide one example from each family within the group of Transeurasian languages, i.e. Turkic, Tungusic, Mongolian, Japanese, and Korean. Turkish uses *da~de* as a general additive operator:

(22) Turkish

Nonscalar

Onu ben de gördüm.

him I also/even saw

'I also saw him.' (Kornrumpf 1976, s.v. *da*)

(23) Scalar (upward entailing)

Onu babam da yapar.

it my.father also/even can.do

'Even my father can do that!' (Kornrumpf 1976, s.v. *da*)

Da~de can also be used in combination with negation, as in (24). It is apparently not normally used in non-negative downward entailing contexts with a scalar reading and wide scope, so (25) (where the specialized scalar additive operator *bile* is used) cannot be rendered with *da~de* (cf. also Section 7 on *bile*).

(24) Upward entailing

Köpekleri-de ona itaat etmiyor.

his.dogs-also/even him obedience do.not

‘His dogs, too/even his dogs do not obey him.’ (Diler Aba, p.c.)

(25) Downward entailing/non-negative: *bile*

Karanlık-ta-ki-ler-in gizlice yap-tık-ları-ndan söz etmek

dark-LOC-REL-PL-GEN secretly do-F.NMLZ-3PL.POSS-ABL word do

*bile/*de ayıp-tır.*

even/also shame-is

‘For it is shameful to even mention what they do in secret.’

(Eph. 5:12; *Turkish Bible*, from <http://www.bibleserver.com>)

Turkish *de~da* is highly polysemous or polyfunctional and is also used as a conjunction and discourse connective (cf. Göksel & Özsoy 2003; Göksel & Kerslake 2005: 101). A similar range of polyfunctionality is characteristic of all general additive operators discussed in this section. We will focus on the specific uses of interest to our investigation, i.e. scalar and nonscalar uses as additive focus

operators, but we should bear in mind that the operators under discussion cover an even broader range of functions than, for instance, Latin *et* (cf. Section 3.2).

The Tungusic language Udihe also has a suffix *da~de*, whose use as a general additive operator is illustrated in (26) and (27) (note that *da~de*, here glossed as ‘also/even’, is glossed as ‘FOC’ by Nikolaeva & Tolskaya 2001). Nikolaeva & Tolskaya (2001) do not provide a (scalar) example of this suffix within a non-negative downward entailing context of the type illustrated in (25).⁵

(26) Udihe

Nonscalar

Ag'a bi-de ηene-ze-mi.

brother me-also/even go-SBJV-1SG

‘Brother, I will also go.’

(Nikolaeva & Tolskaya 2001: 441)

⁵ *Da~de* is used in a closely related construction, however. It combines with conditional clauses, turning them into conditional-concessive ones:

(i) *ηala zawa-mi=da e-i ise*
hand take-INF=even/also NEG-2SG see

‘Even if you take it with your hands, you won’t see it.’

(I. Nikolaeva & M. Tolskaya, p.c.)

(27) Scalar (downward entailing/negative)

Taŋi-mi-de e-ini ñoni.

read-INF-also/even NEG-3SG can

‘He can’t even read.’

(Nikolaeva & Tolskaya 2001: 442)

The general additive operator of Khalkha Mongolian is realized as a voiceless alveolar affricate, here represented as *ch*. Its nonscalar use is illustrated in (28), its scalar use in an upward entailing context in (29).

(28) Khalkha Mongolian

Nonscalar

Bi ch irne.

I also/even will.come

‘I will also come.’ (Vietze 1988: 366)

(29) Scalar/upward entailing

Hüühed ch medhe.

child also/even knows

‘Even a child knows that.’ (Gaunt & Bayamandakh 2004: 79)

An example of a (scalar) use of *ch* in downward entailing contexts is given in (30) (negative) and (31) (non-negative).

(30) Scalar/downward entailing/negative

Nadad heg ch möngöbaihgüi.

to.me one also/even penny there.is.not

'I don't even have a penny.' (Gaunt & Bayamandakh 2004: 79)

(31) Scalar/downward entailing/non-negative

Bill John-ig algad-san ch gej bi itgehgüi.

Bill John-ACC slap-PST also/even that I do.not.believe

'(Bill is accused of murder, but) I do not believe that Bill even/so much as slapped John.' (D. Guntsetseg, p.c.)

Japanese uses the clitic *mo* as a general additive operator:

(32) Japanese

Nonscalar

Watashi=mo sore wo kikimashita.

I=also/even that TOP heard

'I also heard that.' (Vaccari 1967, s.v. *also*)

(33) Scalar (upward entailing)

Saru=mo ki-kara otiru.

monkey=also/even tree-from falls

'Even a monkey may fall from a tree.' (Nakanishi 2006: 4)

Mo is used in the scope of negation with a scalar reading as well (cf. (34)). It does not have scalar uses in non-negative downward entailing contexts, however (cf. (35)).

(34) Downward entailing/negative

gakusei-o hitori-mo mi-naka-tta.

student-ACC one.person-mo see-NEG-PST

'I did not see even a single student.' (Yoshimura 2009: 53)

(35) Downward entailing/non-negative

**gakusei-o hitori-mo mi-tara, kaeruyou itte-kudasai*

student-ACC one.person-mo see-if return say-IMP

'If he sees even a single student, please tell him to go home.'

(Yoshimura 2009: 53-54)

Finally, Korean uses the suffix *-to* as a general additive operator (cf. (36)). This operator can be used in combination with clause-mate negation, as in (37).

(36) Korean

Nonscalar

Mary-to o-ass-ta.

Mary-also/even come-PST-DECL

'Mary also/even Mary came.' (Lee 2004: 102)

(37) Scalar/downward entailing/negative

onul haksayng-i han-myeng-to o-cianh-ass-ta.

today student-NOM one-CLF-also/even come-NEG-PST-DECL

'Not even one student came.' (Chungmin Lee & Seongha Rhee, p.c.)

In non-negative downward entailing contexts, *-to* takes narrow scope and is interpreted as a (scalar or nonscalar) additive operator. (38) is thus only appropriate in a context in which the problem to be solved by John is particularly difficult:

(38) Scalar/downward entailing/non-negative (narrow scope)

John-i [i-mwuncey]_{Foc}-to phwul-myen,

John-NOM this-problem-also/even solve-if

swuhak swuep-ul tutcianhato tway.

math.class-ACC not.take can

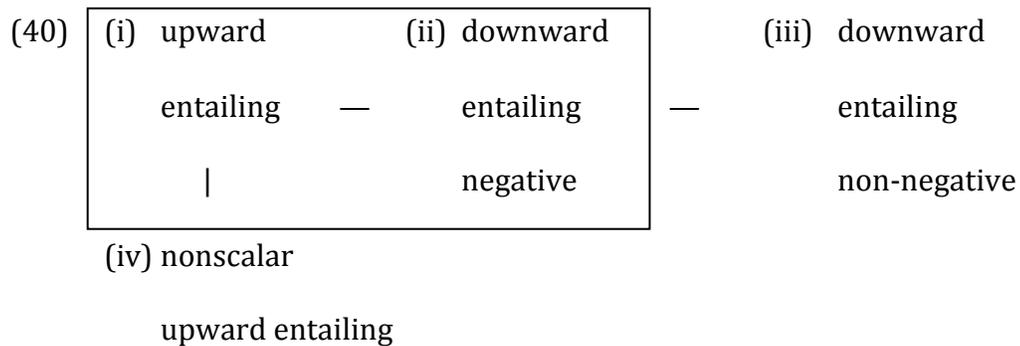
'If John solves even this problem, he can skip the whole math course.'

(Choi 2007: 292)

As has been seen, all of the general additive operators discussed in this section are used in at least two contexts, i.e. in upward entailing contexts and with clause-mate negation. Some of the operators — for instance, Japanese *mo* and Korean *to* — do not allow a BENEATH-reading in non-negative downward entailing contexts. Mongolian *ch* does seem to allow such uses. We do not have enough information on Udihe *da~de*. What we do know that it is used both in upward entailing contexts and with clause-mate negation. So far, our claim that upward entailing contexts are closer to negative downward entailing contexts than they are to non-negative ones is thus confirmed. All of the operators have either readings (i) and (ii) on the semantic map in (17), or they allow all of the readings (i), (ii), and (iii). We can characterize their distribution on a semantic map as shown in (39) and (40), where a fourth context type ‘nonscalar’ has been added. (39) corresponds to an operator like Mongolian *ch*, (40) to Japanese *mo* and Korean *to*.

(39)	(i) upward		(ii) downward		(iii) downward
	entailing	—	entailing	—	entailing
			negative		non-negative

(iv) nonscalar
upward entailing



5.2 A glance at contact languages and the question of shared grammaticalization

Given that Transeurasian languages have undoubtedly been exposed to a considerable amount of language contact, we will also have a look at the major contact languages Persian, Arabic, and Russian, without, however, going into much detail with respect to the exact polarity properties of the general additive operators. A rather typical instance of a general additive operator can be found in Persian, the most important southern neighbour of Central Asian languages, and a major donor language of the area. Like the elements illustrated in Section 5.1, the general additive operator of Persian, *ham*, follows its focus:

(41) Persian

Nonscalar

Târâ sib ham mixore.

Târâ apples also she.eats

'Tara also eats apples.' (Ganjavi 2007: 85)

(42) Scalar (upward entailing)

dar xâb-ham âvâz mixânad.

PREP sleep-even song he.sings

'He even sings in his sleep.' ('il chante jusque dans son sommeil')

(Lazard 1990, s.v. *ham*)

A general additive operator, though a less typical one, is also found in Russian. Even though Russian normally uses *takže* in nonscalar contexts and *daže* in scalar contexts, the particle *i* is also sometimes found with an additive reading. It is, however, highly restricted in this function (cf. Poljakova 2000) and not comparable to Persian *ham* or any of the other operators discussed above in terms of its distribution. The example in (43) has been taken from a dictionary.

(43) Russian

i tanzuet, ne tol'ko pojot.

also/even dances not only sings

'He not only sings, he also/even dances.' (Bielfeldt 1976, s.v. *i*)

The third major contact language, Arabic, does not have a general additive operator at all and distinguishes systematically between nonscalar *ayḍan* (cf. (44)) and *kaḍalik* on the one hand, and scalar *ḥattā* on the other. The latter element is used in upward entailing contexts (cf. (45)) as well as in combination with clause-mate negation (cf. (46)).

(44) Modern Literary Arabic

Nonscalar: *ayḍan*

wa-ʿanā ʿayḍan qad baʿattu ʿilay-ki lyawma

and-I also already sent to-you.F today

hadiyyata ʿīdi mīlādi-ki.

present birthday.GEN

‘And today I also sent you a birthday present.’ (Abu-Chacra 2007: 96)

(45) Scalar/upward entailing: *ḥattā*

māta n-nās-u ḥattā l-mulūku.

died the-people even the-kings

‘The people died, even the kings.’ (Abu-Chacra 2007: 53)

(46) Syrian Arabic

Scalar/downward entailing/negative

mā qdərət šuufa ḥattā

NEG I.could.see even

'I couldn't even see him.' (Stowasser & Ani 2004, s.v. *even*)

Fully fledged general additive operators like those discussed in this section are very rare in European languages. Even though Latin and Ancient Greek had such operators, very few examples can be found in the 40-language sample investigated by Gast & van der Auwera (2011), the most typical example probably being provided by Basque *ere*. Most Slavic languages have some correlate of Russian *i*, but as was seen above, this operator is not as widely distributed as, for instance, Turkish *da~de*. It is thus reasonable to say that the presence of general additive operators is a characteristic feature of Transeurasian languages.

To what extent this feature reflects a common genealogical origin is a question that we are not in a position to answer. In most languages, the operators are clearly native. In some cases there seems to have been borrowing, however. For instance, the general additive operator of Uzbek (*ham*) is suspiciously similar — in fact, phonologically identical — to the operator of Persian, the most important donor language of Uzbek for centuries. An example is given in (47):

(47) Uzbek (scalar use of *ham*, here with clause-mate negation)

hech *ham* *shunday* *emas.*

NEG even close NEG

‘It’s not even close.’ (Guérin 2005: 322)

Irrespective of whether the general additive operators of Transeurasian languages represent a family trait or a contact-induced innovation in each particular case, the presence of such operators in all languages of our sample is a strong indication that we are dealing with an example of shared grammaticalization. This impression is confirmed by a glance at the structural properties of the relevant operators (cf. Göksel & Özsoy 2003 for a detailed analysis of Turkish *da~de*). As can be gathered from the examples given in Section 5.2, all general additive operators found in the languages of our sample follow the focus. Another common feature seems to be that they are invariably unstressed — unlike the (nonscalar) additive operators of most European languages in postfocal position, e.g. French *aussi*, English *too*, Spanish *tambien*, etc. In fact, the general additive operators of Transeurasian languages are typically classified as clitics or even suffixes in grammatical descriptions.

By and large, postfocal additive operators in Transeurasian languages seem to have syntactic and prosodic properties comparable to those of prefocal additive particles of Germanic languages (remember that German *auch* is unstressed when preceding the focus, and that it is only in these cases that it may trigger a scalar presupposition, cf. Section 3.2). The difference in the ordering of operator and focus may obviously be related to the general word order properties of the languages in

question. The picture that emerges is that the OV-languages of our sample — the Transeurasian languages and Persian — all have general additive operators that follow their focus. The other languages under discussion either have no such operator at all (the SVO-language Arabic), or the relevant operator precedes the focus (as in Russian and German, which are both difficult to classify in terms of basic word order). We return to this question in Section 8.

Having identified a common denominator of the Transeurasian languages in the domain of scalar additive operators, we will now turn to the differences, i.e. the ways in which an unambiguously scalar presupposition can be triggered.

6. Bimorphemic scalar additive operators in Transeurasian languages

General additive operators are by definition ambiguous. It is therefore not surprising to see that all languages of our sample have some way of making a scalar reading explicit. There are basically two ways of doing so: (i) some (scalar) element is added to the general additive operator (a “bimorphemic” operator), or (ii) an alternative, explicitly scalar, monomorphemic operator is used instead of the general additive operator. We will start by discussing the first possibility in this section and turn to the second possibility in Section 7. We will first discuss the structural patterns available and then turn to the polarity properties of the relevant constructions.

6.1 Structural types of bimorphemic operators

Many Transeurasian languages use borrowed elements to make a scalar reading of a general additive operator explicit. The westernmost language of our sample, Gagauz, has borrowed *daži/daže* (< Russian *daže*) and *kär* (< Rumanian *chiar*). Unlike the native general additive operator *da*, the borrowed elements precede the focus, which is thus enclosed by the two operators, i.e, a scalar component (SCAL) and a general additive operator (GAO) forming a “bracket” around it ([SCAL FOC GAO]). An example is given in (48).

(48) Gagauz

Upward entailing

kär o da geldi.

even he also came

‘Even he came.’ (Gajdarzi & Baskakov 1973: 160/1)

Gagauz is of course quite exceptional (within Transeurasian languages) in exhibiting a borrowing from Rumanian, but the pattern illustrated in (48), here characterized as a “bracket structure”, is pervasively found in other Transeurasian languages as well. Most Turkic languages use an element derived from Arabic *hattā* (or Persian

hatta, itself a borrowing from Arabic) to specify a general additive operator as scalar. This is illustrated for Azeri, Kumyk, and Tatar in (49)–(51).

(49) Azeri

Hamy, hetta gocha-lar da kel-mish-ler.

all even old-PL also come-PRF-3PL

‘All came, even old men.’ (I. Nedjalkov, p.c.)

(50) Kumyk

Hatta ol da onda bar edi.

even he also there be was

‘Even he was there.’ (I. Nedjalkov, p.c.)

(51) Tatar

Ul gyna tegel, hetta sin de mony eshli al-myj-syn.

he only not even you also that do AUX-NEG-2SG

‘Not only he, even you cannot do that.’ (I. Nedjalkov, p.c.)

Note that the combination of some *hattā*-derived element with a postfocal general additive operator is also found in other (e.g. Caucasian) languages of the region, for instance in Lezgian, which combines *hatta* with the postfocal particle *-ni* ‘also, even’ (cf. Haspelmath 1997: 237 for examples).

Turkish also has an element *hatta* which can be combined with the general additive operator *da~de*. However, the construction seems to be less common than

in the other Turkic languages of our sample. This may be due to the fact that Turkish has developed a specialized (monomorphemic) scalar additive operator *bile* (originally ‘still’), which stands in a paradigmatic relation to *da~de*. Turkish *hatta* is mostly translated as ‘indeed’ and seems to have a discourse linking function. Göksel & Kerslake (2005: 516) treat it as a discourse connective which is used to “introduce a statement that reinforces the previous statement, usually by making an even more convincing point”. While a sentence like (52) is thus, under specific discourse conditions, probably approximately equivalent with the corresponding English *even*-sentence, the most natural way of translating (1) into Turkish is by using the scalar additive operator *bile* (which may also be combined with *hatta*).

- (52) *Hatta rüzgarlar da ona itaat eder.*
indeed the.winds also/even him obedience do
‘Indeed, even the winds obey him!’ (Aba Diler, p.c.)

The “bracket structure” involving some *hattā*-derived element can also be found in combination with general additive operators other than *da~de* within the Turkic languages. The general additive operator of Uyghur, *mu*, combines with *hetta* (cf. (53)), and the Persian borrowing *ham* of Uzbek can be combined with *hatto* (cf. (54)).

(53) Uyghur (upward entailing)

Bu ki-mu? U hetta shamalghi=mu buyruq qil-dighan.

this who-mu he even wind.DAT=mu order do-INDF.PST

‘Who is this? He commands even the wind.’ (M. Yakup, p.c.)

(54) Uzbek (downward entailing/negative)

Hatto men ham bil-may-man.

even I also know-NEG-1SG

‘Even I don’t know.’

(I. Nadjalkov, p.c.)

Note that Persian *hatta* also combines with the general additive operator *ham* (cf. (55)). The bracket structure of Uzbek may thus have been borrowed as a whole.

(55) Persian

hatta dar xâb-ham âvâz mixânad.

even PREP sleep-even song he.sings

‘He even sings in his sleep.’ (Aida Heshmati, p.c.)

Sakha, the easternmost Turkic language, uses a variety of elements for the expression of a scalar presupposition. First, there is a general additive operator *da*, which is illustrated in (56).

(56) Sakha

Kihi tī:nara da ihillibet.

person breathe also/even could.not.be.heard

‘Not even people’s breathing could be heard’ (B. Pakendorf, p.c.)

Moreover, there is a particle *dayani*, which appears to contain the general additive operator *da*. We have no information on the etymology of *dayani*, however. Its use is illustrated in (57).

(57) [Now we eat everything out of the bakery]

tardibappit dayani

we.do.not.grind even

‘We don’t even grind (grain).’ (B. Pakendorf, p.c.)

A third, apparently less common, element that is used with the function of a scalar additive operator is *onno:yor*,⁶ a comparative form of the demonstrative pronoun which occurs in a preverbal position in the four examples available to us. One of these examples is given in (58).

⁶ Brigitte Pakendorf, who kindly searched her corpus for uses of *onno:yor* as a scalar additive operator, only found two relevant examples, as against a dozen of examples with *da* or *dayani*.

- (58) *En ijitarin höp onno:yor haɣalar iné dieččiler.*
 2SG you.can.ask all.right even Sakha thus say.HAB
 ‘It’s all right for you to ask, but even Yakuts say that.’ (B. Pakendorf,
 p.c.)

A bracket structures of the type found in the other Transeurasian languages under discussion is sometimes found with (prefocal) *onno:yor* and (postfocal) *da*, as in (59).

- (59) Sakha
Kini onno:yor tigr-ga-da, ehe-ge-de bulta-nar
 he even tiger-DAT-CLT bear-DAT-CLT hunt-PRS.3SG
 ‘He even hunts bears and tigers.’ (I. Nedjalkov, p.c.)

So far, we have considered (Turkic) languages in which the scalar and the nonscalar operator form a “bracket” around the focus. A slightly different structure can be observed in (the Tungusic language) Evenki, where the positioning of the scalar element *moton* seems to be more variable. Like the Turkic languages considered above, Evenki allows the scalar operator to precede the focus (cf. (60)), but the opposite order is also found, as is illustrated in (61). While we have no specific information on the syntax of *moton*, the examples below seem to characterize it as a sentence-level element, rather than one member of a “bracket operator”.

(60) Evenki

Nungan moton amaka-l-a-da beyumet-chere-n.

he even bear-PL-INDF.ACC-CLT hunt-PRS-3SG

‘He even hunts bears.’ (I. Nedjalkov, p.c.)

(61) *Amaka-l-da moton nungan-man e-che-tyn ngele-vken-e.*

bear-PL-CLT even he-ACC NEG-PST-3PL fear-CAUS-PART.CONNEG

‘Even bears do not frighten him/her.’ (I. Nedjalkov, p.c.)

Yet another structure can be found in Khalkha Mongolian. The general additive operator *ch* may be followed by *hürtel*, originally a converb based on a root meaning ‘arrive’ (cf. (62)). *Hürtel* also means ‘until, as far as’, which is also the original meaning of Arabic *hattā*. This etymology is widely attested in other languages as well (e.g. Spanish *hasta*).

(62) Mongolian

Umar Mongol-d zaa ch хүrtel baydag.

northern Mongolia-LOC reindeer also/even even there.are

‘In northern Mongolia there is even reindeer.’ (Vietze 1988, s.v. *sogar*)

Note that *hürtel* can also be used on its own, i.e. without *ch*, as in (63).

(63) *Salhi us hürtel tüünii üg-ig daga-dag ter hen be?*
wind water even 3.GEN word.ACC follow-HAB DEM who Q

‘Who is that, whom even the wind and the water follow?’

(D. Guntsetseg, p.c.)

To summarize the constructions mentioned so far, we can distinguish three subtypes of bimorphemic scalar additive operators. They are illustrated in (64). Remember that “SCAL” stands for the explicitly scalar element that is added to the general additive operator.

- (64) a. [SCAL FOC-ADD] (e.g. Gagauz)
b. [(SCAL) FOC-ADD (SCAL)] (e.g. Evenki)
c. [FOC-ADD SCAL] (e.g. Khalkha Mongolian)

The combination of a general additive operator with some specifically scalar element seems to be widespread in the “Western” languages of our sample. This could be interpreted as another indication of shared grammaticalization having contributed to the considerable degree of uniformity observed in the languages under investigation. The more fine-grained subdivisions seem to reflect genealogical relatedness. In general, Turkic languages seem to prefer bracket structures of the type of (64a) (though this structure is apparently rare in Sakha, the northeastern “outlier” of the Turkic languages). Tungusic is apparently more flexible with respect

to the ordering of scalar operators relative to the focus (cf. (64b)). Khalkha Mongolian differs from the Turkic languages insofar as the scalar element normally seems to follow the focus (cf. (64c)). Obviously, these generalizations are very tentative and more fine-grained investigations are needed to (dis)confirm them.

The impression that family membership plays a role also emerges when we consider data from Japanese and Korean. These languages do not seem to have bimorphemic scalar additive operators but use monomorphemic elements which stand in a paradigmatic relation to general additive operators (cf. Section 7).

6.2 Polarity properties of bimorphemic operators

We are not in a position to offer an exhaustive overview of the polarity properties exhibited by the bimorphemic operators illustrated in Section 6.1. The discussion in this section will therefore be somewhat cursory. Unsurprisingly, all bracket operators are found in upward entailing contexts, and it is this type of context that is illustrated by most of the examples given in Section 6.1. At least some of the operators are also used in combination with clause-mate negation. Three relevant examples were provided in Section 6.1, i.e. (51) from Tatar, (54) from Uzbek, and (61) from Evenki. An example from Uyghur is given in (65).

- (65) *Hetta uning itliri=mu uninggha boysun-may-du.*
 hetta his dogs=mu him obey-NEG-3PL.PRS
 ‘Not even his dogs obey him.’ (M. Yakup, p.c.)

While there seem to be few, if any, restrictions on the use of bimorphemic operators in negative contexts, at least some of the operators under investigation cannot be used in non-negative downward entailing contexts. For example, Sakha *onno:yor ... -de* is not used in this type of context:

- (66) *En kini-ni (*onno:yor) körüster-gin-de, tuoh-da*
 that man-ACC (even) meet-COND-CLT anything-CLT
die-ge suoga.
 say-FUT NEG
 ‘Even if you meet this man, he will not tell you anything.’ (I. Nedjalkov, p.c.)

Evenki, by contrast, allows the use of *moton* in non-negative downward entailing contexts:

- (67) *Si nungan-man moton archa-mcha-s-da*
 you he-ACC even meet-SUBJ-2SG-CLT

nungan sin-du eya-val e-ta-n gun-e.
he you-DAT anything-CLT NEG-FUT-3SG say-PART.CONNEG

‘Even if you meet him/her, he/she will not tell you anything.’

(I. Nedjalkov, p.c.)

Even though we have to collect more data in order to determine the exact polarity properties of bracket operators, it seems to us that their distribution is not fundamentally different from that of general additive operators. Some operators seem to be found in upward entailing as well as negative downward entailing contexts, others in all types of (scalar) contexts under discussion. There seems to be no operator, however, which is used in upward entailing and non-negative downward entailing contexts while not being used in combination with clause-mate negation. The semantic map in (21) above is thus confirmed.

7. Monomorphemic scalar additive operators

As has been mentioned, Turkish has a post-focal scalar additive operator *bile*, which belongs to the same syntactic class as (the general additive operator) *da~de*. *Bile* and *da~de* are paradigmatic alternatives and do not normally co-occur. Examples of *bile* are given in (68) and (69).

(68) Turkish

upward entailing

Bunu bir çocuk bile anlayabilir.

this one child even could.understand

'Even a child could understand this.' (Göksel & Kerlake 2005: 331)

(69) downward entailing/negative

Ev-de bir tane bile fazla ampul yok.

house-LOC one piece even remaining bulb there.is.not

'There is not even one spare light bulb in the house.' (Göksel & Kerlake 2005: 276)

Bile is a genuine universal scalar additive operator, like English *even*. It is also used in non-negative downward entailing contexts, as was already illustrated in (25), repeated here as (70):

(70) Downward entailing/non-negative: *bile*

Karanlık-ta-ki-ler-in gizlice yap-tık-ları-ndan söz

dark-LOC-REL-PL-GEN secretly do-F.NMLZ-3PL.POSS-ABL word

*etmek bile/*de ayıp-tır.*

do even/also shame-is

'For it is shameful to even mention what they do in secret.'

(Eph. 5:12; *Turkish Bible*, from <http://www.bibleserver.com>)

A similar situation is found in Japanese and Korean. Japanese has a specifically scalar additive operator *sae* (probably related to a verb *soeru* meaning ‘to attach, add [tr.]’).⁷ It occupies basically the same structural position as *mo*. Kuroda (1992) provides the examples in (71) (for *mo*) and (72) (for *sae*; note that the case marker *o* would normally be omitted in these examples).

(71) Japanese

John wa Syntactic Structures o mo yonda.

John TOP Syntactic Structures ACC too read

‘John also read Syntactic Structures.’ (Kuroda 1992: 85)

(72) *John wa Syntactic Structures o sae yonda.*

John TOP Syntactic Structures ACC too read

‘John even read Syntactic Structures.’ (Kuroda 1992: 85)

Sae is also used under negation:

(73) *John wa Syntactic Structures o sae yom-ana-katta.*

John TOP Syntactic Structures ACC too read-NEG-PST

‘John did not even read Syntactic Structures.’ (Y. Iyieri, p.c.)

Sae is not used with weak local propositions in non-negative downward entailing contexts. (74) cannot therefore render the meaning of the intended English

⁷ We owe this information to Martine Robbeets.

translation. It could only have a locally strong interpretation, i.e. one in which reading one book is considered a remarkable achievement.

- (74) ?*John-ga hon-o is-satu-sae yonda-to-wa odoroit*a.
John-NOM book-ACC one-CLF-even read-COMP-TOP was.surprised
'I was surprised that John read even a single book.' (Y. Iyeri, p.c.)

Nakanishi (2006) and Yoshimura (2009) discuss the scalar additive operator *demo* in some detail. From a historical point of view, this operator seems to be composed of *mo* plus (a form of) the copula *de*, but from a synchronic point of view the operator can be classified as monomorphemic. Nakanishi (2006) provides the (idiomatic) example in (75), which instantiates an upward entailing context.

- (75) *saru-demo ki-kara otiru*.
monkey-even tree-from falls
'Even a monkey (can) fall(s) from a tree.' (Nakanishi 2006)

Demo in the scope of clause-mate negation is illustrated in (76).

- (76) *John-wa hon A-(de)mo yom-ana-katta*.
John-TOP book A-even read-NEG-PST
'John did not even read book A.' (Nakanishi 2006: 142)

According to Nakanishi (2006), *demo* cannot normally be used in (locally) non-negative contexts. Here, a combination of *demo* and *dake* — the latter element meaning ‘only’ when standing by itself — is regularly used:⁸

(77) [*Itiban kantanna mondai*]_{Foc}{*??-demo/-dake-demo*}

most easy question{-even/-only-even}

toi-ta-ra, A-o mor-aeru.

solve-PST-if A-ACC get-can

‘If I solve even the easiest question, I can get an A.’ (Nakanishi 2006)

What we have, thus, is (i) three postfocal additive operators that are used in upward entailing contexts and in the scope of local negation (*mo, sae, demo*; but see footnote 8), and (ii) a ‘composite’ operator *dake-demo* that is used in non-negative downward entailing contexts only. The distribution of these operators is shown in (78):

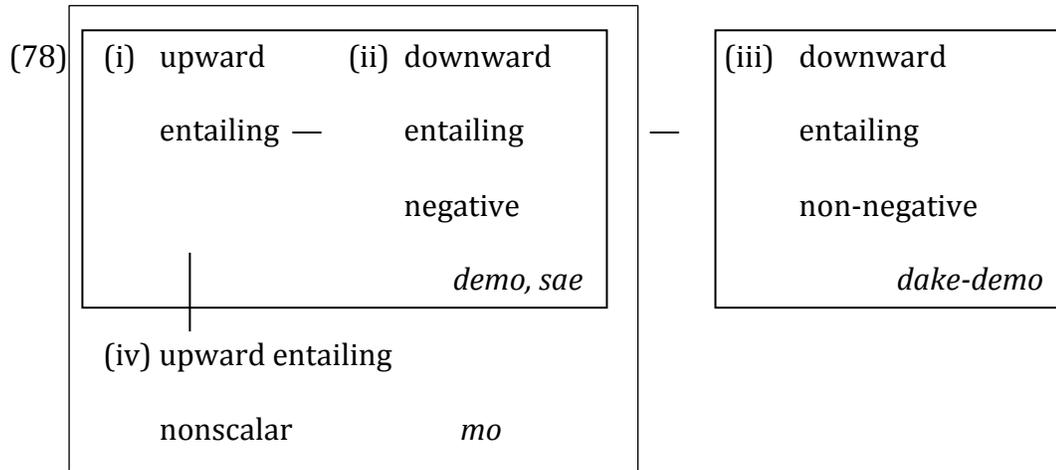
⁸ According to Yoshimura (2009: 55), both *mo* and *demo* are used in non-negative downward entailing contexts in combination with a numeral meaning ‘one’:

(i) *ichipeeji-mo/-demo kai-tara tani-o ageru*

one.page-too/even write-if credit-ACC give

‘If you write even a single page, I will give you credits.’ (Yoshimura 2009: 55)

We do not know to what extent the lexical content of the focus has an impact on the acceptability of scalar additive operators. Moreover, we noticed that there is considerable inter-speaker variation in acceptability judgements. This topic requires more investigation.



The situation found in Korean is largely parallel to that observed in Japanese. As pointed out in Section 5, Korean *-to* is used in both scalar and nonscalar contexts. An example with local negation is given in (79). *To* is not, however, used in non-negative downward entailing contexts with wide scope (cf. (38) above). This distribution is similar to that of Japanese *mo*.

(79) Korean

onul haksayng-i han-myeng-to o-cianh-ass-ta.

today student-NOM one-CLF-even come-NEG-PST-DECL

‘Not even one student came.’ (Chungmin Lee & Seongha Rhee, p.c.)

There are at least two specifically scalar additive operators in Korean, i.e. *mace* and *cocha*. *Mace* might be related to a verbal stem *mAc-* ‘reach, encounter’, or perhaps to

mAch- ‘finish’, and *cocha* apparently derives from a verb meaning ‘follow’.⁹ According to Han (2010), there is a subtle difference between these operators, but both of them qualify as rough equivalents of English *even*. The names *Best* and *Good* in (80) and (81) are intended as descriptive labels, i.e. as standing for the best student in class and for a good one, respectively.

(80) *Best-mace sihem-ey tteleci-ess-e.*
 Best-even exam-DAT fail-PST-DECL
 ‘Even Best failed the exam.’ (Han 2010: 293)

(81) *Good-cocha sihem-ey tteleci-ess-e.*
 Good-even exam-DAT fail-PST-DECL
 ‘Even Good failed the exam.’ (Han 2010: 293)

Both of these operators are also used under negation:

(82) *Chelswu-mace Mica-lul an-coaha-n-ta.*
 Chelswu-even Mica-ACC NEG-like-PRS-DECL
 ‘Even Chelswu does not like Mica/Not even Chelswu likes Mica.’ (Han 2010: 297)

⁹ We owe this information to Seongha Rhee.

(83) *Changswu-cocha o-cianh-ass-ta.*

Changswu-even come-NEG-PST-DECL

'Even Changswu did not come/Not even Changswu came.' (Han 2010: 299)

For non-negative downward entailing contexts, there is, as in Japanese, a “specialized” operator, *-ilato*, with the first vowel being deleted if it follows another vowel. The use of this operator in a non-negative downward entailing context is illustrated in (84) (the original has *-irato* instead of *-ilato*, but we stick to the use of <l> for consistency).

(84) *han salam-ilato o-myen malha-y*

one person-even come-COND say-END

'Tell me if even one person shows up.' (Lee 2003: 15)

The operator illustrated in (84) contains a copula (*i-*) in initial position and the general additive operator *-to* at the end. It originally had a concessive meaning, which explains why *-ilato* can sometimes give rise to a scalar implicature in upward entailing contexts, even though it is basically a BENEATH-operator (cf. (85) and (86), from Han 2010: 301). In common (non-modal) contexts, *-ilato* cannot be used as a scalar additive operator, as far as we know.

(85) *I il-un papo-lato ha-lswuiss-ta.*
 this work-TOP blockhead-even do-can-DECL

‘Even a blockhead can do this.’

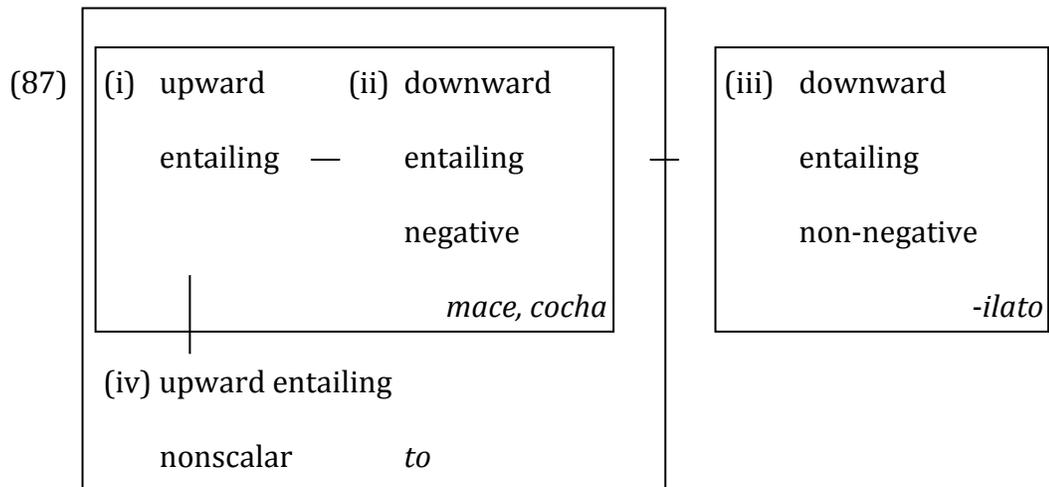
(‘Even though *x* is a blockhead, *x* can do this.’) (Han 2010: 301)

(86) *Ikes-un chencay-lato phwu-lswuep-ta.*
 this-TOP genius-even solve-cannot-DECL

‘Even a genius cannot solve this.’

(‘Even though *x* is a genius, *x* cannot solve this.’) (Han 2010: 302)

The distribution of the Korean elements discussed above can accordingly be represented as shown in (87).



8. Some typological implications

We will now consider what conclusions the data from Transeurasian languages allow us to draw with respect to more general (typological) questions. We will consider two noteworthy features, (i) the existence of general additive operators in all Transeurasian languages under investigation as well as the high degree of “homogeneity” in their structural properties, and (ii) the patterns of polysemy found in the relevant languages.

8.1 General additive operators

All Transeurasian languages of our sample have been shown to have general additive operators. Moreover, these general additive operators exhibit a homogeneous structural behavior and have a rather rigid syntax, insofar as they always follow their focus. Another feature that they share is that they cannot carry stress. This latter feature is the only one that (the general additive operators of) Transeurasian and European languages have in common. Remember that German *auch* can receive a scalar interpretation only when it precedes the focus and when it is unstressed, while the focus carries main stress (cf. Section 3.2). The same generalization applies to other comparable operators (e.g. Dutch *ook*). In fact, European languages seem to allow scalar readings for any type of focus operator — including the specialized scalar ones — only in this particular prosodic

configuration. We can thus make the (tentative) generalization in (88), which applies to European and Transeurasian languages alike:

- (88) Additive focus operators can only have a scalar reading when the focus is stressed.

The requirement of the focus carrying main stress does not apply to many nonscalar additive operators. For instance, English *too*, Spanish *tambien*, French *aussi* attract stress. Thus, there seems to be a direct connection between stress and the availability of scalar readings. This connection can be explained by assuming that the type of scalar implicature associated with focus operators is an utterance-level property, rather than part of the meaning of a specific (scalar additive) operator. Krifka (1995) has argued that there is a type of illocutionary operator that expresses “emphatic focus” or “emphatic assertion”. In emphatic assertions, the focus value is implied to be particularly unlikely (in terms of our analysis, we could say that it is “pragmatically strong”):

The function of emphatic focus is to indicate that the proposition that is actually asserted is *prima facie* a particularly unlikely one with respect to the alternatives. This meaning component can be made explicit with particles like *even* or idiomatic constructions like *out of all persons*. Let us assume that emphatic prosody indicates a particular type of assertion, emphatic assertion. (Krifka 1995: 227)

According to this point of view, the scalar implicature is primarily evoked by stress, and lexical operators like *even* are (sometimes redundantly) used to make it explicit (i.e. to disambiguate where necessary). In fact, scalar utterances can also be made without a focus operator, as in Fauconnier's (1975) "quantificational superlatives", to which Krifka (1995) refers:

(89) John would distrust ALBERT SCHWEITZER!

If scalar presuppositions are (phonologically realized) utterance-level properties, and scalar additive operators merely provide a way of making them explicit, we can explain the connection between stress and scalar implicatures that emerges from our data: Stress is essential, the operator is an additional element ruling out alternative (especially nonscalar) readings.

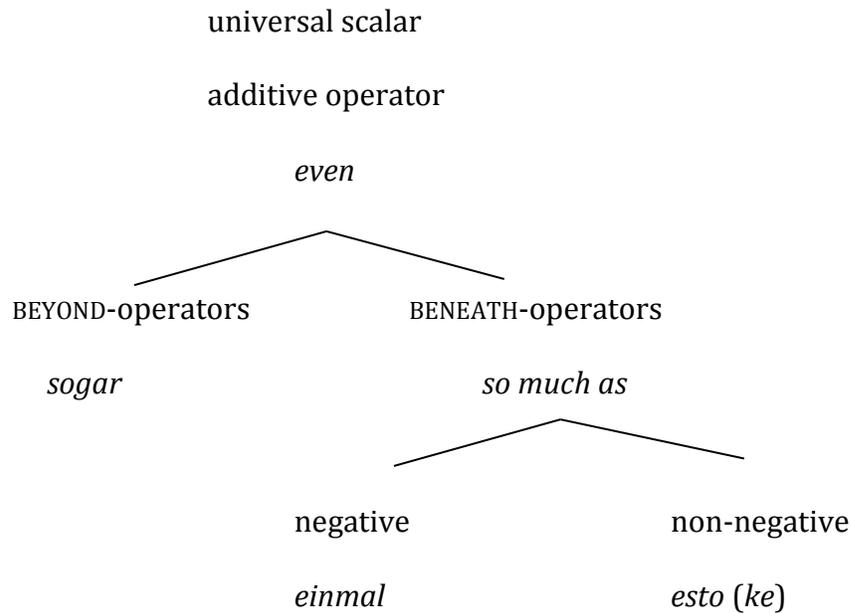
If the requirement of focus stress is the invariant in the distribution of scalar additive operators, we can expect to find systematic correlations between basic word order and the ordering of focus and scalar operators. The exact format of such correlations in a broader sample of languages remains to be determined. For the languages compared in this study, it is rather simple: In European languages, additive operators with a scalar reading precede the focus, while in Transeurasian languages they follow the focus. Given the existence of "bracket operators" as discussed in Section 6, it is perhaps more correct to rephrase the generalization as follows: If the focus of a sentence with "emphatic focus" is accompanied by some

additive operator with a scalar reading, then at least a part of that operator precedes the focus. The reverse generalization can be made for Transeurasian languages. We can obviously conjecture that this observation can be generalized from European to VO-languages, and from Transeurasian to OV-languages, but we have not tested this hypothesis yet (note that such a generalization will have to be probabilistic anyway).

8.2 Patterns of polysemy and context classifications

A second implication of the data considered in this study concerns the typology of scalar additive operators as proposed in Gast & van der Auwera (2011). Recall from Section 3 that this typology is based on two parameters, i.e. the “direction of entailment” and the “presence or absence of local negation”. It is repeated in Figure 2:

Figure 2. Five types of scalar additive operators



The typology shown in Figure 2 is hierarchically ordered and partitions scalar additive operators according to the direction of entailment first, and then makes an additional distinction according to the presence or absence of negation. This typology was motivated by the fact that most of the operators found in European languages could be assigned to one of the five classes emerging from it. We have pointed out, however, that there are also operators (in European languages) that do not fit into the scheme shown in Figure 2. We have called these operators “extended BEYOND-operators” (cf. the discussion of Czech *dokonce* in Section 4). Given that extended BEYOND-operators seem to be relatively rare in the languages of Europe, we considered them to be a “minor”, perhaps “transitional” type. The data from

Transeurasian languages, however, teach us that operators which can be used in (i) upward entailing contexts and (ii) negative downward entailing contexts while not being used in (iii) non-negative downward entailing contexts are not rare at all. Accordingly, they should have a place of their own in a typology of scalar additive operators.

In Gast & van der Auwera (2011), we noticed this complication already and therefore considered a typology based on scope, which is more flexible with respect to the types that it allows, as it is not based on hierarchically ordered features. However, we were (and still are) hesitant to reduce the semantic variation in the domain of scalar additive operators to differences in scope interaction. Especially if we want to take historical developments into account, it seems to us that both lexical content and scope behavior should be reflected in a typology of scalar additive operators. We would therefore like to stick to a typology based on distributional properties. Still, the system as shown in Figure 2 needs to be revised.

One way of accommodating the facts from Transeurasian languages is to distinguish two types of (orthogonal) context features that both relate to “pragmatic strength”: (i) the “pragmatic strength” of the “minimal proposition” or “minimal scope domain”/MSD (the “local [scope] domain”, in terms of Gast & van der Auwera 2011: 16), and (ii) the “pragmatic strength” of the “local proposition”/LP, i.e. the proposition denoted by the minimal clause containing the scalar additive operator and the focus as well as any other scope-bearing element. Let us consider some examples for illustration. In a sentence like (90), both the minimal scope domain (MSD) and the local proposition (LP) are strong:

(90) Even [_{LP}[_{MSD} [the Pope]_F congratulated me]].

This is different in (91):

(91) [_{LP} Not even [_{MSD} [my mother]_F congratulated me]].
 [strong [weak]]

The minimal scope domain of (91) is weak, as “my mother congratulated me” is not a particularly strong statement (under normal circumstances). The local proposition (“My mother did not congratulate me”), by contrast, is strong, due to scale reversal caused by the negation (hence, *even* is licensed). Finally, in (92) both the minimal scope domain and the local proposition are weak. The utterance meaning is strong due to scale reversal:

(22) If [_{LP} [_{LD} you even look at my wife]], you’ll get into trouble.
 [[weak [weak]] strong]

We can now combine the strength of the local proposition and the strength of the minimal scope domain as shown in Table 1.

Table 1. Combining the strength of the local proposition and that of the focus value

local proposition	strong		weak
minimal scope domain	strong	weak	
	Even the Pope congratulated me.	Not even my mother congratulated me.	If you even look at me, you'll get into trouble.

Table 1 can be translated into a semantic map as shown in (93):



The semantic map in (93) is based on features. Unlike in the (unsuccessful) attempt in (17), similarity in feature specifications and proximity on the map go hand in hand.

The semantic map shown in (93) allows us to distinguish six types, all of which have equal status. These types are summarized in Table 2, with one example for each type.

Table 2. Six types of focus operators

	LP: strong MSD: strong	LP: strong MSD: weak	LP: weak MSD: weak
1	German <i>sogar</i>		
2	Japanese <i>sae</i>		
3		German <i>einmal</i>	
4		English <i>so much as</i>	
5			Japanese <i>dake-demo</i>
6	English <i>even</i>		

If we consider systems of Transeurasian languages, it turns out that the distributional space is mostly partitioned in such a way that there is some operator of type 2 and some operator of type 5. In European languages, by contrast, there are often operators of type 1 and operators of type 4. Even languages that have a universal scalar additive operator (like English *even*) often have a type-4 operator as well (e.g. English *so much as*; cf. also Spanish *aun/siquera*). Operators of type 1 and type 6 are more or less complementarily distributed, however (cf. Gast & van der Auwera 2011 for a historical explanation of this observation).

The observation that European languages typically have <1,4>-systems while Transeurasian languages mostly seem to have <2,5>-systems can provide the basis

for a (somewhat bold) hypothesis concerning the relationship between lexical content and scope. The semantic map displayed in (93) is more or less neutral with respect to the role of scope and/or lexical content. However, the context features distinguished here can be regarded as either lexical or syntactic properties of the relevant operators. The feature “MSD” can be interpreted as a lexical feature. For instance, the value “MSD: weak” is often found in operators that contain a restrictive focus particle like *only* or *just* (cf. German *auch nur*). The feature “LP” seems to be more scope-related; it concerns the ability of an operator to take clausal scope, irrespective of where it is located syntactically. If this is right, the generalization that European languages tend to have <1,4>-systems whereas Transeurasian languages tend to have <2,5> systems can be rephrased as follows: European operators are often specified for the “strength” of the minimal proposition and thus carry a relatively high amount of lexical information. They tend to distinguish “MSD: strong”-operators (type 1) from “MSD: weak”-operators (type 4). Transeurasian languages, by contrast, primarily seem to make a distinction between contexts with the feature “LP: strong” (type 2), as opposed to those with a feature “LP: weak” (type 5). If this hypothesis turns out to be correct, the question of whether sentence semantic variation in the interpretation of scalar additive operators is a matter of lexical variation or of scope properties — a major topic in the syntactic and semantic analysis of scalar additive operators (cf. Gast & van der Auwera 2011 for an overview), could appear in a new light, and the matter may turn out to be a parameter of crosslinguistic variation. At this point, this hypothesis is of course bold

speculation and it remains to be seen to what extent it is supported by the investigation of more languages.

Abbreviations

ABL	ablative
ACC	accusative
ADD	additive
AUX	auxiliary
CAUS	causative
CLF	classifier
CLT	clitic
COMP	complementizer
COND	conditional
CONNEG	connegative
DAT	dative
DE	downward entailing
DECL	declarative
DEM	demonstrative
DET	determiner

END	sentence ender
EX	existential
FOC	focus
F	feminine
FUT	future
GEN	genitive
HAB	habitual
IMP	imperative
INDF	indefinite
INF	infinitive
LD	local domain
LOC	locative
LP/LP	local proposition
NEG	negation
NMLZ	nominalizer
NOM	nominative
PREP	preposition
PART	partitive
PRF	perfect
PL	plural
LP	local proposition

POSS	possessive
PRS	present
PST	past
Q	question
REL	relative
SCAL	scalar
SG	singular
SBJV	subjunctive
TOP	topic
1, 2, 3	first, second, third person

References

- Abu-Chacra, Faruk. 2007. *Arabic: An Essential Grammar*. London: Routledge.
- Bielfeldt, Hans H. 1976. *Russisch-deutsches Wörterbuch*. 13th ed. Berlin: Akademie-Verlag.
- Choi, Jinyoung. 2007. Free Choice and Negative Polarity: A Compositional Analysis of Korean Polarity Sensitive Items. PhD Dissertation, University of Pennsylvania.
- Fauconnier, Gilles. 1975. Polarity and the scale principle. *Chicago Linguistic Society* 11: 188–199.

- Gajdarzi, Gavril A. & Baskakov, Nikolaj A. 1973. *Gagauzsko-russko-moldavskij slovar'* [Gagauz-Russian-Moldavian dictionary]. Moscow: Sovetskaja Entsiklopedija.
- Ganjavi, Shadi. 2007. Direct Objects in Persian. PhD Dissertation, University of Southern California.
- Gast, Volker & van der Auwera, Johan. 2010. Vers une typologie des opérateurs additifs scalaires. In *Approches de la Scalarité*, Pascale Hadermann & Olga Inkova (eds.), 226–247. Genève: Droz.
- Gast, Volker & van der Auwera, Johan. 2011. Scalar additive operators in the languages of Europe. *Language* 87(1): 2–54.
- Gaunt, John & Bayarmandakh, L. 2004. *Mongolian. A Course Book*. London: Routledge.
- Giannakidou, Anastasia. 2007. The *landscape* of EVEN. *Natural Language and Linguistic Theory* 25: 39–81.
- Göksel, Asli & Özsoy, A. Sumru. 2003. *dA*, a focus/topic associated clitic in Turkish. *Lingua* 113(11): 1143–1167.
- Göksel, Asli & Kerslake, Celia. 2005. *Turkish: A Comprehensive Grammar*. London: Routledge.
- Guérin, Hervé. 2005. *An Uzbek Glossary*. <<http://www.uzbek-glossary.com/>>
- Guerzoni, Elena. 2003. Why even ask? PhD Dissertation, Massachusetts Institute of Technology.
- Han, Jeonghan. 2010. The cases of the more informative proposition triggers in Korean, focussing on the Korean auxiliary particles *-mace*, *-cocha*, *-lato*, *-na*. *Korean Journal of Linguistics* 35(1): 291–319.

- Haspelmath, Martin. 1997. *A Grammar of Lezgian*. Berlin: Mouton de Gruyter.
- Hole, Daniel. 2004. *System and theory behind cái, jiù, dōu and yě*. London & New York: RoutledgeCurzon.
- Hole, Daniel. 2008. EVEN, ALSO and ONLY in Vietnamese. In *Interdisciplinary Studies on Information Structure (ISIS)* 8, Shinichiro Ishihara, Svetlana Petrova & Anne Schwarz (eds.), 1-54. Universität Potsdam: Universitätsverlag Potsdam.
- König, Ekkehard. 1991. *The Meaning of Focus Particles: A Comparative Perspective*. London: Routledge.
- Kornrumpf, Hans-Jürgen. 1976. *Langenscheidts Universal-Wörterbuch Türkisch*. München: Langenscheidt.
- Krifka, Manfred. 1995. The semantics and pragmatics of polarity items. *Linguistic Analysis* 25: 1–49.
- Kuroda, S.-Y. 1992. Remarks on the notion of subject with reference to words like *also, even, or only*. In *Japanese Syntax and Semantics: Collected Papers*, S.-Y. Kuroda (ed.), 78–113. Dordrecht: Kluwer. [Originally published in 1969 in *Annual Bulletin* 3: 111–129. Research Institute of Logopedics and Phoniatics, University of Tokyo.]
- Lazard, Gilbert. 1990. *Dictionnaire persan-français*. Leiden: Brill.
- Lee, Chungmin. 2003. Negative polarity items and free choice in Korean and Japanese: A contrastive study. *Icwung enehak (Bilingualism)* 22: 1–48. Korean Society of Bilingualism.
- Lee, Yong-cheol. 2004. *The Syntax and Semantics of Focus Particles*. PhD Dissertation, Massachusetts Institute of Technology.

- Nakanishi, Kimiko. 2006. *Even, only, and negative polarity in Japanese*. In *The Proceedings of the 16th Semantics and Linguistics Theory (SALT 16)*, 138–155. Ithaca: CLC Publications.
- Nakanishi, Kimiko. 2008. Scope of *even*: A crosslinguistic perspective. In *The Proceedings of the 38th Conference of the North East Linguistic Society (NELS 38)* 2: 179–192.
- Nikolaeva, Irina A. & Tolskaya, Maria. 2001. *A Grammar of Udihe*. Berlin: Mouton de Gruyter.
- Poljakova, Svetlana. 2000. Fokusdomäne von Gradpartikeln im Deutschen und Russischen. *Linguistik Online* 6(2). <http://www.linguistik-online.com/2_00/poljakov.html>
- Rooth, Mats. 1985. Association with Focus. PhD Dissertation, University of Massachusetts at Amherst.
- Stowasser, Karl. & Ani, Mouhktar. 2004. *A Dictionary of Syrian Arabic*. Washington: Georgetown University Press.
- Vaccari, Oreste. 1967. *Vaccari's Standard English-Japanese dictionary*. Tokyo: Vaccari's Language Institute.
- Vietze, Hans-Peter. 1988. *Wörterbuch Mongolisch-Deutsch*. Leipzig: Verlag Enzyklopädie.
- Yoshimura, Keiko. 2009. Complexity of Polarity Sensitivity. *The Annals of Gifu Shotoku Gakuen University* 48: 49–59.