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Studies on English Literature and Linguistics with the Aid of Personal Computers

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Abstract

Search results on a digitized corpus show that the subject pronoun ellipsis in English displays two major patterns: some verbs often elide *I*, whereas others elide *it*. Pragmatic motivations for those verbs to do so seems varied. However, they share one common thing: their lexical meaning optionally contains the meaning of the relevant pronouns. It seems that based on such notation, one can tell which representation is representative of the meaning of those verbs.***

1. Introduction

This article concerns which pronouns are elided as the subjects of particular verbs in conversation of present-day English. Schmerling (1973) is a seminal work on this theme. She describes three classes of verbs and auxiliaries which prefer the ellipsis of particular pronominal subjects of declarative sentences.

The subject pronoun ellipsis has caught the interest of many students of English. Jespersen (1922), the first of those to our knowledge, calls this phenomenon prosiopesis and considers them as a matter of performance. Quirk et al. (1972), following in the same track as Jespersen, ascribe the phenomenon to "subaudibility." On the other hand are Schmerling (1973), Thrasher (1974), Thomas (1979), Napoli (1982), Akmajian et al. (1984), Haegeman (1990) and Rizzi (1992), who take these phenomena as a matter of linguistic knowledge. Schmerling deals with the ellipsis in question by means of the ordering of syntactic rules, Haegeman by means of a variable bound by a null operator of discourse and Rizzi by means of a null constant. Akmajian et al. describe this ellipsis as a morpho-phonemic deletion and Napoli describes it as a phonological deletion. Thrasher, perhaps the most thorough work on this subject, and Thomas tackle this problem from the standpoint of recoverability based on pragmatics.

2. *Caption Corpus*

The data employed in this research are an 18.7-megabyte collection of digitized texts—dubbed *Caption*

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Corpus—of the captions of 269 films. It was compiled in 1998 by Research Institute of Foreign Language Teaching, Dokkyo University. Almost all tokens of verbs were retrieved and those of them without their subjects were checked on the original video films. The equipment employed to do the job of retrieval is a 1.42 GHz Power Mac G4 with 2.0 GB SDRAM and a 3.06 GHz iMac with 4 GB DDR3. The search software employed is YooEdit 1.7.1, developed in 2000 by Yooichi Tagawa, and TextWrangler 3.1, developed in 2010 by Bare Bones Software, Inc.

2.1. Overview

The tokens of verbs without subject pronouns in the present and past tenses are shown in Table 1 along with the plausible candidates as their construed subjects.

subjects / verbs	I	we	you	you (pl)	some-/ any-one	some-/ any-thing	he	she	it	it (cat)	they	here/ there	totals
present	331	7	10	1	1	0	76	22	300	154	9	3	914
%	36.09	0.76	1.09	0.10	0.10	0	8.28	2.39	32.71	16.79		0.32	
present	<1>		<1>				<2>		<2>				3
%	36.20		1.19				8.50		32.93		0.98		
													917
past	320	18	24	0	1	0	94	26	90	16	21	0	610
%	52.12	2.93	3.91	0	0.16	0	15.31	4.24	14.66	2.61	3.42	0	
past	<1>						<2>	<2>	<2>		<1>		4
%	52.28						15.64	4.56	14.98		3.58		
													614
present and past	651	25	34	1	2	0	170	48	390	170	30	3	1524
%	42.52	1.63	2.22	0.07	0.13	0	11.10	3.14	25.47	11.10	1.96	0.2	
present and past	<2>		<1>				<4>	<2>	<4>		<1>		7
%	42.65		2.29				11.37	3.27	25.74		2.02		
													1531

Table 1 Tokens of verbs without subject pronouns in the present and past tenses. (pl: plural; cat: cataphoric; <i>: the token in the case of a verb having two possibilities of interpretation for its missing subject)

Most frequently elided is the first-person singular pronoun *I*, comprising 42.52 to 42.65 percent of tokens, depending on interpretation; next comes the third-person singular neuter pronoun *it*, comprising 36.57 to 36.84 percent of tokens, including cataphoric cases. Those higher percentages *per se* suggest that something is happening in the case of these pronouns. If we can identify the subclasses of the verbs within which some significantly higher percentages of ellipsis of these pronouns are attested than those general percentages, we may be able to find out the causes.

The ellipsis of the third-person singular pronouns *he* and *she* comprises 14.24 to 14.64 percent, depending on interpretation. Frequent cases are those in which a missing subject is the topic of a discourse, as in (1), or a predicate is a focus, as in (2):[1]

(1) 00:34:01 His fitness report says it all.
00:34:02 He's a wild card.
00:34:05 *Flies* by the seat of his pants.
00:34:07 Completely unpredictable. (*Top Gun*; "[He] Flies")

(2) 01:35:20 What did you do, then?
01:35:22 *Stayed* in. Read me book. Had a little drink.
(*Secrets & Lies*; "[I] Stayed," "Read [my] book")

Examples of the second-person pronoun *you* elided are few. Examples involving the indefinite pronouns *some-/anyone* and *some-/anything* and the existential expletives *here* and *there* are virtually nonexistent.

2.2. First-Person Singular Pronoun

The ellipsis of *I* often involves verbs of thinking, sensing/knowing and saying, which will be described below in order.

2.2.1. Verbs of Thinking

By verb of thinking, we mean not only verbs like *think*, *doubt* ("think not *p*") and *wonder* ("think either *p* or not *p*"), but also those like *want* ("think one needs") and *like* ("think something is good").

Examples of the subject pronoun ellipsis are given in (3) and (4):

(3) 00:30:05 Ray, think about what I said.
00:30:07 I'm just trying to help.
00:30:09 I know.
00:30:11 *Thought* you were watching some game.
00:30:13 It's not really a game.
00:30:15 It's more like practice. (*Field of Dreams*; "[I] Thought")

(4) 00:33:53 Got a second?
00:33:54 One second?
00:33:59 *Want* to show you something.
00:34:08 Here you are.
00:34:10 What do you think? (*On the Waterfront*; "[I] Want")

The tokens of the subject pronoun ellipsis involving particular verbs of thinking are shown in Table 2.

The percentage—87.59 or 87.27 percent—of the ellipsis of *I* in this group of verbs is more than twice that of the corresponding ellipsis in all the verbs examined. It seems reasonable to state something like (5):

(5) When the first argument of a verb of thinking is elided in the subject position, it is likely that the missing subject is *I*.

2.2.2. Verbs of Sensing/Knowing

Verbs of sensing include verbs like *feel*, *hear* ("sense by ear") and *see* ("sense by eye"); verbs of knowing those like *know*, *realize* ("come to know"), *forget* ("come not to know") and *remember* ("continue to know").

Examples of the subject pronoun ellipsis are given in (6) and (7):

(6) 01:26:13 I was thinkin' maybe tryin' for my high school equivalency.
01:26:17 *Hear* you helped a couple of fellas with that.
01:26:20 I don't waste time with losers, Tommy. (*The Shawshank Redemption*; "[I] Hear")

subjects / verbs	I	we	you	you (pl)	some-/ anyone	some-/ anything	he	she	it	it (cat)	they	here/ there	total
assumed			1										
believe	2						1						
care							1						
cared	1												
dig (=like)	6												
doubt	1												
expected	4												
figure	1												
figured	5												
guess	37												
hate	3						1						
hated	1												
hope	34												
like	4						1						
love	14												
miss	1												
missed	3	1	3				1						
need	8	3							4				
suppose	2												
think	10						4						
thought	53						2						
want	17	1	2				2	1	2		1		
want	<1>		<1>										
wanted	8		1				1				1		
wish	27												
wonder	4												
totals	247	5	7				14	1	6		2		282
%	87.59	1.77	2.48				4.96	0.35	2.13		0.71		
totals	246		8										
%	87.23		2.84										

Table 2 Tokens of verbs of thinking without subject pronouns. (pl: plural; cat: cataphoric; <i>: the token in the case of a verb having two possibilities of interpretation for its missing subject)

(7) 01:38:40 Doreen, uh, meet Dr. Griswold.
01:38:42 Uh, this is Molly.
01:38:44 Hi.
01:38:45 She's, uh, my shrink.
01:38:46 Hi. Well, ex-shrink, um ... [*sic*]
01:38:48 We're sleeping together now, so I can't be his therapist.
01:38:52 *Knew* it. Thanks. (*Tin Cup*; "[I] Knew")

The tokens of the subject pronoun ellipsis involving particular verbs of sensing/knowing are shown in Table 3.

subjects / verbs	I	we	you	you (pl)	some-/ anyone	some-/ anything	he	she	it	it (cat)	they	here/ there	total
caught							1						
checked		1											
copy (radio)	24												
feel	3												
felt	2												
forget	2						1						
forgot	3												
found	13							1					
hear	2												
heard	9												
know	20		2				3						
knew	10	1					1	1				1	
located (radio)	1												
read	2						1						
read (past)	2												
realized	1												
recognized	2												
remembered	1												
see	2												
saw	11						1						
understand (radio)	2												
woke up	2												
totals	114	2	2				8	2				1	129
%	88.37	1.55	1.55				6.20	1.55				0.78	

Table 3 Tokens of verbs of sensing/knowing without subject pronouns. (pl: plural; cat: cataphoric)

Here again, the prevalence of *I* is striking. Although the verb *copy* ("understand") used in radio communication contributes, in no small way, to beefing up the total number of tokens in these groups, deducting the tokens involving *copy* from the aggregate total still leaves the percentage of the ellipsis of *I* at 85.71.

These facts point to (8):

(8) When the first argument of a verb of sensing or knowing is elided in the subject position, it is likely that the missing subject is *I*.

2.2.3. Verbs of Saying

Verbs of saying conflate SAY as part of their meaning: e.g. *bet*/*swear* ("say something is true"), *appreciate*/*thank* ("say one is happy with"), *promise* ("say one will do"), *owe*/*request* ("say one should give").[2]

Examples of the subject pronoun ellipsis are given in (9) and (10):

(9) 00:11:35 You know what this place reminds me of?
00:11:39 *Bet* you a beer you're going to tell me.
00:11:40 You lose. (*Always*; "[I] Bet")

(10) 00:12:09 Ah, Dr. Jones. I'm R. Weber.
00:12:11 We've managed to secure three seats.
[... ... ...]
00:12:30 [Jones holding out a hand] *Owe* you a gin.

(*Indiana Jones and the Temple of Doom*; "[I] Owe")

Table 4 shows how particular verbs of saying behave in relation to the subject pronoun ellipsis.

subjects / verbs	I	we	you	you (pl)	some-/ any-one	some-/ anything	he	she	it	it (cat)	they	here/ there	total
accept	3												
acknowledge	1												
appreciate	4												
asked							1						
beg	8												
bet	27												
cancelled	1												
decide							1						
denied								1					
fooled	1							1					
insulted			1										
mean	1												
named	1												
owe	1							1					
pass	1												
promise	1												
propounded							1						
recommend (radio)	6												
repeat	29												
request	14												
resigned	1						1						
say					1		13			3			
said	2		2				6	3			2		
said							<1>	<1>					
swear to God	5												
tell							1						
told	16						1						
trust	2												
totals	125		3		1		26	6	3		2		166
%	75.3		1.81		0.60		15.66	3.61	1.81		1.20		
totals							25	7					
%							15.06	4.22					

Table 4 Tokens of verbs of saying without subject pronouns. (pl: plural; cat: cataphoric; <i>: the token in the case of a verb having two possibilities of interpretation for its missing subject)

There are two quirks to this group. One is the scarcity of the examples with *I* elided as the subject of *say*/

said. The other is the profuseness of those with *he* and *she* elided as the subject of *say*/*said*. These facts lower the percentage of the tokens involving *I* (75.3 %). Probably, the first quirk may reflect the fact that there is little need for a speaker to mention that *he*/*she* is engaged in a speech act, except for saying *I dare say*. Likewise, there seems to be little need for a hearer to do the same. Hence comes the second quirk.

The verb *thank* is not included in Table 4 because of its enormous number of tokens. This verb seems to be able to go without its subject only when its object is *you*. Thus, the relevant expression in (11) for instance, cannot be construed as a declarative but as an imperative:

(11) 00:28:43 Hello.
00:28:45 William Shackleford.
00:28:46 Oh, hi. David Murphy.
00:28:50 [Shackleford holding out a box] For Mrs. Murphy,
00:28:52 from John Gage.
00:28:55 Oh, well, *thank* him for us.
00:28:56 I'll do that. (*Indecent Proposal*; "[you] thank")

Besides *bet* and *told*, *repeat* and *request* are the only members of this group that reach double digits. Both, as well as *recommend*, are frequently used in radio communication—25 tokens over 29 for *repeat* and 10 over 14 for *recommend*.

Thus it seems fair to say something like (12):

(12) When the first argument of a verb of saying is elided in the subject position, it is likely that if the verb is *say*, the missing subject is *he* or *she*; otherwise it is *I*.

2.3. Third-Person Singular Neuter Pronoun

The ellipsis of *it* often involves verbs of knowledge-/percept-subject, causative sensing/knowing verbs, verbs of cost-benefit and metalinguistic verbs, which will be described below in order.

2.3.1. Verbs of Knowledge-/Percept-Subject

Verb of knowledge-/percept-subject is a verb which takes knowledge or percept as its subject. Knowledge comes to the subject of, say, *come up*, *enter one's mind* or *turn out*; percept to the subject of, say, *feel*, *seem* or *sound*. In many cases, real knowledge or percept is postposed, leaving the cataphoric *it* in the subject position of these verbs.[3]

Examples of the subject pronoun ellipsis come under (13) and (14):

(13) 01:06:34 Some poor S.O.B. on a public-indecency charge
01:06:38 paid off a P.A. to have his case dismissed.
01:06:40 *Turns* out the guy's probation officer is Carolyn,
01:06:43 and the Deputy assigned to the case
01:06:45 is Tommy Molto. (*Presumed Innocent*; "[It] Turns")

(14) 01:19:18 I missed you a lot. / Sure you missed me?
01:19:23 Of course. / You don't look like you did.
01:19:25 No. *Looks* to me like I missed you more than you missed me.
(*Green Card*; "[It] Looks")

Table 5 shows the tokens of the subject pronoun ellipsis involving particular verbs of knowledge-/percept-subject.

The anaphoric or deictic *it* and the cataphoric *it* share over 90 percent of the aggregate total. The third-person masculine and feminine pronouns make up 6.27 percent together.

Hence (15):

(15) When the first argument of a verb of knowledge-/percept-subject is elided in the subject position, it is likely that the missing subject is *it*.

subjects / verbs	I	we	you	you (pl)	some-/ any-one	some-/ any-thing	he	she	it	it (cat)	they	here/ there	total
appear									2	1	1		
come from									2				
come up									1				
came up									1				
ended up							1						
enter one's mind									1				
feel									5	2			
felt	1												
look	1		2	1			4	2	69	100	3		
looked			1				1	1	3	2			
resemble									1				
seem			1				4	2	8	26			
seemed									1	1			
smell									6				
sound							3	3	47	11			
suck (=feel bad)									1				
taste									5				
turn out										4			
turned out									2	1			
totals	2		4	1			13	8	155	148	4		335
%	0.6		1.19	0.3			3.88	2.39	46.27	44.18	1.19		

Table 5 Tokens of verbs of knowledge-/percept-subject without subject pronouns. (pl: plural; cat: cataphoric)

2.3.2. Causative Sensing/Knowing Verbs

Causative sensing/knowing verb is a verb which takes the meaning of a verb of sensing/knowing as the second argument of the lexical predicate CAUSE. Those verbs take a cause as their subject. Normally, causative sensing verbs take an experiencer as their direct object, as do, say, *beat*, *scare* and *surprise*; they also take it as their dative or oblique object, as do *give the willies* and *beat the hell out of*. Some causative knowing verbs take percept as their direct object, as do *show* and *bring back*; *remind* takes it as its oblique object.

Examples of the subject pronoun ellipsis are given in (16) and (17):

(16) 01:46:27 Well ... [*sic*]
01:46:30 I was kinda rough on Egghead.
01:46:32 I mean, *beats* the hell out of me,
01:46:35 but I kinda miss him. (*Fabulous Baker Boys*; "[it] beats")

(17) 00:09:14 I'd concentrate on the view if I were you.
00:09:16 Much more worthwhile.
00:09:19 Rather *reminds* me of our coastline at home. (*Rebecca*; "[It] Rather")

Notice that in (16), the missing subject refers to what follows it—*I kinda miss him*.

Table 6 shows the tokens of the subject pronoun ellipsis involving particular causative sensing/knowing verbs.

subjects / verbs	I	we	you	you (pl)	some-/ any-one	some-/ any-thing	he	she	it	it (cat)	they	here/ there	total
beat									8	1			
beat the daylights (past)		1							1				
bother													
bring back/ out									2				
broke heart										1			
give the willies/ creeps							<2>		<2>				
gave goose bumps/thrill									1	1			
go to show									2				
hurt										1			
make (causative)									25				
made (causative)			2				1		4				
piss off										1			
pissed off									1				
remind								1	1				
rings a bell									1				
scared								1	2				
show									1	1			
sorted out										1			
stagger the imagination									1				
straightened ass out									1				
surprise									1				
take breath									1				
tear up									1				
taught							1						
totals		1	2				4	2	54	7			70
%		1.43	2.86				5.71	2.86	77.14	10			
totals							2		56				
%							2.86		80				

Table 6 Tokens of causative sensing/knowing verbs without subject pronouns. (pl: plural; cat: cataphoric; <i>: the token in the case of a verb having two possibilities of interpretation for its missing subject)

Table 6 also carries the periphrastic causative verb *make* which embeds predicates of sensing like *make one feel* or *make one happy*.

Just as with the verbs of knowledge-/percept-subject verbs, seen in section 2.3.1, the pronoun *it* makes up over 87 percent of the aggregate total. This time, however, the tokens involving anaphoric or deictic *it* outnumber those involving the cataphoric *it* by over five times.

Hence (18):

(18) When the first argument of a causative sensing/knowing verb is elided in the subject position, it is likely that the missing subject is *it*.

2.3.3. Verbs of Cost-Benefit and Metalinguistic Verbs

Verb of cost-benefit takes as its subject a task, as do, say, *cost* and *go well*, or an event, as do *happen* and *serve well*; it describes the effect which that task or that event has on the one who is involved in it. Some verbs of cost-benefit put the one who is involved in the event in the position of their direct object, as do *cost* and *serve well*; some in the position of their oblique object, as do *happen to* and *matter to*.

Metalinguistic verb takes an expression as its subject and makes a comment on that expression. The expression can be a proposition, as with *figure* and *mean*, or a question, as with *depend*.

What this odd couple of verb subclasses share is the fact that what come to their subjects—i.e. task, event, proposition and question—take the shape of a clause. A clause subject imposes a burden on short-term memory in sentence-parsing, so that it tends to be replaced with the cataphoric *it*.

Examples of the subject pronoun ellipsis are given in (19) and (20):

(19) 01:20:21 Need a pack of cigarettes.
01:20:23 Which brand?
01:20:24 Doesn't *matter*. I don't smoke,
01:20:25 but for you, I would shoot the Surgeon General. (*Mask*; "[It] Doesn't")

(20) 00:07:55 You want to use that?
00:07:58 *Depends* on how big a news day it is. (*Broadcast News*; "[It] Depends")

Table 7 shows the tokens of the subject pronoun ellipsis involving particular verbs of cost-benefit and particular metalinguistic verbs.

The token distribution in Table 7 just mirrors the pattern seen in the causative sensing/knowing verbs—i.e. the prevalence of the ellipsis of *it* (over 94 %) and the ellipsis of the anaphoric or deictic *it* at a rate over five times higher than that of the cataphoric *it*.

Hence (21):

(21) When the first argument of a verb of cost-benefit or a metalinguistic verb is elided in the subject position, it is likely that the missing subject is *it*.

3. Answers

In this section we will first consider pragmatic accounts of why some verb subclasses prefer the ellipsis of *I* and some *it*. Then, based on a set of assumptions about language acquisition, we will propose a lexico-semantic alternative.

3.1. Pragmatics

The facts that have been observed thus far could find some pragmatic accounts. A discourse topic, for instance, sits less prominent in the background of a discourse. Hence it is omitted.

Thinking, sensing and knowing are of a speaker's own experience, since it is difficult to read anyone else's mind, or out of one's business to talk about it.[4] Hence the first arguments of relevant verbs are preempted

subjects / verbs	I	we	you	you (pl)	some-/ anyone	some-/ anything	he	she	it	it (cat)	they	here/ there	total
cost									1				
cost (past)							1		2				
cost (past)								<1>	<1>				
depend									6				
figure									3				
went well									1				
happen									7				
make sense									6	1			
made sense									2				
matter									14				
mattered									1				
mean									4				
prove									1				
serve you right									2				
suit me									1				
take									4	3			
took									7	8	1		
work (out)			1				1		5				
worked									2				
totals			1				2	1	69	12	1		86
%			1.16				2.33	1.16	80.23	13.95	1.16		
totals								0	70				
%								0	81.4				

Table 7 Tokens of verbs of cost-benefit and metalinguistic verbs without subject pronouns. (pl: plural; cat: cataphoric; <i>: the token in the case of a verb having two possibilities of interpretation for its missing subject)

by a speaker. A speech act is a speaker's business, too. Further, there is little need for a speaker to say that he or she, or a hearer is engaged in a speech act. Hence the first arguments of relevant verbs are preempted by a speaker, while that of *say* itself by a third party.

Knowledge or percept is a state and a state tends to take the shape of a clause. But a clause subject is problematic. Hence it is replaced with *it*, anaphoric or cataphoric. Likewise, the cause of knowledge or percept is a state or an event, and a state and an event tend to take the shape of a clause. Hence they are expressed by *it*. Further, the event which brings about cost or benefit and the proposition or the question which makes an argument of a metalinguistic verb also tend to take the shape of a clause. The memory load, which is increased by those clause subjects, results in them being expressed by *it*.

The catch is that it seems highly implausible that a speaker and a hearer are doing such reasoning in conversation. In addition, pragmatic reasoning is conducted to look for special implicatures, but it is doubtful that the subject pronoun ellipsis is employed to convey any special implicature. Rather, it looks like the reasoning above does not describe the actual use of knowledge of language, but diachronic or developmental motives that give birth to knowledge of language. To put it differently, all the reasoning above seems to have contributed to the development or the acquisition of the knowledge that informs a

speaker which pronouns can be elided where.

3.2. Old Knowledge and New

As an outline of the process of language acquisition, let us consider (22):

(22) a. Knowledge about expressions is acquired through their use—esp. parsing.

b. The direction of acquisition is from specific items to the general categories to which they belong.

Clause (22a) suggests that the more an expression is parsed, the more firmly it is acquired. Clause (22b) suggests that if a specific expression is often parsed in the specific position of larger expressions, the knowledge about that expression will remain specific. Ultimately, the specific knowledge will be replaced by general knowledge, but only halfway, since it has long withstood the shift to general knowledge. The result is the coexistence of both specific and general knowledge about an expression.

3.3. Representative Linking

Going back to the subject pronoun ellipsis, there is a possibility that those subclasses of verbs which often elide specific pronouns in the subject position might have the lexical meaning in which the meaning of those pronouns occupy the first argument, as well as just the general semantic categories, say, HUMAN and THING.

Let us use the Roman numerals i, ii and iii for the indices attached to the meaning of the first-, the second- and the third-person pronouns. Namely, the semantic category HUMAN_{i} refers to the person who utters an expression the meaning of which contains that semantic category; HUMAN_{ii} the person who receives an expression the meaning of which contains that semantic category; $\text{THING}_{\text{iii}}$ anything else—i.e. a thing in the real world or the thing which an expression refers to.

Let us assume (23) as the meaning of *think*:

(23) think: $[_{\text{STATE}}$ HUMAN HAVE $[_{\text{STATE}}$ PROPOSITION BE $[_{\text{PLACE}}$ IN MIND]]]

The representation in (23) states that *think* is a state which consists of the predicate HAVE and the arguments HUMAN and STATE, which in turn consists of the predicate BE and the two arguments PROPOSITION and PLACE, which consists of the predicate IN and the argument MIND.

Now, if *think* is often parsed with *I* as its subject, by (22b), the knowledge first acquired about *think* will be (24):[5]

(24) think: $[_{\text{STATE}}$ HUMAN_{i} HAVE $[_{\text{STATE}}$ PROPOSITION BE $[_{\text{PLACE}}$ IN MIND]]]

This representation states that the first argument of *think* is always linked with *I*.

Exposure to many expressions in which *think* takes other subjects will lead to the acquisition of (23), but for (22a), (24) will also stay in the brain unerased.[6] To describe such situation, (25) will be in order:

(25) think: $[_{\text{STATE}}$ $\text{HUMAN}_{\text{(i)}}$ HAVE $[_{\text{STATE}}$ PROPOSITION BE $[_{\text{PLACE}}$ IN MIND]]]

The pair of parentheses in (25) states that both HUMAN_{i} and HUMAN can occupy the first argument of *think*, allowing it to be linked with *you*, *he* or *Mary*, as well as *I*.

Since just specifying HUMAN can cover *I* as well, further specifying HUMAN_{i} might look redundant. However, (25) will not impose so much burden on long-term memory. Just an index enclosed with a pair of parentheses allows the two separate representations to be stored in the brain as the single representation. On the other hand, paying such a small cost will bring about a great benefit: one can tell which representation is representative of the meaning of *think*.

Similar representations are available to *feel*, *know* and *bet*. Consider the representations in (26):

(26) a. feel: $[_{\text{STATE}}$ $\text{HUMAN}_{\text{(i)}}$ HAVE $[_{\text{STATE}}$ PROPOSITION BE $[_{\text{PLACE}}$ IN SENSE]]]

b. know: $[_{\text{STATE}}$ $\text{HUMAN}_{\text{(i)}}$ HAVE $[_{\text{STATE}}$ PROPOSITION BE $[_{\text{PLACE}}$ IN MEMORY]]]

c. bet: $[_{\text{EVENT}}$ $\text{HUMAN}_{\text{(i)}}$ SAY $[_{\text{PROPOSITION}}$ PROPOSITION BE TRUE]]

The representation in (26c) states that *bet* is an event which consists of the predicate SAY and the two

arguments $HUMAN_{(i)}$ and PROPOSITION, which in turn consists of the linking predicate BE and the argument PROPOSITION and the predicate TRUE. In each of (26a-c), it is guaranteed that the first argument is linked with *I* and others.

In the case of *say*, something like (27) will be appropriate:

(27) say: $[_{EVENT}$ $HUMAN_{(iii)}$ SAY PROPOSITION]

The first argument $HUMAN_{(iii)}$ in (27) is linked with *he* or *she* and others.

For verbs of knowledge-/percept-subject, things like (28a) and (28b) can be considered:

(28) a. turn out: [INCH $[_{STATE}$ $[_{THING}$ PROPOSITION$]_{(iii)}$ BE $[_{PLACE}$ IN MEMORY]]]

b. look: $[_{STATE}$ $[_{THING}$ PROPOSITION$]_{(iii)}$ BE $[_{PLACE}$ IN SENSE]]

These representations in (28a) and (28b) basically correspond to the second arguments in (26b) and (26a), respectively. The INCH in (28a) stands for inchoation and represents the change of states. The argument $[_{THING}$ PROPOSITION$]_{(iii)}$ will be linked with *it* and others.

For causative sensing/knowing verbs, things like (29a) and (29b) can be considered:

(29) a. scare: $[_{EVENT}$ $[_{THING}$ EVENT$]_{(iii)}$ CAUSE $[_{STATE}$ HUMAN HAVE $[_{STATE}$ $[_{PROPOSITION}$ HUMAN BE AFRAID] BE $[_{PLACE}$ IN SENSE]]]]

b. remind: $[_{EVENT}$ $[_{THING}$ EVENT$]_{(iii)}$ CAUSE $[_{STATE}$ HUMAN HAVE $[_{STATE}$ PROPOSITION BE $[_{PLACE}$ IN MEMORY]]]]

The representation in (29a) and (29b) are such things that those in (26a) and (26b) are embedded in the second argument of CAUSE, respectively. Again, the argument $[_{THING}$ EVENT$]_{(iii)}$ will be linked with *it* and others.

Last, verbs of cost-benefit and metalinguistic verbs can be described by the following representations:

(30) a. matter: $[_{STATE}$ $[_{THING}$ EVENT$]_{(iii)}$ BE TROUBLE]

b. depend: $[_{STATE}$ $[_{THING}$ QUESTION$]_{(iii)}$ BE $[_{PLACE}$ ON QUESTION]]

4. Conclusion

The subject pronoun ellipsis in English displays two major patterns. Verbs of thinking, sensing/knowing and saying often elide *I*, while verbs of knowledge-/percept-subject, causative sensing/knowing verbs, verbs of cost-benefit and metalinguistic verbs often elide *it*. These facts can be described by linking their first arguments with either the relevant pronouns or other expressions. This can be implemented by making the lexical meaning of those verbs optionally contain the meaning of the relevant pronouns. This move seems to be motivated by pragmatic considerations.

Notes

[1] Times before quoted lines show a film's progression. Throughout the article, plausible candidates of missing subjects are placed after the sources of examples. Emphases, annotations and ellipses in the examples are ours, unless otherwise mentioned.

[2] One might suspect that these verbs make several subclasses instead of one. For instance, *bet* is used in making assurance; *owe* in making a promise to pay off a debt; *request* in giving an order to give something. This distinction, however, concerns what the verbs are used in doing as opposed to what they mean. The expression *what's wrong with John?* is unambiguous in its meaning; it is only ambiguous in its use—either interrogation or suggestion.

The claim that the verbs of saying contain SAY in their lexical meaning is supported by the fact that some of them can take direct quotations as their direct objects, as shown in (i), and can even support quotative inversion, as shown in (ii):

(i) "Before almighty God," he *swore*, "I have no links to terrorist groups, I am not involved in ... [*sic*] abuse of human rights" or criminal activities, and "I have not been directly or indirectly involved in the murder of innocent people. Therefore I consider myself to be entitled" to be a candidate.
("Voting Ends for Afghan Assembly," *WP*, 6/9/2002)

(ii) a. "Well, I'll do my best," *promised* Anne, burying her face in Marilla's lap. (*Anne*:51)
b. 'Get me a glass of water, would you, Harry,' *requested* Moody. (*Phoenix*:50)

Of course, the meaning of the verbs illustrated in (i), (iia) and (iib) are not necessarily shared by all the senses of those verbs. For instance, *request* can take as its direct object both the whole state in which someone should give something and just something to be given. We assume that this difference in meaning can account for the nonexistence of direct quotations as the direct objects of some verbs of saying. Probably a sense which links the whole state in which one is happy with something to the oblique object is not available to *thank*, while a sense which links just something to be happy with to the oblique object is available to it. The same seems to go for *bet* and *owe*. However, we cannot likewise explain away the nonexistence of a direct quotation as the direct object of *appreciate*.

[3] Note that in this article, pronouns such as are missing in (13) and (14) count as cataphoric ones, instead of expletives.

[4] This is essentially the claim made by Kuno (1973) and Thomas (1979). According to Kuno, Japanese verbs like *hoshii* 'want' "represent an internal feeling" and "[t]he speaker has no basis for making an affirmative judgment on the second or third person's internal feeling" (p.83).

[5] If the human cognitive development goes from egocentric to sociocentric awareness, the child may well pay attention to only expressions involving him- or herself. This developmental progression may intensify at early stages the tendency of *think* to be parsed with *I* as its subject.

[6] There are many reports of cases which point to the existence of biological organs which govern particular memories of language. Badecker and Caramazza (1989), for instance, describe a six-year-old Italian boy who suffered an acute intracerebral hematoma. A corpus of the boy's spontaneous speech contains "a significant number of subject/verb agreement errors (55.9%) and determiner/noun and noun/adjective agreement errors (13.8% and 20%, respectively)" (p.111). This fact could be interpreted as suggesting that the brain has an organ which governs the mechanism of agreement or the inflectional representations and that this organ was impaired in the case of the Italian boy.

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