Åke Viberg
Lund University/Sweden

Differentiation and Polysemy in the
Swedish verbal lexicon

Abstract

The semantic structure of verbal semantic fields in Swedish is illustrated with one specific field, viz. Physical contact (cf. English: *hit, strike, beat, knock, slap, kick, touch* etc). All members of the field share the core component CONTACT(x,y). The patterns of differentiation accounting for the contrasts between members of the field exploit components such as body–parts, intensity of contact and interpersonal expressive meanings (e.g. *beat, kick* vs. *caress, kiss*). Patterns of polysemy are studied with the help of a large textbank. A prototypical meaning representation is postulated and non–ideal cases derived by three broad classes of modifications: 1. Bleaching, 2. Resultative strengthening and 3. Metaphor.

1. Introduction

The aim of this paper is to give a characterization of the semantic structure of the lexicon with a focus on the principles of differentiation between words with a related meaning on the one hand and the patterns of polysemy that relate different senses (or uses) of individual words on the other. The study is part of a larger research project concerning the lexical organisation of verbs in Swedish seen from a crosslinguistic perspective (Viberg 1981, 1992).

Semantically, the verbal lexicon is organized into a number of semantic fields. In Appendix 1, the 100 most frequent verbs in Swedish have been classified into semantic fields. (The numbers show the rank when the verbs are ordered according to descending frequency.) The fields have been grouped into three larger classes (Viberg 1994a). "Concrete (physical) actions" comprises fields such as Motion ('go', 'put') and Production ('make', 'build'), which typically refer to situations immediately accessible to the sense organs. Most of these verbs are canonical actions in the sense that they take an Agent surfacing as subject in the unmarked case. Mental verbs comprising fields such as Cognition and Perception describe psychological processes of various types which can be subjectively ex–perienced by the self but not directly observed in others. Typically, one of the arguments is an Experiencer. Very often, there are pairs of verbs which contrast (primarily, but not necessarily exclusively) with respect to base–selection (Viberg 1983; cf. flip–flop, psych–movement etc), e.g. Experiencer–based: *I could hear that Peter was happy* vs. Source (Phenomenon)–based: *Peter sounded happy (to me).* The last class, Grammatical verbs, covers various groups of grammaticalized verbs, which

express dynamic (aspectual, causative) or modal distinctions. Verbs, in particular the most frequent ones, tend to be extremely polysemic. There is a general trend that verbs extend their meanings according to the order "Concrete actions" > Mental verbs > Grammatical verbs. This applies both diachronically and in terms of synchronic polysemy. Looked at more closely, individual verbs tend to have characteristic paths of semantic extension.

2. Internal structure and differentiation in one semantic field: Physical contact

The internal structure of a semantic field may be looked upon as the outcome of the interaction of a set of more or less field–specific components and a number of general field–independent components that cut across all verbal semantic fields. To take just one example, verbs of Perception (Viberg 1983) are organized according to field–dependent components such as the sense modalities (*see/hear/touch* etc) and the field–independent dynamic system comprising aktionsart (e.g. stative: *see*; dynamic: *look*) and causative distinctions (*be visible* vs. *show* 'make visible').

In this presentation, I will use the verbs of Physical contact as the major example. Following Miller & Johnson–Laird (1976), verbal semantic fields are organized around a core predicate, e.g., Motion verbs are organized around TRAVEL(x) and Possession verbs around POSSESS(x,y). Verbs of Physical contact such as *hit, strike, beat, punch, knock, bump into, touch, rub* etc are organized around CONTACT(x,y). In Table 1, the verbs belonging to this field in Swedish are listed grouped into broadly defined subfields. A subfield such as Body–part contains verbs specifying the body–part with which the contact is effectuated (cf. *slap, punch, kick, lick*), Sound–source specifies the sound produced from the contact (cf. *bang, thump,*) and Moving contact specifies motion along something simultaneously with a contact which is hard enough to have some effect on the surface (cf. *stroke, rub, scrape, graze, scratch, itch, tickle*). The first step in the further analysis is to account for the principles of differentiation within the field. As an example, I will use some of the verbs in the subfield Moving contact. They can all be regarded as hyponyms of *stryka* approx. 'stroke' (with many language–specific characteristics). The central part of the meaning (ii, below) comprises one motion and one contact component:

(i)   ACT(z,S)
(ii)   CAUSE (S, (ALONG(TRAVEL))(x,y) &
             CONTACT (x,y))
(iii)   INTEND(z, SHOW(z,w,AFFECTION))

Example: *Maria strök lille Peter över håret.* 'Maria (z) stroke little Peter's (w) hair(y)' (lit. 'over the hair'). What travels along Peter's hair in this example is not expressed explicitly but is normally understood to be Maria's

hand: HAND(x) is thus the default interpretation. Most verbs of physical contact also have an attitudinal component like (iv), which is actualized in the following syntactic frame involving a relation between two human beings:

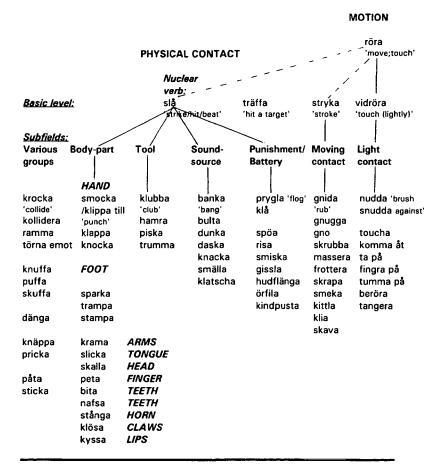$NP^z\_\_NP^w$ prep NP^y (med 'with' NP^x) [HUMAN:z,w;BODY–PART:x,y]

Table 1. Physical contact verbs in Swedish. A simple taxonomy.

The hyponyms of *stryka* 'stroke' specify various body–parts such as SKIN(y) for *smeka* 'caress' and *kittla* 'tickle' and *skava* 'abrade'. These verbs contrast primarily with respect to the purpose or result: 'show affection', 'make laugh' and 'hurt', respectively. Another parameter is the intensity of the contact along the scale HARD <———> LIGHT contact.   The

differentiation between the verbs belonging to the subfield Moving contact is presented schematically in Table 2.   ·

Table 2. Differentiation between the hyponyms of *stryka* 'stroke'

(BACK&FORTH(TRAVEL))(x)
gnida 'rub'
gno 'rub'   (ENERGETICALLY(ACT))(z,S)
gnugga 'rub'   (HARD(CONTACT))(x,y), (FAST(TRAVEL))(x)
skrubba 'scrub'   ROUGH(x)
skrapa 'scrape'   SHARP(x)

(ALONG(TRAVEL))(x, SKIN)
smeka 'caress'   (LIGHT(CONTACT))(x,y),
                     INTEND(z,SHOW(z,w,AFFECTION))
kittla 'tickle'   FEEL(w, WANT(w, LAUGH(w)))
klia 'itch';'scratch' INTEND(z, HAPPEN(FEEL(w, notSORE)))
skava 'abrade'   CLOTHES(x), FEEL(w, PAIN)
frottera 'give a   INTEND(z, HAPPEN(WARM/DRY(w)))
 rubbing'
massera 'massage' MUSCLES(y), INTEND(z, HAPPEN(notFEEL(w, PAIN)))

3. Patterns of polysemy

The principles of differentiation are based on the prototypical meaning. A second step of the analysis consists in establishing the patterns of polysemy which are characteristic of the verbs belonging to the field. This part of the analysis is based on an intensive textual study of the most frequent Physical contact verbs in "The Bank of Swedish" (Språkbanken, Dept. of Swedish, Gothenburg Univ.). In particular, the corpus Novels 1980 has been used (4 million running words from 60 novels, see Gellerstam 1992). Due to limitations of space, however, I will primarily present invented examples in this paper. Actual examples can be found in my publications in Swedish (Viberg 1984, 1992b, 1994b).

When all occurrences of a verb are studied in a corpus, a large number of specific meanings can be observed (by feel or with reference to synonyms or paraphrases or by translating into another language), especially if the verb has a high frequency of occurrence. To a large extent these meanings appear to be related. Such patterns will be accounted for by postulating a prototypical meaning representation from which all the specific meanings can be derived in a systematic way. Some of the specific meanings can only be derived by invoking certain metaphorical principles, but to a great extent the specific meanings form a continuous chain, where adjacent meanings are

felt to represent bleached or strengthened versions of one another.
Technically, this can be represented by deleting from or adding to the
prototypical representation. The analysis in several respects forms a parallel
to text–based in–depth studies of individual words such as the study of *risk*
by Fillmore & Atkins (1992) and the analysis of *ask* by Rudzka–Ostyn
(1989).

The verbal semantic fields tend to be organized around one or at most a
few nuclear verbs (Viberg 1993), which are dominant within their fields with
respect to frequency of occurrence, the number of secondary senses and the
range of constructions they can enter. Within the field Physical contact, *slå*
'strike/hit/beat' is the nuclear verb. The prototypical meaning of *slå* is
presented in Table 3 (slightly simplified, i.e. a number of CAUSE have been
left implicit).

Table 3. Lexical representation of *slå* 'strike/hit' in its prototypical use.

Syntactic frame:

NP^Z ___ NP^W (prep NP^Y) (med NP^X)

Exemple: Per(z) slog Pål (w) (i ansiktet^Y) (med knytnäven^X/en käpp^X)
                'Per(z) hit Pål(w) in the face(y) with his fist(x)/a stick(x)'

Semantic representation:

Unmarked values:
HUMAN(z); HUMAN(w); HAND(x) or HOLD(z,x)

BODYPART(y,w)		y is a Body-part of w
FAST(iii)		The motion in (iii) is fast
GREAT (d_1)		The force (d_1) is great
(i)	ACT(z,S)	z performs an act S
(ii)	STRETCH(ARM)	the arm is stretched
(iii)	TRAVEL(x)	x travels
(iv)	HAPPEN(CONTACT(x,y))	There is contact between x and y
(v)	FORCE(x, y, d_1)	A force with strength d_1 is directed tow. y
(vi)	INTEND(z, DEFEAT *or* HURT(z, w))	z intends to defeat *or* hurt w

---

In the textual study (based on 2354 actual examples), a wide range of
non–prototypical or secondary meanings were observed. The majority of
these can be described by a modification of the representation of the
prototypical meaning. Roughly, the modifications are of three types (often
used in combinations): 1. **Bleaching**, 2. **Resultative strengthening** and 3.
Metaphor. The first two are gradual in nature and the meanings derived in
these ways can often be arranged into a continuous scale with almost
imperceptible   steps. Many cases of bleaching are associated with a

non–prototypical subject, such as the following (Simplified versions of actual examples in Viberg 1994b):

En käpp slog mot asfalten.   'A cane was (heard) striking the
                                              asphalt'.
Regnet slog honom i ansiktet.   'The rain hit his face'.
Vågorna slog mot stranden.   'The waves beat against the shore'.
Ljuset/Ljudet/Stanken slog   'The light/noise/stench hit him'.
emot honom.

All these examples describe some type of physical contact and share the core component (iv) HAPPEN CONTACT and perhaps also (v) FORCE and (iii) TRAVEL with the prototypical case. It might be argued, that the rest of the components in Table 3 could be dispensed with even in the prototypical case. But in Swedish, the body movement in (ii) STRETCH ARM is a rather prominent part of the meaning when the subject is human. It is possible to find examples of the following type, where *slå* is used as a verb of pure body movement without any concomitant contact: *Per slog ut med armarna.* 'Per spread ('struck out with') his arms'. (A conventionalized sign of resignation, esp. in the novels.) One rather frequent type of metaphorical extension appears with thoughts or emotions as subject: *Tanken slog honom att han kunde ha fel.* 'The thought struck him that he could be wrong'. or *Det slog honom att han kunde ha fel.* 'It struck him etc.' This is based on a metaphorical principle such as **AN IDEA IS A FORCE** (cf. Lakoff & Johnson 1980). The observations regarding the selection of subject and its consequences for the semantic interpretation are summed up in Table 4.

Table 4. Subject cline (for Contact verbs)

HUMAN = >	INSTRUMENT = >	NATURAL = >	SENSE- = >	THOUGHT,
		FORCE	IMPRESSION	EMOTION
	VEHICLE,			
	PROJECTILE,	WIND	LIGHT	
	CLOCK	RAIN	SOUND	
		WAVE	SMELL	
	(BODY-PART)			
	(TOOL)			

PROTOTYPICAL (Literal) < --- >   METAPHORICAL
Intention ---------------->
Responsibility -------->
Self-induced motion -->
Concretely perceptible to the senses --------------------------- · · · · ->

Most of the cases that can be interpreted as resultative strengthening are motivated by a naive physics model (or folk psychology, when the object is

human). Physical contact can result in 1. Motion, 2. The production of Sound, 3. Disconnection ('Breaking'), to mention just some of the most important cases. With a human object, we can add categories such as 1. Non–verbal communication, 2. Expression of Emotion and 3. Hurting or 4. Killing (cf the Engl. cognate *slay* of *slå*). Formally, this strengthening can be represented by the addition of various resultative components at the end of the representation of the prototypical meaning in Table 3, according to the model:

(iii)   HAPPEN(CONTACT(x,y))
(iv)   CAUSE((iii), TRAVEL(y))

E.g. Peter hit the ball (over the net).

Meaning extensions of this type interact in a complex way with the syntactic frame of the verb and with the addition of a wide variety of verbal particles in Swedish. Spatial particles are used in most cases when motion is involved. In addition, there is a number of combinations with more specific particles such as *slå sönder* 'strike into pieces', one of the closest equivalents of English *break* and *slå ihjäl* (etymol. 'into Hell') 'beat to death', 'kill'. An example of the function of the syntactic frame is the use of the formal subject *det* 'it', which is characteristic for verbs describing a sound–source like *Det knackar* 'There is a knock(at the door)'. This syntactic frame can be used even with *slå* in examples such as: *Det slog i dörrarna.* (Lit. It struck in the doors.) 'The doors slammed'. The selection of subject also can result in strengthening in some relatively frequent cases, for example: *Klockan slog.* 'The clock struck' (Sound–source). The selection of object often affects the interpretation of the verb. If the object means 'grass' (or an area that is typically covered by grass such as a lawn or a ditch–bank) the interpretation that naturally imposes itself is that a scythe is used as an instrument and that the grass is cut (see Table 5).

Table 5. The lexical representation of 'slå gräs' (lit. beat grass) 'cut the grass'

Syntactic frame: NP^Z ___ NP^Y (med NP^X)
Example: Per slog gräset (med lie). 'Per cut the grass (with a scythe)'.

HUMAN(z), GRASS(y), SCYTHE(x)

(i)   ACT(z,S)
(ii)   TRAVEL(x)
(iii)   HAPPEN(CONTACT(x,y))
(iv)   CAUSE((iii), HAPPEN(notCONNECTED(y)))

Resultative strenthening turns the basic meaning of the verb into a kind of manner component ('cut by striking a scythe'). The expression *slå gräset* contrasts with *klippa gräset* 'cut the grass with a lawn–mover'. Some of the major types of strengthening are summed up in Table 6, which, however, is far from complete.

Table 6. Major types of resultative senses of *slå* 'hit/strike/beat'

	Semantic components	Semantic fields Human subject	Compare with another type of subject:
(i)	ACT(z,S)	**Stationary motion: Body movement**	
(ii)	STRETCH (ARM)	Per slog ut med armarna. *Per spread*	Blommorna slog ut. *The flowers came ('hit') out.*
(iii)	TRAVEL(x)	*his arms.* **Pure contact**	
(iv)	HAPPEN(CONTACT(x,y))	Per slog emot ett bord. *Per knocked against a table.*	Vågorna slog mot stranden. *The waves beat/ lapped against the beach.*
(v)	FORCE(x,y,d_1) & CAUSE(d_1,(vi)) u: GREAT (d_1)	**Objective motion** Per slog bort bollen.	
(vi) a)	TRAVEL(y)	*Per hit ('away') the ball.* **Sound source**	Det slog i dörrarna.
(vi) b)	(FROM(TRAVEL))(SOUND,y)	Per slog takten. *Per beat time.* **Disconnection**	*The doors slammed.* Klockan slog fem. *The clock struck five.*
(vi) c)	HAPPEN(notCONNECTED(y))	Per slog sönder flaskan. *Per broke ('hit to pieces') the bottle.* Per slog gräsmattan. *Per mowed the lawn.*	
(vi) d)	HAPPEN(FEEL(w,PAIN))	**Bodily sensation** Per slog sig (i knät). *Per hit his knee.*	Pulsen/Hjärtat slår. *The pulse/The heart beats.*
(vi) e)	HAPPEN(notALIVE(w))	**Organic life** Per slog ihjäl Pål. *Per beat Pål to death.*	Björnen slog ett får. *The bear got ('hit') a lamb.*
(vi) f)	HAPPEN(EXIST(FIRE))	**Production** Per slog eld på en tändsticka. *Per struck ('hit fire on') a match* **Social interaction**	
(vi) g)	DEFEAT (z,w)	Per slog Pål i schack. *Per beat Pål at chess.* Napoleon slog preussarna. *Napoleon defeated the Prussians.*	

The verb *stryka* 'stroke/rub/wipe' discussed earlier provides some clear examples of resultative strengthening and how this is dependent on the type of object. A sentence such as *Peter strök taket* means 'Peter painted the ceiling', while *Peter strök sina byxor* means 'Peter ironed his pants'. The instrument in such examples is ususally understood: BRUSH(x) or

IRON(x). Any object that could naturally be interpreted as a surface that is conventionally painted or a cloth that is usually ironed will strongly suggest these specific meanings. A further possibility is that the object refers to a word or an utterance, TEXT(y), for short. In this case, the instrument PEN(x) is understood: *Peter strök under ordet* ('under the word') 'Peter underlined the word' or *Peter strök över* ('over') *ordet* 'Peter crossed out the word'. The semantic represenation is shown in Table 7.

Table 7. The lexical representation of 'stryka' in combination with TEXT

Syntactic frame: NP^Z ___ under/över NP^Y (med NP^X)

HUMAN(z), TEXT(y), PEN(x)

(i)	(WITH$_i$ (ACT)) (z, S, x)
(ii)	CAUSE(S,((ALONG(TRAVEL)) (x,y) & HAPPEN (CONTACT (x,y)))
(iii)	CAUSE ((ii), HAPPEN(EXIST(LINE)))
(iv) a)	INTEND (z, SHOW (z,w,IMPORTANT (y)))
(iv) b)	INTEND (z, SHOW (z,w,notVALID(y)))

In this case, the meaning can be further extended from the basic meaning by deleting the manner component leaving only the superimposed abstract component (iv) in Table 7: *I sitt tal, strök ministern under vikten av förhandlingar.* 'In his speech, the minister emphasized the importance of negotiations.' This represents a common phenomenon. In the material, it is possible to observe several chains of related meanings, where the last link superficially lacks any relation to the prototypical meaning of the word. If some of the intervening links should be lost, we would have a change of meaning in the historical sense. Many of the synchronically existing secondary meanings of Swed. *slå* 'strike' have developed into primary meanings in other languages. According to Buck (1949), many of the words for 'kill' in Indo–European languages are derived from words meaning 'strike' as the English cognate *slay* of Swed. *slå*. Another common phenomenon is the development from 'strike' to 'cut' attested, for example, in French *couper* 'cut' (<OldFr. 'strike'; cf. It. *colpire*, Spa. *golpear*). This is one indication that both the general principles of meaning extension and also some of the specific patterns of polysemy observed in Swedish reflect more general phenomena. Many of the semantic extensions follow from general human experience of the typical result of physical contact such as displacement, disconnection, the emergence of a sound etc and could thus be expected to reflect universal tendencies, but to tease out more exactly what represents universal tendencies and what represents language–specific meaning specializations obviously requires varied crosslinguistic data.

References

Allén, S. 1971. *Frequency Dictionary of Present–Day Swedish.* Stockholm: Almqvist & Wiksell.
Buck, C. Darling. 1949. *A Dictionary of Selected Synonyms in the Principal Indo–European Languages.* Chicago: Univ. of Chicago Press.
Fillmore, C. & Atkins, B. 1992. Toward a frame–based lexicon: The semantics of RISK and its Neighbors. In: Lehrer, A. & Kittay, E. (eds.). *Frames, Fields, and Contrasts.* Hillsdale/N.J.: Lawrence Erlbaum.
Gellerstam, M. 1992. Modern Swedish text corpora. In: Svartvik, J (ed.), *Directions in Corpus Linguistics.* Berlin and New York: Mouton de Gruyter.
Miller, G. A. & Johnson–Laird, Ph. 1976. *Language and Perception.* Cambridge: Cambridge University Press.
Rudzka–Ostyn, B. 1989. Prototypes, schemas and cross–category correspondences: the case of ask. *Linguistics* 27:613–661.
Viberg, Å. 1981. *Studier i kontrastiv lexikologi.* (Ph. D. thesis). *SSM Report 7–8.* Dept. of linguistics, Stockholm University.
—— 1983. The verbs of perception: a typological study. *Linguistics 21: 1, 123–62.*
—— 1984. Fysiska kontaktverb i svenskan. En skiss. *Svenskans beskrivning 14.* Lund.
—— 1992a. Universellt och språkspecifikt i det svenska ordförrådets organisation. *Tijdschrift voor Skandinavistiek 13:2,* 17–58.
——1992b. Tvärspråklig lexikologi med svenskan i centrum. In: Fjeld, R. (ed.), *Nordiske studier i lexikografi.* Oslo.
——1993. Crosslinguistic perspectives on lexical organization and lexical progression. In: Hyltenstam & Viberg (eds.). *Progression and regression in language.* Cambridge: Cambridge University Press.
——1994a. Vocabularies. In: Ahlgren, I. & Hyltenstam, K. (eds.). *Bilingualism in Deaf Education.* Hamburg: Signum Press.
——(1994b). Polysemi hos svenska verb. Exemplet slå och andra fysiska kontaktverb. To appear in the publication from The Second Nordic Conference of Lexicography in Copenhagen, May 1993.

Appendix 1.

The 100 most frequent verbs in Swedish classified into semantic fields

GRAMMATICAL VERBS

GENERAL DYNAMIC	ASPECTUAL	CAUSAL	MODAL	MODALITY
1 vara 'be'	23 börja 'begin'	26 låta 'let'	3 kunna 'can'	49 försöka 'try'
6 bli 'become'	51 fortsätta 'continue'	59 leda 'lead (to)'	4 ska 'shall'	54 lyckas 'succeed'
41 använda 'use'	89 bruka HABITUAL	71 bero 'depend'	15 måste 'must'	85 töras 'dare'
		95 tvinga 'force'	19 böra 'ought'	100 hinna 'be in time to'
			35 behöva 'need'	

"CONCRETE ACTIONS"

POSTURE	MOTION Reflexive	Objective	POSSESSION	EXISTENCE & PRODUCTION
17 stå 'stand'	7 komma 'come'	37 sätta 'put = set'	2 ha 'have'	8 göra 'make'
21 ligga 'lie'	12 gå 'go'	38 ställa 'put = stand'	5 få 'get'	9 finnas 'there is'
61 sitta 'sit'	34 följa 'follow; accompany'	42 lägga 'put = lay'	10 ta 'take'	39 bygga 'build'
	50 lämna 'leave'	47 dra 'pull'	13 ge 'give'	58 ske 'happen'
	70 hoppa 'jump'	64 föra 'lead'	81 köpa 'buy'	62 skapa 'create'
	72 nå 'reach'	80 bära 'carry'	87 sakna 'lack'	77 hända ''happen'
		92 samla 'gather'	94 äga 'own'	88 bestå 'last'
				90 förekomma 'occur'

ORGANIC LIFE	QUANTITY	PHYSICAL CONTACT	MANIPULA-TION	
46 leva 'live, be alive'	45 öka 'increase'	53 slå 'strike/hit/beat'	22 hålla 'hold'	
86 växa 'grow'		69 röra 'touch' (;'move')		

MENTAL VERBS				
METALING-	**VERBAL**			
UISTIC	**COMMUNIC.**	**PERCEPTION**	**COGNITION**	**DESIRE**
20 gälla 'apply; be valid'	11 säga 'say'	14 se 'see'	24 tycka 'think = be of the opinion'	16 vilja 'want'
40 kalla 'call'	28 tala 'speak'	18 visa 'show'	25 anse 'consider'	**OTHER**
44 betyda 'mean = signify'	29 skriva 'write'	32 höra 'hear'	27 veta 'know'	**MENTAL**
57 innebära 'mean = imply'	65 berätta 'tell = narrate'	33 finna 'find'	30 känna 'know'; 'feel'	68 välja 'choose'
73 heta 'be called'	74 nämna 'mention'	48 söka 'look for'	31 tro 'think = believe'	91 uppleva 'experience'
	78 kräva 'demand'	76 verka 'seem'	36 tänka 'think = reflect'	99 intressera 'interest'
	79 svara 'answer'	83 betrakta 'look at, regard'	52 räkna 'count'	
	98 fråga 'ask'	93 förefalla 'seem'	55 lära 'learn; teach'	
			63 läsa 'read'	
			66 förklara 'explain, declare'	
			67 mena 'mean = think'	
			84 förstå 'understand'	

OTHER FIELDS: 43 spela 'play'; 56 vänta 'wait'; 60 arbeta 'work';
75 utgöra 'constitute'; 82 möta 'meet'; 96 fylla 'fill'; 97 omfatta 'comprise'

The frequency ranking is based on Allén (1971).