Usage, structure, and substance in the English ditransitive construction

Testing Hudson's (1992) hypotheses with quantitative methods

Shibuya, Yoshikata; Jensen, Kim Ebensgaard

Publication date:
2015

Document Version
Early version, also known as pre-print

Usage, structure, and substance in the English ditransitive construction: Testing Hudson's (1992) hypotheses with quantitative methods

Y. Shibuya & K. E. Jensen

1. Introduction

In a very important paper, Hudson (1992) proposes the hypothesis that monotransitive and direansitive direct objects identical and constitute one category. This hypothesis represents an important break from the formalist tendencies of the mainstream linguistic tradition at the time. However, in retrospect, the hypothesis itself has not to our knowledge been addressed empirically, and may itself thus not be without problems. In this paper, we present a study which addresses the hypothesis within the perspective of contemporary construction grammar and cognitive (socio)linguistics; in other words, we present a usage-based account of (aspects) of double object constructions.

2. Hudson (1992) on double object constructions

Hudson's paper is a reaction to previous generations of formalists' treatment of double object constructions in which they, based on purely formal criteria, equal direct objects in monotransitive constructions with indirect objects in ditransitive constructions. This is called the OO = O1 hypothesis. OO is short for ordinary object, which is Hudson's term for direct objects in monotransitive constructions. O1 is short for first object, or object 1, which is Hudson's term for indirect objects in ditransitive structures. It is called first object or object 1, because this constituent appears as the first object after the verb in ditransitive constructions. A third abbreviated form is O2, which is short for second object or object 2, and is used with reference to direct objects in ditransitive structures.

Listing a range of “facts” about objects, which are based on introspective judgments by a number of informants, Hudson proposes an alternative hypothesis called the OO =/= O1 hypothesis in which monotransitive direct objects are treated as a distinct class from indirect objects in ditransitive contexts. Below are Hudson's (1992: 264) “facts”:

	PROPERTY	O1	O2	OO
(i)	X passivizes easily	+	−	+
(ii)	X extracts easily	−	+	+
(iii)	X can follow a particle	−	+	+
(iv)	X can be moved by Heavy-NP Shift	−	+	+
(v)	X is accusative in a true case system	−	+	+
(vi)	X must be subcategorized for	−	+	+
(vii)	X has same semantic role as OO	−	+	+
(viii)	X is normally nonhuman	−	+	+
(ix)	V + X may constitute an idiom	−	+	+
(x)	X = extractee of infinitival	−	+	+
(xi)	X controls a depictive predicate	−	+	+

TABLE 1. Comparison among O1, O2, and OO.

Hudson uses these observations not just as the foundation upon which the OO =/= O1 hypothesis is built on, but also as input to the accompanying OO = O2 hypothesis, in which it is stated that monotransitive and ditransitive direct objects are identical, thus constituting one category.

These hypotheses constitute a massive contribution to the study of syntax, and their importance

can not be overstated. However, they are – in the perspective of cognitive linguists some decades later – not without problems. While Hudson (1992) considers variation in grammaticality judgment under the rubric of what he calls 'speculative sociolinguistics', the phenomena themselve are given a very monolithic treatment for the following three reasons:

- He aims for maximal generalization in his descriptions.
- He makes use of native speaker grammaticality judgements.
- He aims to push a purely syntactic account as far as possible.

While such an approach was not unusual in mainstream linguistics at the time, socially oriented linguists, have pointed out that it is a very problematic one:

> It seems to be implied that grammatical description ... is not infinitely extensive, that a sort of exhaustiveness is possible there. This is perhaps an illusion. Any monolithic grammatical model which aims to be productively explicit will, as a consequence, fail to be explicit about and overtly recognize all the possible relationships in a language which might be called grammatical (Gregory 1967: 179)

Indeed, studies like Croft (2003), Siewierska & Hollmann (2007), and Koch & Bernaisch (2013) suggest that ditransitives and double object constructions are not monolithic, but that they display a considerable amount of variation.

While we critically address the OO = O2 hypothesis as being too monolithic, we must reiterate that this paper is not an attack on the work by Hudson and that we acknowledge how important a contribution to the study of double object constructions Hudson (1992) is; also, we should point out that he figures as one of the forefathers of cognitive sociolinguistics which is the overall framework of this paper.

3. Addressing the hypothesis

If O2 and OO really constitute a monolith, the two categories cannot be differentiated from each other; they cannot be classified into distinct categories. Statistically speaking, we can set up a pair of hypotheses as follows, with respect to the properties of lexicon and grammar:

- H0: O2 and OO form a same category, both lexically and grammatically. Hence, there is no difference between O2 and OO.
- H1: O2 and OO do not form a same category, both lexically and grammatically. Hence, there is a difference between O2 and OO.

This is interesting, because OO = O2 actually forms the null hypothesis (typically, one states the alternative hypothesis first and derives the null hypothesis from it). Drawing on principles from usage-based linguistics, in which patterns of actual language use are held to shape the language system, we will address these hypotheses to so whether or not the discursive behavior of OOs and O2s can be seen as validating the hypotheses.

The source of our data is the British component of the International Corpus of English (ICE-GB), which is annotated for parts-of-speech and for syntactic function. The corpus consists of 200 written texts and 300 spoken texts. Below is an overview of its text categories:

ID	Text Category
s1	spoken_dialogue_private_direct conversations
s2	spoken_dialogue_private_telephone calls
s3	spoken_dialogue_public_broadcast discussions
s4	spoken_dialogue_public_broadcast interviews
s5	spoken_dialogue_public_business transactions
s6	spoken_dialogue_public_classroom lessons
s7	spoken_dialogue_public_legal cross-examinations
s8	spoken_dialogue_public_parliamentary debates
s9	spoken_mixed_broadcast news
s10	spoken_monologue_scripted_broadcast talks
s11	spoken_monologue_scripted_non-broadcast speeches
s12	spoken_monologue_unscripted_demonstrations
s13	spoken_monologue_unscripted_legal presentations
s14	spoken_monologue_unscripted_spontaneous commentaries
s15	spoken_monologue_unscripted_unscripted speeches

ID	Text Category
w1	written_non-printed_correspondence_business letters
w2	written_non-printed_correspondence_social letters
w3	written_non-printed_non-professional writing_student examination scripts
w4	written_non-printed_non-professional writing_untimed student essays
w5	written_printed_academic writing_humanities
w6	written_printed_academic writing_natural sciences
w7	written_printed_academic writing_social sciences
w8	written_printed_academic writing_technology
w9	written_printed_creative writing_novels/stories
w10	written_printed_instructional writing_administrative/regulatory
w11	written_printed_instructional writing_skills/hobbies
w12	written_printed_non-academic writing_humanities
w13	written_printed_non-academic writing_natural sciences
w14	written_printed_non-academic writing_social sciences
w15	written_printed_non-academic writing_technology
w16	written_printed_persuasive writing_press editorials
w17	written_printed_reportage_press news reports

In addressing the discursive behavior of OOs and O2s, we apply distinctive collexeme analysis (Stefanowitsch & Gries 2003; Gries & Stefanowitsch 2004a, 2004b), which allows us to measure the degrees of attraction of units to OOs in monotransitive constructions and O2s in ditransitive constructions. In other words, we can use this method to address differences and similarities in terms of the units that typically appear as OOs and O2s in the ICE-GB. If the OO and O2 categories display differences in this respect, then the null hypothesis that is OO = O2 cannot be said to hold up, but if they do not display differences, then OO = O2 is verifiable. We used Gries (2007) to run the calculations in. It should be pointed out that we focus on objects realized by phrasal structures only and not by clausal ones.

We applied the analysis to the lexical level. That is we used it to measure the preferences of lexemes among OO and O2. We also applied it at the level of PoS to measure the preferences of word classes among OO and O2; that is, to see whether either category had a preference for members of a certain word class and to see whether there were differences in such preferences. Note that our PoS categories are specified in terms of further grammatical features, such as number and reference.

In addition, we looked at the distribution of semantic roles among OOs, seeing that Hudson's (1992: 264) point *vii* states that it is the case that OOs share semantic roles with O2s and not O1s.

4. Distinctive collexeme analysis #1: Lexical features of O2 and OO

Below is an overview of the 20 lexemes that prefer O2s:

rank	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
1	prescription	6	1	0.1913	6.8087	O2NP	0.0102	0.8301	8.5556
2	ring	7	4	0.3007	10.6993	O2NP	0.0117	0.6093	8.4811
3	opportunity	10	23	0.9021	32.0979	O2NP	0.0159	0.2761	7.9456
4	what	8	21	0.7927	28.2073	O2NP	0.0126	0.2489	6.1145
5	letter	8	27	0.9567	34.0433	O2NP	0.0123	0.2016	5.4382
6	copy	7	19	0.7107	25.2893	O2NP	0.0110	0.2422	5.3368
7	chance	9	45	1.4761	52.5239	O2NP	0.0132	0.1397	4.8468
8	dose response curve	3	0	0.0820	2.9180	O2NP	0.0051	0.9728	4.6920
9	appointment	4	5	0.2460	8.7540	O2NP	0.0066	0.4173	4.2047
10	indication	4	6	0.2734	9.7266	O2NP	0.0065	0.3728	3.9923
11	sense	6	23	0.7927	28.2073	O2NP	0.0091	0.1798	3.9470

12	story	5	17	0.6014	21.3986	O2NP	0.0077	0.2001	3.5709
13	a little bit	4	9	0.3554	12.6446	O2NP	0.0064	0.2805	3.4887
14	lead	4	11	0.4100	14.5900	O2NP	0.0063	0.2395	3.2267
15	good	3	4	0.1913	6.8087	O2NP	0.0049	0.4014	3.1836
16	disservice	2	0	0.0547	1.9453	O2NP	0.0034	0.9728	3.1273
17	rug	2	0	0.0547	1.9453	O2NP	0.0034	0.9728	3.1273
18	support	5	25	0.8201	29.1799	O2NP	0.0073	0.1395	2.9159
19	examples	3	6	0.2460	8.7540	O2NP	0.0048	0.3061	2.8212
20	flowers	3	6	0.2460	8.7540	O2NP	0.0048	0.3061	2.8212

The following table provides an overview of the 20 lexemes that prefer OOs:

rank	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
1	it	1	1553	42.4792	1511.5208	OONP	-0.0726	-0.0288	17.7438
2	them	0	327	8.9387	318.0613	OONP	-0.0157	-0.0278	3.9667
3	him	0	195	5.3304	189.6696	OONP	-0.0093	-0.0276	2.3580
4	you	1	231	6.3418	225.6582	OONP	-0.0094	-0.0233	1.9275
5	her	0	138	3.7723	134.2277	OONP	-0.0066	-0.0275	1.6665
6	me	1	205	5.6311	200.3689	OONP	-0.0081	-0.0227	1.6562
7	anything	1	156	4.2917	152.7083	OONP	-0.0058	-0.0211	1.1608
8	people	0	91	2.4875	88.5125	OONP	-0.0044	-0.0275	1.0977
9	so	1	144	3.9636	141.0364	OONP	-0.0052	-0.0206	1.0435
10	us	0	80	2.1868	77.8132	OONP	-0.0038	-0.0274	0.9648
11	way	0	70	1.9135	68.0865	OONP	-0.0034	-0.0274	0.8440
12	part	0	53	1.4488	51.5512	OONP	-0.0025	-0.0274	0.6387
13	point	0	50	1.3668	48.6332	OONP	-0.0024	-0.0274	0.6025
14	problem	0	47	1.2848	45.7152	OONP	-0.0023	-0.0274	0.5663
15	effect	0	46	1.2574	44.7426	OONP	-0.0022	-0.0274	0.5543
16	ball	0	42	1.1481	40.8519	OONP	-0.0020	-0.0274	0.5060
17	place	2	126	3.4989	124.5011	OONP	-0.0026	-0.0118	0.4998
18	interest	0	41	1.1208	39.8792	OONP	-0.0020	-0.0274	0.4940
19	evidence	0	40	1.0934	38.9066	OONP	-0.0019	-0.0274	0.4819
20	role	0	40	1.0934	38.9066	OONP	-0.0019	-0.0274	0.4819

In comparing the two, we can see that O2 prefer content words – that is semantically full lexical words – while OOs are more strongly associated with pronominal forms:

rank	O2NP	OONP
1	prescription	it
2	ring	them
3	opportunity	him
4	what	you

5	letter	her
6	copy	me
7	chance	anything
8	dose response curve	people
9	appointment	so
10	indication	us
11	sense	way
12	story	part
13	a little bit	point
14	lead	problem
15	good	effect
16	disservice	ball
17	rug	place
18	support	interest
19	examples	evidence
20	flowers	role

Thus, at the level of the lexical features of OOs and O2s, the two object categories display differences in terms of the lexemes (and pronominal forms) that typically realize them.

5. Distinctive collexeme analysis #2: Grammatical features of O2 and OO

Moving to the level of grammatical features (that is preferences in PoS), the following table provides an overview of the 20 most strongly attracted PoS types in O2s:

rank	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
1	N(com,sing)	393	10525	298.4477	10619.5523	O2NP	0.1656	0.0176	15.0472
2	PRON(nom)	6	9	0.4100	14.5900	O2NP	0.0098	0.3729	5.7826
3	PRON(univ)	4	16	0.5467	19.4533	O2NP	0.0060	0.1728	2.7237
4	NUM(mult)	2	2	0.1093	3.8907	O2NP	0.0033	0.4728	2.3650
5	NADJ(sup,plu)	1	0	0.0273	0.9727	O2NP	0.0017	0.9727	1.5633
6	NUM(frac,plu)	1	0	0.0273	0.9727	O2NP	0.0017	0.9727	1.5633
7	PRON(dem,sing)	27	692	19.6541	699.3459	O2NP	0.0129	0.0106	1.2169
8	PRON(neg,sing)	4	53	1.5581	55.4419	O2NP	0.0043	0.0430	1.1535
9	NADJ(sup)	1	2	0.0820	2.9180	O2NP	0.0016	0.3060	1.0981
10	PRON(inter)	2	16	0.4920	17.5080	O2NP	0.0026	0.0838	1.0677
11	PRON(dem)	1	5	0.1640	5.8360	O2NP	0.0015	0.1394	0.8147
12	PRON(quant,sing)	6	132	3.7723	134.2277	O2NP	0.0039	0.0162	0.7514
13	PRON(quant)	10	274	7.7632	276.2368	O2NP	0.0039	0.0080	0.5997
14	PRON(poss,sing)	1	10	0.3007	10.6993	O2NP	0.0012	0.0636	0.5803
15	N(com,sing,disc1)	1	13	0.3827	13.6173	O2NP	0.0011	0.0441	0.4926
16	PRON(quant,plu)	2	43	1.2301	43.7699	O2NP	0.0013	0.0171	0.4566
17	PRON(ass)	3	74	2.1048	74.8952	O2NP	0.0016	0.0117	0.4533
18	NUM(card,sing)	7	227	6.3965	227.6035	O2NP	0.0011	0.0026	0.3388

19	NADJ(sing)	1	24	0.6834	24.3166	O2NP	0.0006	0.0127	0.3010
20	PRON(one,sing)	4	136	3.8270	136.1730	O2NP	0.0003	0.0012	0.2717

This table, in contrast, shows the 20 PoS types that are preferred by OOs:

rank	words	obs.freq.1	obs.freq.2	exp.freq.1	exp.freq.2	pref.occur	delta.p.constr.to.word	delta.p.word.to.constr	coll.strength
1	PRON(pers,sing)	2	2089	57.1583	2033.8417	OONP	-0.0966	-0.0292	23.1582
2	PRON(pers,plu)	0	407	11.1255	395.8745	OONP	-0.0195	-0.0279	4.9466
3	N(prop,sing)	9	945	26.0780	927.9220	OONP	-0.0299	-0.0187	4.1537
4	PRON(pers)	1	233	6.3965	227.6035	OONP	-0.0095	-0.0233	1.9486
5	N(com,plu)	88	3835	107.2367	3815.7633	OONP	-0.0337	-0.0060	1.7124
6	PRON(nonass,sing)	1	180	4.9477	176.0523	OONP	-0.0069	-0.0220	1.4005
7	PRON(ref,sing)	0	106	2.8976	103.1024	OONP	-0.0051	-0.0275	1.2791
8	PROFM(so)	1	144	3.9636	141.0364	OONP	-0.0052	-0.0206	1.0435
9	N(prop,plu)	0	51	1.3941	49.6059	OONP	-0.0024	-0.0274	0.6146
10	PRON(ref,plu)	0	37	1.0114	35.9886	OONP	-0.0018	-0.0274	0.4457
11	PRON(ass,sing)	5	233	6.5058	231.4942	OONP	-0.0026	-0.0064	0.4390
12	NUM(ord)	0	28	0.7654	27.2346	OONP	-0.0013	-0.0274	0.3372
13	N(com,sing,ignore)	0	21	0.5740	20.4260	OONP	-0.0010	-0.0274	0.2529
14	PRON(recip)	0	21	0.5740	20.4260	OONP	-0.0010	-0.0274	0.2529
15	PRON(univ,sing)	1	53	1.4761	52.5239	OONP	-0.0008	-0.0088	0.2492
16	PRON(nonass)	1	50	1.3941	49.6059	OONP	-0.0007	-0.0077	0.2278
17	PRON(one,plu)	0	16	0.4374	15.5626	OONP	-0.0008	-0.0274	0.1927
18	NADJ(sup,sing)	0	15	0.4100	14.5900	OONP	-0.0007	-0.0274	0.1806
19	PRON(dem,plu)	1	43	1.2028	42.7972	OONP	-0.0004	-0.0046	0.1801
20	NUM(card,plu)	0	14	0.3827	13.6173	OONP	-0.0007	-0.0274	0.1686

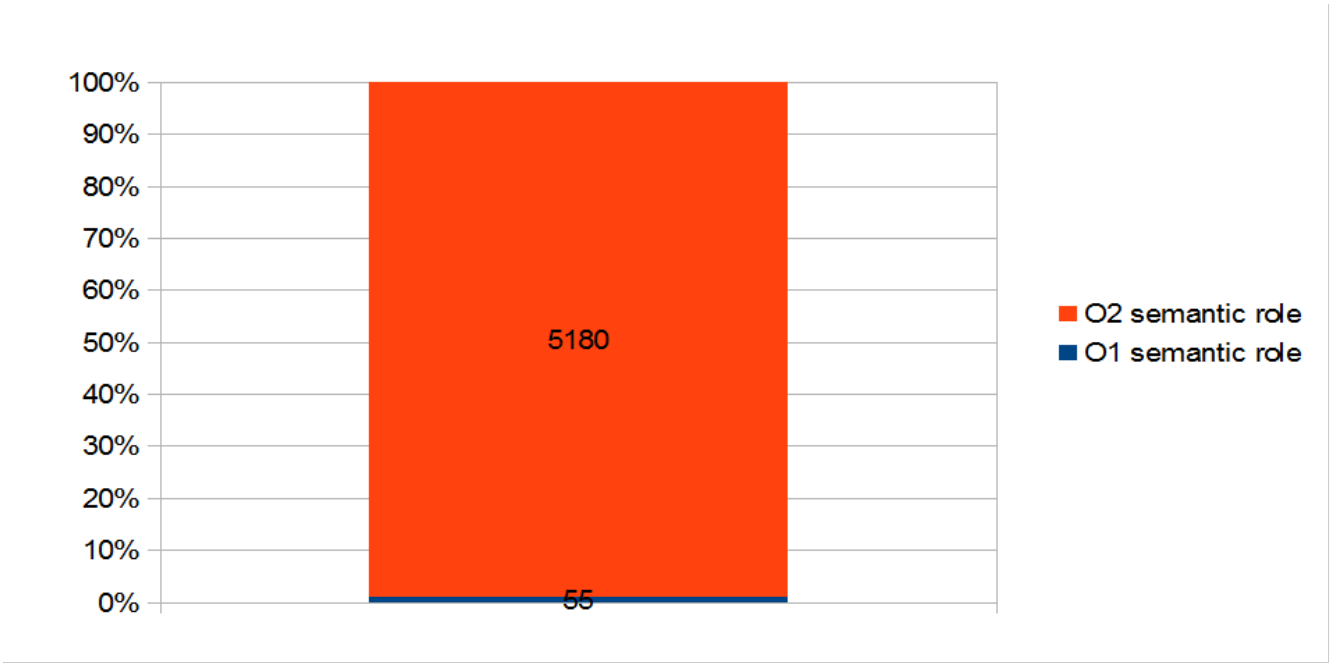
In comparing the two categories, we can see that O2s have a preference for the following categories: common singular noun (e.g. *use*, *direction*, *break*, *money*, *cash*, *chance*, quid*),* nominal relative pronoun (e.g. *what*), universal pronoun (e.g. *all*), multiplier (e.g. *double*), and superlative nominal adjective, (e.g. *best*). OOs prefer the following categories: personal, singular pronouns (e.g. *it*, *me*, *him*, *her*), personal, plural pronoun (e.g. *them*, *us*), singular proper noun (e.g. *Adam*, *John*, *English*, *The Silence of the Lambs*, *Back to the Future Two*), personal pronoun (e.g. *you*), and common plural noun (e.g. *sets*, *movement forms*, *people*, *things*, *performances*). Consequently, at the level of PoS, the OO = O2 hypothesis does not seem to hold up.

6. Distribution of semantic roles in OO

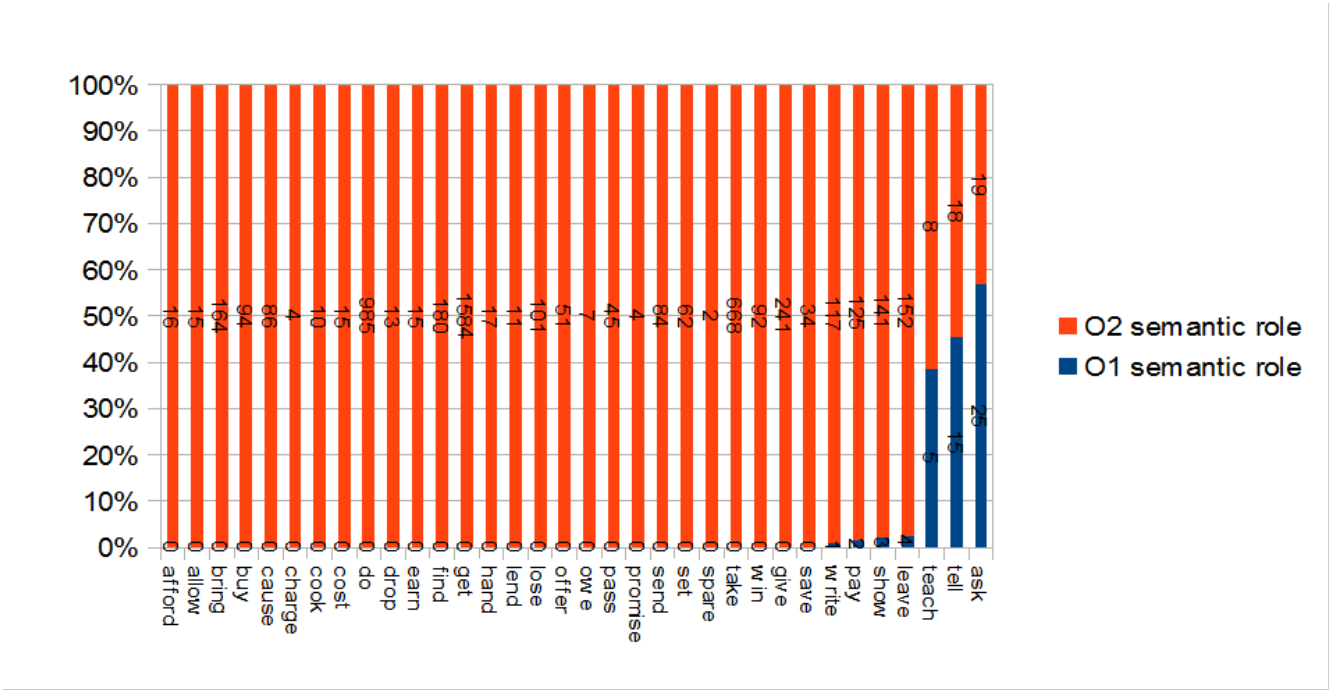
Hudson (1992: 261) states the following: "it is typically O2, not O1, that has the same semantic role as OO in those cases - the majority, in fact-where the same verb can occur with either one or two objects", pointing out that only "a handful of verbs, including TEACH, TELL, and SHOW, ... allow OO to have the semantic role of either O1 or O2" (Hudson 1992: 261).[1]

1 See Hopper and Thompson 1980; Goldberg 1995; Rasmussen & Jakobsen 1996: 103-105; Croft et al. 2001: 583-586 for more elaborate accounts of the semantics and substance of double object constructions and other types of argument structure constructions

If one looks at the overall distribution of O1 and O2 semantic roles in OOs, it seems to verify Hudson's point *vii*:



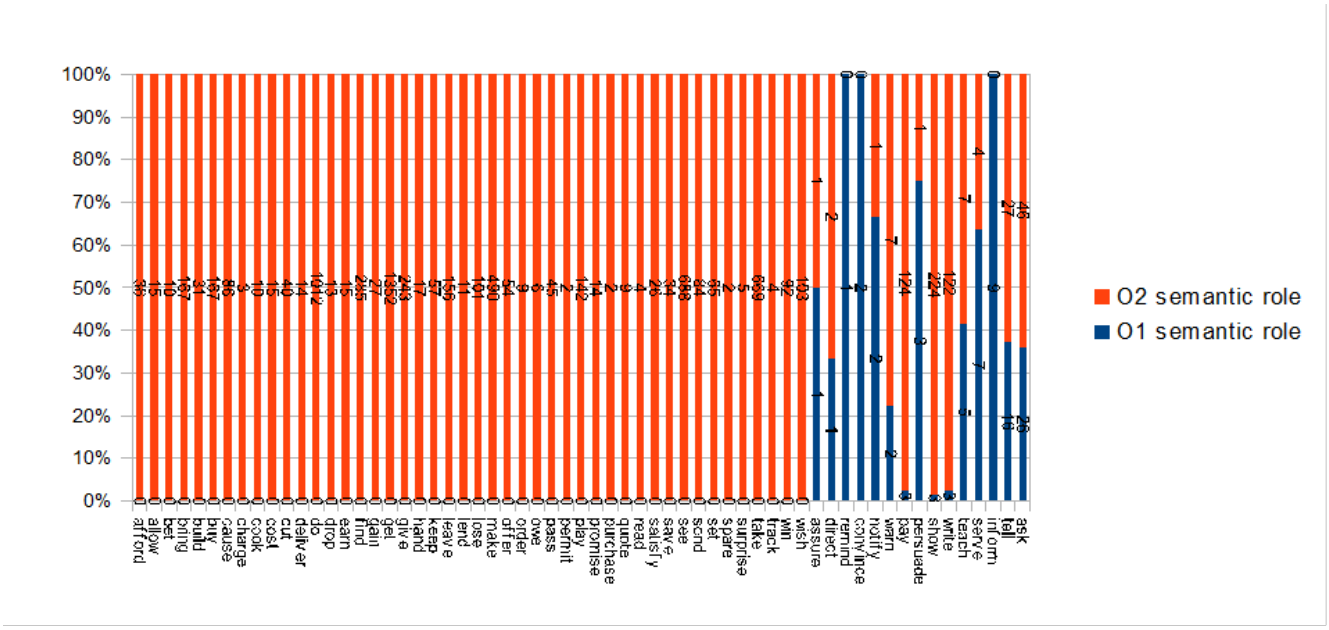
However, this approach may be too simplistic, and we should look at the distribution of such roles for each verb that appears in the corpus with an OO:



Note that the verbs *write*, *pay*, *show*, *leave*, *teach*, *tell*, and *ask* appear with O1 semantic roles, with the distribution with *tell* being almost equal, while O1 roles have the edge with *ask*. Does this mean that these are verb-class-specific and verb-specific subconstructions (cf. Croft 2003: 57-58)? If we accept that they are (tentatively, as this would require more research), then it suggests that the statement that

OO takes O2 roles and not O1 roles is void at the superconstructional level, and that we have to zoom in on the level of each verb. In fact, Hudson (1992: 261) indirectly suggests this himself.

If we include clausal objects, then the number of verbs that occur with OO-type semantic roles grows:



While supporting the notion that we need to consider verb-class-specific and verb-specific levels, this is something that requires more research before any definitive statements can be made.

7. OO = O2?

The analyses above suggest that, if we accept a usage-based view on grammar, Hudson's claim cannot be supported lexically and grammatically. The null hypothesis (H0) is rejected (hence the alternative hypothesis H1 can be accepted) on statistical grounds. From the perspective of construction grammar, especially Radical Construction Grammar (Croft 2001), the fact that O2 and OO constitute two distinct properties is not surprising news. The properties of O2 and OO are defined with respect to the constructions that they occur in.

That is structure, substance and symbolic relations need to be taken into account. Structure alone will not result in a satisfactory description of OO, O2, and O1.

8. Toward a more register-sensitive/usage-based approach

OO = O2 does not seem to hold up if one considers the above analyses in a usage-based perspective. One problem is that it is based on a rather monolithic outlook. In the following, we go beyond the hypothesis and see whether or not double-object constructions display variation across the registers of ICE-GB.

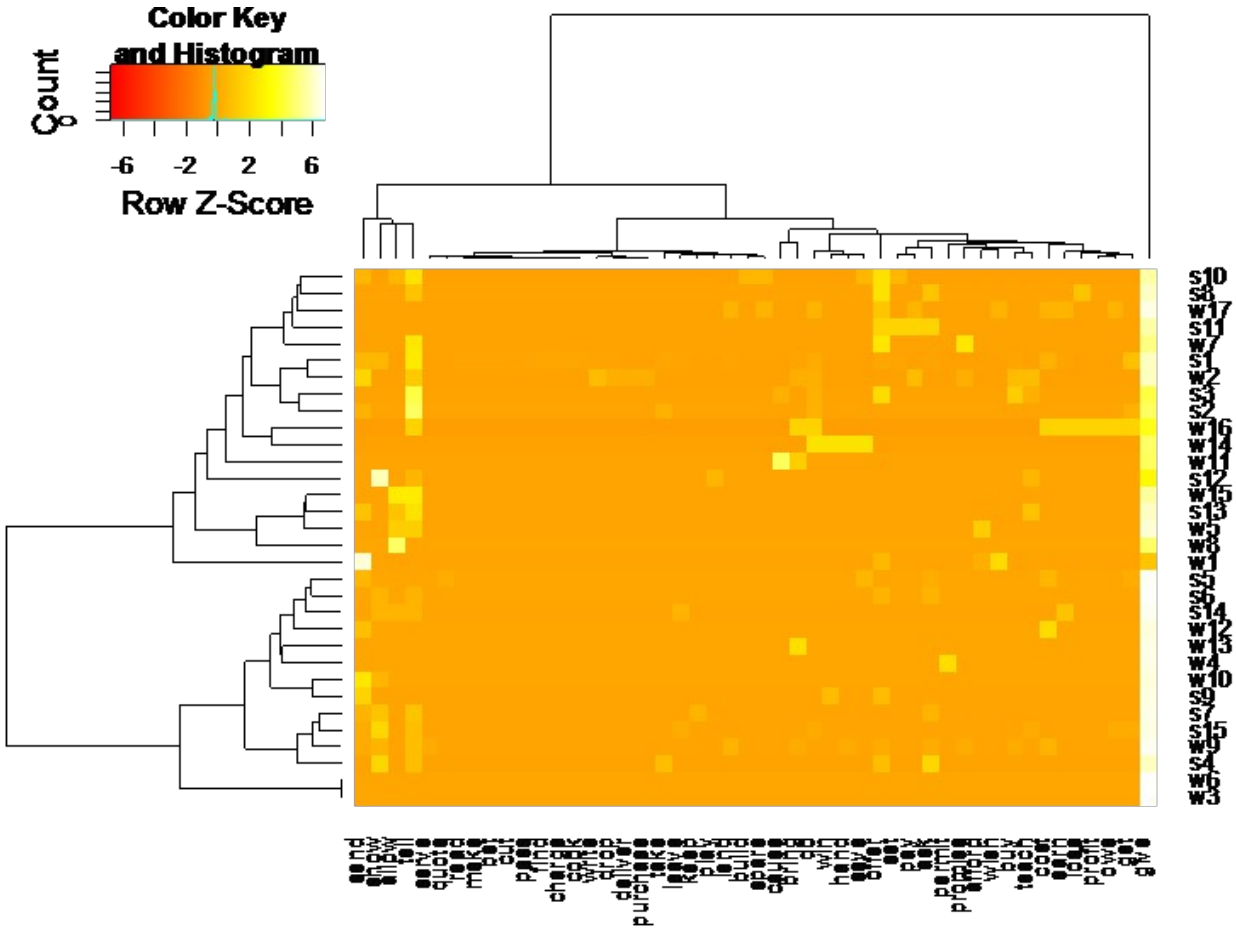
Taking a usage-based approach, the following principles are among our main premises:

- Language competence is influenced by language use, and language competence includes information on contextual patterns alongside structural and functional features of constructions (e.g. Barlow & Kemmer 2000; Bybee 2013).
- Language use is genre- and register-sensitive (e.g. Ferguson 1983, 1994; Bender 1999; Biber & Conrad 2009, Ruppenhofer & Michaelis 2010; Schönefeld 2013, Jensen 2014).

Previous constructional approaches to ditransitives or double object constructions tend to seek for a register-independent, not register-sensitive, generalization (e.g. Goldberg 1995), but, if the above principles hold up, then we should take into account register-sensitivity too.

8.1. Text- and register-sensitivity of verbs in the double object construction

Using a clustered heatmap analysis, we investigated the interaction between text type, or register, and verbs in double object constructions to see if there were patterns of variation in how strongly the verbs in the construction are associated with text types, or registers, in the corpus:[2]



We can see that *give* is generally strongly associated with the construction in most text types. This should be no surprise, since it is considered the prototypical ditransitive verb. However, it is weakly associated with the construction in text-type w1 (business letters). *Send* and *wish* are more strongly associated with the construction in w1, which very likely owes to the conventions of writing business letters. *Show* is more strongly associated with the construction than 'give' in type s12 (demonstrations), which makes sense, given the situational context of demonstrations. The distribution of verbs in the construction among text types can be confirmed on statistical grounds. For instance, the distribution of 'give' is statistically significant: X-squared = 2388.499, df = 31, p-value < 2.2e-16.

2 The findings were confirmed by a Schönefeld-style register-specific multiple distinctive collexeme analysis (Schönefeld 2013); can be accessed here: http://vbn.aau.dk/files/208518685/RegisterVerbOutput.txt.

8.2 Text- and register sensitivity of structural/grammatical realizations of the double object construction

Here we classify the double object construction based on the grammatical tags ICE-GB provides in order to see whether or not the double object construction displays cross-register variation at the level of structural realization. Below are the structure IDs we used:

ID	Structure
str1	N_V_N_N
str2	N_V_N_NUM
str3	N_V_N_PRON
str4	N_V_NUM_N
str5	N_V_PRON_N
str6	N_V_PRON_NADJ
str7	N_V_PRON_NUM
str8	N_V_PRON_PRON
str9	NUM_V_N_N
str10	NUM_V_PRON_N
str11	PRON_V_N_N
str12	PRON_V_N_PRON
str13	PRON_V_PRON_N
str14	PRON_V_PRON_NADJ
str15	PRON_V_PRON_NUM
str16	PRON_V_PRON_PROFM
str17	PRON_V_PRON_PRON

Thus, by "structure", we do not refer to the "syntactic" specification, but "grammatical" specification. (e.g. N_V_N_N). Again, we applied a heatmap analysis to investigate the interaction between structure type and register, or text type (see the figure on the following page).

The text types form three main clusters. The top cluster is good mixture of both spoken and written text types. It is also most productive cluster of in the three. Below are the typical structures in that cluster:

- str5: N_V_PRON_N: <ICE-GB:S1A-001 #098:1:B> *Uhm having said that uhm the Mike Heafy Centre have given us the use of uhm the the the hall there once a week ...* (mike heafy centre_give_us_use)
- str11: PRON_V_N_N: <ICE-GB:S1A-019 #106:1:E> *Yeah we used to buy Mum a vase every year for her birthday* (we_buy_mum_vase)
- str13: PRON_V_PRON_N: <ICE-GB:S1A-002 #138:2:B> *I'm graduating in June uhm so it's given me some direction already* (it_give_me_direction)
- str17: PRON_V_PRON_PRON: <ICE-GB:S2A-011 #008:1:A> *Later his assassin said he told us nothing* (he_tell_us_nothing)

The middle cluster consists exclusively of written text types, and these are the most typical structures within it:

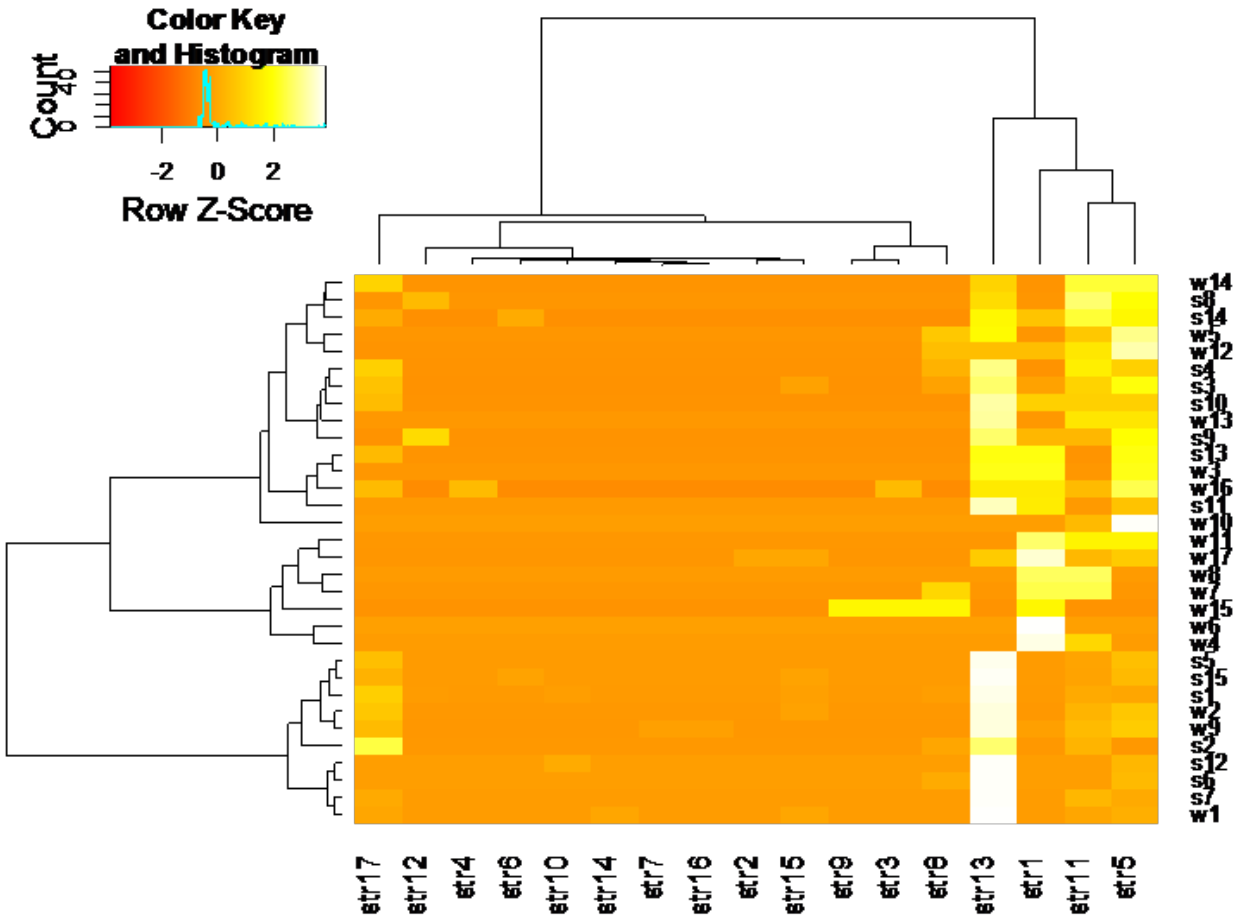
- str1: N_V_N_N: <ICE-GB:W2C-007 #085:2> *The guidelines, though an improvement, still*

give the judges considerable discretion. (guidelines_give_judges_discretion)

- str11: PRON_V_N_N: <ICE-GB:S1A-019 #106:1:E> *Yeah we used to buy Mum a vase every year for her birthday* (we_buy_mum_vase)

Finally, the bottom cluster consists of ten texts, out of which seven are spoken. The three written text types are: social letters, novels/stories, and business letters. The two first of these written texts are arguably more spoken-like than other written text types. Below are the typical structures in this cluster:

- str13: PRON_V_PRON_N: <ICE-GB:S1A-002 #138:2:B> *I'm graduating in June uhm so it's given me some direction already* (it_give_me_direction)
- str17: PRON_V_PRON_PRON: <ICE-GB:S2A-011 #008:1:A> *Later his assassin said he told us nothing* (he_tell_us_nothing)



8.3 Verb-object relations in discourse

The heatmap analyses suggest that use of the double object construction is sensitive to register and text types. The construction has an internal structure with different grammatical specifications, each of which is attracted to different registers.

Let us now turn to a last analysis. This time, we apply a covarying collexeme analysis, which allows the researcher to address the coattraction of lexemes in two positions within one construction (Gries & Stefanowtsch 2004b, Stefanowitsch & Gries 2005). Here, we look at the patterns of coattraction among lexemes in the verb and object positions in ditransitive constructions and

monotransitive construction. This actually leads us back to the OO = O1 hypothesis in that, if it holds up, the two constructions should display the same patterns of verb-object coattraction. As the following table (which lists the top twenty coattracted pairs in both constructions) shows, this is not the case:

Rank	V	O2	coll.strength	V	OO	coll.strength
1	tell	that	52.2268	think	so	684.6911
2	tell	what	35.3592	take	place	606.9454
3	wish	success	29.3254	do	that	290.6387
4	do	good	25.4258	do	it	245.7179
5	ask	this	23.2384	play	part	161.3048
6	cook	dinner	22.9016	say	that	127.9449
7	tell	story	21.8895	give	rise	116.7203
8	cause	problems	21.1755	suppose	so	95.8424
9	offer	job	20.4182	have	effect	95.8204
10	teach	lesson	19.0825	need	help	93.7345
11	send	copy	18.8386	declare	interest	91.4019
12	tell	all	17.4569	shake	head	89.9866
13	lend	books	17.3633	play	role	89.6925
14	take	minutes	17.3633	do	so	81.2833
15	afford	opportunity	16.7126	answer	question	79.4210
16	do	disservice	16.7126	ring	me	77.3068
17	send	flowers	16.0284	enclose	copy	76.4652
18	get	rug	14.9405	satisfy	condition	76.3263
19	build	amphitheatre	14.7483	give	way	69.7770
20	deliver	verb	14.7483	have	look	68.8061

9. Concluding remarks

Hudson's monolithic hypothesis does not appear to be verifiable on statistical grounds based on the analyses we have applied here. OO and O2 behave differently in discourse in terms of, for instance, the lexemes and grammatical units they attract. Lastly, we need to take into account register, text types, and other contextual factors for a fuller picture if we want our accounts of double object and single object constructions to be satisfactory in a usage-based perspective.

This calls for a range of future research tasks which include, but are not limited to, the following-do list: include clausal objects, test all of Hudson's "facts" systematically and rigorously, investigate the role of substance (or semantic frames) further, and investigate register, text type, and other contextual factors further.

References

Bender, E. 1999. Constituting context: Null objects in English recipes revisited. U. Penn Working Papers in Linguistics 6.1: 53-68.course. Language 56.2: 251–299.nglish go un-V-en construction. Journal of Pragmatics 52: 17-33.

Biber, D. & S. Conrad. 2009. Register, Genre, and Style. Cambridge: Cambridge University Press.

Bybee, J. (2013). Usage-based theory and exemplar representations of constructions. In T. Hoffmann and G. Trousdale (eds.), The Oxford Handbook of Construction Grammar. Oxford: Oxford

University Press, pp. 49-69.
Croft, W. A. 2001. Radical Construction Grammar: Syntactic Theory in Typological Perspective. Oxford: Oxford University Press.
Croft, W. A. 2003, Lexical rules vs. constructions: a false dichotomy. In H. Cuyckens, T. Berg, R Dirven, K. Panther (eds.), Motivation in Language: Studies in Honour of Günter Radden, Amsterdam: John Benjamins, pp. 49-68.
Croft, W. A., C. Taoka & E. J. Wood. 2001. Argument linking and the commercial transaction frame in English, Russian and Japanese. Language Sciences 23.4: 579-602.
Ferguson, C. A. 1983. Sports announcer talk: Syntactic aspects of register variation. Language in Society 12.2: 153-172.
Ferguson, C. A. 1994. Dialect, register, and genre: Working assumptions about conventionalization. In Douglas Biber and Edward Finegan (eds.). Sociolinguistic Perspectives on Register. Oxford: Oxford University Press, pp. 15-30.
Goldberg, A. E. 1995. Construction: A Construction Grammar Approach to Argument Structure. Chicago: Chicago University Press.
Gregory, M. . 1967. Aspects of varieties differentiation. Journal of Linguistics. 3.2: 177-198.
Gries, S. Th. 2007. Coll.analysis 3.2a. A program for R for Windows 2.x.
Gries, S. Th. & A. Stefanowitsch. 2004a. Extending collostructional analysis: A corpus-based perspectives on 'alternations'. International Journal of Corpus Linguistics 9.1: 97-129.
Gries, S. Th. & A. Stefanowitsch. 2004b. Co-varying collexemes in the into-causative. In: Achard, Michel & Suzanne Kemmer (eds.). Language, Culture, and Mind. Stanford, CA: CSLI, pp. 225-36.
Hopper, P. J. and S. A. Thompson. (1980). Transitivity in grammar and discourse. Language 56.2: 251–299.
Hudson, R. 1991. Double objects, grammatical relations and proto-roles. UCL Working Papers in Linguistics 3: 331-368.
Hudson, R. 1992. So-called 'double objects' and grammatical relations. Language 68: 251-276.
Jensen, K. E. 2014. Performance and competence in usage-based construction grammar. In R. Cancino & L. Dam (eds.), Towards a Multidisciplinary Perspective on Language Competence. Aalborg: Aalborg Universitetsforlag, pp. 157-188.
Kemmer, S. & M. Barlow. 2000. Introduction: A usage-based conception of language. In M. Barlow & S. Kemmer (eds.), Usage-Based Models of Language. Stanford: Stanford University Press. Vii-xxviii.
Koch, C. & T. Bernaisch. 2013. Verb complementation in South Asian English(es): The range and frequency of "new" ditransitives. In G. Andersen & K. Bech (eds.), English Corpus Linguistics: Variation in Times, Space and Genre. Amsterdam: Rodopi, pp. 69-90.
Rasmussen, L. S. & L. F. Jakobsen. 1996. From lexical potential to syntactic realization: A Danish verb valency model. In E. Engberg-Pedersen, M. Fortescue, P. Harder, L. Heltoft & L. F. Jakobsen (eds.), Content, Expression and Structure: Studies in Danish Functional Grammar. Amsterdam: John Benjamins, pp. 103-157.
Ruppenhofer, J. & L. A. Michaelis. 2010. A constructional account of genre-based argument omissions. Constructions and Frames 2.2: 158-184.
Siewirska, A. & W. Hollman. 2007. Ditransitive clauses in English with special reference to the Lancashire dialect. In M. Hannay & G. J. Steen (eds.), Structural-Functional Studies in English Grammar. Amsterdam: John Benjamins, pp. 83-102.
Stefanowitsch, A. & S. Th. Gries. 2003. Collostructions: Investigating the interaction between words and constructions. International Journal of Corpus Linguistics 8.2:209-43.
Stefanowitsch, A. & S. Th. Gries. 2005. Co-varying collexemes. Corpus Linguistics and Linguistic Theory 1.1: 1-43.

Schönefeld, D. 2013. It is ... quite common for theoretical predictions to go untested (BNC_CMH). A register-specific analysis o the English go un-V-en construction. Journal of Pragmatics 52: 17-33.