

SEMANTIC AND PRAGMATIC ASPECTS OF SET-RELATIONAL REFERENCE IN MODERN INDO-EUROPEAN LANGUAGES

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1. Introduction

This study is part of an ongoing series investigating the semantics and pragmatics of set-relational reference. In English the relevant lexicon includes *all, some, no, none, each, every, any, another, other, both, either, and neither*, as they are used to quantify nominals. An example of this kind of reference is found in the sentence:

- (1) *Each* of the children sang a song.

Researchers have reported extensive cross-linguistic study of natural language number systems (cf. Saxe and Posner 1983). Advances in this field contrast sharply with the absence of comparable surveys of set-relational quantifier use. Such a gap in the research literature is odd, considering the theoretical and practical significance of set-relational language in human affairs (Sapir 1930). We reason about sets and their relationships to solve problems in a wide variety of domains, and we communicate our ideas in natural languages that are rich in semantic contrasts for this purpose. Set-relational language is a powerful conceptual tool that is as uniquely human in its elaboration as is the opposable thumb. This study is offered as a first attempt at cross-linguistic exploration of this important domain.

The first author and her associates have investigated the acquisition of set-relational quantifiers by American English-speaking children, conceptualizing this learning as a part of the children's general cognitive and linguistic development. A previous report has described the major dimensions of semantic contrast for this domain in American English and outlined the developmental sequence in first language acquisition (Hanlon 1987a). The developmental model for this work was supported by the results of an experimental sentence-processing study reported in the same paper. Another project has explored some pragmatic aspects of set-relational reference in parent-child conversation (Hanlon 1987b). In yet another line of research, both adult and child definitions of these words have been analyzed to get a better understanding of how their meanings are explicitly conceptualized

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by native speakers (Hanlon 1990).

An earlier review of published English language writings on set-relational quantification (Hanlon 1987a) failed to uncover any adequate description of the full range of semantic contrasts involved in adult usage. To proceed with developmental study, it was thus necessary to synthesize a descriptive model of the adult contrastive system. This review, together with a full exposition of the model and three developmental studies, are published in the earlier monograph noted above (Hanlon 1987a) and cannot be repeated here. What follows is a brief summary of the general conceptual background and developmental findings that seem most relevant to this discussion. The set of linguistic expressions examined in this research comprises a small group of high-frequency quantifiers, the reference of which can be characterized unambiguously in set-relational terms. That is, these quantifiers are natural language elements that are used in everyday parlance to talk about entities thought of as members of a group and the relationships relevant to such group membership. The most frequent lexical items used for this reference in English are as follows: *all*, *some*, *no*, *none*, *any*, *each*, *every*, *other*, *another*, *both*, and *neither*. These quantifiers share with other terms (such as *the* and *few*) the property of delimiting the reference set associated with a nominal in a sentence (or utterance). The set of terms under study delimits the reference set by simultaneously quantifying and specifying. That is, these terms take the general class of objects denoted by the predicative elements of a noun phrase and add information both about the size of the reference set and about its role in the discourse.

The total set of quantifying terms used in this study was selected from the larger set of English quantifiers and quantifiers-specifiers the adult knowledge of which can be described by our set-relational model of the semantic relations involved. For this set of terms, then, it is claimed that there are rational bases for predictions about the order of acquisition for various aspects of the adult system. Our predictions have been generated by relating the model to what we already know about children's cognitive development in general and to their developing notions of set relations in particular. The set of relevant terms is not precisely co-extensive with any traditional linguistic category. The study set includes some but not all English terms that linguists describe as bearing quantifying and specifying features (Bierwisch 1971) and also include some which, because of their deviant grammatical function in more complex constructions, are not considered by some linguists (Carden 1970) to be "true" quantifiers at all. The present description of the semantics of set-relational reference is based on psychological theory and research on the human understanding of set relations. An extensive discussion of this background is provided in the first author's work on this topic cited above. Because this conceptualization of the adult semantic domain goes beyond a traditional set-theoretic or featural analysis to incorporate set transformations, a brief outline of the semantic model is presented here.

The semantic system for this domain can be described as involving four general dimensions of contrast. The first dimension of contrast consists of three levels of generality in reference. The generic level refers to members of the general class named, as in the following sentence,

- (2) *Some trees are evergreen.*

The specific level refers to a specific set, as in the following:

- (3) *Some* of these trees are evergreen.

At the nonspecific level, the suppositional reference set is left unspecified, as in,

- (4) We may plant *some* evergreen trees.

Note that this model follows Bierwisch (1971) in adding a third level of reference generality to the distinction between universal and existential quantification found in traditional formal logic. The nonspecific level captures the intuition that in everyday conversation some quantifier usage involves neither a universal nor a specific suppositional set as, for example, in Sentence 4 above.

The second general dimension of semantic contrast can be thought of in terms of characteristic transformations of a potential reference set into an actual one. Thus, the meaning of each quantifier word or morpheme can be described in terms of a distinctive transformation of a suppositional set into an actual reference set. For example, the meaning of the English word *some* can be described as, "Take an indefinite portion of the suppositional set referred to by the quantified nominal." Table 1 gives a list of descriptions of the major transformations explored in this study, as they are used to define their respective English quantifier words.

The third dimension on which these terms contrast is in the size of the suppositional set. It is common for languages to have one or more specialized terms for the case where the suppositional set size is two (for example, in English, *both*, *either*, and *neither*). The other terms are not limited in this way.

The fourth dimension of semantic contrast involves distributive predication. That is, some of the set-relational terms are restricted in use to the case of distributive predication and thus serve as a signal for such an interpretation. In other words, the relevant predicates outside the quantified nominal must be interpreted as describing the members of the set individually, taken one at a time. It is the difference in meaning between the two English sentences,

- (5) *All* of the children in the class sang a song.
 (6) *Each* of the children in the class sang a song.

In sum, our general model of lexical semantic structure for the domain of set-relational reference includes four different kinds of contrast: (1) level of set generality (generic, specific, and nonspecific), (2) set transformation type, (3) suppositional set size (two, more than two), and (4) predication type (distributive, unrestricted).

In our developmental research, separate studies examined the production of these quantifiers in conversational speech (longitudinal data), and their elicited comprehension (cross-sectional data) throughout the acquisition period (roughly 18 months to eight years). The model (used in conjunction with independently-established principles of cognitive development) was a successful predictor of the consistencies in order of acquisition, but so was parental frequency of usage. Nonetheless, it was argued from the general pattern of evidence that the positive correlation between frequency and order of acquisition for these high-frequency terms is not a direct causal factor in the child's speed of acquisition.

Rather, ready acquisition is the result of a design feature of language assigning simpler linguistic structures to more frequent occasions of usage. An additional experimental study of preschool children's performance on a picture-sentence verification task with the quantifiers *all*, *some*, and *none* yielded reaction time and error data consistent with the model. There were also clear indications that young children show greater differences in sentence processing efficiency related to semantic complexity than do adults in responding to these terms. Further work explored the psychological reality of the semantic dimensions of the model through an examination of young children's definitions of the specific quantifiers in sentence context (Hanlon 1990). We also examined the potential semantic information for the most frequent quantifiers in early conversational exchanges between caregiver and child (Hanlon 1987b). The general conclusion from this developmental research has been that no adequate theory of first language acquisition can be constructed without further exploratory descriptive studies of key semantic domains in pragmatic context.

Such extensive work with monolingual speakers of English has stimulated the researchers' curiosity about the organization and development of this semantic domain in other languages, especially the question of which aspects of set-relational reference may be universal to human language, and which may vary across languages. Since the elaboration of this aspect of communication is not observed in other species, it is of some scientific interest to see how consistent the semantic may be across human languages, and what its developmental course in acquisition may look like. Accordingly, our first thought was to compare the lexicalization of semantic contrasts in this domain as it occurs in different language families. Such a comparison would allow an examination of language structure and function under conditions likely to minimize the possible causal role of historical relations and language contacts in creating resemblances. The current study of the lexicon in a sample of Indo-European languages was intended only to broaden the authors' own knowledge as preparation for such inquiry. However, the results seemed to be informative enough to be shared with a wider audience.

This research surveys the semantics and pragmatics of set-relational reference in seven modern Indo-European languages (English, French, German, Greek, Italian, Russian, and Spanish) and two historical ones (Classical Greek and Latin). The selection of these languages from the Indo-European group was based primarily on the availability of informants and published lexicographic sources. In spite of these constraints, however, it should be noted that four of the major branches of the family are represented (Germanic, Hellenic, Italic, and Slavic). Two of these (Hellenic and Italic) are represented in both historical and modern forms. This work was designed primarily to identify the major set-relational terms in standard usage. Two native speakers served as informants for each of the modern languages. For classical Greek and Latin, it seemed reasonable to rely on a professional classicist's sense of word usage in each language based on the extensive reading of texts. The second author provided this expertise. In all cases the range of reference for linguistic forms was checked in standard published sources and there was absolute agreement on the usage of the set-relational terms to be discussed in this paper. That is, in no case was there any variation in usage between informants or inconsistencies between their usage and that reported in standard lexical references (Andriotes 1983; Battaglia 1961; Chantraine 1980; Dauzat 1938; DeVoto 1968; Dubois-Charlier 1986; Glare 1963; Grebe 1963; Lampe 1961; Liddell & Scott 1966; Mackridge 1985; Patrick 1963;

Preobrazhenskii 1951; Simpson & Weiner 1989; Swanson 1982). (Such consistency is not unexpected for these commonly-used terms.) Nonetheless, in any language study this level of agreement is rare, and we interpret this finding as evidence that our elicitation task for speakers of the modern languages (where we had more than one informant) was related to their understanding of the reference of these terms as they are used in context.

On the other hand, the major finding of this study was totally unexpected and therefore seems worth reporting to students of pragmatics and of historical linguistics. The general pattern is cross-linguistic consistency in semantic contrasts, together with much variation in the etymology of the lexical forms associated with each semantic component. This diversity of lexical roots appeared for semantically analogous forms, even between historically close languages. That is, similar meanings were commonly associated with distinct roots across languages. We conclude that there is likely a powerful pragmatic at work, pressing lexical forms into service to encode useful meanings whenever other historical forces leave a language even momentarily without a simple lexical encoding for some combination of basic set-relational semantic components.

2. Method and analysis

The major focus of this report is the modern language survey. This section describes the subjects and the data collection method for this part of the study. For each target language, two bilingual (English) speakers provided standardized interview data on the relevant terms, major semantic contrasts, and pragmatic features of usage. Since this work was designed primarily to elicit the major lexical forms in standard usage, it should be noted that every informant had had a professional education that called for the precise and thoughtful use of language. All but three were college teachers of their target languages. One German informant was a college teacher of philosophy, one Greek informant was an Orthodox priest, and the other was an advanced undergraduate in the college's Classics program (Classical Greek and Latin).

All of the subjects were interviewed individually in English, and each interview began with an object placement task to test agreement between the participants on the reference of the English set-relational terms used in the inquiry. The task was a simple one, involving the use of five walnuts and five bowls. On successive trials the subject was asked to follow instructions with one of the English set-relational terms; for example:

- (2) "Please put *all* of the nuts in a bowl."

The remainder of the interview was devoted to the elicitation of the target language forms of interest, using standard probes with follow-up questions when necessary. The participants were asked to translate a series of English sentences into the target language. This strategy was designed to elicit the relevant quantifier in sentence context. At the specific level of reference, the quantifier words of interest were elicited as variant translations of the above test item. At the generic and non-specific levels, the sentence contexts of Table 2 were used to elicit the quantifier forms. These sentences were drawn whenever possible from actual transcribed speech (Brown 1973), and all were judged to be unambiguous in quantifier reference by a small sample of English speakers. The subject

was asked to provide the target language terms in both written and spoken form. The target-language portion of the interview was tape-recorded as a part of the data collection process. The advantage of the standard interview procedure was the elicitation of closely comparable data across subjects and languages. With such a method, the risk of making the situation too artificial to generalize to ordinary language use is real. However, in this case several observations suggest that these interviews provided data that were consistent with the informants' conversational quantifier use. First, as noted previously, there was strong agreement between the two informants for each language, and between the informants and the published sources on the standard forms for each language. Second, the informants responded to the tasks generally without hesitation as though they seemed natural. Third, the informants were quick to point out ways in which the range of reference for a particular term varied from that of semantically-related English quantifiers, no doubt because of their professional interest in language.

Heartened by the apparent success of the method as applied to our modern language informants, the first author (a psychologist) interviewed the second author (a classicist) for information on set-relational reference in classical Greek and Latin. In this case the classicist was quick to note that her intuitions about usage based on the reading of texts were not totally comparable to those of our bilingual speakers of modern languages. In spite of this disclaimer her responses were perfectly consistent with published sources. Furthermore, when points of less certainty were checked with two other classicists, there was perfect agreement. The fact seems to be that these are among the most frequently used words in every language; the forms and their corresponding ranges of reference are learned early and well by everyone who acquires the language in any way at all. Accordingly, we felt comfortable about including our data on classical Greek and Latin to this initial survey, keeping in mind, of course, the different source of the information.

A comparative analysis of our findings indicates strong similarities across languages in semantic and pragmatic characteristics of this domain together with a fair amount of variation in the way in which morphemes are mapped onto semantic contrasts. The same four general dimensions of semantic contrast found useful in describing the English system of set-relational reference (Hanlon 1987a) seem applicable to these data as well. That is, our informants seemed to respond consistently to the English quantifier forms with native language forms mapped contrastively along the same semantic dimensions as those we found useful in describing the English contrasts. In sum, there were four different kinds of contrast: (1) level of set generality (generic, specific, and nonspecific), (2) set transformation type, (3) suppositional set size (two, more than two), and (4) predication type (distributive, unrestricted). Of course, if these languages involved contrastive dimensions other than those we explored based on English study we may not have uncovered them, but at least our informants did not reject the contrasts we offered as awkward or irrelevant to their native quantifier usage.

Table 3 gives a summary of the major quantifier forms across languages, listed by levels of set generality. (The specific level forms the first section of the table, since it is the most highly elaborated part of the system. The forms appear inflected as elicited. The absolute numeral quantifiers *one* and *two* were included in the study at this level for comparative purposes and the results are shown here as well.) As was the case for English, not every quantifier is used at every level; lexical gaps appear within the general pattern, and morphological and syntactical variations occur across levels within as well as between

languages. Some of these gaps are transparently pragmatic: for example, a lexical form for a universal class with a set size of two seems worse than useless. There is at least one that is a procedural artifact - the omission of *other* as an English probe at the generic level means we have no data on this possibility. There are likely other omissions and distortions related to the development of the conceptual model starting with and working in English as a natural language. Nonetheless, these problems seem relatively minor in light of the usefulness of starting with semantic and pragmatic distinctions as they are made by users of a natural language and then looking to see if similar distinctions are made by users of other structurally-related languages.

Indeed, the biggest surprise for the authors of this study is precisely the lexical form variations on the same semantic themes that turn up across languages. The undoubted historical relationships among the languages (Buck 1949; Renfrew 1987; and many earlier works) would of course lead one to expect many similar lexical forms to be associated with a given semantic, and these similarities are obvious throughout Table 3. What is not so predictable from a general knowledge of the history of these languages is the seemingly idiosyncratic way in which the same semantic distinction has in a number of cases come to be encoded by words with quite different historical roots. The cases of the meanings encoded by the English words, *all*, *any*, and *each* are particularly well-documented cases of this phenomenon. For example, the English word *any* is derived from the word for *one* plus the adjective ending (Simpson & Weiner 1989); whereas in two other languages, Russian and Spanish, its origins have been traced to a proto-Indo-European root *kwep, meaning "to be agitated emotionally," and subsequent forms meaning "to love or desire" (Dubois-Charlier 1986; Morris 1969; Patrick 1963). The semantic elements that are implicit in English *any* are more transparent in the Spanish *cualquier* and the French *n'importe quelle*; however, our Spanish informants had not noticed the obvious derivation of the Spanish form from the relative pronoun and the verb meaning "to want." In a related observation from another study, a five-year-old monolingual English-speaking child unhesitatingly told us that *any* means "you can pick whatever you want." (Hanlon 1990). However, no English speaker has yet told us that *any* means "one-y" or "one-ish," although that is its historic derivation (Simpson & Weiner 1989). Historically, then, morphemes seem to be pressed into service for the communication of a consistent set of semantic contrasts. How particular words end up being used to signal a given contrast in a given language seems totally mysterious, and it may be a matter of chance. Although the semantic connections in the historical evolution of words are often clear enough to the scholar when intermediate forms and their glosses are available, it is certain that we learn these forms in quite a different way, as global and arbitrary pairings of words and meanings inferred from everyday referential contexts. For set-relational terms these contexts seem likely to be whatever it is that people do with sets. It does not take a profound student of human behavior to notice that there is a great deal of species-wide commonality in this type of activity, especially in circumstances in which children are likely to acquire this domain. For example, parents and children often have conversations about small sets of similar objects such as grapes and blocks, and they routinely use set-relational language in household activities such as sorting belongings and retrieving the lost member of a pair, like shoes or mittens (Hanlon 1987b). It would not be surprising if it turned out that the semantic contrasts that get lexicalized most widely in languages are just those that serve best our communicative intentions under the usual pragmatic conditions of usage. For set

relational terms, that would certainly include actions like offering others a choice of items in a set, referring to the complement of a set, talking about sets of two, and so on. In short, one might expect something like the very dimensions of semantic contrast that we have found useful as a conceptual framework for this analysis.

3. Conclusions

Our findings suggest that there is a consistent semantic for set-relational reference across this group of languages. The level of lexical variation we observed would lead us to conclude that such semantic consistency is less a matter of the historical evolution of the languages from a common source than it is from the pragmatic conditions under which human language users talk about sets. The fact that some semantic distinctions are lexicalized and others are not at a given time for a given language may be the complex resultant of a number of forces, functional pressure being one of them. It is interesting to note in this regard that the only single-word forms lost historically in our survey are those for the meanings that English encodes as *either* and *neither*. Classical Greek and Latin each had separate words for this meaning; their closest modern analogues, modern Greek and Italian, do not. This case may be the exception that proves the rule, since word counts in English show *either* and *neither* to be considerably less frequent in usage than any of the other set-relational forms in the study (e.g., Howes 1966). These terms are also among the last to be correctly understood by children learning English as a first language (Hanlon 1987a). If our conclusion is correct, we would expect most human languages to have words for the general set of semantic contrasts that we have identified. The exploration of this domain across language families seems like a promising next step in this line of research.

References

- Andriotes, N. (1983) *Etymologiko lexiko tes koines neoellenikes*. Thessalonike: Institouto Neoeellenikeon Spoudeon.
- Battaglia, S. (1961) *Grande dizionario della lingua italiana*. Torino: Union Tipografico Editrice Torinese.
- Bierwisch, M. (1971) On classifying semantic features. In D. Steinberg and L. Jakobovitz (eds.), *Semantics: An interdisciplinary reader in philosophy, linguistics, and psychology*. Cambridge: Cambridge University Press, pp. 410-435.
- Buck, C. (1949) *A dictionary of selected synonyms in the principal Indo-European languages; a contribution to the history of ideas*. Chicago: University of Chicago Press.
- Carden, G. (1970) Logical predicates and idiolect variation in English. Unpublished doctoral dissertation, Harvard University.
- Chantraine, P. (1968-1980) *Dictionnaire étymologique de la langue grecque*. Paris: Klincksieck.
- Dauzat, A. (1938) *Dictionnaire étymologique*. Paris: Larousse.
- DeVoto, G. (ed.) (1968) *Avviamento alla etimologica italiana: Dizionario etimologico*. Firenze: LeMonnier.

- Dubois-Charlier, F. (1986) *American heritage Larousse Spanish dictionary*. Boston: Houghton-Mifflin.
- Glare, P. (ed.) (1963) *Oxford Latin dictionary*. Oxford: Clarendon.
- Grebe, P. (1963) *Duden Etymologie Herkunftswörterbuch der deutschen Sprache*. Mannheim: Bibliographisches Institut (Dudenverlag).
- Hanlon, C. (1987a) Acquisition of set-relational quantifiers in early childhood. *Genetic, Social and General Psychology Monographs*. 113.2: 213-264.
- Hanlon, C. (1987b) Pragmatic influences in the acquisition of English set-relational quantifiers. Paper presented at the meetings of the International Pragmatics Association, Antwerp.
- Hanlon, C. (1990) Defining set-relational quantifiers in early childhood. Paper presented at the meetings of the International Society for the Study of Child Language, Budapest.
- Howes, D. (1966) A word count of spoken English. *Journal of verbal learning and verbal behavior* 5: 572-604.
- Lampe, G. (1961) *A patristic Greek lexicon*. Oxford: Oxford University Press.
- Liddell, H., & R. Scott (eds.) (1966) *A Greek-English lexicon*. Oxford: Clarendon.
- Mackridge, P. (1985) *The modern Greek language: A descriptive analysis of standard modern Greek*. Oxford: Oxford University Press.
- Morris, W. (1969) *American heritage dictionary of the English language*. (1st ed.) Boston: Houghton Mifflin.
- Patrick, G. (1963) *Roots of the Russian language*. New York: Pitman.
- Preobrazhenskii, A. (1951) *Etymological dictionary of the Russian language*. New York: Columbia University Press.
- Renfrew, C. (1987) *Archaeology and language: The puzzle of Indo-European origins*. Cambridge: Cambridge University Press.
- Sapir, E. (1930) Totality. *Language Monographs* 6: 1-27.
- Saxe, G., and J. Posner (1983) The development of numerical cognition: Cross-cultural perspectives. In H. Ginsburg (ed.), *The development of mathematical thinking*. New York: Academic Press, pp. 291-317.
- Simpson, J., and E. Weiner (eds.) (1989) *The Oxford English dictionary*. Oxford: Clarendon Press.
- Swanson, D. (1982) *Vocabulary of modern spoken Greek*. St. Paul, MN: North Central Publishing Co.

Table 1. Definitions for English set-relational quantifiers expressed as transformations of suppositional into actual reference sets

Quantifier	Definition
<u>all</u>	The actual reference set is identical to potential reference set.
<u>no, none</u>	The actual reference set is null or empty.
<u>some</u>	The actual reference set is an indefinite portion of the potential reference set.
<u>any</u>	The actual reference set is an indefinite portion of the potential reference set, with an equal chance of selection across all members or portions of the potential reference set.
<u>another</u>	The actual reference set is an indefinite new member of the potential reference set.
(the) <u>other</u>	The actual reference set is that portion of the potential reference set remaining after a specific subset has been subtracted.
<u>each</u>	The actual reference set is identical to the potential reference set. Also, the relevant predicates outside the nominal must be applied distributively. That is, the predicates must be interpreted as describing the members individually, or taken one at a time.
<u>every</u>	The actual reference set is identical to the potential reference set. Also, the predicates outside the nominal are applied to set members distributively, with stress on the exhaustiveness of the process.
<u>both</u>	The actual reference set is identical to the potential reference set. Further, the potential reference set is a previously specified set of two.
<u>either</u>	The actual reference set is one member of the potential reference set, with an equal chance of selection across set members. Further, the potential reference set is a previously-specified set of two.
<u>neither</u>	The actual reference set is null or empty. Further, the potential reference set is a previously specified set of two.

Table 2. English sentences used to elicit quantifiers in target languages.

- | | Generic Level |
|-----|--------------------------------------------------------------------------------|
| 1. | all
All men are mortal
Mommy, why do all animals have tails? |
| 2. | no
No raindrops are square.
No wolves talk like that. |
| 3. | some
Some trees are evergreen.
Some animals wake up in the morning time. |
| 4. | any
You can buy a stamp at any post office.
Any animal uses oxygen. |
| 5. | each
Each person is a world apart.
Each snowflake is a crystal. |
| 6. | every
Every cloud has a silver lining.
Every plant is made up of cells. |
| | Non-Specific Level |
| 7. | no
This tree has no apples.
No children are here. |
| 8. | some
Do you want some peanuts?
I'm going to make some cookies. |
| 9. | any
Have you gotten any letters?
Do you need any pencils? |
| 10. | another
I need another notepad.
Hey, let's do another page. |

SPECIFIC								
English	C Greek	Latin	Italian	Spanish	French	German	Russian	M Greek
all	panta	omnes	tutte	todas	toutes	alle	vse	ola
some	tina	aliquas	alcune	algunas	quelques	einige	neskol'ko	merika
none	ouden	nullas	nessuna	ninguna	aucune	keine	ni odnovo	kanena
any	tina	ullas	qualsiasi	cualquiera	n'importe quelle	einige	liuboi	opio
other	alla	alias	altre	otras	autres	andere	drugoi	alla
another	allo	aliam	una altra	otra	une des autres	eine der anderen	drugoi	ena allo
each	hekaston	unam quemque	ognuna	cada	chacune	jede	kazhdyi	kathe
every	pan	omnem	ogni	todas	toutes	alle	kazhdyi	ola
both	amphotera	ambas	tutte e due	ambas	les deux	beide	oba	dyo
either	hopoteron	utram	l'una o l'altra	una	l'une ou l'autre	eine oder die andere	odin ili drugoi	ena e to allo
neither	oudeteron	neutram	nessuna	ninguna	aucune	keine	ni odin ni drugoi	kanena
one	hen	unam	una	una	une	eine	odin	ena
two	duo	duas	due	dos	deux	zwei	dva	dyo
GENERIC								
all	pantes	omnes	tutti gli	todos	tous	alle	vse	oloi
some	tina	nonnullae	alcuni	algunos	quelques	einige	nekotoryie	merika
no	oudenes	nulli	neg. verb	ningun	aucune	neg. verb	ni odin	neg. verb
any	pan	quidlibet	qualsiasi	cualquier	n'importe quelle	jeder	liuboi	opio
each	hekastos	unus quisque	ogni	cada	chaque	jeder	kazhdyi	ekastos
every	pasa	omnis	ciascuna	todas	chaque	jede	kazhdyi	kathe
NON-SPECIFIC								
some	0	0	delle	0	des	0	neskol'ko	merika
no	neg. verb	nullas	non + verb	neg. verb	neg. verb + de	keine	niet	neg. verb
any	0	0	0	0	du	0	0	kanena
another	allo	aliam	un altra	otro	un autre	eine andere	drugaiia	ena allo

Table 3. Set-relational quantifiers for nine Indo-European languages. The first group are used for specific sets, the second group for generic sets, and the third group are used in non-specific set reference.