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A ROLE OF LEXICAL QUANTIFIERS*

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Partee 1995 claims that lexical quantifiers quantify over either the event or other verbal arguments. In this paper, I show that data from a lexical quantifier *saai* in Hong Kong Cantonese indicate that *saai* is associated with both the event and the verbal arguments in the argument structure. I argue that *saai* is an anti-quantifier which marks the event as the distributee having a scope under the distributor. Several properties of *saai*, namely the distributive interpretation of *saai*, the requirements of divisibility and definiteness/specificity of the elements associated with *saai*, the requirement of telicity of the predicate, and the constraint on aspect markers, can be accounted for by the analysis proposed in this paper.

1. Introduction[1]

One way to understand the nature of quantifiers is to see how they are classified on the basis of their differences in terms of morphology and semantic content. Quantifiers in natural languages can be grouped into two classes: D-quantifiers and A-quantifiers, where 'D' is for determiner and 'A' for the cluster of adverbs, auxiliaries, affixes, and argument-structure adjusters (Partee, Bach, & Kratzer 1987). As pointed out by Partee 1995, A-quantifiers are not homogeneous and can be further classified. She suggests that A-quantification can be further divided into two major classes: true A-quantification and lexical quantification. The so-called true A-quantification is associated with adverbs of quantification along the lines in Lewis 1975 and Heim 1982. With regard to lexical quantification, an operator with some quantificational force is applied directly to a verb at a lexical level, with morphological, syntactic, and semantic effects on the argument structure of the predicate.

Partee 1995 claims that all lexical quantifiers operate on the argument structure of the verb, i.e. that they can quantify over either the event or other verbal arguments. In this paper, my focus is on a lexical quantifier *saai* in Hong Kong Cantonese. I am going to explore the quantificational properties of *saai* and examine the interaction between the event and other verbal arguments in quantification of *saai*. The finding of this paper is that the lexical quantifier *saai* marks the event as the distributee having a scope under the distributor, which is considered to be an 'anti-quantifier'.

This paper is organized as follows. Some properties of *saai*, namely the requirements of divisibility, definiteness/specificity, telicity, aspect, and locality, are introduced in section 2. I propose that *saai* is a distributee marker in section 3

Some interesting issues, such as the comparatives and *saai*, and the relation between *saai* and spatiotemporal arguments and degree arguments, will be discussed in section 4.

2. Characteristics of *saai*

Morphologically, *saai* is a suffix attached to verbs (Lin 1963). It literally means 'all, entirely and completely'. In this paper, I will gloss it as 'all'. The suffixation of *saai* is very productive and it can be attached to new loanwords, such locutions as *kap-saai* 'copy (all disks)', *ko-saai* 'call (all)', *pin-saai* 'print (all)', and *sen-saai* 'send (all)' are not uncommon.

The semantic effect of *saai* is similar to universal quantification. This has been suggested by Lee 1994 who points out that *saai* functions as a universal quantifier. This is illustrated in (1b) where *godi pinggwo* 'those apples' will have a universal interpretation. As indicated in the English translations, (1b) differs from (1a) in that the addition of *saai* to the verb in (1b) changes the interpretation of (1a), triggering universal quantification over the object associated with *saai*, i.e. *godi pinggwo* 'those apples', which is then interpreted with an exhaustive or a holistic reading. (1b) is true only if all the apples will be eaten up without exception. In contrast with (1b), (1a) says nothing about whether or not I will eat up those apples.

(1) a. Ngo wui sik godi pinggwo
I will eat those apple
'I will eat those apples.'
b. Ngo wui sik-saai godi pinggwo.
I will eat-all those apple
'I will eat up all those apples.'

Saai is a lexical quantifier because it operates on the verb with quantificational effects on the argument of the verb. Descriptively the elements associated with *saai* have an interpretation of universal quantification. The quantificational relation will be discussed later. To be neutral at this point, I tentatively use the term 'association' to describe the relation between *saai* and the elements that have the interpretation of universal quantification. Some of the characteristics of quantification of *saai* are listed in the following subsections.

2.1 Divisibility requirement

The elements associated with *saai* must be divisible, which roughly means that the object can be divided into parts. Divisibility is determined by the contextual information and our conceptual knowledge (Teng 1996, cf. Lee 1994, Tang 1996b). The underlined phrases are the elements associated with *saai*.

(2) Keoidei zau-saai.
they leave-all
'Each of them left.

(3) *Keoi zau-saai.
he leave-all
*'Each of him left.'

(4) Ngo jam-saai bui seoi.
I drink-all Cl water
'I have drunk the whole cup of water.'

In (2) *keoidei* 'they' refers to a set of people. A part could be a member of the group. (2) may mean that every member of the group left. (3) is unacceptable because *keoi* 'he' is very unnatural to be divided into parts according to that context. Otherwise (3) would give us a pragmatically bizarre reading that every part of his body left. The contrast between (2) and (3) suggests that there is a requirement of divisibility in quantification of *saai*. (4) shows that mass nouns can also be associated with *saai*. In (4) the mass noun *bui seoi* 'the cup of water' is divided into proper parts, in the sense of Krifka 1992, and the divisibility requirement is satisfied.

In addition, the elements associated with *saai* have a distributive reading.

(5) a. Keoidei git-fan.
they get-marry
(i) 'Each of them marries someone else.'
(ii) 'They marry each other.'
b. Keoidei git-saai-fan.
they get-all-marry
(i) 'Each of them marries someone else.'
(ii) *'They marry each other.'

As we can see, the interpretation of (5a) is ambiguous: it can have either a distributive reading, i.e. 'each of them marries someone else'; or a collective reading, i.e. 'they marry each other'. However, in (5b), only the distributive reading is available.[2]

2.2 Definiteness/specificity

The elements associated with *saai* must be definite/specific.[3]

(6) a. Ngo tai-saai ni bun syu.
I read-all this Cl book
'I have finished reading the whole book.'
b. ?Ngo tai-saai saam-bun syu.
I read-all three-Cl book
'I have finished reading all of three books.
(Lee 1994:135)

In (6a), the object *ni bun syu* 'this book' is definite and the sentence is acceptable. The object *saam-bun syu* 'three books' is an indefinite NP and (6b) sounds unnatural. It will be acceptable only if the speaker has presupposed a particular group of books in mind such that all of them are read.

2.3 Telicity

The examples in (7), (8), (9), and (10) represent four different types of eventualities. *Saai* can only cooccur with the predicates that denote a telic event.

(7) Keoi sik-saai go honboubaau. (accomplishment)
he eat-all Cl hamburger
'He ate up the hamburger.'

(8) Keoidei sei-saai. (achievement)
they die-saai
'They all died.'

(9) *Keoidei siu-saai. (activity)
they laugh-all
'They all laughed.'

(10) *Keoidei cungming-saai. (state)
they clever-all
'They all are clever.'

Saai can be attached to some verbs that are usually treated as stative verbs, such as *leng* 'pretty' in (11).

(11) Keoi zoek-zo ni gin saam, senggo leng-saai.
he wear-Perf this Cl dress whole pretty-all
'After he wore this dress, he (as a whole) becomes pretty.'
(Lin 1963:188)

As pointed out by Lin 1963 and Lee 1994, when *saai* occurs, the predicate *leng* 'pretty' expresses a change of state. In this respect, the event denoted by *leng* 'pretty' is not a state but a telic event.

2.4 Aspect

Saai can only cooccur with the experiential aspect marker *gwo*.

(12) *Keoidei heoi-zo-saai Hoenggong. (perfective)
they go-Perf-all Hong Kong
'They all went to Hong Kong.'

(13) Keoidei heoi-gwo-saai Hoenggong. (experiential)
they go-Exp-all Hong Kong
'They all have been to Hong Kong.'

(14) a. *Ngo tai-gan-saai nidi syu. (imperfective)
I read-Imperf-all these book
'I am reading (*all) these books.'

b. *Ngodei kei-zyu-saai haidou.
we stand-Imperf-all here
'We (*all) stand here.'

There are two imperfective markers in Cantonese: *gan* describes an ongoing activity and *zyu* expresses a meaning of continuity which does not denote a dynamic ongoing activity but a static condition. *Saai* cannot cooccur with the perfective marker *zo* and the imperfective markers as well.

As pointed out by Lisa Cheng (personal communication), if a purpose clause is added to (14b), the judgment becomes acceptable, such as (15).

(15) Ngodei kei-zyu-saai haidou [coeng go].
we stand-Imperf-all here sing song
'We all stand here to sing.'

I propose that in (15) *zyu* is a resultative verb which marks the first of the two verbs denoting an instrumental reading and thus it is not an imperfective marker (Tang 1996a).

Au Yeung 1996 points out that *saai* seems to be able to cooccur with the imperfective marker *zyu* in the following example.

(16) Nei zo-zyu-saai tiu lou, ngo dim bun di fo aa?
you block-hold.on-all Cl road I how move Cl goods Q
'You are blocking every part of the road. How can I move the goods?'

I believe that in (16) *zyu* should not be treated as an aspect marker because it can be followed by the perfective marker *zo*, as shown in (17)

(17) Nei zo-zyu-zo tiu lou.
you block-hold.on-Perf Cl road
'You blocked the road.'

One possibility is to analyze *zyu* in (17) as a resultative verb denoting a resultant state. If *zyu* in (16) is also treated as a resultative verb, (16) should not be a counter-example.

2.5 Locality

The relation between *saai* and the elements that *saai* is associated with exhibits locality effects: *saai* is associated with the object if there is one. Otherwise, *saai* is associated with other elements, for instance, the subject or the spatiotemporal argument.

(18) Keoi zaak-saai di faa. (transitive)
he pick-all those flower
'He picked up all those flowers.'

(19) *Keoidei zaak-saai do faa.
they pick-all Cl flower
'They all picked up the flower.'

(20) Keoidei lai-saai. (intransitive)[4]
they come-all
(i) 'They all came.'
(ii) 'They came in all specific occasions.'

(21) Keoidei maai-saai-uk.
they buy-all-house
(i) 'They all bought houses.'
(ii) 'They bought houses (e.g., by spending all the money).'
(iii) *'They bought all the houses.'

(22) a. Ngo man-saai keoidei ni-tiu mantai. (ditransitive)
I ask-all they this-Cl question
'I have asked all of them this question.'

b. Ngo man-saai keoi nidi mantai.
I ask-all he these question
'I have asked him all of these questions.

Though the subject *keoidei* 'they' in (19) is divisible, *saai* cannot be associated with it. There is a subject-object asymmetry in transitives. The ambiguity of (20) shows that if there is no object, *saai* can be associated with either the subject *keoidei* 'they' or the spatiotemporal argument. Notice that the content of the spatiotemporal argument is supplied by the context and should be presupposed. In (21), the bare noun *uk* 'house' and the verb *maai* 'buy' form a VO compound such that *uk* 'house' is part of the VO compound instead of an argument of the verb. It turns out that either the subject *keoidei* 'they' or the spatiotemporal argument could be the argument associated with *saai*. The examples in (22) are the double object constructions. Either the indirect object *keoidei* 'they' or the direct object *nidi mantai* 'these questions' can be associated with *saai*.

3. *Saai* as a distributee marker

I assume that distributivity is a relational notion, which is a relation between the distributor and the distributee.[5] The relation between the distributor and the distributee can be represented by the following logical form, where A is the distributor and B is the distributee.[6]

(23) $\forall a \exists B$ where a*A: = a is an atomic i-part of A
a*A

The set of quantifiers in (23) means that the proper parts, i-parts, denoted by the distributor, A, are exhaustively mapped onto sets denoted by the distributee, B, such that no two parts denoted by the distributor are mapped onto the same set denoted by the distributee. The numeric interpretation of the distributee is dependent on the numeric interpretation of the distributor.

I propose that the lexical quantifier *saai* functions as a marker which makes distributivity obligatory. In quantification of *saai* the event is marked as the distributee and the argument associated with *saai* is selected to be the distributor distributing over the event. As *saai* marks the event as the distributee having a scope under the distributor, *saai* can be considered to be an 'anti-quantifier', in the sense of Choe 1987.

The candidate of the distributee is predictable: as the lexical quantifier *saai* is a verbal suffix and verbs stand for events, the event will be marked as the distributee morphologically.

Regarding the distributor, it seems that the selection of the distributor exhibits some locality effects, as we have already seen in the previous section. One possibility to account for this fact is to assume that the distributor-distributee mapping in quantification of *saai* is a cyclic operation, which is a consequence of the bottom-up process of Merge. The object (direct internal argument) is always the closest element in the first mapping cycle. Thus, the locality effects of *saai* are deduced from the theory of structure building and the architecture of the computational system of human language. See Tang 1996b for a detailed discussion along these lines.

An alternative proposal to account for the locality of *saai* is an aspectual approach: only the argument that measures out the event is selected to be the distributor.[7] The notion 'measuring-out' is defined in the sense of Tenny 1994. Essentially the measuring-out arguments play a particular role in delimiting the event. They are restricted to direct internal arguments. The candidate for the measuring-out argument of the transitive verbs is the object instead of the subject. The subject-object asymmetry of *saai* is explained. The subject of the unaccusative verbs and the VO compounds could be created or consumed over time or undergo some change in a property over time. The spatiotemporal argument could provide a temporal bound or a gradient along which the progress of the event may be measured. Therefore, either the subject or the spatiotemporal argument of the intransitive verbs (unaccusatives) and the VO compounds can be the measuring-out arguments and serve as the distributor.[8] Both the syntactic approach and the aspectual approach seem plausible and I leave these two possibilities open in this paper.

The proposal that the lexical quantifier *saai* is a marker of the distributee correctly derives the distributive interpretation of *saai*. Let us review (5b) again, as repeated in (24).

(24) Keoidei git-saai-fan.
they get-all-marry
(i) 'Each of them marries someone else.'
(ii) *'They marry each other.' (=(5b))

In (24) only the distributive reading is available. Suppose that *keoidei* 'they' refers to two people. As the event of marrying is marked by *saai* as the distributee, the numeric interpretation of the event of marrying will be dependent on the numeric interpretation of the distributor, i.e. the subject *keoidei* 'they'. The parts of the distributor distribute over the event. The distributive interpretation of (24) is that each of them should marry someone else and thus there should be two separate events of marrying. The collective reading is not available.

The distributive interpretation of *saai* can also be observed when the distributor is the object.

(25) a. Tiu kiu linzip ni loeng-go deifong.
Cl bridge connect this two-Cl place
'The bridge connects these two places.'
b. *Tiu kiu linzip-saai ni loeng-go deifong.
Cl bridge connect-all this two-Cl place
'The bridge connects (*all) these two places.'
c. Tiu kiu linzip-saai ni saam-go deifong.
Cl bridge connect-all this three-Cl place
'The bridge connects all these three places.'

Each minimal event of connecting requires that there be at least two event participants. In (25a), the two participants of the event of connecting are the two places. In (25b), if the event of connecting is marked as the distributee having a scope under the distributor, i.e. the object *ni loeng-go deifong* 'these two places', each of the two individuals in the set denoted by the distributor is mapped onto an event of connecting. However, it is impossible for a minimal event of connecting to have only one event participant, i.e. one place. As a result, (25b) is unacceptable. If the object refers to three places, as in (25c), the judgment improves. Suppose that there are three places A, B, and C. There could be three possibilities: A and B connect; B and C connect; and C and A connect. If each of these connections is mapped onto a minimal event, each minimal event involves at least two places.

The anti-quantifier property of the lexical quantifier *saai* is very similar to the binominal *each* in English, which is also analyzed as an anti-quantifier (Choe 1987, Safir & Stowell 1988, and Moltmann 1991).

(26) The balloons are held by one child each.

The binominal *each* in (26) marks *one child* as the distributee having a scope under the distributor *the balloons*. If there are ten balloons, then there could be ten children. Let us discuss some properties of distributivity exhibited by the binominal *each*. First of all, the distributor must be plural. For example, in (27a) the subject *those men* is the distributor and the object *two women* is the distributee marked by *each*. (27b) is unacceptable because the subject *the man* in (27b) is singular. Therefore, *the man* in (27b) cannot be the distributor.

(27) a. Those men saw two women each.
b. *The man saw two women each
(Safir & Stowell 1988:429)

Secondly, the distributor must be definite/specific. For example, (28) is unnatural because the distributor *two men* is interpreted as indefinite/nonspecific.

(28) ?Two men saw two women each.
(Safir & Stowell 1988:429)

On the other hand, the distributee should be indefinite. Definite elements cannot be the distributee.

(29) a. The men saw one jewel each.
b. *The men saw the jewels each
(Safir & Stowell 1988:428)

In (29a), the binominal *each* marks the object *one jewel* as the distributee and the subject *the men* serves as the distributor. The ungrammaticality of (29b) is due to the indefiniteness of the distributee *the jewels*.

Some of the requirements of *saai* we have discussed in the previous section could be derived from the general constraints on distributivity. For example, the requirements of divisibility and definiteness/specificity of the elements associated with *saai* are attributed to the fact that the distributor should be 'plural' and presupposed.[9]

Recall that *saai* can only be compatible with the experiential marker *gwo*. It could be due to the indefiniteness requirement of being a distributee. As argued by Chan 1996, the perfective marker *zo* marks the event as definite whereas the experiential marker *gwo* marks the event as indefinite. Given that the event is marked as the distributee, *saai* cannot cooccur with the perfective marker *zo*. Otherwise, the event would become definite and the indefiniteness requirement is violated.

In addition, the telicity requirement of *saai* could be attributed to a general constraint on distributivity. The parallelism between events and things has been observed in the literature that telic events are countable because they are heterogeneous while atelic events are uncountable because they are homogeneous (Mourelatos 1978, Bach 1986, Krifka 1992).[10] I propose that the distributee should be countable. The proposal accounts for the telicity requirement of *saai*. Since the event marked as the distributee by *saai* has to be countable, atelic predicates are ruled out. This analysis can also explain why (30) is unacceptable.

(30) *The children drank water each.

In (30) what is marked as the distributee by the binominal *each* is the object *water* which is considered to be a mass noun. Due to the uncountable nature of mass nouns, *water* cannot be the distributee and thus (30) is ruled out.

Note that *saai* cannot cooccur with the imperfective markers *gan* and *zyu*. A conjecture is that the imperfective markers could make the predicate to denote an uncountable event. Let us assume that this is correct. *Saai* is incompatible with the imperfective markers because the events are uncountable and uncountable elements cannot be the distributee. This is further supported by the following examples.

(31) Keoi tai-zo bun syu saam ci.
he read-Perf Cl book three time
'He read the book three times.'

(32) *Keoi tai-gan bun syu saam ci.
he read-Imperf Cl book three time
'He is reading the book three times.'

In (31) and (32) the frequency phrase *saam ci* 'three times' quantifies the event of reading the book. Only (31) is acceptable. The imperfective marker *gan* indicates an ongoing activity. As shown by (32), the ongoing event cannot be quantified by the frequency phrase. If imperfective events can be analyzed as atelic events (Parsons 1990), the unacceptability of the imperfective markers in *saai* quantification and the ungrammaticality of (32) could be explained by the fact that atelic events are uncountable.

In sum, I have proposed that the lexical quantifier *saai* is an anti-quantifier which marks the event as the distributee having a scope under the distributor. The numeric interpretation of the event is dependent on the numeric interpretation of the distributor. I have also argued that the requirements of divisibility, definiteness/specificity, telicity, and aspect are derived from the constraints on distributivity, i.e. that the distributor must be divisible/plural and definite/specific, and the distributee must be countable and indefinite.

4. Some interesting issues

4.1 Comparatives and *saai*

(33) is a comparative sentence in Cantonese, in which *gwo* is a comparative marker which is argued to be a verbal suffix (Mok 1994).[11] *Gwo* literally means 'surpass, exceed, beyond'. Essentially, the predicate in the comparatives denotes states. We would predict that *saai* would be incompatible with the predicate in the comparatives. However, (34) is acceptable.

(33) Siuming lek-gwo keoidei.
Siu-Ming smart-Comp they
'Siu-Ming is smarter than them.'

(34) Siuming lek-gwo-saai keoidei.
Siu-Ming smart-Comp-all they
'Siu-Ming is smarter than all of them.'

Compared with the comparative sentence without *saai*, the comparative sentence with *saai* is referring to a specific occasion. For example, (33) could indicate a permanent state. However, the felicitous reading of (34) is that there is a presupposed situation in which Siu-Ming is compared with each of the people and as a result his smartness surpasses everyone. It sounds unnatural to utter (34) in an out of the blue context. With the presence of *saai*, the resultative interpretation of the comparative marker *gwo* emerges.

Strikingly, when *saai* occurs, the optimal candidates to fit in the matrix verb position are mainly restricted to the verbs denoting 'positive' properties like *faai* 'fast', *gou* 'tall', *hou* 'good', *lek* 'smart', and *leng* 'pretty'. If the verb has a 'negative' meaning, such as *ceon* 'stupid' in (35), the occurrence of *saai* is not

very natural.[12] Other examples include *ai* 'short', *ban* 'stupid', *cau* 'ugly', *kung* 'poor', and *seoi* 'bad'.

(35) ?Siuming ceon-gwo-saai keoidei.
Siu-Ming stupid-Comp-all they
'Siu-Ming is stupider than all of them.'

The occurrence of *saai* in the comparative enforces the resultative meaning of 'surpassing' denoted by the comparative marker *gwo*. If a person or something surpasses another, the most natural reading is that the first is better than the second. To put it informally, only the 'positive' quality can exceed and go beyond some idealized degree.

With the remarkable parallelism between the V-*gwo* predicates and the resultative verb compounds, I further suggest that the V-*gwo* predicates could be treated on a par with the resultative verb compounds. The first piece of evidence comes from the morphology of the V-*gwo* predicates. Both the comparative marker *gwo* and the resultative verb are verbal suffixes attached to the verbal stem to form a complex predicate. Both of them can occur in the potential form involving the insertion of *dak* 'can, to obtain' between the stem and the suffix.

(36) a. Siuming lek-dak-gwo keoidei.
Siu-Ming smart-can-Comp they
'Siu-Ming can be smarter than them. (comparative)

b. Siuming se-dak-jyun pin man.
Siu-Ming write-can-finish Cl paper
'Siu-Ming can finish writing the paper.' (resultative)

In both (36a) and (36b), the presence of *dak* 'can, to obtain' means the event denoted by the first constituent of the compound can have a result denoted by the second constituent, i.e., *gwo* 'exceed' and *jyun* 'finish'.

Furthermore, the comparative marker *gwo* and some resultative verbs can be 'extraposed' when they are negated by the negation *m* 'not'.[13]

(37) a. Ngo gou keoi [m gwo].
I tall he not Comp
'I am not taller than him.' (comparative)

b. Ngo gaau keoi [m dim].
I do he not OK
'I cannot make him satisfied. I cannot settle him.' (resultative)

In (37b), the resultative verb *dim* 'OK' and the matrix verb *gaau* 'do' can form a resultative compound *gaau-dim* 'do-OK'. Though the extraposed resultative verbs are not productive, the extraposed *gwo* seems to be patterned on the extraposed resultative verbs.

Since the comparative marker *gwo* could denote permanent states as well as a resultative interpretation, I propose that there are two *gwo*'s in the comparatives: one modifies the phase of the degree denoted by the predicate,[14] and one indicates a resultant state having a meaning of 'surpassing'. For example,

gwo in (33) is ambiguous between a phase interpretation and a resultative interpretation whereas *gwo* in (34) only denotes a resultant state. The resultative meaning of *gwo* is forced by *saai* in (34). As the event denoted by the predicate in the comparatives has a result, it has a natural endpoint and should be interpreted as telic. Hence, the occurrence of *saai* is possible.

4.2 Spatiotemporal argument, degree argument, and *saai*

An interesting observation in quantification of *saai* is that the lexical quantifier *saai* could be associated with the spatiotemporal argument. In my analysis, the spatiotemporal argument could serve as the distributor ranging over the event that is marked as the distributee by *saai*. The value of such a spatiotemporal argument is supplied by the context of use. The spatiotemporal argument can have spatial parts and temporal parts. The parts in the spatial and temporal dimension can distribute over the event.

We have seen that the spatiotemporal argument is covert in the previous examples. In fact, the spatiotemporal argument can be overt. If there is no direct argument, the overt spatiotemporal argument can serve as the distributor

(38) Go faajyun zung-saai-zigingfaa.
Cl garden plant-all-bauhinia
'The whole garden is planted with bauhinia.

(39) Keoi camjat heoi-saai-gaai.
he yesterday go-all-street
'He went out for a whole day yesterday.'

In (38), the unergative verb *zung* 'plant' and the bare noun *zigingfaa* 'bauhinia' form a VO compound. The event denoted by the predicate is marked by *saai* as the distributee. The locative subject *go faajyun* 'the garden' is an overt spatiotemporal argument and the bare noun is part of the VO compound, the overt spatiotemporal argument becomes the only argument in the argument structure which can serve as the distributor. In (38), the spatiotemporal argument *go faajyun* 'the garden' distributes over the event. Therefore, we get the correct interpretation: each part of the garden is mapped onto an event of planting bauhinia. In (39), the bare noun *gaai* 'street' is part of the VO compound *heoi-gaai* 'go out'. The subject *keoi* 'he' cannot be the distributor because it is unnatural to be divided into parts in that context. The spatiotemporal argument *camjat* 'yesterday' is the only argument that can serve as the distributor ranging over the event.

I notice that (40) may have a so-called 'exclusive reading' (Tang 1996a: fn5).

(40) Siuming gaan-saai-pinggwo.
Siu-Ming choose-all-apple
'Siu-Ming only chooses apples.'

Suppose that Siu-Ming was told to buy a fixed amount of fruits and was expected to buy different kinds of fruit. (40) is felicitous if it turns out that all the fruits he bought were apples. The 'exclusive reading' of *saai* can be derived from the spatiotemporal argument if the spatiotemporal argument is interpreted as the expected fixed amount of fruit, say 50 bucks or 10 boxes. In (40) the spatiotemporal argument serves as the distributor ranging over the event of choosing apples. Therefore, the exclusive and exhaustive reading of (40) is deduced from the universal interpretation of the spatiotemporal argument.

In addition, the lexical quantifier *saai* may indicate the degree of completeness and the predicate is subject to a scalar interpretation such that the degree denoted by the predicate reaches 'the highest degree' (Li et al 1995, Tang 1996a: fn5). For example, reading (ii) of (41) means that the flower has reached the highest degree of redness and the example in (42) means that someone has reached the highest degree of thankfulness.

(41) Do faa hung-saai.
Cl flower red-all
(i) 'The whole flower becomes red.'
(ii) 'The flower becomes completely red.'

(42) Doze-saai!
thank-all
'Thank you so much! (for a gift)'

Can the analysis of *saai* in this paper capture the data in (41) and (42)? I propose that there is an argument indicating degree in the argument structure and it is the degree argument that is selected to be the distributor ranging over the event in the examples in (41) and (42). To get the scalar interpretation, the degree argument could be interpreted as a set of degree or an 'abstract event' in the sense of Moltmann 1990, 1991. In (41) and (42), the event is marked by *saai* as the distributee and the degree is the distributor. The parts of the set of degree distribute over the event, i.e. that each part of the set of degree maps onto an event. The event denoted by the predicate instantiates every part of the degree. The parts include an extreme degree or culmination.

The maximal degree interpretation of *saai* should have a presupposition. As noted by Au Yeung 1996, the scalar interpretation of the phrase *mgoi-saai* 'thank you very much' cannot be used in an out of the blue context. It is felicitous only if there is a presupposed situation. I assume that the value of the degree argument is supplied by the context and should be presupposed. Interestingly, there seems to be a similarity between the spatiotemporal argument and the degree argument with respect to presupposition. But the difference between these two arguments is that the former is extensional whereas the latter is intentional. Due to limited space, I leave these questions open here.

5 Concluding remarks

In this paper, I have discussed some properties of a lexical quantifier *saai* in Hong Kong Cantonese. Partee 1995 claims that lexical quantifiers quantify over either the event or other verbal arguments. Data from the lexical quantifier *saai* suggest

that *saai* is associated with both the event and the verbal arguments in the argument structure.

I have argued that the lexical quantifier *saai* is an anti-quantifier which marks the event as the distributee having a scope under the distributor. The numeric interpretation of the event is dependent on the distributor. The analysis proposed here not only accounts for the distributive interpretation of quantification of *saai* but also explains the requirements of divisibility and definiteness/specificity of the elements associated with *saai*, the telicity requirement and the constraint on aspect markers. I hope that the discussion in this paper may lead us to have a better understanding of lexical quantifiers and may shed some light on the theory of quantification in natural languages.

NOTES

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[1] The romanization system of Cantonese in this paper is based on the Linguistic Society of Hong Kong Romanization Scheme. I use the following abbreviations in glosses: Cl: classifier, Exp: experiential, Imperf: imperfective, and Perf: perfective. This paper uses *he* to stand for third person singular pronoun.

[2] To some speakers, the distributive reading of (5a) is not very salient. But there is still a contrast between (5a) and (5b) that the collective reading of (5b) is absolutely impossible.

[3] Interestingly, this requirement is exceptional in the conditional clauses, such as (i), and in the modality context, such as (ii), as pointed out to me by Leo Wong (personal communication).

(i) Jyugwo keoi sik-saai loeng-wun faan,
if he eat-all two-Cl rice
'If he eats up two bowls of rice, ...'

(ii) Keoi sik-dak-saai loeng-wun faan.
he eat-can-all two-Cl rice
'He can eat up two bowls of rice.'

* If the intransitive verb is unergative, the judgment is deviant. As we have seen in (9), the verb is unergative and (9) violates the telicity requirement.

[5] The notions 'distributor' and 'distributee' are adopted by Beghelli & Stowell 1997 and Tang 1996b. Distributor is also known as 'distributive key' (Choe 1987) and 'range XP' (Safir & Stowell 1988); distributee is also known as 'distributed share' (Choe 1987) and 'distributing XP' (Safir & Stowell 1988).

[6] The logical form given in (23) is based on Choe 1987.

[7] Thanks to Molly Diesing (personal communication) for this suggestion.

[8] In Tang 1996a, I propose that only event participants of the predicate are visible to lexical quantification. If that conjecture is correct, event participants should be defined as measuring-out arguments in quantification of *saai* including the spatiotemporal argument.

[9] One difference between *saai* and the binominal *each* with respect to divisibility/plurality is that in English the distributor must be morphologically plural. A singular argument cannot be divided into parts to serve as the distributor. In contrast, a 'singular' object, such as *go pinggwo* 'the apple' in (ii), could be divided into parts and serves as the distributor.

(i) *The apple was eaten by one boy each.

(ii) Ngo sik-saai go pinggwo.
I eat-all Cl apple
'I have eaten up the whole apple.'

[10] Thanks to Jim Huang (personal communication) for drawing my attention to this possibility.

[11] The V-*gwo* predicates discussed here are restricted to those taking a subject. Mok 1994 argues that the comparative marker *gwo* that introduces a clause or an NP, as in (i), is attached to a verb forming a conjunction complex. Notice that *saai* is not allowed to occur in (i). I do not have any concrete answer at this moment.

(i) Keoi maai minbaau do-gwo(*-saai) (maai) daangou.
3sg buy bread many-Comp(-all) buy cake
'He buys more bread than (*all) cakes.'

[12] The 'positive/negative' interpretation of the verbs is determined by pragmatic factors. For instance, (35) may become natural in a situation in which a person who is the stupidest can win a gold medal.

[13] To say that the comparative marker and the resultative verb are 'extraposed' is only a descriptive statement. I will not discuss how the construction is derived.

[14] For example, the so-called resultative verb *ji* 'extreme' in the compound *hao-ji* 'extremely good' in Mandarin Chinese is in fact modifying the degree of the event denoted by the first verb *hao* 'good'. This compounds are known as 'phase resultative verb compounds' in Li & Thompson 1981.

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