

# **Double Object Constructions and ‘bill’ verbs in English**

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## 1 Introduction

Double Object Constructions (DOCs), of the type *Mary gave the boy the book*, have been extensively researched within linguistic theory (Emonds & Whitney, 2005).<sup>1</sup> A significant area of focus has been accounting for which of the two objects is the ‘true’ object, i.e. which of the two objects behaves most like the object of a monotransitive construction. There are two predominant positions with regards to this question. The first, proposed by (among others) Baker (1997) and Hudson (1992), analyses DOCs as having an Indirect Object-Direct Object distinction, suggesting that the second object in a DOC (henceforth O2) behaves most like the object of a monotransitive sentence (henceforth O0).<sup>2</sup> In (1), O2 in (1b) patterns with O0 in (1a).

### *IO/DO distinction*

- (1) a. Mary read [the book]<sub>DO</sub>.  
b. Mary gave [the boy]<sub>IO</sub> [the book]<sub>DO</sub>.

Evidence in support of this viewpoint comprises extraction, heavy NP shift, and nominalization tests.

An alternative view suggests that the distinction is one of Primary Object versus Secondary Object, as proposed by Dryer (1986), and supported by work in Lexical Functional Grammar (Bresnan, 2001; Dalrymple, 2001). In this view, it is the

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<sup>1</sup> We do not consider NP-PP constructions such as *Mary gave the book to the boy* to be DOCs.

<sup>2</sup> We follow Hudson’s (1992) terminology of O0, O1 and O2 to distinguish the objects.

traditional indirect object (henceforth O1) which patterns with O0. In (2), the first object in (2b) patterns with the object in (2a).

*PO/SO distinction*

- (2) a. Mary saw [the boy]<sub>PO</sub>.  
b. Mary gave [the boy]<sub>PO</sub> [the book]<sub>SO</sub>.

Evidence in favour of this hypothesis comes from passivization, word order and object marking on verbs.

Despite the wealth of DOC research that has been undertaken, comparatively few lexical items have been studied (Maling, 2001). Of these, *give* is the most widespread. There is evidence, however, to suggest that *give* is not always a prototypical DOC verb (Lam, 2008).

This study seeks to determine whether Hudson's (1992) eleven objecthood diagnostics hold for verbs other than *give* or *send*, based on corpus work and a grammatical acceptability survey. Levin's (1993) list of non-alternating DOC verbs was taken as a starting point. Due to a limited time scale and the small size of the project, particular focus has been given to verbs that pattern like *bill*, such as *bet*, *charge*, *fine*, *overcharge*, *tax*, *tip* and *wager*, and how such verbs behave when applied to Hudson's (1992) object tests. Hudson's claim is that all tests bar passivization support a patterning of O2 with O0, which means only an IO/DO analysis is possible. The results presented in Chapters 3 and 4 show that 'bill' verbs

differ with respect to several tests, above all those for semantic role and animacy, where O1 often patterns with O0. Of the ‘syntactic’ tests, only extraction and passivization indicate a statistically significant correlation between two of the objects. We do not believe, however, that these correlations support either a PO/SO or an IO/DO distinction: despite there being a statistical correlation in the acceptability score of extracted O0 and O2, O1 was still readily extractable. In addition, we argue that passivization is not a useful objecthood diagnostic, following Börjars & Vincent (2008).

For most of Hudson’s objecthood tests, there was no clear patterning of O0 with either O1 or O2 for ‘bill’ verbs. This calls into question whether it is possible to determine which of the objects in a DOC is the ‘true’ object by employing such diagnostics, and has significant implications for notions of objecthood, especially within LFG. The study indicates that a substantial rethink is needed with regards to traditional views about objecthood.

## 2 DOCs in the literature: a review

This section gives a brief overview of several influential accounts for DOCs, both derivational and lexical.<sup>1</sup> We will see that the study of DOCs has most often been approached from within dative alternation research. This has influenced views about the structure of DOCs.

### 2.1 Motivation for the review

The motivation for this study is based on the intuition that authors have assumed all English ditransitive verbs behave like the ‘prototypical’ ditransitive verb *give*. Lam (2008:41) notes that definitions of ditransitivity are often illustrated or even defined as comprising ‘a verb like *give*’ or ‘a construction like the *give*-construction’. She suggests, however, that the *give*-construction is not as prototypical as is assumed: while *give* is probably the most representative ditransitive verb cross-linguistically, within a single language it is often the only ditransitive verb that behaves exceptionally (Lam, 2008:42). She cites examples of passivization and word order, among other phenomena. A specific example is how the unmarked word order of the two objects in Cantonese DOCs is reversed only with the verb *give* (Lam, 2008:ii). Could it also be the case that English *give* is not prototypical?

Some authors have commented on the importance of a verb-sensitive approach to DOCs. Rappaport Hovav & Levin (2008) argue that verb meaning is crucial to determining argument realization options. Maling (2001:420) argues that one-to-one

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<sup>1</sup> For a fuller account of DOCs in the literature, see Emonds & Whitney (2005).

mapping between semantic roles and grammatical relations (henceforth GRs) is not as predictable in Germanic as in other languages. She is critical of Hudson's (1992) and Baker's (1997) treatment of DOCs, arguing that the picture is significantly more complex than they assume (Maling, 2001:424).

This review is motivated by the concerns raised by Maling (2001) and Rappaport Hovav & Levin (2008). Sections 2.2 to 2.4 sketch derivational and lexical treatments of DOCs in the literature. Section 2.5 considers the ways in which scholars have classified verbs in the literature according to semantic and syntactic criteria, before addressing scholars' views about verb classification within DOCs. Section 2.6 critically examines the tests put forward by scholars to suggest which of the two DOC objects is most 'object-like', with a particular focus on Hudson (1992) and Baker (1997). Subsequently, the conflicting analyses of Dryer's (1986) Primary Object/ Secondary Object analysis and Hudson's (1992) Indirect Object/ Direct Object analysis are assessed. Here, Hudson's objecthood diagnostics are informally applied to multiple verb classes, as set out by Levin (1993), based on the intuitions of a single speaker. Problems with the use of single speaker acceptability judgments within linguistic research are the focus of 2.7. Last, the implications and gaps in the literature are discussed in Section 2.8.

## **2.2 The dative alternation**

The dative alternation is an alternation in argument realization which applies to many ditransitive verbs. The alternation refers to that between a sentence containing an NP and a PP, and one which contains two NPs:

- (1) a. I gave the candy to the children.  
b. I gave the children the candy.<sup>2</sup>

Scholars such as Baker (1997:88) have argued that the semantic role<sup>3</sup> of *the children* in both sentences is the same (a recipient), as is the role of *the candy* (a theme).<sup>4</sup> Consequently, many scholars believe that the NP-PP and NP-NP alternations are linked.

### 2.3 Derivational accounts of DOCs

Derivational theories have predominantly analysed the DOC as either i) a transformational raising of IO to DO position (i.e. S-Structure NP-NP derived from D-Structure NP-PP) or ii) a transformational advancement of the SO to PO position (i.e. S-Structure NP-PP derived from D-Structure NP-NP). We will show how both positions are problematic, and will subsequently discuss general problems with derivational accounts of the dative alternation based on Oerhle (1976).

#### 2.3.1 Transformational raising of IO to DO position

According to this analysis, a DOC is derived from a prepositional phrase like (1a) via Indirect Object Advancement, known in the early days as ‘dative movement’. This analysis has been suggested by Larson (1988), Baker (1988; 1997) and Emonds & Witney (2005), along with much work in Relational Grammar, which aimed to better

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<sup>2</sup> Data taken from Baker (1997:86).

<sup>3</sup> We use the term *semantic role* to refer to what others have deemed *thematic role* or *θ-role*.

<sup>4</sup> Baker (1997:88) acknowledges that sentences (1a) and (1b) differ ‘with respect to matters of topic and focus’. His view that the semantic roles in both alternations are always the same is controversial.

explain changes in GRs within a transformational framework. Labelling the GRs subject, direct object and indirect object 1, 2 and 3, respectively, their claim was that at underlying structure, the 3 was a PP which underwent ‘3 to 2 advancement’, resulting in the original 2 (the direct object) being ‘demoted’ to the relation ‘chômeur’ (Dryer, 1986). We consider two influential raising analyses in more detail below.

### 2.3.1.1 Larson (1988)

Larson’s (1988) transformational account proposes that the direct object be treated as an adjunct of V’, and the indirect object come to asymmetrically c-command the direct object. This analysis was informed by binding asymmetries pointed out by Barss & Lasnik (1986), and attempts to account for these within a purely dominance-based theory of binding.

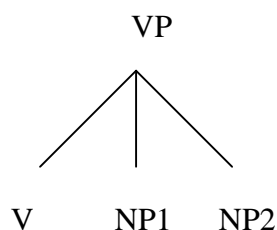
- (2) a. I showed Mary herself.  
b. \*I showed herself Mary.<sup>5</sup>

Larson (1988) argues that, in accordance with the rules of binding, *Mary* c-commands *herself* in (2a). (2b) is ungrammatical because *Mary* does not c-command *herself*. The structure in (3a) is not possible for DOCs, because *Mary* and *herself* would c-command each other. Given that (2b) is ungrammatical, the hierarchical structure in (3b) is also not an appropriate tree for DOCs, Larson argues.

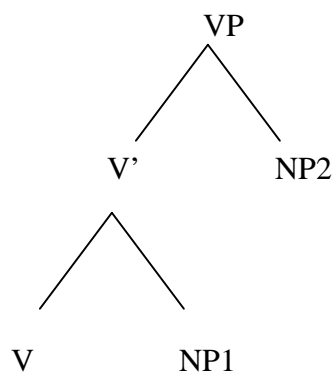
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<sup>5</sup> Data from Larson (1988:336).

(3a)



(3b)



Jackendoff (1990:435) points out that it is far from clear how Universal Grammar defines the repertoire of possible binding domains, suggesting that linear order might be a possible condition, rendering c-command inessential. Lam (2008:68) also notes how Larson introduces a number of new or modified assumptions within his theory, such as the Single Complement Hypothesis, which states that there is only one complement position and on which Larson's analysis of the configuration of DOCs crucially rests. The Single Complement Hypothesis implies binary branching, an assumption for which Larson makes no attempt to provide evidence. A more significant problem noted by both Jackendoff (1990) and Lam (2008) is that Larson's analysis provides no structural distinction between arguments and modifiers, where the theme role is realised as an adjunct of V'.

Larson's (1988) analysis of non-alternating DOCs<sup>6</sup> is also left wanting. He proposes that non-alternating DOCs theta-mark but do not Case-mark the indirect object. As a result, non-alternating verbs like *donate* resist the dative shift. This is a further new or modified assumption introduced by Larson, yet it is no more explanatory than a purely lexical treatment (Jackendoff, 1990:445).

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<sup>6</sup> That is, DOCs that have no NP-PP alternation, such as *donate*. See Levin (1993:45-7).

### 2.3.1.2 Baker (1997)

Baker's analysis is also informed by theory internal principles. The principle of UTAH (discussed more fully in 2.5.1) states that, at D-structure, identical thematic relationships between items are represented by identical structural relationships between these items. This principle rests on the belief that the thematic roles of the NPs in dative alternations are the same. Baker (1997:89) acknowledges that there is a difference in meaning between the following:

- (4) a. I taught French to the children.  
b. I taught the children French.<sup>7</sup>

Baker admits that there is a sense in (4a) that the children did not fully learn French, which is not the case in (4b), which suggests the children mastered French. However, he does not consider the following to be infelicitous:

- (5) I taught the children French, but they didn't learn it at all.<sup>7</sup>

That the contradiction in (5) is grammatical suggests that the nuanced difference in meaning 'must be stated at the level of "suggests," rather than "asserts" or "implies"' (Baker, 1997:89). Nevertheless, Baker provides no explanation for why this nuanced difference in meaning exists.

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<sup>7</sup> Data from Baker (1997:89).

Bresnan & Nikitina (2009:2), however, show from corpora that different constructions must be associated with different semantics:

- (6) a. I sent a package to the boarder. ~ I sent the boarder a package.  
b. I sent a package to the border. ~ \*I sent the border a package.

In the above examples, Bresnan & Nikitina (2009) show how spatial goals do not normally alternate in English. Consequently, they suggest that the NP-NP and NP-PP alternations are not alternative expressions of the same meaning; rather they are expressions of different meanings (Bresnan & Nikitina., 2009:2). This is a serious problem for non-weakened UTAH, because it challenges the assumption that the (truth conditional) semantics of the dative alternation are the same for each alternation, a principle on which UTAH is based. It is possible that the semantic roles of the NPs in dative alternations such as (6a) and (6b) are different. In (6b), *the border* is inanimate, and may be best analysed as a goal rather than a recipient. These considerations are not discussed by Baker (1997).

### **2.3.2 Transformational advancement of the SO (DO) to PO (IO) position**

Dryer (1986) proposes an advancement of the secondary object to the primary object which he terms the *antidative* rule.<sup>8</sup> For example, in (7), it is *the book* which has advanced to become the PO.

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<sup>8</sup> A small set of 'supply' verbs (such as *provide*, *present* and so on) are analysed as participating in 'dative movement' (IO advancement), resulting in Dryer's analysis of the dative alternation displaying what he calls a kind of 'split objectivity'. These verbs do not participate in DOCs. See 2.6.2.1 and 5.2.1.

(7) John gave the book to Mary.<sup>9</sup>

*To Mary* is treated as a *chômeur*, like ‘by clauses’ of passives (Dryer, 1986:821):

(8) John was seen by Sally.

Dryer argues that an antidative analysis is simpler and more consistent with markedness principles than Relational Grammar’s IO advancement. However, there are some problems with his analysis. If we assume *to Mary* in (7) behaves like ‘by clauses’ in passive sentences such as (8), are we to assume that it is no longer an argument of the verb? If this is the case, why for some verbs can it not be omitted like ‘by clauses’ can?

(9) John was seen (by Sally).

- (10) a. John gave the book to Mary.  
b. \*John gave the book. (Only grammatical on a *donate* reading of *give*).<sup>10</sup>

There is a further objection to Dryer’s analysis. If the NP-PP alternation derives from the NP-NP alternation, it is unclear how one can predict which preposition will appear (e.g. *for*, *to*, *of*, etc.) Aside from benefactive alternations of the type *Mary peeled John an apple/ Mary peeled an apple for John*, all of which take *for* as a preposition, it is not always possible to predict which preposition will appear on semantic grounds. In

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<sup>9</sup> Data from Dryer (1986:821).

<sup>10</sup> We acknowledge that some authors consider (10b) acceptable.

both (11) and (12), the pronoun *him* is a recipient. In (11), he is the recipient of the book, in (12) he is the recipient of a question, yet the alternations are formed with different prepositions.

- (11) a. Mary gave him a book.  
b. Mary gave a book to him.

- (12) a. Mary asked him a question.  
b. Mary asked a question of him.

Dryer (1986) also makes no attempt to account for non-alternating *to-only* verbs such as *admit*, *credit* and so on (Levin, 1993:46-7). If the NP-PP alternation is derived from the 'bare' NP-NP variant, it is unclear what the base form for non-alternating *to-only* verbs should be.

### **2.3.3 General problems with derivational accounts: Oehrle (1976)**

Based on an examination of i) pronominal restrictions on the second object in DOCs, ii) the interaction of the passive and the dative construction, iii) the dative construction and particles and iv) movement constraints, Oehrle (1976:165) is an early work arguing against a transformational account of the dative alternation. Only pronominal restrictions and movement constraints are discussed below.

Oehrle (1976:166) notes that DOCs in which O2 is an unstressed definite pronoun are ungrammatical:

- (13) a. John sent it to Arnold.  
b. \*John sent Arnold it.

If a transformational account is assumed, a requirement to the effect that O2 must be non-pronominal, or at least 'lower in prominence' than O1, must be included (see Oehrle 1976:168). However, Oehrle (1976) argues that this does not hold for some examples that have undergone passivization (Oehrle, 1976:171):

- (14) a. Mary never offered John the job.  
b. Mary never offered the job to John.  
c. \*Mary never offered John it.  
d. Mary never offered it to John.  
e. John was never offered the job.  
f. John was never offered it.

If the dative alternation were transformational, we would expect it to occur before passivization, as both NP-NP and NP-PP constructions can usually be passivized. We would therefore predict that (14f) would be ungrammatical like (14c). This is problematic for a transformational account.

Oehrle (1976) presents further problems based on evidence from movement constraints. He argues that *wh*-movement cannot be applied to O1, something which Fillmore (1965:13) pointed out. This, according to Kuroda (1968), follows from a more general constraint prohibiting movement of O1 over material which is represented in the structural description of the rule by a variable. Consequently it is

not just *wh*-movement of O1 (e.g. in (15a)) which is infelicitous, but also left dislocation ((15b)), clefting ((15c)), tough-movement ((15d)) and relativization ((15e)) (Oehrle, 1976:236-7):

- (15) a. \*Who did Max tell a joke?  
b. \*Your upstairs neighbour, I told a joke yesterday.  
c. \*It was your upstairs neighbour that I told a joke.  
d. \*Your upstairs neighbour is hard to tell a joke.  
e. \*Your upstairs neighbour is the person who I told a joke yesterday.

According to Kuroda (1968), passivization does not contain a variable, and so its application to O1 does not produce the violation evidenced above.

Oehrle (1976:237) argues that the violations in (15) could only be accounted for if the dative rule were ordered after all the rules that provide the violations in (15), but that such an ordering is impossible because the dative rule must precede the application of rules such as *wh*-movement, clefting and relativization. This is clear by considering the interaction of the above-mentioned rules with the passive. We saw that any dative rule must apply before passivization. Rules containing a variable may apply to the derived subject in a passive sentence, meaning that passivization must be applied before e.g. extraction (16b) and clefting (16c):

- (16) a. The diplomat was given the pouch of documents.  
b. Who do they believe was given the pouch of documents?  
c. It's the diplomat that they believe was given a pouch of documents.

Consequently, the passivization rule must be applied before the rules in (16), and the dative rule or rules must be applied before passivization. Therefore the violations in (15) cannot be accounted for by derivation, Oehrle (1976) argues.

### **2.3.4 Section Summary**

We have seen that there are significant problems with derivational accounts of DOC constructions. For Larson (1988) and Baker (1997), a desire to adhere to theory-internal principles has influenced their analyses. For Dryer (1986), a number of empirical problems remain unsolved. We have discussed general problems based on work by Oehrle (1976). We now turn to a lexicalist approach to see whether this can better account for the data.

## **2.4 A lexicalist approach to DOCs**

Lexicalist approaches to DOCs, put forward by scholars such as Jackendoff (1990), Oehrle (1976) and Dalrymple (2001) argue that a lexical solution best explains the fact that there are many non-alternating verbs which participate in DOC constructions. This section appraises the lexicalist approach as laid out in LFG.

### **2.4.1 An LFG account of DOCs**

LFG is a constraint-based non-derivational theory of grammar with multiple layers of structure (Bresnan, 2001). As such, there is no analysis open to the theory other than a

lexical treatment of DOCs. However, there are many advantages to adopting such a lexicalist approach, without doing so for theory internal reasons.

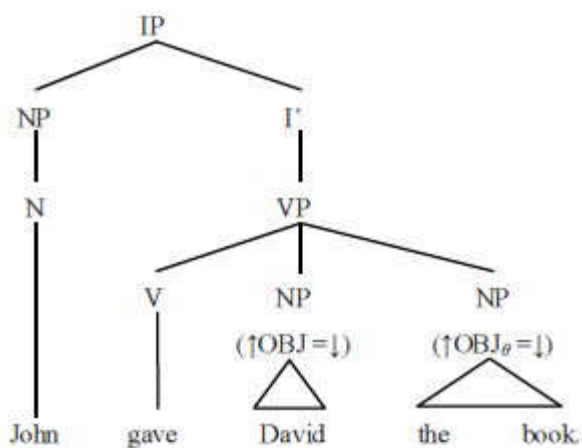
First, theories of grammar which disallow multiple branching must account for the fact that some predicates have more than one complement. With no derivation possible and multiple branching acceptable, LFG does not face this problem. It can account for the binding asymmetries noted by Barss & Lasnik (1986) on a different level of structure than at constituent structure, allowing a constituent structure in which each NP stands in the same hierarchical relation to the head verb (which Larson (1988) disallows). A DOC using the verb *give* is structured as follows within the LFG framework (example taken from Lam, 2008:124):

(17) a. John gave David the book.

b. A-structure for (17a)

*give*<Ag, Rpt, Th>

c. Simplified c-structure for (17a)



d. F-structure for (17a)

|                  |  |      |        |      |       |
|------------------|--|------|--------|------|-------|
| PRED             | 'give < SUBJ, OBJ, OBJ <sub>θ</sub> >'   |      |        |      |       |
| TNS              | pst  |      |        |      |       |
| SUBJ             | [PRED 'John']  |      |        |      |       |
| OBJ              | [PRED 'David']   |      |        |      |       |
| OBJ <sub>θ</sub> | [ <table style="border-collapse: collapse; display: inline-table; vertical-align: middle;"> <tr> <td style="padding-right: 10px;">PRED</td> <td>'book'</td> </tr> <tr> <td>SPEC</td> <td>'the'</td> </tr> </table> | PRED | 'book' | SPEC | 'the' |
| PRED             | 'book'   |      |        |      |       |
| SPEC             | 'the'  |      |        |      |       |

In (17), the argument structure (a-structure) stipulates that the predicate *give* subcategorizes for the semantic roles Agent, Recipient and Theme. The functional structure (f-structure) shows that *give* is a three place predicate, requiring a subject, an object and a secondary object. The argument structure is then mapped to GRs.

While such a lexicalist approach does not capture the similarity between the two types of alternation in the way derivational approaches can, it accounts much more neatly for the fact that many verbs participate in only non-alternating DOCs or *to-only* NP-PP constructions. Indeed, in their extensive list of objections to lexicalist approaches, Emonds & Whitney (2005) mainly list Case-theory-internal problems with flat structure, and do not discuss the possibility of flat structure in theories with multiple levels of structure.

In LFG, it is at f-structure where two complements are clearly distinguished, with different grammatical roles. The canonical LFG account assigns the GR OBJ to O0 and to O1, but not to O2, i.e. O1, not O2 is the more 'object-like'. This is based on the belief that O1 patterns syntactically in a more similar way to O0 than does O2. This opinion is controversial, but it is of crucial importance. For linguists who explain the

dative alternation using transformational means, the question of which ditransitive object most resembles OO determines which of the dative alternation sentences is the base sentence from which the other derives. Consequently, this dictates the phrase structure position of the 'true' object. For a lexicalist approach such as LFG, it determines which object is assigned the GR OBJ and which one OBJ<sub>θ</sub>. This issue is explored in depth in 2.6.

### **2.4.2 Section Summary**

In this section, we have seen that an LFG approach, which is lexical, allows multiple complements to be captured by multiple branching, accounting for binding asymmetries by other means than at constituent structure. As there is no derivation of DOCs from NP-PP sentences (or vice versa), semantic differences between alternations are of no concern.

### **2.5 DOCs, semantics and verb classification**

In this section, we discuss DOCs and verb classification, noting that authors have tended to investigate only a handful of ditransitive verbs. First, semantic roles and the syntax-semantics interface are considered. Subsequently, we explore the extent to which linguists have discussed semantic considerations with respect to their analysis of DOCs.

### 2.5.1 Semantic roles, Case Grammar and argument realisation: a brief tangent

Consider (6), repeated below for convenience.

- (6) a. I sent a package to the boarder. ~ I sent the boarder a package.  
b. I sent a package to the border. ~ \*I sent the border a package.

In (6b), it cannot be a syntactic phenomenon which causes the violation, otherwise we would predict that the second sentence in (6a) would be ungrammatical. Thus the semantics must interact in subtle ways with the syntax in ways hitherto undiscussed.<sup>11</sup>

In this section, we discuss the notion of semantic role and its implications for argument realization, to better understand how verbs pattern together along semantic grounds.

The notion of semantic role was first introduced in the work of Fillmore (1968) in Case Grammar. The central tenet of this theory was that in any clause, each noun has a ‘case’ which represents its semantic role (or ‘case role’) as one element at an underlying level (Matthews, 1997:47).<sup>12</sup> In other words, Case Grammar represents a system which views the deep structure of grammar as consisting of a series of nonlinearly ordered ‘case-marked’ NPs associated with a VP (Cook, 1979:1). These covert cases are made up of a series of roles such as Agent, Instrument and Object, which retain their semantic role while participating in various types of surface structures. Fillmore (1968) developed a hierarchy in which A(gent) case would be

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<sup>11</sup> In (6), the violation is probably caused by lack of animacy.

<sup>12</sup> It is terminologically confusing that the term ‘case’ was adopted to refer to semantic roles.

selected as subject by default. If A case is not present, the Instrument must be the subject, and if neither A nor I is present, Object is selected as subject.

Fillmore's roles and their hierarchy have influenced scholars of many different theoretical persuasions.<sup>13</sup> Culicover & Jackendoff (2005:6) suggest that traditional syntactic approaches (to which Case Grammar belongs) have had as one of their central tenets a principle which they call 'Interface Uniformity':

**Interface Uniformity** (Culicover & Jackendoff, 2005:6)

The syntax-semantics interface is maximally simple, in that meaning maps transparently into syntactic structure; and it is maximally uniform, so that the same meaning always maps onto the same syntactic structure.

Given that this principle is, on the surface, 'patently false' (Culicover & Jackendoff, 2005:7), it is necessary for mainstream traditional theories of grammar to introduce an underlying level of syntax (be that Deep Structure, D-structure or Logical Form).

Baker's UTAH falls within this theoretical camp:

**Uniform Theta Assignment Hypothesis** (Baker, 1988:46)

Identical thematic relationships between items are represented by identical structural relationships between those items at the level of D-structure.

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<sup>13</sup> For an LFG treatment of semantic role hierarchy, see Bresnan & Kanerva (1989).

In other words, two constituents which fulfil the same semantic function with respect to a given head must occupy the same underlying position in the syntax with respect to the head. That is, UTAH disallows the possibility of cases in which thematic function is the same but grammatical structure is different (Culicover & Jackendoff, 2005:73).

We saw in 2.3.1 that DOC and NP-PP alternations present problems for this principle. However, we must recall that UTAH was at the time of its conception influenced by the development of another theory internal principle, namely Head Movement (Culicover & Jackendoff, 2005).

Theories of Head Movement were posited in the 1980s to account for the fact that in VSO languages, the verb and object act like abstract constituents but are not contiguous. In early generative work, scholars had assumed that VSO languages had no VP and thus had ‘flat structures’ (Schwartz, 1972; Tallerman, 1990). However, VO and VS constructions appeared to be structurally distinguishable, which is not captured by flat structure (Carnie, 1991).<sup>14</sup> Emonds (1980) also argued against a VP-less analysis and for a derivational account, based on typological observations (e.g. VSO languages being much less common than SVO languages) (Carnie, 1991). As a result of these and other observations, it was suggested that VPs *do* exist underlyingly, and that the head of the VP (i.e. the terminal node, V) moves to the specifier of CP. Thus SVO => VSO. As Head Movement grew to become an established part of P&P-based syntactic theory, the idea that underpins it, namely Interface Uniformity, also

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<sup>14</sup> Note that generative theories of grammar which allow multiple layers of structure allow flat (constituent) structure for VSO languages, as subject and object are primitives, and are distinguished on a separate level of structure from the phrase structure.

came to be accepted. However, Interface Uniformity is an *a priori* assumption, rather than being informed by empirical data.

## **2.5.2 The motivation for verb classification**

The discussion above was a necessary tangent to account for the fact that, in traditional theories of grammar, verbs have been classified within mainstream generative theories according to their ‘case frame’ and other features (Fillmore, 1968; Cook, 1979). This section overviews the motivation for separating verbs into different classes according to meaning based on the work of scholars outside of mainstream generative grammar, and the effects this has on syntactic behaviour.

### **2.5.2.1 Verb classification according to meaning**

Levin & Rappaport Hovav (2005:1) acknowledge that verbs fall into semantically identifiable classes that are the basis for generalizations about argument realization, as Fillmore (1968) and other proponents of Case Grammar suggest.

Indeed, Levin & Rappaport Hovav (2005) claim that the argument realization patterns which classes of verbs with similar meanings show can be attributed to the semantic properties of each class (Levin & Rappaport Hovav, 2005:2). In addition, the authors show that generative syntax has assumed that the syntactic realization of arguments is predictable from the meaning of their verbs (Levin & Rappaport Hovav, 2005:7). For example, the verbs that participate in the dative alternation are often ones which convey the meaning *X causes Y to have Z* such as *give, send, lend, assign, promise,*

*carry* and so on.<sup>15</sup> They argue that O1 is best characterized semantically as a recipient, an animate goal in an event that involves a physical or abstract transfer of possession, but that O1 can also realize a beneficiary (e.g. *our grandmother baked us a pie*) or in some instances, a source (*The police fined him \$50*) or a possessor that is not construable as a recipient (e.g. *Kelly envied Kerry her good fortune*) (Levin & Rappaport Hovav, 2005:29). The next section will consider the implications of Levin & Rappaport Hovav's work on verb classification for DOCs.

### 2.5.2.2 The effects of verb classification on DOCs

Importantly, Levin & Rappaport Hovav (2005) acknowledge that semantically coherent classes of verbs do not always constitute grammatically relevant classes. Sometimes, verbs of a particular semantic class can belong to more than one distinct grammatically relevant semantic class (Levin & Rappaport Hovav, 2005:11-12). For example, locative alternation verbs, which may express either the transferred item or the surface as the direct object, do not share all options for argument realization. *Splash* shows transitive and intransitive uses characteristic of causative alternation, but *smear* does not:<sup>16</sup>

- (18) a. The pigs splashed mud on the wall.  
b. Mud splashed on the wall.

- (19) a. We smeared mud on the wall.  
b. \*Mud smeared on the wall.

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<sup>15</sup> This is reminiscent of a Construction Grammar approach. See Goldberg (1995).

<sup>16</sup> Data from Levin & Rappaport Hovav (2005:17).

Levin (1993) divides verbs which can form DOCs into semantic classes (see 2.6.3.1.1). Is it possible that certain semantic classes of verbs, or certain verbs within those semantic classes, behave differently from each other with regards to Hudson's eleven tests? Indeed, it is well-noted in the literature that *give* can partake in the dative alternation, but *donate* cannot, and it is often assumed that these verbs belong to a semantically coherent class.

The question of how different semantic classes of verbs behave in DOCs has not been extensively researched. Maling (2001) is one of the few who acknowledge that the transitive objects of verbs do not all behave alike and that one must therefore be cautious in assuming that theme is a default semantic role for objects. In her discussion of Germanic, Maling (2001) shows that one-to-one Bakerian mapping between morphological case and GR is not so predictable, which has implications for the theory of abstract Case. Goal arguments are *not* always marked dative, themes are not necessarily marked accusative, and O1 is not always marked dative even in those Germanic languages where the prototypical O1 is dative. For example, in Icelandic, themes are marked genitive with the verb *biðja*, 'to ask'. When *biðja* is used as a ditransitive, it occurs in two different case frames: NAG and NDG. Accusatives mark the goal of the speech act (that is, the person asked) and the dative marks a beneficiary:<sup>17</sup>

- (20) a. Jón bað [syni sínum] [blessunar guðs] BEN.DAT TH.GEN  
 Jon asked his son-D God's blessing-G  
 'Jon asked God's blessing for his son.'

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<sup>17</sup> Data from Maling (2001:432).

b. Jón bað [guð] [blessunar] [fyrir son sinn] GOAL.ACC TH.GENBEN.PP

Jon asked God-A blessing-G for his son

‘Jon asked God for his blessing for his son.’

However, Maling’s (2001) paper focuses on addressing the problems of abstract Case theory rather than providing a typology of semantic classes of verbs within DOCs in Germanic. For example, she does not tell us whether ditransitive verbs belonging to different semantic classes behave the same way as *biðja*. Nevertheless, her paper is sensitive to the need to apply Baker’s (1997) and Hudson’s (1992) tests to more lexical items.

The main typology of English DOC verbs is that of Levin (1993). However, Levin’s typology does not discuss exhaustively the problem of which verbs partake in DOCs. For example, under her section on ‘non-alternating verbs’, Levin (1993:47) lists (among others) ‘appoint verbs’, ‘dub verbs’ and ‘declare verbs’. While it is true that these verbs form what look like DOCs, most scholars consider them to have some kind of predicative reading and are thus not to be analysed in the same way as other non-alternating DOCs (see 2.6.3.3).

Similarly, there are alternative analyses of what are sometimes thought to be DOCs with particular verbs. Allerton (2006) considers ‘true’ objects to be only those which correspond to a passive subject, such as with the verbs *give* or *offer*. *Cost* and *weigh*, however, cannot take a single object or a DOC because they have no passive equivalent.

- (21) a. The new piano cost me five pounds.  
b. \*I was cost five pounds by the new piano.

In (21), *me* is analysed by Allerton as an Indirect Object. Quirk & Greenbaum (1975:352), on the other hand, consider *cost* and *weigh* to be ‘verbs of measure’ which take compulsory adjuncts and these are not to be understood as objects in the traditional sense.

There is not space here for a full analysis of these positions. In what follows, all of Levin’s (1993) semantic classes in DOCs are treated as if they are verbs which take two objects, unless distributional evidence indicates the contrary. Levin’s verb classes for DOCs remain the best available typology for English, and this paper will refer to it extensively when considering the behaviour of different lexical items which form DOCs.

### **2.5.3 Section summary**

This section provided a brief overview of early work on semantic roles and GRs, noting that traditional theories are influenced by the Interface Uniformity principle, as outlined in Culicover & Jackendoff (2005). We saw that the argument realization patterns that verb classes show can be attributed to the semantic properties of each class, as suggested by Levin & Rappaport Hovav (2005). Lastly, Maling’s (2001) work on Germanic shows that there is no clear pattern of one-to-one mapping between semantic role and GR in different verb classes.

## 2.6 PO/SO or IO/DO?

### 2.6.1 Introduction

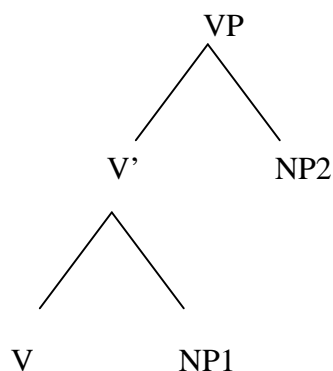
In traditional grammars, O1 is typically analysed as the IO and O2 as the DO. O0 was also analysed as the DO, as scholars considered O0 to share more properties with O2 than with O1. Scholars have argued that this view is too heavily influenced by semantics (Dalrymple, 2001; Maling, 2001). In transitive sentences, O0 is often a theme or a patient. Similarly, in DOCs, O2 often patterns with O0 for semantic role, whereas O1 is some kind of recipient (Baker, 1997). Consider the following English data from Hudson (1992:261):

- (22) a. We gave [the children]<sub>1</sub> [sweets]<sub>2</sub>.  
b. We gave [sweets]<sub>0</sub>.  
c. \*We gave [the children]<sub>0</sub> (where *the children* is understood to be a recipient).

Clearly, O0 *sweets* shares the same semantic role as O2 *sweets* in (22a). But it is not clear that semantic role should have any influence on GR, if one does not subscribe to Interface Uniformity.

Despite the traditional approach, there have been a number of works that have challenged the picture that O2 is syntactically more similar to O0 than O1. For example, Chomsky (1981:48) argues that the following constituent structure is the more likely for DOCs:

(23)



Here, O1 (NP1) is depicted as a complement of V', which is the position we expect to find O0 in a transitive sentence. Because the constituent structure in (23) has been one of the most popular ways of analysing DOCs, scholars have in so doing tacitly linked O1 with O0 syntactically. Most notably, Dryer (1986), Bresnan & Moshi (1990) and Maling (2001) show that there is much evidence from other languages that O1 patterns with O0 more than O2 does, at least in some languages.

The problems with the traditional IO/DO distinction are discussed in 2.6.3, which particularly focuses on the dangers of not applying tests to more than a handful of lexical items. In 2.6.3.1, Hudson's (1992) eleven objecthood tests are applied to verbs of different semantic classes as outlined by Levin (1993), based on the informal acceptability judgments of a single native speaker. We will see that Hudson's claims do not hold for some of the tests, and that others of the tests are inapplicable.

First, though, we will appraise the evidence from Dryer (1986) and others who argue for a Primary Object/ Secondary Object distinction. We will see how LFG handles the phenomenon, and consider the less well-aired view that O1 and O2 share the same GR.

## 2.6.2 PO/SO distinction and LFG

### 2.6.2.1 Evidence for a PO/SO distinction

Dryer's (1986) principal claim is that some languages distinguish between direct and indirect objects, and some between primary and secondary objects, and he draws the parallel with ergative versus absolutive case marking (Dryer, 1986:808). In addition, some languages exhibit a kind of 'split objectivity', showing both PO/SO and IO/DO patterns. He argues that most languages do not exhibit alternative constructions. Instead, many of the world's languages have single constructions, such as French, which resembles the English NP-PP construction.<sup>18</sup>

- (24) Jean a donné le livre à Marie  
John PERF give the book to Mary
- \*Jean a donné Marie le livre.  
John PERF give Marie the book

'John gave the book to Mary'.

Other languages, such as Ojibwa, exhibit a single construction analogous to the English DOC:

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<sup>18</sup> Data adapted from Dryer (1986).

- (25) n-gi:-mi:n-A:                      mzinhigan                      ža:bdi:s.  
 1-PAST-give-3.ANIM                      book                      John  
 ‘I gave John a book.’

Dryer (1986) argues that evidence from languages other than English supports the analysis that O1 patterns with O0 in some languages. To support his hypothesis, he gives evidence from languages where there is verbal agreement with the PO, for example, Paluan. In this language, the object agreement suffix represents the O0 in monotransitive and the O1 in ditransitive clauses (Dryer, 1986:815-6):

Paluan (Josephs (1975:96, 347), quoted in Dryer (1986:816))

- (26) a.     *A        Droteo a        cholëbëde-tërir        a        rë-ngalëk.*  
           DET    D.        DET    hit-3PL                      DET    PL-child  
           ‘Droteo is going to hit the children.’

- b.     *Ak        m-il-s-tërir                      a        rë-sëchël-ik        a*  
           I        VERB-PAST-give-3PL        DET    PL-friend-my    DET  
           *hang*  
           book.  
           ‘I gave my friends a book.’

Dalrymple (2001) argues that English is a PO/SO language based on evidence from passivization and post verbal position. For example, it is the PO, not the SO, that can become the subject of a corresponding passive sentence. In (27), it is passivized O0

and O1 that produce felicitous sentences, not passivized O2 (adapted from Dryer, 1986:832):

- (27) a. John ate the cake.  
b. The cake was eaten by John.  
c. John gave Mary the book.  
d. Mary was given the book by John.  
e. \*The book was given Mary by John.

Immediate post-verbal position also indicates that O1 behaves like O0:

- (28) a. John ate (\*yesterday) the cake.  
b. John gave (\*yesterday) Mary the book.

The next section considers how this asymmetry in object behaviour is captured in LFG.

### **2.6.2.2 Grammatical relations of objects in LFG**

LFG maintains a PO/SO distinction in agreement with Dryer, mapping OBJ onto the PO and OBJ<sub>θ</sub> onto the SO. In early LFG, the GRs SUBJ, OBJ, OBJ<sub>θ</sub> and OBL were assumed to consist of atomic labels, i.e. they were made up of unanalyzable attributes (Alsina, 1996:18). However, scholars found that it was necessary to make generalizations over groups of GRs, which led to the decomposition of GRs into features which define natural classes. In standard LFG, both OBJ and OBJ<sub>θ</sub> share the

feature +objective. The object GRs differ in that OBJ is semantically unrestricted, whereas OBJ<sub>θ</sub> is semantically restricted, i.e. OBJ has the feature –restrictive, OBJ<sub>θ</sub> +restrictive.

Not all scholars share the canonical LFG view, however. Börjars & Vincent (2008) point out that the PO in a DOC *is* semantically restricted: it must be a recipient, or a goal, or possibly a source, but it can never be a theme or a patient, however the latter two are defined. The current distinction between OBJ and OBJ<sub>θ</sub> does not capture this. Börjars & Vincent (2008), who suggest that the object is a semantically inert GR, propose that both PO and SO in a DOC (and indeed the monotransitive object) be analysed as OBJ<sub>θ</sub>, but this is problematic if one believes that one of the objects in a DOC patterns with O<sub>0</sub>, as no object symmetry is captured if all three objects have the same GR.

Alsina (1996) also deviates from the canonical LFG view. Influenced by the GB distinction between internal and external arguments (Chomsky, 1981), he suggests that GRs should be decomposed into features according to subject/nonsubject and direct/oblique distinctions (Alsina, 1996:18-19). According to this distinction, subjects are necessarily [+subj, -obl], and objects are [-subj, +obl]. Thus for Alsina (1996) all objects have the GR OBJ. In order to persuade his readership that the traditional indirect object is also a ‘direct function’, he presents eight arguments from Romance languages which indicate a syntactic patterning of the IO with DOs and subjects (Alsina, 1996:160). He does not show, however, that the DO never patterns with the subject to the exclusion of the IO. There are also further problems: he refers only to the ‘direct object’ and ‘indirect object’ making no distinction between O<sub>0</sub> and

O2, as they are both grouped together under ‘direct object’. While his argumentation indicates that the behaviour of O1 resembles that of a subject or a direct object more than it does that of an oblique, we do not discover whether there are any asymmetries between O1 and the other two objects. In addition, it is not clear how applicable Alsina’s analysis is to English. Unlike English, unless the objects are pronominal clitics, ditransitive verbs are only used in Romance in the construction NP V NP PP (Alsina, 1996:150). Where there are DOCs, the pronominal clitics are distinguished by morphological case-marking (themes are marked accusative, goals etc dative) which is also unlike English.

Börjars & Vincent (2008) list several further problems with Alsina’s (1996) proposal of alternative features, most notably pointing out that his system represents an undesirable mix of binarity and monovalence, as the subject is the only GR to be [+subj], but objects are defined by having the feature [-subj]. For our purposes, the same problem holds for Alsina’s proposal as for Börjars & Vincent’s (2008): analysing all objects as OBJ does not capture the apparent asymmetries between the syntactic behaviour of the objects.

We return to the status of OBJ and OBJ<sub>θ</sub> in 5.2, where the implications of empirical data are discussed.

### **2.6.2.3 Section Summary**

In this section we have seen that evidence from passivization and post verbal position (English) and object-verb agreement (other languages) supports the claim that DOCs

are best analysed as exhibiting a Primary Object/ Secondary Object distinction. We also discussed conflicting analyses within LFG.

### **2.6.3 IO/DO analysis: Baker (1997) and Hudson (1992)**

Both Hudson (1992) and Baker (1997) list several objecthood diagnostics which they consider to be evidence in favour of an IO/DO distinction. There are significant problems with both papers. First, neither systematically discusses the behaviour of ditransitive verbs other than *give* or *send*. Second, both Baker & Hudson (by and large) base their analyses on unempirically tested data, despite admitting that it is not clear whether some of the data are grammatical or not.

Of Hudson's eleven tests for objecthood, only one suggests that O1 patterns more closely with O0 (passivization). The remaining ten, Hudson claims, support the analysis of DOCs as having an IO/DO distinction. These are discussed fully under 2.6.3.1, where they are applied to multiple lexical items.

Both Baker and Hudson argue that extraction of O2 is 'better' than extraction of O1. O2 thus patterns with O0, which extracts well (Hudson, 1992: 258, example 22):

- (29) a. We give [children]<sub>1</sub> [sweets]<sub>2</sub>.  
b. [Which sweets]<sub>2</sub> do you give children \_\_\_\_?  
c. %[Which children]<sub>1</sub> do you give \_\_\_\_ sweets?

Baker (1997:92) also struggles to identify whether extraction of O1 is grammatical, but concludes that it is less acceptable than extraction of O2:

(30) Which woman do you think I should ?give/\*buy t perfume?

Both authors draw the conclusion that O2 patterns with O0. However, neither author shows consideration for issues such as context or information structure in the examples of extraction they cite. In addition, both authors apply the tests informally to only a handful of verbs, despite making general claims about how to capture ditransitive constructions theoretically. We will see that this is problematic. In the next section, we examine Hudson's diagnostics in more detail.

### 2.6.3.1 Testing Hudson (1992)

#### 2.6.3.1.1 Introduction

Hudson's object diagnostics can be summarized as follows:

- i) **Passivization** – O1 is more similar to O0 as both can be passivized. O2 is less easily passivized.
- ii) **Extraction** – O2 extracts more easily than O1, just like O0.
- iii) **Particle following** – O2 and O0 easily follow a particle, O1 does not.
- iv) **Heavy NP shift** – O2 and O0 can both be moved by Heavy NP shift, O1 cannot.

- v) **Case** – in related languages with case marking, O2 and O0 share the same case.
- vi) **Lexical specification** – O2 and O0 are always lexically specified in the verb's valency, whereas O1 is not always.
- vii) **Semantic role** – typically, O2 and O0 share the same semantic role
- viii) **Animacy** – typically, O2 and O0 are non-human, O1 is human.
- ix) **Idiom involving verb** – both O2 and O0 are frequently part of an idiom that also involves the verb, but O1 rarely is.
- x) **Provision of extracted object** - O2 and O0 can provide an extracted object in relation to infinitival adjuncts, but O1 cannot.
- xi) **Control of a depictive predicate** – O0 and O2 can control a depictive predicate, O1 cannot.

Hudson (1992) states the origin of only one of his examples ('a very traditional grammar' (Hudson, 1992: 257)), so we must assume that his data are based on his own linguistic intuitions.

Hudson makes no attempt to differentiate between different classes of ditransitive verbs. However, it is clear that ditransitive verbs can be divided into different classes. For example, some DOC verbs have to take three arguments (e.g. *give*), some can take three arguments but do not have to (e.g. *send*), some form idiomatic expressions (e.g. *lend someone a hand*), some do not (e.g. *email*). Of the verbs which do not have to take three arguments, but can, there are verbs whose IO is a beneficiary (e.g. *peel* as in *Mary peeled me the banana* vs. *Mary peeled the banana (for me)*) and verbs where the semantic role of O1 is not a beneficiary (e.g. *ask* as in *Mary asked me a question*

vs. *Mary asked a question*). As we have seen, some verbs which form DOCs can also alternate with sentences with a PP (e.g. *send* – *Mary sent a letter to me* and *Mary sent me a letter*), and some cannot (e.g. *forgive* – *\*Mary forgave my mistake to/for/of me*).

Levin (1993), in her section on dative alternation, divides verbs which participate in NP-NP and NP-PP constructions into **alternating verbs**, **non-alternating ‘to only’ verbs** (i.e. verbs which only take object-PP constructions), **non-alternating ‘double object only’ verbs** and **benefactive alternation verbs** (Levin, 1993:45-7).

As our aim is to investigate DOCs, we shall not refer again to the non-alternating ‘to only’ verbs. Below is a summary of the subcategories of alternating and non-alternating ‘double object only’ verbs, omitting benefactive alternation verbs (for a full listing see Levin, 1993:45-7):

### **Alternating verbs**

- a) GIVE VERBS e.g. feed, give, lease, lend
- b) VERBS OF FUTURE HAVING e.g. advance, allocate, offer, promise
- c) BRING AND TAKE i.e. bring, take
- d) SEND VERBS e.g. forward, send, post, smuggle
- e) SLIDE VERBS e.g. bounce, float, slide, roll
- f) CARRY VERBS e.g. carry, drag, pull, push
- g) DRIVE VERBS e.g. bus, drive, fly, wire (money)
- h) VERBS OF THROWING e.g. bash, fling, kick, pass
- i) VERBS OF TRANSFER OF MESSAGE e.g. ask, preach, read, teach

- j) VERBS OF INSTRUMENT OF COMMUNICATION e.g. email, fax,  
telephone

**Non-alternating double object only verbs**

- a) MISCELLANEOUS e.g. begrudge, forgive, issue, refuse
- b) BILL VERBS e.g. bill, charge, fine, save
- c) APPOINT VERBS e.g. acknowledge, crown, deem, ordain
- d) DUB VERBS e.g. baptize, call, consecrate, crown
- e) DECLARE VERBS e.g. assume, believe, declare, judge

Below we draw on evidence from the grammatical acceptability judgments of a native speaker of British English<sup>19</sup> to show that not all of Hudson's eleven tests apply consistently across the different verb classes as specified by Levin (1993).<sup>20</sup>

Several of Hudson's tests proved inapplicable for reasons explained below. Of the ones that are applicable, passivization, animacy and control of depictive predicate showed consistent results across all verb classes, while extraction, lexical specification, semantic role and provision of extracted object yielded inconsistent results across the verb classes.

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<sup>19</sup> The native speaker is not a trained linguist. The data were gathered informally, according to a two-point scale of acceptable versus unacceptable. A table of the results can be found in Appendix I.

<sup>20</sup> There are, of course, significant drawbacks to using the judgment of only one native speaker, and we criticized Hudson's (1992) and Baker's (1997) work for this above. The drawbacks are discussed fully in 2.7. Our motivation for using the judgments of a single native speaker in this section is, probably like Hudson and Baker, based on constraints on time and resources. However, probably unlike Hudson and Baker, the section below is designed to identify verb classes which warrant further investigation by means of corpus searches and a grammatical acceptability survey.

### 2.6.3.1.2 Hudson's inapplicable tests

The following tests were either not applicable or difficult to apply: particle following, case, and idiom involving verb.

#### (i) Particle following

Hudson (1992) claims that O2 and O0 can follow a particle, but O1 cannot:

- (31) a. The secretary sent out a schedule.  
b. The secretary sent the stockholders out a schedule.  
c. %The secretary sent out the stockholders a schedule.

This test cannot easily be applied to different verb classes, as many verbs which form DOCs cannot take a particle (e.g. *bet*, *fine*, *deny* and so on). In addition, it is just as likely that a particle can immediately follow the object:

- (31) d. The secretary sent [a schedule]<sub>0</sub> out.

Consequently, one could analyse the phenomenon as the possibility for O0 to be *followed by* a particle. Were that so, it shares this tendency with O1, and not O2:

- (31) e. The secretary sent [the stockholders]<sub>1</sub> out [a schedule]<sub>2</sub>.

Corpora attest many examples of a particle immediately following O0 (32) and O1 (33).

(32) Only the buggers that send the bills out. (BNC)

(33) ... that your discouraging coming to erm we can say to you we can **send you out a leaflet** saying the kind of er things that you'd like to see are ... (BNC)

We conclude that this test is of dubious worth, as it cannot be applied to more than a handful of verbs, rests on the assumption that all verbs in DOCs behave the same, and is difficult to interpret.

## **(ii) Case**

English has an impoverished case system with some residual case-marking in its pronouns. Unfortunately, there is no distinction in case between the two kinds of object, so this test cannot be applied.

## **(iii) Idiom involving verb**

In their paper concerning the noncompositionality versus compositionality of idioms, Nunberg, Sag & Wasow (1994:491) argue that idioms provide no evidence bearing one way or the other on syntactic issues such as whether there are transformational operations, or whether syntactically selected arguments are semantically selected, and

so on. This is because they argue that there are ‘compelling reasons’ to believe that the majority of phrasal idioms are semantically compositional, and that the phenomenon of idiomaticity is ‘fundamentally semantic in nature’ (NSW, 1994:491). Consequently, they distinguish between ‘idiomatically combining expressions’ such as *take advantage*, where meanings are conventional but distributed among their parts, and ‘idiomatic phrases’ such as *kick the bucket*, where meanings do not distribute their meanings to their components (NSW, 1994:497). The former are much more prevalent than the latter.

If it is true that the majority of phrases which have been termed ‘idioms’ are semantic in nature, there is no reason to assume that GR should play any role at all, and Hudson’s ‘idiom involving verb’ test is not applicable. It is unclear whether there are more idiomatic phrases with unspecified O1 than O2.

As is shown below, O2 and O0 often cluster for semantic role. Consequently, it is not surprising that idiomatically combining expressions tend to favour O2 and O0 at the expense of O1: it appears that themes tend to be incorporated into idioms more than other semantic roles.

This test is also difficult to apply to verbs of different semantic classes, as many verbs do not form either type of idiomatic expression in DOCs. It is thus difficult to apply this test systematically across all of Levin’s (1993) semantic classes.

Indeed, Levin (1993) does not attempt to account for verbs involving idioms in her division of verbs used in DOCs into different classes. Hudson (1992) also fails to

provide a precise definition of idiom. That Hudson's notion of idiom is vague is a further problem resulting in this test being difficult to apply.

### **2.6.3.1.3 Tests with consistent results across all verb classes**

The tests which yield mostly consistent results across all verb classes are the following: heavy NP shift, passivization, animacy, control of a depictive predicate, and provision of extracted object. The salient points are summarized below.

#### **(i) Heavy NP shift**

Hudson claims that O2 can be shifted as easily as O0, whereas O1 cannot be shifted, as evidenced by the following examples (from Hudson, 1992:259):

- (34)
- a. Fred met [Ann]<sub>0</sub> on Sunday.
  - b. Fred met on Sunday [someone he hadn't seen since he was in college]<sub>0</sub>.
  - c. Fred gave [Ann]<sub>1</sub> [some flowers]<sub>2</sub> on Sunday.
  - d. Fred gave [Ann]<sub>1</sub> on Sunday [some lovely flowers that he'd bought in the market the day before]<sub>2</sub>.
  - e. \*Fred gave [some flowers]<sub>2</sub> [the girl he had met at the party the night before]<sub>1</sub>.
  - f. \*Fred gave on Sunday [the girl he had met at the party the night before]<sub>1</sub> [some lovely flowers that he'd bought in the market the day before]<sub>2</sub>.

While it is true that O1 cannot be moved by heavy NP shift in any of the DOCs involving verbs of different classes, all instances of O2 or O0 being moved by heavy NP shift were deemed equally unacceptable. Given that heavy NP shift is well-attested in the literature, the acceptability judgments of multiple native speakers will shed light on the relative grammaticality of heavy NP shifted O0, O1 and O2.

### **(ii) Passivization**

O1 is passivizable, just like O0. O2 is less easily passivized. Hence *\*The sweets were given the children (by Anne)* was not acceptable for our native speaker, but *The children were given the sweets* was acceptable.<sup>21</sup> In the preliminary tests carried out, only one sentence involving the passivization of O2 was deemed acceptable by the native speaker, whereas all sentences involving the passivization of O1 were deemed acceptable. Passivization suggests that O1 is more similar to O0 than O2, as O0 can be freely passivized.

### **(iii) Animacy**

O1 is generally human, O2 is generally inanimate. There are, however, exceptions to this e.g. *Anne gave the boat a kick*. In contrast to Hudson's view that O0 is generally inanimate, examples of O0 as an animate/human object could be found for many different verbs which did not have to take three arguments, for example *Mary*

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<sup>21</sup> Hudson (1992: 257) notes that 'a large number of English speakers, perhaps a majority' find sentences with a passivized O2 much less acceptable than passivized O1s, but points out that not all O1s are equally passivizable. The oddness of some of his examples may have more to do with context: the fact that passivized sentences are less common, as well as information structural considerations. For problems with passivization, see 5.2.3.

*emailed/kicked/sent/flung/asked/fined/crowned the boy*. If O0 can be equally animate or inanimate, there is little evidence to suggest that O2 is more similar to O0 than O1.

#### **(iv) Control of a depictive predicate**

Hudson claims that O0 and O2 can control a depictive predicate across all verb classes, whereas O1 cannot. Preliminary investigations confirmed that this is the case. For example, in *the nurse<sub>i</sub> gave John the book sick<sub>i</sub>*, John was not considered sick, rather the nurse. Likewise, *the nurse gave John the book<sub>i</sub> new<sub>i</sub>* implies that the book is new, not John or the nurse. This was the case across all verb classes, for example, verbs of future having (*Anne<sub>i</sub> awarded the children the prize drunk<sub>i</sub>*), verbs of throwing (*Anne<sub>i</sub> threw the child the ball sick<sub>i</sub>*) and ‘bill’ verbs (*Anne<sub>i</sub> fined the children ten pounds drunk<sub>i</sub>*). It is possible that whether a depictive can be controlled or not has a non-syntactic explanation: for example, it could have more to do with semantic role than GR, or it could be that a depictive picks out the least deeply embedded controller. There is not space here to explore these ideas further. It remains clear, however, that where O0 is the theme, it can control depictive predicates more easily: *Mary saw the boy<sub>i</sub> drunk<sub>i</sub>*, *Mary ate the meat<sub>i</sub> raw<sub>i</sub>*, and so on.

#### **(v) Provision of extracted object**

Hudson claims that O2, like O0, can provide an extracted object in infinitival adjuncts, but O1 cannot, as seen from the following examples (Hudson, 1992:263):

- (35) a. I bought [it]<sub>0</sub> [to put # on the table].  
b. He gave [her]<sub>1</sub> [it]<sub>2</sub> [to put # on the table].  
c. \*He gave [her]<sub>1</sub> [it]<sub>2</sub> [to cheer # up].

Hudson's claim that O1 cannot provide an extracted object was confirmed by preliminary investigations across all verb classes. Nine out of fifteen examples of O2 providing an extracted object were considered by the native speaker to be acceptable. The examples that were considered to be unacceptable were often semantically less plausible than examples marked acceptable. For example, *He kicked her it to put in the bag* was considered unacceptable; whereas *He flung her it to put in the bag* was marked acceptable. Contextually, it is probably more plausible that a ball would be flung to someone for them to put it away in a bag than for a ball to be kicked. Nevertheless, since there were no acceptable examples of O1 providing an extracted object and no examples could easily be found in corpora searches, Hudson's claim holds.

#### **2.6.3.1.4 Tests which yield different results for different verb classes**

The tests which yielded different results across verb classes were semantic role, extraction and lexical specification.

##### **(i) Semantic role**

It is true across most verb classes that it is typically O2, not O1, that shares the same semantic role as O0 in those cases where the same verb can occur with either one or

two objects, but this pattern is reversed for some non-alternating verbs. For example, for some ‘bill’ verbs, O1 shares a semantic role with O0:

- (36) a. The company fined [the employee]<sub>1</sub> [twenty pounds]<sub>2</sub>.  
b. The company fined [the employee]<sub>0</sub>.  
c. \*The company fined [twenty pounds]<sub>0</sub>.

- (37) a. The waiter overcharged [me]<sub>1</sub> [twenty pence]<sub>2</sub>.  
b. The waiter overcharged [me]<sub>0</sub>.  
c. \*The waiter overcharged [twenty pence]<sub>0</sub>.

- (38) a. The boss billed [the company]<sub>1</sub> [ten pounds]<sub>2</sub>.  
b. The boss billed [the company]<sub>0</sub>.  
c. \*The boss billed [ten pounds]<sub>0</sub>.

Some verbs do not fall into either pattern, for example, *save*, which has a different meaning (though still within its monetary sense) depending on the semantic role and number of objects:

- (39) a. Mary saved [the man]<sub>1</sub> [ten pounds]<sub>2</sub>.  
b. Mary saved [the man]<sub>0</sub>. (*different meaning*)  
c. Mary saved [ten pounds]<sub>0</sub>. (*different meaning*)

*Bet* is also problematic, as the O0 of *bet* can have the same semantic role as either O1 or O2:

- (40) a. Mary bet [the man]<sub>1</sub> [twenty pounds]<sub>2</sub>.  
b. Mary bet [the man]<sub>0</sub>.  
c. Mary bet [twenty pounds]<sub>0</sub>.

‘Appoint’ verbs pattern like *bill*.

- (41) a. Mary appointed [the lecturer]<sub>1</sub> [manager]<sub>2</sub>.  
b. Mary appointed [the lecturer]<sub>2</sub>.  
c. \*Mary appointed [manager]<sub>0</sub>.
- (42) a. The American people elected [Obama]<sub>1</sub> [president]<sub>2</sub>.  
b. The American people elected [Obama]<sub>0</sub>.  
c. \*The American people elected [president]<sub>0</sub>.

Likewise, some ‘verbs of transfer of meaning’ pattern like *bet*:

- (43) a. Mary asked [the girl]<sub>1</sub> [a question]<sub>2</sub>.  
b. Mary asked [the girl]<sub>0</sub>.  
c. Mary asked [a question]<sub>0</sub>.

The extent to which the semantic role test is valid must also be questioned. We saw in 2.5.1 that traditional views of DOCs have been heavily influenced by semantics. We also saw that the semantic role of an object need not bear a relation to its GR if we reject Interface Uniformity. Hudson does not include a discussion of these issues. Dryer (1986) agrees that a purely syntactic explanation is preferable.

## (ii) Extraction

Hudson's belief that O2 and O0 extract more easily than O1 does not consistently hold. While our native speaker deemed the extraction of O2 acceptable in fourteen out of fifteen examples, the extraction of O1 was considered acceptable in eleven. There appeared to be some uncertainty, as *Who did you bring the sweets?* was marked acceptable, whereas *Who did you send the sweets?* was marked unacceptable. Nevertheless, all 'bill', 'declare', 'dub' and 'appoint' verbs (i.e. non-alternating verbs) allowed O1 to be extracted. For example, the verb *fine* allowed both the extraction of O1 and O2, as well as O0.

- (44)
- a. Mary fined [the boy]<sub>1</sub> [ten pounds]<sub>2</sub>.
  - b. Mary fined [the boy]<sub>0</sub>.
  - c. [What]<sub>2</sub> did Mary fine [the boy]<sub>1</sub> # ?
  - d. [Who]<sub>1</sub> did Mary fine # [ten pounds]<sub>2</sub>?
  - e. [Who]<sub>0</sub> did Mary fine # ?

## (iii) Lexical Specification

Hudson's (1992) sixth test, that O2, like O0, is always specified in the verb's valency, whereas O1 often is not, has theoretical implications. His view assumes that the two verbs in the following examples have the same lexical entry, and that O1 is not specified, without discussing any alternative analyses of verb valency.

- (45) a. Mary sent flowers.  
b. Mary sent John flowers.

An alternative analysis might suggest that there are two lexical entries for *send*, which we could call *send*<sub>1</sub> and *send*<sub>2</sub>. *Send*<sub>1</sub> is a verb that always requires two arguments, whereas *send*<sub>2</sub> always requires three. There would not necessarily have to be the same analysis for DOCs with beneficiaries (e.g. *peel*, *sing* etc):

- (46) a. Mary sang John an aria.  
b. Mary sang an Aria (for John)

- (47) a. Mary peeled John an apple  
b. Mary peeled an apple (for John).

Such a benefactive alternation is not possible for other verbs which do not obligatorily have to be uttered with two objects:

- (48) Mary sent John flowers. ≠ Mary sent flowers for John.

- (49) Mary issued the children a ticket ≠ Mary issued a ticket for the children

Hudson (1992) lumps all different types of DOCs together when he makes the claim that O2 and O0 are lexically specified in a verb's valency, where O1 is often not. However, there is good evidence to suggest that such an assumption cannot hold as certain verbs behave differently. Recall that *give* must subcategorise for three

arguments, unless it is understood in the sense of ‘donate’, or is being uttered as part of the focus of the sentence, as in (50) below.

- (50) a. \*Mary gave a book. (*in the sense of ‘Mary gave a book to John’*)  
b. *Who gave what to John at the launch?*  
*Mary gave a book.*  
c. Mary gave a book. (*in the sense of ‘Mary donated a book to the charity shop’*)

The same pattern is true of many ‘appoint’, ‘dub’ and ‘declare’ verbs, for example *deem* and *label*:

- (51) a. Mary deemed [Mark]<sub>1</sub> [an idiot]<sub>2</sub>.  
b. \*Mary deemed [Mark]<sub>0</sub>.  
c. \*Mary deemed [an idiot]<sub>0</sub>.  
d. \*Mary deemed.
- (52) a. Mary labelled [Mark]<sub>1</sub> [an idiot]<sub>2</sub>.  
b. \*Mary labelled [Mark]<sub>0</sub>.  
c. \*Mary labelled [an idiot]<sub>0</sub>.  
d. \*Mary labelled.

It is not clear from the above examples that it is any less likely that O1 might be specified in a verb’s valency than O2.

### 2.6.3.2 Implications

This subsection has so far applied Hudson's (1992) tests for DOCs to verbs of different semantic classes as listed by Levin (1993), based the judgments of a single native speaker. Some tests could not be applied, and the validity of other tests was questioned. Nevertheless, some of the tests showed consistent results across all verb classes (passivization, animacy and control of a depictive predicate). 'Declare' verbs, 'dub' verbs, 'appoint' verbs and 'bill' verbs were shown to behave differently for some of the tests (extraction, semantic role, lexical specification and provision of extracted object), a behaviour pattern possibly governed by the semantic roles of the verb's objects. Only control of a depictive predicate and provision of an extracted object indicated a patterning of O2 and O0. Hudson's claim that passivization is the only test which indicates a patterning between O1 and O0 holds, however.

Clearly, then, several verb classes, as well as individual verbs across Levin's (1993) verb classes do not support the results of the eleven tests for objecthood as outlined in Hudson (1992). The situation is thus much more complex than Hudson's article suggests.

It goes beyond the scope of this project to examine all deviations across verb classes and individual verbs. We noted above that 'appoint', 'dub', 'declare' and 'bill' verbs tend to cluster, behaving differently in the extraction, semantic role and animacy tests. There is evidence to suggest that 'bill' verbs should be treated differently from 'appoint', 'dub' and 'declare' verbs, the case for which is made in the next section.

### 2.6.3.3 'Predicative' constructions

In accordance with Quirk & Greenbaum (1972:850), we argue that the DOCs of 'appoint verbs', 'dub verbs' and 'declare verbs' are predicative in nature, as exemplified in the following example:

(53) The coroner judged [the man]<sub>1</sub> [a criminal]<sub>2</sub>.

This is evident from the fact that the O2 of the above example could easily be replaced with a predicative adjective as exemplified below:

(54) The coroner judged the man angry.

This is not the case with most 'bill' verbs:

- (55) a. \*The company bet the man angry.  
b. \*The company fined the man angry.

Not only this, but the preliminary investigations suggested that 'dub', 'declare' and 'appoint' verbs display significantly different patterns in other tests too. For example, while the passivization of O2 was largely unacceptable for all verbs, Hudson lists a few examples which some speakers find acceptable, including the following (Hudson, 1992:257):

(56) [A book]<sub>2</sub> was given [John]<sub>1</sub>.

However, the passivization of O2 of ‘dub’, ‘declare’ and ‘appoint’ verbs are all unacceptable.

- (57) a. The Archbishop crowned [Elizabeth II]<sub>1</sub> [Queen]<sub>2</sub>.  
b. [Elizabeth II]<sub>1</sub> was crowned [Queen]<sub>2</sub> by the Archbishop.  
c. \*[Queen]<sub>2</sub> was crowned [Elizabeth II]<sub>1</sub> by the Archbishop.

Also, the O2 in predicative constructions sometimes has a special form, that is, in other contexts, the O2 we find in DOCs do not form NPs on their own. Consider, for example, subject position:

- (58) a. \*[Queen] walked down the street last week.

This suggests that such verb classes exhibit different behavioural patterns from other verbs which can be used in the formation of DOCs. ‘Bill’ verbs, on the other hand, appear to be distinct from this group. Consequently, these were selected for more extensive empirical research, presented in Chapters 3 and 4.

#### **2.6.3.4 Section Summary**

In our discussion of the IO/DO analysis of DOCs, we have noted some major problems in applying Hudson’s tests to multiple lexical items. First, we saw that several tests could not be applied. Second, based on informally collected acceptability judgments, some tests yielded different results for different verb classes with regards

to the behaviour of O1 and O2. We also set aside verbs which pattern like *dub*, *declare* and *appoint*, which form predicative constructions. A group of verbs emerged which appear not to be predicative but which pattern differently in a number of respects from the way Hudson's (1992) tests for objecthood predict: verbs which pattern like *bill*. While we have not ruled out an IO/DO distinction for English, this section has shown that the situation is more complex than assumed by Hudson (1992). One reason for this is examined in the next section.

## **2.7 Problems with grammatical acceptability judgments**

So far in this chapter, the discussion both of other scholars' work (e.g. Hudson (1992) and Baker (1997)) and our own work in 2.6 has focused on the acceptability judgments of only one or two speakers, which have been informally collected.

Scholars such as Featherston (2007), Schütze (1996) and Bresnan et al. (2005) have warned of the dangers of relying on the linguistic intuitions of the grammatical acceptability judgments of one speaker for their data. Featherston (2007) assesses both negative and positive reasons for using judgment data in linguistic research, arguing that using multiple informants cancels out any judgment error (see 4.1), but stresses the problems of basing theoretical implications on judgments from only one speaker.

We noted above that the sources of Hudson's (1992) and Baker's (1997) data were primarily their own linguistic intuitions. Featherston (2007:7) suggests that it is no longer adequate research practice for linguists to rely on their own intuitions as

linguistic evidence. We have discovered in the above discussion how many of the judgments of our native speaker, who is not a trained linguist, were different from those found in Hudson (1992).

There is an emerging consensus that basing a theoretical analysis on the judgments of one speaker, whether trained linguist or not, is problematic, especially if the data are controversial (Featherston, 2007). Bresnan et al. (2005) suggest that scholars have all too often relied on linguistic intuitions of a single speaker for their data. They argue that the growth of computer-based texts and recordings provide linguists with many sources of spontaneous use of language in natural settings, such that there is little need to resort to grammatical acceptability judgments. In their treatment of the apparent ungrammaticality of *give* idioms, they show that sentences of the type *\*That movie gave the creeps to me*, considered ungrammatical by syntacticians for decades, are well-attested in corpora (Bresnan et al., 2005:5):

- (59) ... Orson Welles, who as the radio character, “The Shadow,” used to **give “the creeps” to countless child listeners** ...

<http://clps.k12.mi.us/platte/scifi/toppage21.htm>

- (60) This life-sized prop will **give the creeps to people who hate spiders**, but is not true.

<http://www.frightshop.com/>

Electronic sources of data, they argue, allow the linguist to search constructions widely and with multiple lexical variants.

Nevertheless, there is also a need for caution when considering corpus data. First, the linguist who searches tagged corpora is dependent on the tagging of another linguist or of a computer program. One might conceivably disagree with the former, and the latter is not fool-proof. Consequently, searching for certain tags may include inappropriate data, and miss out appropriate data. Because of this, it is difficult to make empirical statistical claims using corpus data. Second, it is not easy to determine from corpora whether an utterance is an example of a rare construction or a speech error. This is often clearer if a number of speakers are asked how acceptable a single sentence is.

Despite this, corpora provide a rich source of natural language in context, something which sentences in acceptability surveys often lack. Since such databases were not available to Hudson and Baker at the publication dates of their articles, it is likely that corpora will shed some light on the problems identified above with regards to perceived difference in grammatical acceptability judgment. Scholars who have based their analyses on informally collected data must expect to be contradicted by subsequent linguists who have opted to use more reliable and detailed information (Featherston, 2007:2).

## **2.8 Implications and gaps in the literature**

This review has shown that there are serious problems with Baker's (1997) and Hudson's (1992) DOC studies. Consequently, any theoretical conclusions they have reached about the patterning of objects must be approached with caution. We have

seen that few linguists focussing on DOCs have applied any distributional ‘test’ to more than a handful of ditransitive verbs. Indeed, there has been little empirical testing of data undertaken by those theoreticians who have held the most sway in current DOC thinking.

Given that so little DOC research has taken empirical data into account, we take this as a starting point. A possible option, following the approach taken in 2.6.3.1, would be to take the tests supplied by Baker and Hudson, apply them to different classes of verbs ditransitive verbs in English, and invite speakers to rate their acceptability. Such a task is too large for this project. In order to provide empirical data to support an analysis, a smaller subclass of verbs must be investigated, and the tests must be limited. We saw that ‘bill’ verbs behave differently from other verb classes with regards to a number of Hudson’s tests, most notably animacy and semantic role. This suggests that ‘bill’ verbs may, as a separate semantic class of verbs from many of those examined by Hudson, behave differently in other respects, too. The research questions can be summarised as follows:

RQ 1: Do Hudson’s tests hold for all ‘bill’ verbs?

RQ 2: Do ‘bill’ verbs, when applied to Hudson’s objecthood diagnostics, support an IO/DO or a PO/SO analysis for English, or neither?

In order to investigate these questions, a corpus search and a grammatical acceptability test were undertaken to test each individual ‘bill’ verb as outlined by Levin (1993) against Hudson’s tests. Levin lists the following (non-alternating) verbs under ‘bill’ verbs:

(61) bet, bill, charge, fine, mulct, overcharge, save, spare, tax, tip, undercharge, wager.

The next three chapters seek to answer the research questions. In Chapter 3, the methodology and results of a corpus search are discussed; Chapter 4 has as its focus a grammatical acceptability survey, which was informed by the results from the corpus search. Chapter 5 serves as an analysis of the results from the previous two chapters, discussing implications of the findings for a linguistic theory of objecthood.

### 3 ‘Bill’ verbs and Hudson’s (1992) tests: a corpus search

#### 3.1 Method: searching the corpora

Examples were taken from two large English language corpora, the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA).<sup>1</sup> Size of corpus was favoured over ease of searching, as few examples of DOCs were attested in the smaller yet more appropriately tagged corpora. Consequently, it was difficult to find examples of several of Hudson’s tests without developing complex methods of searching, which went beyond the scope of this project. Two important tests (provision of extracted object and heavy NP shift) proved unsearchable. These were tested subsequently in the grammatical acceptability survey for ‘bill’ verbs (see Chapter 4).

Because of such problems encountered when searching large untagged corpora for examples of particular constructions with particular lexical items, it is likely that many attestations of particular phenomena are not represented in the results.

Nevertheless, a systematic method of searching was used. When searching for DOCs of ‘bill’ verbs, for example, a verb lemma followed by a personal pronoun and a cardinal number lemma was entered into the search box.<sup>2</sup> This resulted in many attestations of the type ‘X billed Y £Z’, but did not, of course, yield examples with modifiers in between the constituents searched. Although many searches were made consisting of a verb lemma followed by a personal pronoun, care was taken to ensure

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<sup>1</sup> Although Bresnan et al. (2005) argue against searching corpora of both British and North American varieties, there was no suggestion that the grammatical acceptability of DOCs is divided along geographical lines.

<sup>2</sup> Pronouns were included in the corpus study as they can be searched for with relative ease.

that the inanimate pronoun *it* was substituted for the personal pronoun in order to ensure that both inanimate and animate O1s formed part of the search.

For extraction, searches were carried out as follows. The verb lemma was entered, usually followed immediately to its right by a noun or a pronoun, i.e. strings similar to the following were entered: **fine.[v\*] [pn\*]**. A *wh*-word (*who(m)*, *which*, *how much*) was also entered as a collocation of up to six words previous to the verb lemma for the extraction diagnostic. The hope was that examples such as *who did you fine the money?* would more easily be found.

Searching in the way described above resulted in many attestations of DOCs, transitive sentences and passives, etc. Where a search yielded very few or no results (such as the passivization of O2), we tentatively concluded that there are comparatively fewer attestations of the construction in question, while not making any statistical claims.

The most significant limitation of using the BNC and COCA specifically was that the two corpora are tagged only for ‘parts of speech’ (i.e. noun, verb, etc.), and not GR (i.e. ‘indirect object’ versus ‘direct object’). Consequently the search had to be limited to transitive and intransitive instances of each verb, semantic role, animacy, passivization and extraction.

### **3.2 Discussion of results**

A table of the corpus findings can be found in Appendix II.

### 3.2.1 DOCs

Examples of DOCs were found in the corpora for all verbs except *mulct* and *undercharge*, presumably because these are less commonly attested in general.

However, *mulct* was attested in transitive but not intransitive sentences, whereas *undercharge* was attested in intransitive but not transitive sentences.

### 3.2.2 Animacy

Of Hudson's tests, this was straightforward to search and verify. Hudson's claim that O2 is typically non-human and O1 is human is upheld by findings from corpora. No verb deviated from this pattern in any significant way. There were some instances of inanimate O1s, but these were limited to organisations such as companies and governments, which are groups of animate beings, and often bore the same semantic role as their animate O1 counterparts:

- (1) After auditing the deal, the Pentagon found that KBR had overcharged the government \$61 million for fuel. (COCA)
- (2) How much did the government end up fining the company? (COCA)

However, with the exception of *undercharge*, which yielded no examples of monotransitive (or ditransitive) sentences, O0 of all other verbs was found to be either solely animate or alternate between animate and inanimate. The verbs that belong to the former pattern are *bill*, *fine*, *mulct* and *overcharge*:

- (3) He's billed them and they pay out direct. (BNC)
- (4) ... the Emperor was content to fine him heavily and imprison him. (BNC)
- (5) ... as evidence that the whole system is a means for private bankers to mulct the public. (COCA)
- (6) ... a taxi driver who was trying to overcharge these students. (COCA)

No examples of *fine*, *mulct* or *overcharge* were found with inanimate OOs, excepting the groups of animate beings described above such as *government*, *company*, and so on. (For an isolated example of *bill* with an inanimate OO, see example (19) and subsequent discussion).

Verbs whose OOs were either animate or inanimate were *bet*, *charge*, *save*, *spare*, *tax*, *tip* and *wager*. A selection is shown below.

- (7) But ultimately it wouldn't surprise me if it went higher, if people started tipping 30 percent. (COCA)
- (8) Maybe here people still tip waitresses. (COCA)
- (9) If you charge students, they will not come. (BNC)
- (10) The impression has been created that we want to charge fees. (BNC)
- (11) "If you're betting money, go with Penelope Cruz," says Damien Bona ... (COCA)
- (12) Instead of betting on a new toy, Handler had bet the company on a whole new concept. (COCA)

Importantly, instances of *bet* as a monotransitive verb only yielded animate objects (or a group of animate beings as an object) if there was also a sentential complement present.

Two verbs, *save* and *spare*, must be treated slightly differently. Although the corpus search yielded a plethora of examples of both verbs with animate and inanimate OOs, the meaning of the verb is, arguably, different:

- (13) That means the average shopper who would normally spend £60 could save a fiver a week on their groceries. (BNC)
- (14) That child would save me, but not you. (BNC)

In (13), the meaning is that the shopper would save five pounds for himself. In (14), however, the meaning is not that the child would save the author for himself. This suggests that there may be separate lexical entries for the different meanings of *save* and *spare*. In (13), the OO of *save* is a theme. In (14), it is an experiencer. In subsequent discussion, only the lexical entries of *save* and *spare* of the type exemplified in (13) will be considered.

To summarize, Hudson's claim that the semantic role of O1 is usually animate and O2 is usually inanimate is upheld. OO, however, can be either animate or inanimate for many 'bill' verbs, but is exclusively animate for some 'bill' verbs. The implications of this on Hudson's claim that, with respect to animacy, O2 is more similar to OO than O1 is will be discussed in 3.3.1.

### 3.2.3 Semantic role

Hudson (1992) claims that, typically, O2 and O0 share the same semantic role.

Evidence from ‘bill’ verbs suggests strongly that there exists at least one class of verbs which do not conform to this pattern.

Despite the difficulties in assigning a semantic role to an argument, we argue for the purposes of this study that the O2 of all ‘bill’ verbs is a *theme*. The exact semantic role is unimportant for the purposes of Hudson’s test; what is important is whether it is the same as O0’s semantic role. It is clear from a selection of the data below that we find the same patterning as we did above with regards to animacy: the O0 of some ‘bill’ verbs *can* be a theme, but needn’t be. These verbs are: *bet, charge, save, spare, tax, tip* and *wager*.

- (15) Presumably one would be able to charge participants? (BNC)
- (16) Most cards now charge interest from the date of transaction. (BNC)
- (17) Maybe here people still tip waitresses. (COCA)
- (18) But ultimately it wouldn't surprise me if it went higher, if people started tipping 30 percent. (COCA)

In (16) and (18), O0 is a theme. In example (15) and (17), O0 is arguably a recipient.

Of this subset of verbs which can have either themes or recipients as the semantic role of O0, *save* and *spare* have a different meaning depending on the semantic role of the object following the verb (a pattern noted for animacy above). Verbs that were never

found to take a theme as their O0 (unlike O2 in DOCs in which the verb in question was found) are *fine*, *mulct* and *overcharge*. *Bill* proved difficult to situate, as one transitive example of *bill* with a theme was found:

(19) Currently, 130 accounts billing £297m are out for tender. (BNC)

In this example, *billing* has the meaning of ‘adding up to’, suggesting that the verb attested here is not the same as the use of *bill* in other environments, such as in (20)

(20) Our telephone company was kind enough to bill us only one Belgian franc per call. (BNC)

There were no attestations of, for example, the following pattern:

(21) \*Our telephone company was kind enough to bill only one Belgian franc per call.

However, there were a number of attestations of the following pattern, where O0 has the same semantic role as O1 in (20):

(22) Sam – you're sure it's OK to bill your office for this? (BNC)

Given that example (19) is the only one of its kind and is semantically ambiguous, the data suggest that *bill* falls into the same pattern as *fine*, *mulct* and *overcharge*, where O0 is never the theme and always the same as O1 in ditransitive clauses.

To summarize, O2 and O0 do not have to share the same semantic role. For most ‘bill’ verbs, O0 *can* share the same semantic role as O2, but it can also share that of O1. For some ‘bill’ verbs, O0 must have the same semantic role as O1. This stands in direct contradiction to Hudson’s claim that there are no verbs whose O0 can have the same semantic role as O1 but NOT O2 (Hudson, 1992: 261).

### 3.2.4 Passivization

In almost all cases, passivization of O0 and O1 were attested, while very few attestations of passivized O2 were found.

#### 3.2.4.1 Passivization of O0

Passivization of O0 was attested in the corpora for all ‘bill’ verbs except *mulct* and *undercharge*. In accordance with the semantic role results, passive examples of those verbs which allow O0 to have a variety of semantic roles were found mostly to correspond to this pattern: that is, the subject in passivized sentences could be either a theme or a goal for *save*, *spare* and *tax*. For example, in (23), the theme is passivized, and in (24) the goal is passivized.

(23) Above this limit, bills must be taxed in the usual way. (BNC)

(24) If the overseas trustees validly accumulate the income, the income will not, under general principles, be taxable upon the beneficiary (although he may be taxed under anti-avoidance provisions mentioned hereafter). (BNC).

There were no attestations of goals as subjects for *bet* and *charge*, and no attestations of a theme as the subject of *tip*. It is unlikely, however, that there are semantic restrictions on these verbs as to which semantic roles can undergo passivization. It is more likely, given that passive sentences occur less frequently than their active counterparts, and that there are many passive attestations of other meanings of some verbs (e.g. *charge*) that all semantic roles of O0 can undergo passivization, and that some are simply absent in the corpora.

*Bill*, *fine*, *mulct* and *overcharge* only allow passivization of O0s that are goals. This is in accordance with the pattern that the objects of these verbs in transitive sentences are goals. There were no attestations of, e.g. \*£20 was *fined*.

#### **3.2.4.2 Passivization of O1**

Hudson claims that O1 can easily be passivized in DOCs. If this is the case, we would expect to find examples of the passivization of O1 for all verbs. Examples of passivized O1 were found in the corpora for the following verbs: *bill*, *charge*, *fine*, *overcharge*, *spare*, *tax*, and *wager*, for example:

- (25) She was fined £10 and caused a riot when crowds besieged the police for stopping her performance. (BNC)

No attestations of passivized O1 were found in the corpora for *bet*, *save*, or *tip*.

Attestations of passivized O1s of *bet* and *save* were found when searching in a limited way in an internet search engine, for example in (26):<sup>3</sup>

(26) Will Kemp was bet a hundred pounds that he couldn't jig a hundred miles.

This suggests that constructions in which O1 is passivized are grammatical for all verbs.

### 3.2.4.3 Passivization of O2

Hudson claims that, in some dialects, passivization of O2 is acceptable. If this is the case, we might expect some attestations of the phenomenon in the corpora searches, especially as many registers are represented in the BNC.

Only *charge* and *spare* were found in constructions involving the passivization of O2:

(27) The seller is paid a lump-sum down payment, receives a monthly payment for the life of the loan, profits additionally from **whatever interest is charged the buyer** and can schedule the payment terms to his or her liking. (BNC)

(28) ... all the infirmities of old age were going to be spared me. (COCA)

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<sup>3</sup> The searching technique was made up of a string involving a part of the copula and the past participle of the relevant verb, e.g. "was bet", "were saved", etc.

While only the one example of passivized O2 was found for *charge*, there were at least seven attestations found for *spare* in total in the BNC and COCA. Given the patterning together of *save* and *spare* in others of Hudson's tests, a limited search in an internet search engine for examples of passivized O2s in sentences involving *save* was undertaken. The following example was found in a published e-book:

- (29) After we once learned to read these signs, much tedious trailing was saved us, for we had but to count the intervening ridges.<sup>4</sup>

A discussion of these occurrences of passivized O2 can be found in 3.3.2.

### 3.2.5 Extraction

Hudson claims that O0 and O2 extract much more easily than O1. Corpus findings from 'bill' verbs, though limited given the difficulty in searching for the phenomenon, broadly support this view.

#### 3.2.5.1 Extraction of O0

Examples of extracted O0 were found for *bet*, *charge*, *spare*, *tax*, *tip*, and *wager*:

- (30) When he saw how much money I had to bet \_\_\_\_\_, he invited me to stay with him. (COCA)

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<sup>4</sup> Source: <  
<http://books.google.co.uk/books?id=NcLD1rXZ2NUC&pg=PA37&lpg=PA37&dq=read+these+signs,+much+tedious&source=bl&ots=iyW9U-JVje&sig=gNO4S7FmPXa-we9CbJlla75bIM0&hl=en&sa=X&ei=GVUHT9zXNMjL8QOSg4jJAQ&ved=0CDAQ6AEwAA#v=onepage&q=read%20these%20signs%2C%20much%20tedious&f=false>> [Accessed 06 January 2012].

- (31) What are they gonna be charging \_\_\_\_? (BNC)
- (32) Why don't we all give what we can spare \_\_\_\_? (BNC)
- (33) What sin will they tax \_\_\_\_ next? (BNC)
- (34) The tattoo man I'd tipped \_\_\_\_\_ five minutes before looked at me like someone he'd never seen before. (COCA)
- (35) "So, what do you wish to wager \_\_\_\_\_ for a week with my wife?" (COCA)

No example of extraction of O0 was found for *bill*, *fine*, or *overcharge*, which behave differently from the above verbs with regards to semantic role. However, we should not assume that, for these verbs, O0 cannot be extracted, based only on the lack of attestations.

### 3.2.5.2 Extraction of O1

No examples of extraction of O1 (of the type 'Who did you bet ten pounds that ...') were found in corpus searches.

### 3.2.5.3 Extraction of O2

Examples of extraction of O2 were found for the verbs *bill*, *charge*, *fine*, *save*, *spare* and *tax*:

- (36) ... which will include costs and attorney fees at an hourly rate equal to what you bill your client \_\_\_\_\_. (COCA)
- (37) ... what sort of fee are you going to charge us \_\_\_\_? (BNC)

- (38) How much did the government end up fining the company \_\_\_\_? (COCA)
- (39) ... the only money available to us is what we have saved ourselves \_\_\_\_.  
(COCA)<sup>5</sup>
- (40) She doesn't understand what I want to spare her \_\_\_\_\_. (COCA)
- (41) How much can you tax the wealthy \_\_\_\_\_ without impacting the revenues that those businesses and those businessmen and women provide? (COCA)

Again, there is little reason to assume that the verbs for which there are no attestations of O2 extraction do not allow it. Unsurprisingly, those verbs which feature less often in the corpora in general are among those for which no examples of O2 extraction could be found.

In general, then, corpora findings support Hudson's claim that O2 and O0 extract more easily than O1. However, this does not necessarily mean that a group of 'bill' verbs (those patterning like *fine*) might not extract O1 just as easily as O2. Indeed, the results from the grammatical acceptability survey indicate that O1 extracts readily (see 4.3.2).

### **3.3 Analysis of the findings**

The findings above have important implications for IO/DO and PO/SO analyses of DOCs. These are discussed in order of the results described above.

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<sup>5</sup> This could be analysed as an emphatic (adverbial) reflexive.

### 3.3.1 Animacy and semantic role

Hudson's claim that O2 and O0 are more similar than O1 and O0 in terms of animacy and semantic role cannot be upheld based on findings from corpus searches for 'bill' verbs. This suggests that there is at least one class of verbs whose semantic properties of O0s are more similar to those of O1 than of O2. This calls into question the validity of Hudson's semantically-based claims for O2 to be more similar to O0 than O1. It suggests, in fact, that semantic considerations are to be kept separate from the syntactic properties of the double objects, as it is arbitrary as to whether O1 or O2 is semantically more similar to O0, which supports Dalrymple's (2001) analysis. Her analysis suggests that one should not use purely semantic generalisations to support syntactic categories.

### 3.3.2 Passivization

Passivization is the only test, Hudson (1992) claims, in which O0 and O1 pattern together. The results of the corpus search indicate that O1 is more easily passivized than O2. In fact, given that passivization of O2 is, according to Hudson, acceptable in some dialects of English, we might expect to have seen more examples of it in the results.

However, corpora findings indicate that passivization of O2 is certainly acceptable for the verb *spare*, and possibly for the verb *save*. This phenomenon does not appear to be restricted to a particular dialect. It suggests that not even the passivization diagnostic shows clear results for all types of verbs which form DOCs. This may be evidence for

the claim that O1 and O2 are separate functions from O0, as it appears to be arbitrary as to which verbs allow passivized O2 and which do not (see 5.2.3).

### 3.3.3 Extraction

There were not enough examples to make any significant observations of the distribution of extraction of O0, O1 and O2. We can conclude, however, that O2 and O0 were readily extractable for most ‘bill’ verbs.

### 3.4 Grouping the verbs together?

Different ‘bill’ verbs pattern together depending on the phenomenon under investigation. That is to say, it is not the case that some ‘bill’ verbs always pattern with specific other verbs across all the phenomena investigated. For example, *fine* patterns with *tax* with regards to the fact that they cannot take a CP, but not with regards to the semantic role of its O0 (see table in Appendix II).

We have seen that certain ‘bill’ verbs pattern together according to semantic role of O0 and animacy. All verbs investigated excepting the little attested *undercharge* allowed their O0 to have some semantic role other than a theme; some (e.g. *fine* etc) only surface with O0s that are not themes. *Save* and *spare* behave similarly in that the meaning of the two verbs differs significantly based on the number of arguments in a given clause. *Charge* is similar in that it has a non-monetary meaning which is commonly found with transitive attestations of the verb, especially in the passive (e.g. *the man was charged as a result of the crime*).

*Bet, bill, charge, fine* and *overcharge* are often attested with a CP or a PP following a DOC, of the type seen below:

- (42) I bet you five pound I can make you blink. (BNC).
- (43) She notices it today because her father was billed \$8,000 for eight hours in the emergency room with stomach pain. (COCA)
- (44) We can't charge people money for it. (COCA)
- (45) A court in Melbourne, Australia, completed his misery by fining him £120 for drink-driving. (BNC)
- (46) After auditing the deal, the Pentagon found that KBR had overcharged the government \$61 million for fuel. (COCA)

Of these, DOCs involving *bet* are always followed by a CP. DOCs of other verbs are sometimes followed by CPs, but this does not appear to be obligatory. Are these CPs adjuncts? If so, why are there no attestations of DOCs involving *bet* without a CP? If the CPs are arguments, does that mean there are (potentially) four lexical entries for a verb like *overcharge*, given that it is attested in intransitive, transitive, ditransitive and ‘tertransitive’ contexts, or are the arguments optional for the same lexical entry? This question goes beyond the scope of this thesis, and would benefit from further study.

### **3.5 Chapter Summary**

This chapter has provided corpus evidence that some of Hudson’s (1992) claims do not hold for certain ‘bill’ verbs. The O0s of ‘bill’ verbs often pattern with O1 for semantic role and animacy. Few attestations of the passivization of O2 of ‘bill’ verbs

could be found in the corpora, though this pattern was reversed for the verbs *spare* and *save*. Examples of extraction were hard to search for. As a result, few conclusions could be drawn from the corpora for this test.

Based on results from a grammatical acceptability survey, the next chapter investigates extraction more fully, along with heavy NP shift and the provision of an extracted object, which were not easily searchable in the corpora. In order to shed some light on the constraints on the passivization of O2, passivization was also selected for further investigation.

## **4 ‘Bill’ verbs and grammatical acceptability**

This chapter focuses on grammatical acceptability and its role within DOC research, based on a grammatical acceptability survey carried out by native speakers of British English. This tested the objecthood diagnostics which were not easily searchable in corpora: passivization, extraction, heavy NP shift and the provision of an extracted object with the verbs *bet*, *bill*, *charge*, *fine*, *save*, *spare*, *tax*, *tip* and *wager*.

### **4.1 Grammatical acceptability in linguistic research**

We noted in 2.7 that some linguists consider the use of grammatical acceptability judgments by native speakers in research to be deeply flawed (Bresnan et al., 2005; Cowart, 1997). Doubts about the stability of judgments have been fuelled by the observation that there is widespread variation among speakers, as well as the fact that the informants’ own linguistic behaviour is sometimes different from their judgments of their linguistic behaviour (Cowart, 1997:4-5). However, while it is true that extragrammatical components or features of the processing system such as memory limitations can cause fully grammatical sentences to show up as having low acceptability ratings, Cowart (1997:22) presents several case studies which suggest that there is evidence of a stable natural phenomenon of sentence acceptability. Featherston (2007:7) agrees, adding that judgments are a fully valid way of making generalisations about syntax, but that they ‘must be used with more care and paid more attention to.’ Both Featherston (2007) and Cowart (1997) provide suggestions as to how to ensure that grammaticality judgment tests can be used in good research practice, and the method employed in this study was influenced heavily by their work.

## 4.2 Choice of research instrument: the survey

The survey applied Hudson's (1992) tests for objecthood to Levin's (1993) 'bill' verbs in a variety of contexts. Cowart (1997) warns against a survey that is too long or that makes the participant tired. Applying every 'bill verb' to all of Hudson's tests would have created a survey that would have taken informants an hour to complete. Two verbs which were poorly represented in the corpora were thus omitted: *mulct* and *undercharge*. In addition to those tests deemed inapplicable in Chapter 2 (particle following, case and idiom involving verb), a further diagnostic which yielded consistent results across all verb classes (control of a depictive predicate) was also dropped.<sup>1</sup>

### 4.2.1 Composition of the survey

The instructions to participants and the complete list of sentences (unrandomized and not including fillers) can be viewed in Appendices III and IV.

DOCs were created based on plausible semantic situations for each of the 'bill' verbs (and where possible, sentences matched or were very similar to examples found in the corpora). Then, each of these sentences was manipulated to match each of the four of Hudson's remaining tests (extraction, passivization, heavy NP shift, and provision of extracted object).<sup>2</sup> For example, for the verb *fine*, the following DOC was created:

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<sup>1</sup> Given the comprehensive corpus data, it was deemed unnecessary to test semantic role and/or animacy via grammatical acceptability survey.

<sup>2</sup> Occasionally, a sentence illustrating a particular DOC construction may have seemed implausible. In these circumstances, more semantically plausible alternatives were used.

- (1) a. The government fined the company billions of dollars.

This sentence was then transformed via e.g. passivization, creating two new sentences: the first where O1 is passivized, the second where O2 is passivized:

- (2) b. The company was fined billions of dollars by the government.  
c. Billions of dollars were fined the company by the government.

This method was applied to every verb with each test. It is to be noted that pronouns were avoided in all of the examples, as there is evidence that pronouns behave differently for some speakers within DOCs (Oehrle, 1976). For heavy NP shift and passivization, the verbs *give* and *meet* were also tested in a limited way.

Special consideration was given to Hudson's extraction test. Scholars have noted that the acceptability of sentences involving extraction is context dependent, given that extraction is the result of syntactic and information-structural focusing on the *wh*-word (Fanselow et al., 2006). Cowart (1997) and Featherston (2007:21) both note that there is evidence that the context in which the sentences are judged affects participants' judgment. While it would have proved too demanding and time consuming for participants to read a 'story' which set the scene for every sentence, it was deemed crucial for the testing of extraction. The same sentences were also included out of context to indicate whether context improved the acceptability rating. Different methods of extracting O1 were also tested, as the felicity of O1-extraction shows variation among speakers of English. For example, when testing the extraction

of the verb *charge*, the following examples were used (in the contextualised examples, the underlined sentence indicates the one which participants were invited to judge):

*Extraction of O1*

- (3) a. Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know who it was who had had to pay so much. “Which customer did the shop charge \$49.99?” “Marlene from down the road!” Her husband answered. “And she’s a single mum with no spare cash!”
- b. Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know who it was who had had to pay so much. “Who did the shop charge \$49.99?” she asked him. “Marlene from down the road!” Her husband answered. “And she’s a single mum with no spare cash!”
- c. Which customer did the shop charge \$49.99?
- d. Who did the shop charge \$49.99?

*Extraction of O2*

- (4) a. Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know how expensive the transaction had been. “How much did the shop charge the customer?”, she asked him. “Nearly fifty dollars! For a hairdryer!” Her husband exclaimed.

- b. How much did the shop charge the customer?

For heavy NP shift, two types of O1 shift were tested for all verbs, based on Hudson's (1992:259) examples. The following two variants were tested, shown with the verb *fine*:

(5) *Heavy NP shift O1 type 1*

- a. Subj V O2 Heavy-shifted O1

*[The government] fined [billions of dollars] [the oldest company in Europe].*

*Heavy NP shift O1 type 2*

- b. Subj V AdvP Heavy-shifted O1 Heavy O2

*[The government] fined last year [the oldest company in Europe] [the billions of dollars it had claimed from the insurers to pay for its false claim].*

It was hoped that such methods would facilitate more clearly the acceptability of extracted and heavy-shifted objects.

All the sentences were then randomly ordered using a number generator to ensure that judgments would be less likely to be influenced based on perceptions of what was being tested. The same order was given to all participants to ensure that sentences containing the same tests were not asked one after the other, i.e. it was important that e.g. passivized O2 of one verb was not followed by passivized O2 of another verb.

#### **4.2.2 Scaling issues**

In accordance with currently accepted practice of judgment studies (Coward, 1997:68), the response options were given to participants as an ordered series of points from one to five on a scale. The outer points were defined in the instructions to the test, but the inner points were not defined in order to invite a uniform treatment of intervals (Coward, 1997:70). In other words, point 1 was defined in the instructions as ‘not at all English-sounding’ and point 5 as ‘definitely something a native speaker would say in conversational English’. Points 2, 3 and 4 were left undefined, in accordance with the suggestion that undefined inner points encourage participants to treat the intervals between 2, 3 and 4 more equally (Coward, 1997).

#### **4.2.3 Sampling and collection of data**

Scholars note that sampling is not always a critical issue for all linguistic research and that it can be controlled by issues of convenience for the study (Coward, 1997:80).

The only population that was actively avoided for the survey were linguist informants, whose judgments may be affected by subject knowledge and familiarity with ungrammatical examples. Participants were invited to take part in the survey, hosted by the site surveymonkey.com, via social networking sites. To take part in the survey, participants had to be i) over 18 years of age and ii) native speakers of British English. The latter consideration was included to factor out major dialectal variables to as great a degree as possible.

Although the above method factored out certain populations (illiterate people, people unfamiliar with technology), the benefits of the method (number of speakers invited to participate, range of different ages and backgrounds) were felt to outweigh the negative aspects.

For ease of statistical analysis, each sentence was given a code according to verb, test, object tested and, where applicable, which variant. For example, for the sentence *The government fined billions of dollars the oldest company in Europe*, the code **fine.HNP.O1a** was used, which refers to the verb *fine*, the heavy NP shift test, that this test was applied to O1, and that this was the first of two types of shifted O1 tested.

#### **4.2.4 Steps taken to meet ethical standards**

Participants were informed of the nature of the research via information which preceded the taking of the online survey, and they were made aware that they could withdraw from the proceedings at any time. Consent was sought at the beginning of the online survey.

#### **4.2.5 Analysis of data**

In order to test whether or not the means of each test for O0, O1 and O2 were equal, multiple one-way ANOVAs were employed for each of the tests of passivization, extraction, heavy NP shift and provision of extracted object using the statistical software package SPSS, version 20. For heavy NP shift and passivization, an additional ANOVA was run for the non-*bill*-like verbs tested (*give* and *meet*). For

extraction, separate ANOVAs were run to test the means of the verbs which appeared in context against those which appeared without context. Finally, a number of one-way ANOVAs were run in order to test whether the means of the different types of O1 extraction and heavy NP shift were equal.

The ANOVA was selected as an appropriate means of testing in order to avoid committing a type I error that may have occurred had multiple t-tests been used.<sup>3</sup> In addition, an analysis by ANOVA would indicate whether or not there was a statistically significant difference (at the 95% confidence level) between the responses for each test between O0 and O1, O0 and O2, and O1 and O2, thus showing statistically whether O1 or O2 most closely patterns with O0 for each test.

Post hoc tests were also employed using the LSD, Bonferroni and Tukey HSD methods in order to provide a number of robust tests appropriate for this number of comparisons.<sup>4</sup> Only the results from the Tukey HSD model are reported, though the results from all the tests can be viewed in Appendix V.

#### **4.2.6 Drawbacks to the survey: space considerations**

##### **4.2.6.1 Testing O0; lack of ‘control’ verb**

One drawback of the composition of the survey is that space did not allow O0 to be tested for all verbs. That is, for each of Hudson’s tests, both O1 and O2 were tested

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<sup>3</sup> A type I error refers to falsely rejecting the null hypothesis. For more information, see Woods, Fletcher & Hughes (1996).

<sup>4</sup> Methods such as LSD, Bonferroni and Tukey HSD have been developed to counter the fact that carrying out multiple comparisons results in the probability of a statistical correlation arising being much higher.

for every verb against each objecthood diagnostic, but O0 was not tested for every verb. This decision rested on the need to keep the survey short and the fact that the reliability of judgments for the tests applied to O0 is less controversial. The analysis of DOCs in the corpora indicated the existence of three classes of verbs: i) those verbs whose semantic role of O0 was always the same as that of O1, ii) those verbs whose semantic role of O0 could be either the same as O1 *or* O2 and iii) *spare* and *save*, whose semantic role of O0 could only be the same as O2 for the same verb meaning (see 3.4). Consequently, one verb from each of these three patterns was selected, and an example of it in a monotransitive clause was applied to the different tests. For example, in the first group, the verb *fine* was selected. The following monotransitive sentence served as an example:

(6) a. Fred fined Mary.

The same verb was then used in the test for extraction:

(6) b. Which client did the company fine?

Where there was a significant deviation from Hudson's findings in the preliminary investigation, tests on O0 were included. For example, the preliminary investigation and corpus search suggested that heavy NP shift of O0 was not acceptable for all speakers of English. Consequently, this test was applied to O0 as well as for O1 and O2 throughout.

Given that statistical methods were applied equally to O0, O1 and O2, it is important to keep in mind that the response level for O0 was much lower than that of O1 and O2 because there were fewer sentences in which O0 was tested. This may have some influence on the statistical analysis described above.

Last, a verb serving as a control (e.g. *give*), could not be included for all tests, for reasons of space. Consequently, any analysis of the results can only be drawn from the ‘bill’ verbs themselves, rather a comparison being drawn between *give*, the verb most often discussed in DOCs, and ‘bill’ verbs.

#### **4.2.6.2 ‘Filler’ sentences**

Space also dictated that there could be very few ‘filler sentences’. However, the survey examples featured the use of many different constructions, and all the examples were randomized. As a consequence, it was far from obvious to participants what was being tested, which was confirmed in preliminary investigations.

### **4.3 Results**

34 participants completed the survey. All other data (e.g. partially completed surveys) were ignored for ease of applying statistical tests.

### 4.3.1 Passivization

#### 4.3.1.1 Results

Two one-way ANOVAs were run for the passivization data: one for the ‘bill’ verbs, and one for *give*. As no example of passivized O0 could be tested for *give*,<sup>5</sup> the second of the two was of limited use ( $F(1,67) = 97.34, p < .001$ ). Nevertheless, the mean response for passivized O1 was 4.94 (standard deviation (SD) = .24), in comparison with the mean response for passivized O2, which was 2.97 (SD = 1.14). There was thus a statistically significant difference between responses for O1 and O2 at the 0.05 level for passivized *give* ( $p < .001$ ).

A one-way ANOVA run for passivization of ‘bill’ verbs also showed a significant effect ( $F(2,849) = 574.20, p < .001$ ). The mean response for passivized O0 for ‘bill’ verbs was 4.65 (SD = .78), while that of passivized O1 was 4.43 (SD = .93) and passivized O2 2.17 (SD = 1.08). A Tukey HSD post hoc test showed that there was no statistically significant mean difference between the responses for passivized O0 and passivized O1 (mean difference = 0.22,  $p = .11$ ), whereas there *was* a statistically significant mean difference between those for passivized O0 and passivized O2 ( $p < .001$ ), and between passivized O1 and passivized O2 ( $p < .001$ ).

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<sup>5</sup> See 2.6.3.1.4.

### 4.3.1.2 Discussion

The findings from the ANOVA post hoc tests add statistical weight to the claim that O1 and O0 of both ‘give’ and ‘bill’ verbs passivize easily, whereas O2 does so less easily. This is evident from the fact that the Tukey HSD post hoc tests indicated a significant statistical difference between O2 and O0 and between O2 and O1, but not between O0 and O1. This suggests that O1 more closely patterns with O0. As can be seen from the means, passivized O0 (4.65) and passivized O1 (4.43) are considered much more grammatically acceptable than passivized O2 (2.17), and the standard deviations, all below 1.1, indicate little variation in participant response. These results support the findings from the corpora search, which indicated that O1 and O0 are freely passivizable, whereas O2 is not. Interestingly, passivized O2 of *give* had a significantly higher mean response (2.97) than the other ‘bill’ verbs (2.17). This indicates that passivized O2 with *give* is more grammatically acceptable than ‘bill’ verbs (for example, the mean of passivized O2 with *charge* was 2.09. Even *save* and *spare*, for which examples of passivized O2 were found in the search of the corpora, had lower means than *give*, at 2.14 and 2.32 respectively).

### 4.3.2 Extraction

#### 4.3.2.1 Results

A one-way ANOVA testing the means of extracted O0, O1 and O2 without context also showed a significant effect ( $F(2,849) = 46.81, p < .001$ ). A Tukey HSD post-hoc test revealed that there was a statistically significant mean difference between

extracted O1 and extracted O0 (mean difference = 0.69,  $p < .001$ ), and between extracted O1 and extracted O2 (mean difference = 0.63,  $p < .001$ ), but not between extracted O0 and extracted O2 ( $p = .83$ ). The response means for extracted O0, O1 and O2 were all, however, between 4 and 5 (O0: 4.79, O1: 4.10 and O2: 4.73), indicating that extracted O0, O1 and O2 were grammatically acceptable for most speakers.

Extracted O1 and O2 were also tested in context for some verbs, and an ANOVA was run for extraction in context, which also showed a significant effect ( $F(1,305) = 16.02$ ,  $p = < .001$ ). No statistically significant difference between O1 or O2 in context and O1 or O2 without context was found.

In order to test whether there was a statistical significance between the two variants of extracted O1, ANOVAs were run for i) the extracted O1 sentences in context and ii) the extracted O1 sentences out of context (these were kept separate to reduce the amount of variables). The two wh- phrase O1 variants can be seen below with the example verb *fine*.

*O1 type 1* (code: O1a)

(7) [Who] did the government fine \_\_\_ billions of dollars?

*O1 type 2* (code: O1b)

(8) [Which company] did the government fine \_\_\_ billions of dollars?

For the examples which did not appear in context, all nine 'bill' verbs were tested for extracted O1 type 1, but only three verbs, *bill*, *charge* and *fine*, were tested for extracted O1 type 2. The ANOVA which compared the means of all nine O1a verbs against the means of the three O1b verbs indicated that there was a statistically significant mean difference ( $F(1,407) = 29.32, p < .001$ ). However, the greater number of responses for O1 type 1 probably affected the result. When an ANOVA was run testing only the three verbs (*bill*, *charge* and *fine*) for both O1 types 1 and 2, there was no statistically significant difference between them ( $p = .76$ ).

There was a similar pattern for extraction tests within context. Four verbs (*bet*, *bill*, *charge* and *spare*) were tested for O1 type 1, and only two for O1 type 2 (*charge* and *spare*). The ANOVA which compared the means of all four O1a verbs against both the O1b verbs indicated a statistical significance ( $p = .002$ ), however an ANOVA run which tested only the response mean for the extracted O1s of *charge* indicated no statistically significant difference between type 1 and type 2 ( $p = .961$ ). As above, the larger number of responses for O1 type 1 are likely to have affected the results of the ANOVA which tested the means of the four O1a verbs against the two O1b verbs. These results are summarised in Table 4.1.

Table 4.1: Extraction of O1

|                | <b>Context?</b> | <b>Variable</b> | <b>No. of verbs tested</b> | <b>Statistically significant difference?</b> |
|----------------|-----------------|-----------------|----------------------------|--|
| <b>ANOVA 3</b> | No context      | O1 type 1       | 9                          | Yes  |
|                |                 | O1 type 2       | 3                          |  |
| <b>ANOVA 4</b> | No context      | O1 type 1       | 3                          | No   |
|                |                 | O1 type 2       | 3                          |  |
| <b>ANOVA 5</b> | Context         | O1 type 1       | 4                          | Yes  |
|                |                 | O1 type 2       | 2                          |  |
| <b>ANOVA 6</b> | Context         | O1 type 1       | 1                          | No   |
|                |                 | O1 type 2       | 1                          |  |

#### 4.3.2.2 Discussion

The results discussed above indicate that there is a statistical difference in extraction possibility between O0 and O1 and between O2 and O1, but not between O0 and O2. This suggests that O0 and O2 pattern more closely together with regards to extraction. However, the response means for extracted O0, O1 and O2 without context were all between 4 and 5 (O0: 4.79, O1: 4.10 and O2: 4.73), suggesting that all extracted objects in sentences with ‘bill’ verbs are much more acceptable than, for example, passivized O2. In addition, the standard deviation for the responses for extracted O1 (1.23) was higher than that of O0 (.53) and O2 (.67), indicating a wider variation in acceptability among speakers.

There seems to be little difference in grammatical acceptability of extracted O1 and O2 when in context and when not in context. However, the testing of this was not systematic enough to yield meaningful results, as different numbers of verbs and different variants were tested in context from those tested out of context. The lack of significant difference in acceptability between examples of extraction in context and those out of context could also have occurred as a result of the contextual situations provided being less than plausible. Further research is needed to clarify this issue.

Although two of the one-way ANOVAs indicated a statistically significant difference between the variants of extracted O1 (*who* as opposed to *which X*, see example (3)), this was probably influenced by the difference in the number of responses, as explained above. It is telling that no statistically significant difference between the means of extracted O1a and extracted O1b were found for either the sentences in context or those out of context when an equal number of *a* and *b* variants were tested against each other. This suggests that extracted O1 is considered to be overwhelmingly acceptable by English speakers, and that the result is not dependent on the type of extraction or individual *wh*-word.

### **4.3.3 Heavy NP shift**

#### **4.3.3.1 Results**

Initially, two one-way ANOVAs were conducted to test the heavy NP shift data. The first tested shifted O0 with *meet* and shifted O1 and O2 with *give*; the second tested

shifted O0, O1 and O2 with 'bill' verbs. Both ANOVAs showed a significant effect ( $F(2,135) = 38.34, p < .001$  and  $F(2,1087) = 102.89, p < .001$  respectively), explained below.

For *meet* and *give*, a Tukey HSD post hoc test showed a statistically significant mean difference between O1 and O0 (mean difference = 1.68,  $p < .001$ ) and between O1 and O2 (mean difference = 1.82,  $p < .001$ ), but not between O0 and O2 (mean difference = 0.15,  $p = .86$ ). The response means were as follows. O0: 3.71 (SD: 1.22) O1: 2.03 (SD: 1.09) O2: 3.85 (SD: 1.26).

For 'bill' verbs, however, a Tukey HSD post hoc test showed a significant statistical mean difference between all levels: between O0 and O1 (mean difference = 0.75,  $p < .001$ ), between O0 and O2 (mean difference = 0.36,  $p = .02$ ) and between O1 and O2 (mean difference = 1.11,  $p < .001$ ). Response means were as follows: O0: 2.81 (SD: 1.22), O1: 2.07 (SD: 1.09) and O2: 3.17 (SD: 1.31).

A one-way ANOVA showed that there was a statistically significant difference between the means of the type 1 and type 2 O1 variants ( $F(1,611) = 28.91, p < .001$ ). In the survey, nine 'bill' verbs (*spare* was omitted) appeared each in shifted O1 type 1 and type 2 variants. Thus, an equal number of responses were recorded for each of the types, unlike the extracted variants of O1 described above.

Lastly, a final one-way ANOVA which tested the response means of heavy shifted O1 for *give* for each of the type 1 and type 2 variants showed that there was no statistically significant difference between the types ( $F(1,67) = 1.24, p = .27$ ).

These results are summarized in Table 4.2.

Table 4.2

|         | Variable               | Significant difference? | Post hoc tests   | Significant difference? |
|---------|------------------------|-------------------------|------------------|-------------------------|
| ANOVA 1 | O0 <i>meet</i>         | Yes                     | O0/O1            | Yes                     |
|         | O1 <i>give</i>         |                         | O1/O2            | Yes                     |
|         | O2 <i>give</i>         |                         | O0/O2            | No                      |
| ANOVA 2 | O0 'bill' verbs        | Yes                     | O0/O1            | Yes                     |
|         | O1 'bill' verbs        |                         | O1/O2            | Yes                     |
|         | O2 'bill' verbs        |                         | O0/O2            | Yes                     |
| ANOVA 3 | O1 type 1 'bill' verbs | Yes                     | n/a <sup>6</sup> | n/a                     |
|         | O1 type 2 'bill' verbs |                         | n/a              | n/a                     |
| ANOVA 4 | O1 type 1 <i>give</i>  | No                      | n/a              | n/a                     |
|         | O1 type 2 <i>give</i>  |                         | n/a              | n/a                     |

#### 4.3.3.2 Discussion

The data confirm Hudson's (1992) intuitions about heavy NP shift for the example sentences he used (involving the verbs *give* and *meet*), as a statistically significant mean difference between O1 and O0 and between O1 and O2 was found, whereas no statistically significant mean difference between O0 and O2 was found. This indicates that, statistically speaking, shifted O0 (mean: 3.71) and shifted O2 (mean 3.85) are more acceptable to speakers of English for sentences with *give* and *meet* than is

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<sup>6</sup> Post hoc tests could not be performed for these ANOVAs because there are fewer than three groups.

shifted O1 (mean: 2.03). However, that there is a statistically significant difference between heavy shifted O0, O1 and O2 at all levels for ‘bill’ verbs suggests there is not the same clear patterning between O2 and O0 for all verbs. Hudson’s claim that heavy O2 and O0 can *in general* be shifted more easily than heavy O1 is thus not supported, at least for ‘bill’ verbs, by empirical data.

It is also worth noting that the response means for shifted O0, O1 and O2 were much lower than the passivization and extraction tests for both *give* and *meet* as well as for ‘bill’ verbs. This suggests that speakers of British English do not, in general, judge shifted objects, even if they are heavy, to be as acceptable as passivized or extracted objects. One possibility for the low means is that no context was provided for the shifted NPs. However, where context was provided (for extraction), no statistical difference in means was found. Given that the standard deviation from the mean was never greater than 1.31, it is clear that there is some, but not widespread variation between speakers with regards to heavy shifted NPs. In short, most speakers do not consider heavy shifted NPs to be sentences that native speakers of English would definitely produce. Any theoretical implications drawn from a heavy NP Shift test must therefore be viewed with caution.

Despite the fact that the means of Hudson’s two types of shifted O1 (see 4.2.1, example (5)) were both low in acceptability rating for both ‘bill’ verbs (mean acceptability score of O1 type 1: 1.82, and of O1 type 2: 2.29) and for *give* (mean score of O1 type 1: 1.89, and of O1 type 2: 2.18), there was a statistically significant difference between type 1 and type 2 shifted O1 for ‘bill’ verbs (of which type 1 was considered less acceptable than type 2, see example (5)), but not for *give*. The larger

number of responses for the ‘bill’ verbs mean that it is more likely that an ANOVA would show a statistically significant difference for these verbs. However, lexical frequency could also be playing a role: it could be that objects with *give*, which is almost certainly used more frequently than each of the ‘bill’ verbs, may be shifted more freely than objects of less frequent verbs. Such an explanation may be corroborated by future research.

#### **4.3.4 Provision of Extracted Object**

##### **4.3.4.1 Results**

A one-way ANOVA was run to test the means of O0, O1 and O2 for the provision of Extracted Object test, which showed a statistical effect ( $F(2,815) = 164.77, p < .001$ ).

A Tukey HSD post hoc test showed that there was a significant statistical mean difference between O0 and O1 (mean difference = 0.77), O0 and O2 (mean difference = 0.93), and O1 and O2 (mean difference = 1.70) ( $p < .001$  for each). The response means were as follows: O0: 2.43 (SD: 1.60), O1: 1.66 (SD: .89), and O2: 3.36 (SD: 1.33).

A further ANOVA also indicated a statistically significant difference between the provision of extracted O0 when it was a theme and when it was a goal ( $F(1,67) = 21.54, p < .001$ ). This was only tested for one verb (*charge*), and comprised the following sentences:

*Extracted object is a goal*

(9) The manager charged the client to make \_\_\_\_ angry.

*Extracted object is a theme*

(10) The manager charged £50 to give \_\_\_\_ to charity.

The mean response rate for (9) was 1.32 (SD: .59), while that of (10) was 2.41 (SD: 1.23).

#### **4.3.4.2 Discussion**

Because there was found to be a statistically significant difference between the response means of all the objects, there is no clear patterning between O0, O1 and O2. Indeed, of all sentences which tested the provision of an extracted object, sentences involving extracted O2, with the highest response mean, are the most acceptable to speakers of British English.

It is worth noting that creating semantically plausible sentences that provide an extracted object is difficult for some lexical items, and the low response means for each of extracted O0, O1 and O2 of ‘bill’ verbs may be influenced by this.

However, there is statistical evidence to suggest that what guides the provision of an extracted object is not syntactic, but rather semantic. This is because, for monotransitive *charge*, which, like *bet*, *tax*, *tip* and *wager*, can take as its single object

either a theme or a recipient/goal (see 3.4), an extracted theme was significantly more acceptable than an extracted goal (see examples (9) and (10)).

#### **4.4 Chapter summary**

Only one of Hudson's claims is supported by data from the grammatical acceptability survey, and this was the least controversial: that O1 and O0 are easily passivizable, and O2 less so. For extraction, O2 and O0, which are both extractable, pattern more closely together, but O1 is also very extractable. Heavy NP shifted O0, O1 and O2 yielded much lower acceptability ratings than extracted and passivized objects, and must thus be considered less acceptable in general. O2 and O0 pattern together statistically for *give* and *meet*, but this pattern was not found for 'bill' verbs, where there was no statistical correlation.

Last, there was no clear patterning for 'bill' verbs in the test for provision of an extracted object. Again, acceptability ratings were low for all extracted objects, and any conclusion must therefore be drawn with caution. There was, however, an indication that the provision of an extracted object was dependent on the semantic role of the object in monotransitive sentences.

The implications of these findings, as well as those from the corpus search, are the topic of the next chapter.

## 5 Objecthood and linguistic theory

### 5.1 The situation so far

The data presented in the previous two chapters clearly demonstrate that ‘the picture is obviously far more complex than one would assume from reading Baker or Hudson’ (Maling, 2001:424). Table 5.1 exemplifies the complexity.

*Table 5.1*

*Hudson’s eleven tests applied to ‘bill’ verbs*

|                                      |                                 |
|--------------------------------------|---------------------------------|
| <b>Passivization</b>                 | <b>O0/O1 passivizable</b>       |
| <b>Extraction</b>                    | <b>O0/O1/O2 all extractable</b> |
| [Particle following]                 | <i>inapplicable</i>             |
| <b>Heavy NP shift</b>                | <b>unclear</b>                  |
| [Case]                               | <i>inapplicable</i>             |
| [Lexical specification]              | <i>inapplicable</i>             |
| <b>Semantic role</b>                 | <b>depends on verb</b>          |
| <b>Animacy</b>                       | <b>depends on verb</b>          |
| [Idiom involving verb]               | <i>inapplicable</i>             |
| <b>Provision of extracted object</b> | <b>unclear</b>                  |
| [Control of a depictive predicate]   | <i>not tested</i>               |

How does this influence our understanding of which is the ‘true’ object? What do our data from ‘bill’ verbs suggest about how best to capture double objects theoretically?

First, we note that Hudson’s claim that ten of his eleven tests support an IO/DO analysis cannot be upheld based on data from ‘bill’ verbs in ditransitive constructions. We learnt in Chapter 4 that only two tests showed a statistically significant correlation between O0 and O1 or between O0 and O2. The first, passivization, provided unequivocal support for a patterning between O1 and O0. The second, extraction,

indicated a lack of statistically significant difference between O0 and O2, suggesting that they pattern more closely together. However, O1 was still readily extractable, with a mean acceptability rating of 4.10 out of 5. The data from the other tests, heavy NP shift and provision of an extracted object, did not indicate a patterning between O0 and either O1 or O2 for 'bill' verbs. In sum, one test (passivization) supports a PO/SO distinction, another (extraction) weakly supports an IO/DO analysis. The corpus examples in Chapter 3 indicate that the semantic role and animacy tests could support either analysis depending on the verb in question.

Given this complex picture, five analyses are possible:

### **Analysis 1**

An IO/DO analysis is correct for some English verbs (e.g. *give*, *send*), but not for others (e.g. 'bill' verbs), where a PO/SO distinction is more appropriate.

### **Analysis 2**

An IO/DO analysis can still be upheld, but most of Hudson's tests are not appropriate methods of showing this distinction.

### **Analysis 3**

A PO/SO analysis better captures the distinction between objects, based on the clear results from passivization.

#### **Analysis 4**

Both objects in a DOC have the same GR, which is a different GR from the monotransitive object. The distinctions between objects in DOCs evident in some of Hudson's tests are to be explained by other, non-syntactic factors.

#### **Analysis 5**

O0, O1 and O2 all share the same GR. The distinctions between the objects in some of Hudson's tests can be explained by non-syntactic factors.

### **5.2 Five analyses of DOCs in English**

In the following, I will show that the first three analyses do not adequately explain the results from 'bill' verbs. I will argue that the fourth and fifth analyses are the strongest, but that there are problems for the current representation of objects in LFG. I will also demonstrate that core 'accepted' notions concerning objecthood are in need of significant attention from the linguistic community.

#### **5.2.1 Analysis 1: 'Split objectivity'**

This position is effectively the one put forward by Dryer (1986). The reader will recall from the discussion in Chapter 2 that Dryer draws an analogy between ergativity and objectivity. That is, some languages exhibit an IO/DO patterning, others a PO/SO patterning, rather like some languages have ergative-absolutive case-marking and some nominative-accusative. Similarly, just as some languages have both ergative and

accusative case-marking, so can languages have both IO/DO and PO/SO DOCs, a phenomenon which he calls *split objectivity*.

English, Dryer claims, displays some properties of split objectivity. However, Dryer suggests that English's 'dative rule', by which he means IO-Advancement, occurs only with certain *supply*-type verbs, which have a 'notional DO' that uses the preposition *with* (Dryer, 1986:830):

- (1) a. Our firm supplies coats to the army.
- b. Our firm supplies the army with coats.

This alternation does not fall under the criteria with which we defined DOCs in Chapter 1, and is thus considered separate from the dative alternation.

However, could the principle apply to DOC verbs in English whereby some verbs take objects which are best analysed as having an IO/DO distinction, and others which take objects best analysed as having a PO/SO distinction?

This seems unlikely. There are explanations for the instances where there is a difference in behaviour between the lexical items. Consider extraction, for example. The grammatical acceptability survey showed that extraction of O1 for 'bill' verbs was largely felicitous, despite a closer statistical correlation between extracted O0 and O2. Hudson claims that extraction of O1 for *give* and other verbs is much less acceptable than extraction of O2 (Hudson 1992:258). However, all his examples are

of alternating verbs, where there is competition from the extraction of the object in the NP-PP variant. Consider (2) (adapted from Hudson, 1998:258):

- (2) a. They gave [the authors]<sub>1</sub> [a prize]<sub>2</sub>.  
b. %[Which authors]<sub>1</sub> did they give # [a prize]<sub>2</sub>?  
c. They gave [a prize]<sub>0</sub> to the authors.  
d. [Which authors]<sub>0</sub> did they give # a prize to?

(2b) may seem less acceptable to Hudson because of the competition with (2d).

However, the extraction of O1 with non-alternating verbs obviously does not compete with NP-PP variant, as there is no alternation. This could be an explanation for why sentences involving the extraction of O1 with verbs such as *fine* (e.g. *Who did you fine £12?*) were generally given high acceptability scores in the survey.

The tests in which there is the most noticeable difference between verbs that Hudson uses in his examples and ‘bill’ verbs are semantic in nature (semantic role and animacy). However, if we do not *a priori* assume Interface Uniformity (Culicover & Jackendoff, 2005:6, see 2.5.1), there is little reason to suggest that the syntactic patterning of a verb’s objects should reflect its semantic patterning.

Based on the syntactic properties of the objects tested with ‘bill’ verbs, then, there seems little motivation to posit an analysis involving split objectivity for English.

### 5.2.2 Analysis 2: IO/DO analysis; tests for objecthood inappropriate

A second option is that the IO/DO analysis still holds, but the means of showing that the analysis is the correct one are problematic. We saw in 2.6.3 that several of Hudson's tests are inapplicable, and that there are significant problems with others (such as the low acceptability ratings in general for heavy NP shift and the provision of an extracted object).

The problem is not, however, with the use of tests for objecthood. If we assume that O0 is the 'prototypical object', any empirical method employed to test whether O1 or O2 is the 'true object' must be based on how O1 and O2 behave syntactically in relation to O0. It is not clear how one could provide evidence for a particular analysis without employing objecthood diagnostics, if one wishes to approach the problem from a theory-external perspective.

However, it is important to recall that many theories, while analysing O1 and O2 as different GRs, acknowledge that there are similarities between them. This is clear from the terminology used, such as Dryer's primary object versus secondary object (note, they are both still 'objects'), as well as from theoretical claims, such as in LFG, where OBJ and OBJ<sub>θ</sub> both share the feature +objective. We should not, therefore, be surprised if O1 and O2 behave syntactically in a similar fashion. This clouds the issue somewhat, and has received little attention from authors who claim that any patterning behaviour 'proves' one or another analysis. It also raises the question of whether O1 and O2 are distinct GRs. This is explored in 5.2.4 onwards.

### 5.2.3 Analysis 3: PO/SO analysis, based on passivization

We saw in Chapter 4 that passivization showed the clearest results out of all the tests, indicating a patterning between passivized O0 and O1, which had high mean acceptability ratings. Passivized O2 had much lower mean acceptability ratings. Other tests did not show up such a clear distinction between the objects. Passivization has often been used as the ‘prototypical’ test for objecthood: is it possible to argue for a PO/SO distinction on the basis of passivization data alone?

We would argue not. Hudson (1992) brings to light some important points about passivization which must be considered if we are to use it as a test for objecthood. First, he notes that some examples of passivized O1 are (to some speakers) less acceptable than others, whereas this does not appear to be the case for O0s (Hudson, 1992:271):

- (3) a. The children were given those sweets by the teachers.
- b. %Those visitors must have been found some food.

If we accept his acceptability judgments, unempirically tested though they are, we must find an explanation as to why some O1s seem to passivize more readily than others.

Similarly, we saw in 3.2.4.3 that *spare* and *save* allowed passivized O2. Hudson suggests from the data he supplies that *give* also allows passivized O2 in some

dialects. It is not clear why certain verbs should allow passivization of O<sub>2</sub>, and others not.

A greater problem is that it is not only objects that can be passivized. Other types of complements can be passivized, too, such as finite clause complements:

- (4) a. They proved [that John was lying].
- b. [That John was lying] was proved.

Moreover, we know that such complements are unlikely to be objects, as they can co-occur in the same sentence:

- (5) They persuaded John [that he should resign].<sup>1</sup>

Börjars & Vincent (2008) point out other commonly known problems with passivization. For example, there are passives for which the corresponding active sentence does not have an object, as in (6).

- (6) a. Someone has walked on this road.
- b. This road has been walked on.

In addition, there are passives that have no active counterpart, as in (7).

- (7) a. He is rumoured to be doing a gig in London tomorrow.

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<sup>1</sup> One could, of course, analyse (5) as a DOC, where John has the GR OBJ and the complement the GR OBJ<sub>0</sub>.

- b. \*They/people rumour him to be doing a gig in London tomorrow.

Given the problems with passivization outlined above, we argue with Börjars & Vincent (2008) that

‘... there is evidence that the passive is conditioned not just by grammatical relations, but also by a complex interaction between structural position and semantics and hence is not a reliable test for a grammatical relation.’

Since passivization is the only test that unequivocally supports a patterning between O1 and O0, and thus supports a PO/SO distinction, we are forced to abandon this analysis if we accept that structural position and semantics may have a role to play.

#### **5.2.4 Analysis 4: O0 is OBJ; O1 and O2 are both OBJ<sub>θ</sub>**

In this analysis, neither of O1 or O2 is the ‘true’ object, and they must have different GRs from O0. This position has been little represented in the literature, given that most research has been undertaken within dative alternation research. Within an LFG framework, the only option, if one assumes this analysis, is that O1 and O2 share the same GR, the unrestricted object OBJ<sub>θ</sub>, which is a conclusion Börjars & Vincent (2008) reach (though via different argumentation).

As discussed in 2.6.2.2, LFG’s distinction between the GRs OBJ and OBJ<sub>θ</sub> is based on the fact that, in Lexical Mapping Theory, the former has the feature –restrictive

(meaning that OBJ can be mapped to any semantic role) whereas OBJ<sub>θ</sub> is +restrictive.

Börjars & Vincent (2008) demonstrate that O1 is semantically restricted, just like O2, though the restriction is different.

The results in chapters 3 and 4 overwhelmingly support the claim that both O1 and O2 are restricted as to semantic role. There were no examples of O1 as a theme, and no examples of O2 as a beneficiary, goal or experiencer in corpus searches. This difference in restriction is not currently captured in LFG.

The alert reader will note that if O1 and O2 have the same GR, or belong to the same ‘family’ of GRs,<sup>2</sup> this suggests that O1 and O2 pattern together syntactically more closely than O0 with either of O1 or O2. However, there is as little evidence from the results presented in previous chapters to suggest that O1 and O2 pattern together syntactically as there is for an O1/O0 or an O2/O0 patterning.

This is not a problem for LFG as the GR OBJ<sub>θ</sub> is distinct from OBJ only in terms of its semantic role restrictions. A serious implication, however, is that such a position calls into question whether the syntactic behaviour of an object has anything to say about its GR. If the only distinguishing feature between OBJ and OBJ<sub>θ</sub> is that of semantic restrictedness, why would this affect its syntactic behaviour? This is explored more under 5.3.

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<sup>2</sup> OBJ<sub>θ</sub> is a family of GRs made up of e.g. OBJ<sub>goal</sub>, OBJ<sub>theme</sub> etc.

### 5.2.5 Analysis 5: A call for a review of objecthood: O0, O1 and O2 are either all OBJ<sub>θ</sub> or all OBJ

Börjars & Vincent (2008) suggest that, in some ways, all objects are restricted. This is clear from the fact that certain verbs require certain ‘types’ of theme:

- (8) a. Fred read the book.  
b. \*Fred read the car.

In (8), the object of *read* has to be readable. Similarly, in (9), the source being fined has to be animate (possibly even human):

- (9) a. \*Fred fined the book.  
b. ?Fred fined the caterpillar.

We might be able to account for the data in (9) by suggesting that sources, (along with experiencers and goals) have to be animate. The data in (8) cannot be explained this way, however.

Börjars & Vincent (2008) account for the problem illustrated in (8) by suggesting we discard theme as a distinct theta-role. In most cases, they argue, the theme is ‘a projection into an internal argument slot of some or all of the lexical semantic content of the predicate’, i.e. each (class of) verb will have its own type of theme. Other than this, the only common property the themes have is that they are OBJs. In some sense,

then, Börjars & Vincent (2008) argue, all objects are OBJ<sub>0</sub>, as they are all restricted in some sense.

Alsina's (1996) proposal of analysing all objects as OBJ is similar to Börjars & Vincent's (2008) proposal in the sense that all objects have the same GR, and is another analysis which correlates with our results. We saw in 2.6.2.2 that Alsina (1996) defines GRs according to different features from the canonical LFG account. For him, all objects are [-subj, -obl], i.e. they are 'direct functions' but are not subject-like (Alsina, 1996:19). In order to distinguish the traditional IO from the DO in Romance, which he must do in some sense as they are case-marked differently, he posits a Case Assignment Convention which maps the feature [+DAT] onto the thematically most prominent internal argument (Alsina, 1996:175).

Since English has an impoverished case system and as LFG has no theory of Abstract Case, Alsina's Case Assignment Convention cannot apply to English DOCs. Instead, if we were to follow Alsina's distinctions between direct/oblique and subject/nonsubject, we could posit the following Position Convention:

(10) *DOC Position Convention*

A direct function in a DOC must appear adjacent to the verb at c-structure if it is mapped onto an argument that is either thematically a goal or most prominent (according to e.g. Bresnan & Kanerva's semantic role hierarchy) and if it is not the expression of the external argument.

This convention is clearly problematic: it introduces a new principle which applies only to one kind of construction, and it is not clear what kind of value a position convention would have at f-structure.

Nevertheless, if we assume that the syntactic behaviour of objects indicates the nature of their GR, then an analysis in which all objects share the same GR, or in which O1 and O2 (but not O0) share the same GR, best accounts for the results discussed in chapters 3 and 4, unless we can find tests for objecthood which unequivocally show an O1/O0, an O2/O0, or an O1/O2 patterning.

It is clear, however, that such analyses are incomplete. Is OBJ as a general notion best viewed as a GR with no content, as Börjars & Vincent (2008) suggest? If we follow Alsina (1996), how can we distinguish the fact that O1 is thematically ‘more prominent’ than O2, according to Bresnan & Kanerva’s (1989) semantic role hierarchy? We leave these issues to future research.

### **5.3 Implications for objecthood**

The lack of a clear pattern of either O2 or O1 with O0 suggests that an account based on the transformational raising of IO is doubtful. For example, if O1 were derived from a PP, then one would expect O2 to behave syntactically like O0 in all respects, which is not the case. This is a further indication that DOCs are not derived from NP-PP constructions.

In addition, there is a major implication of the analyses discussed in 5.2.4 and 5.2.5 for LFG. These analyses call into question whether the syntactic behaviour of objects has anything to say about an object's GR. Throughout this thesis, it has been assumed that syntactic behaviour is relevant to GR, and this has been the assumption of countless scholars, including those working in LFG. However, there is a significant theoretical problem with the canonical LFG account of objects in DOCs, if we accept this assumption. LFG, which posits multiple layers of structure and rejects a one-to-one semantic to syntactic mapping, does not subscribe to Interface Uniformity, unlike mainstream generative theories. Since OBJ is currently differentiated from OBJ<sub>θ</sub> only in terms of its semantics, and if a semantic distinction does not equal a parallel distinction in the syntax, then there is no reason to suppose that OBJ or OBJ<sub>θ</sub> will behave differently in terms of their syntax. This being the case, LFG cannot base its PO/SO analysis on the syntactic behaviour of objects, because the current architecture does not capture that there is a syntactic distinction between OBJ and OBJ<sub>θ</sub>. This is a serious theoretical weakness if we assume that the syntactic behaviour of objects is relevant to their GR.

In this respect, Alsina's (1996) proposal of decomposing GRs according to purely syntactic criteria is to be preferred, if we hold to the view that syntactic behaviour informs our views about GRs. There are, however, significant problems with his proposal, noted in 2.6.2.2 and 5.2.5.

Indeed, we saw that the syntactic behaviour of objects in DOCs with 'bill' verbs shows no clear pattern. This might then support the claim that the syntactic behaviour of objects does not reflect our current notions of GRs. Are we looking in the wrong

place, or is the syntactic behaviour of objects no indication of GR? If it is not, then what do we mean by ‘grammatical relation’, if we do not believe that it is defined by structural position?

Finally, if we are unable to distinguish between O1 and O2 in any syntactic (i.e. structural) way, and they can only be told apart in terms of function, there is an indication that GRs are best analysed as linguistic primitives rather than being defined by structural position. This is because their function is not easily attributed to any single phrase structure position. Further discussion of this and the above implications is left for future research.

#### **5.4 Concluding remarks**

In this chapter, we have seen how three analyses of DOCs (PO/SO distinction, IO/DO distinction and ‘split objectivity’) are left wanting, based on results from the corpus search and grammatical acceptability survey. The subsequent two analyses (the first that O1 and O2 share the GR OBJ<sub>θ</sub>, while O0 is OBJ; the second that O0, O1 and O2 are all kinds of OBJ or OBJ<sub>θ</sub>) challenge previous received ideas about objecthood. It is our hope that linguists will engage with the implications set out here and in Börjars & Vincent (2008), and that objects will continue to receive the attention from the linguistic community that they deserve.

## Appendix I

Table of results from single native speaker acceptability judgments, indicating how many sentences were deemed acceptable (15 sentences for each objecthood diagnostic and object; total sentences: 195)

| /15 | DOC | Pass | Extr | HNP | CDP | PEO |
|-----|-----|------|------|-----|-----|-----|
|     | 14* |      |      |     |     |     |
| O1  |     | 14   | 11   | 3   | 0   | 0   |
| O2  |     | 1    | 14   | 5   | 1   | 9   |

\*The unacceptable DOC was *The jury declared Paul a criminal.*

|       |                     |
|-------|---------------------|
|       | Lex Spec            |
| (OBJ) | 3 (give, ask email) |
| O0    | 12                  |
| O1+O2 | 15                  |

Key:

DOC = Double Object Construction

Pass = Passivization

Extr = Extraction

HNP = Heavy NP shift

CDP = Control of a depictive predicate

PEO = Provision of extracted object

Lex Spec = Lexical Specification

(OBJ) = 'can be intransitive'

O0 = 'can be transitive'

O1+O2 = 'can be ditransitive'

## Appendix II: Summary of Corpus findings

|                   | bet            | bill      | charge           | fine      | mulct     | overcharge | save        | spare       | tax         | tip             | undercharge | wager       |
|-------------------|----------------|-----------|------------------|-----------|-----------|------------|-------------|-------------|-------------|-----------------|-------------|-------------|
| <b>DOC</b>        | yes            | yes       | yes              | yes       | n/a       | yes        | yes         | yes         | yes         | yes             | n/a         | yes         |
| <b>OBJ + PP</b>   | n/a            | n/a       | yes              | n/a       | n/a       | n/a        | n/a         | n/a         | yes         | n/a             | n/a         | n/a         |
| <b>Intr</b>       | yes            | n/a       | n/a              | n/a       | n/a       | yes        | yes         | n/a         | yes         | yes             | yes         | yes         |
| <b>Trans</b>      | SR of both*    | SR of O1  | SR of both       | SR of O1  | SR of O1  | SR of O1   | SR of O2**  | SR of O2**  | SR of both  | SR of both      | n/a         | SR of both  |
| <b>SR:O0</b>      | theme/?goal    | ?goal     | theme/?goal      | ?goal     | ?goal     | ?goal      | theme/exper | theme/exper | theme/?goal | theme/recipient | n/a         | theme/?goal |
| <b>SR:O1</b>      | ?goal          | ?goal     | ?goal            | ?goal     | n/a       | ?goal      | benef       | benef       | ?goal       | recipient       | n/a         | ?goal       |
| <b>SR:O2</b>      | theme          | theme     | theme            | theme     | n/a       | theme      | theme       | theme       | theme       | theme           | n/a         | theme       |
| <b>Anim:O0</b>    | either         | either    | either           | animate   | animate   | animate    | either      | either      | either      | either          | n/a         | either      |
| <b>Animacy:O1</b> | animate        | animate   | animate          | animate   | n/a       | animate    | animate     |             |             |                 |             |             |
| <b>Animacy:O2</b> | inanimate      | inanimate | inanimate        | inanimate | n/a       | inanimate  | inanimate   |             |             |                 |             |             |
| <b>Pass:O0</b>    | theme only     | goal only | theme***<br>only | goal only | goal only | goal only  | both SRs    | both SRs    | both SRs    | recip only      | n/a         | n/a         |
| <b>Pass:of O1</b> | only in Google | yes       | yes              | yes       | n/a       | yes        | Google only | yes         | yes         | n/a             | n/a         | yes         |
| <b>Pass:O2</b>    | n/a            | n/a       | yes (1)          | n/a       | n/a       | n/a        | Google only | yes         | n/a         | n/a             | n/a         | n/a         |
| <b>Extr:O0</b>    | yes            | n/a       | yes              | n/a       | n/a       | n/a        | n/a         | yes         | yes         | yes             | n/a         | yes         |
| <b>Extr:O1</b>    | n/a            | n/a       | n/a              | n/a       | n/a       | n/a        | n/a         | n/a         | n/a         | n/a             | n/a         | n/a         |
| <b>Extr:O2</b>    | n/a            | yes       | yes              | yes       | n/a       | n/a        | yes         | yes         | yes         | n/a             | n/a         | n/a         |

\*transitive sentences usually only found with CP

\*\*SR of O1 exists as well, but possible different meaning

\*\*\*probable interference from other meaning of 'charge'

n/a indicates 'not found'

O0 SR of both  
bet  
charge  
tax  
tip  
wager

O0 SR of O1  
bill  
fine  
mulct  
overcharge

O0 SR of O2  
save  
spare

## Appendix III

### Survey instructions (as presented to participants)

#### Instructions:

The following survey has been written as part of a research project that is investigating verbs that are used in English double object constructions. This survey invites participants to assess on a scale from 1 to 5 the ‘acceptability’ of sentences (explained more fully below). The survey should take approximately 15 minutes to complete. The option of withdrawing midway through taking the survey is available at any stage. All data is anonymous and will be stored in a password protected computer.

#### Some details about you

Please indicate the age bracket into which you fall:

18-30

30-45

45-60

60+

Please indicate the area/town in which you were born: \_\_\_\_\_

Please indicate any other area/town in the UK in which you have spent a significant part of your life: \_\_\_\_\_

#### The Survey

For each sentence listed below, we would like you to do the following. Please read the sentence, then ask yourself if the sentence seems English-sounding or not. Suppose a non-native student of English were to use this sentence in conversational English. If we ignore pronunciation, would the student sound like a native speaker? Or would the sentence seem strange or unnatural to a native speaker no matter how it was pronounced? Your task is to tell us how English-sounding each sentence is, using a scale. To make it easier in circumstances where you're not sure, a scale of 1-5 has been included, where 1 = makes no sense, and 5 = makes perfect sense. Please do not think about each example for more than a few seconds: it is your instinct which we wish to capture.

**Where more than one sentence is present in an example, please assess the grammaticality of the underlined sentence.**

## Appendix IV

### Survey questions unrandomized (fillers excluded)

#### Ditransitive Constructions

Fred gave Ann some flowers on Sunday.  
Harry bet Mary five pounds that she'd win the competition.  
The manager billed the company \$10,000.  
The shop charged the customer \$49.99.  
The government fined the company billions of dollars.  
Companies overcharge customers a lot of money.  
Harry saved Mary a fiver.  
The government spared taxpayers millions of pounds.  
The government taxes people billions of pounds every year.  
Customers often tip waitresses obscene amounts of money.  
Companies regularly undercharge customers a lot of money.  
Mary wagered Harry a fiver that he'd get lost.

#### Transitive Constructions

Fred met Ann on Sunday.  
The manager charged the client.  
The manager charged £50.  
Fred fined Mary.  
Fred fined five pounds.  
Mary saved lots of money.

#### Passivization of O0

The client was charged by the company.  
Mary was fined by Fred.  
The money was saved by Mary.

#### Passivization of O1

Mary was given five pounds by her father.  
Mary was bet five pounds by Harry that she'd win the competition.  
Mary was bet five pounds by Harry.  
The company was billed \$10,000 by the manager.  
The customer was charged \$49.99 by the shop.  
The company was fined billions of dollars by the government.  
Customers were overcharged a lot of money by companies.  
Mary was saved a fiver by Harry.  
Taxpayers were spared millions of pounds by the government.  
People are taxed billions of pounds every year by the government.  
Waitresses are often tipped obscene amounts of money by customers.  
Harry was wagered a fiver by Mary that he'd get lost.

#### Passivization of O2

Five pounds were given Mary by her father.  
Five pounds was bet Mary by Harry that she'd win the competition.  
Five pounds was bet Mary by Harry.  
\$10,000 was billed the company by the manager.

\$49.99 was charged the customer by the shop.  
Billions of dollars were fined the company by the government.  
A lot of money was overcharged customers by companies.  
A fiver was saved Mary by Harry.  
Millions of pounds were spared the taxpayers by the government.  
Billions of pounds are taxed people every year by the government.  
Obscene amounts of money are often tipped waitresses by customers.  
A fiver was wagered Harry by Mary that he'd get lost.

### **Extraction of O1 type 1 (context)**

John knew that Harry was going to bet someone five pounds that they'd win the competition, but he didn't know who that someone was. When he found Harry's friend Simon, he asked him "who did Harry bet five pounds that they'd win the competition?"

John knew that Harry was going to bet someone five pounds that they'd win the competition, but he didn't know who that someone was. When he found Harry's friend Simon, he asked him "Who did Harry bet five pounds?"

The director was incensed that a manager of the firm had billed one of their clients so much money, but didn't know which client it was that had been billed. The next time he saw his deputy, he asked "Who did the manager bill \$10,000?"

Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know who it was who had had to pay so much. "Who did the shop charge \$49.99?" she asked him. "Marlene from down the road!" Her husband answered. "And she's a single mum with no spare cash!"

Fred and Mary were having a political discussion about how much the government taxed its people. Fred mumbled something about the government sparing companies billions of pounds last year. Mary, however, didn't hear him properly, and exclaimed "Who did the government spare billions of pounds?"

### **Extraction of O1 type 2 (context)**

The director was incensed that a manager of the firm had billed one of their clients so much money, but didn't know which client it was that had been billed. The next time he saw his deputy, he asked "Which company did the manager bill \$10,000?"

Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know who it was who had had to pay so much. "Which customer did the shop charge \$49.99?" "Marlene from down the road!" Her husband answered. "And she's a single mum with no spare cash!"

Fred and Mary were having a political discussion about how much the government taxed its people. Fred mumbled something about the government sparing companies billions of pounds last year. Mary wanted to know which particular firms had benefited from this and so asked him "Which companies did the government spare so much money?"

### **Extraction of O2 (context)**

John knew that Harry had decided to place a bet with Mary about who would win the competition. John wasn't sure how much money Harry was prepared to bet. So, the next day, he asked Harry's friend Simon, who had been there when Harry placed the bet: "How much did Harry bet Mary yesterday?"

John knew that Harry had decided to place a bet with Mary about who would win the competition. John wasn't sure how much money Harry was prepared to bet. So, the next day, he asked Harry's friend Simon, who had been there when Harry placed the bet: "How much did Harry bet Mary that she'd win the competition?"

The director was incensed that one of their managers had billed the company so much money. "How much did that manager bill the company in the end?" He shouted to his deputy.

Fred was amazed at the audacity of the people working in the shop, charging a customer so much for an inexpensive item. When telling his wife about all this, she wanted to know how expensive the transaction had been. "How much did the shop charge the customer?", she asked him. "Nearly fifty dollars! For a hairdryer!" Her husband exclaimed.

Fred and Mary were having a political discussion about how much the government taxed its people. Fred mumbled something about the government sparing its people billions of pounds last year. Mary, however, didn't hear him properly, and exclaimed "How much did the government spare taxpayers last year?"

### **Extraction of O0**

Which company did the client charge?

Which client did the company fine?

How much money did Mary save?

### **Extraction of O1 type 1 (no context)**

Who did Harry bet five pounds that they'd win the competition?

Who did Harry bet five pounds?

Who did the manager bill \$10,000?

Who did the shop charge \$49.99?

Who did the government fine billions of dollars?

Who do companies overcharge a lot of money?

Who did Harry save a fiver?

Who did the government spare billions of pounds?

Who do customers tip obscene amounts of money?

Who did Mary wager a fiver that he'd get lost?

### **Extraction of O1 type 2 (no context)**

Which company did the manager bill \$10,000?

Which customer did the shop charge \$49.99?

Which company did the government fine billions of dollars?

### **Extraction of O2 (no context)**

How much did Harry bet Mary?

How much did Harry bet Mary that she'd win the competition?

How much did the manager bill the company?

How much did the shop charge the customer?

How much did the government fine the company?

How much do companies overcharge customers?

How much did Harry save Mary?  
How much did the government spare taxpayers?  
How much does the government tax people every year?  
How much do customers often tip waitresses?  
How much did Mary wager Harry that he'd get lost?

### **Heavy NP shifted O0**

Fred met on Sunday someone he hadn't seen since he was in college.  
The company charged last week an employee that hadn't worked for the company before.  
Fred fined on Sunday that horrid girl Mary who he didn't like very much.  
Mary saved last year about ten thousand dollars which she hoped to spend on herself.

### **Heavy NP shifted O1 type 1**

Fred gave some flowers the girl he had met at the party the night before.  
Harry bet five pounds the lovely girl called Mary who he'd met the night before.  
The manager billed \$10,000 the company he'd worked with for twelve years.  
The shop charged \$49.99 the very rowdy customer it had previously barred from entry.  
The government fined billions of dollars the oldest company in Europe.  
Companies overcharge a lot of money deluded customers who don't know what they're doing.  
Harry saved a fiver the lovely girl he met the other day called Mary.  
The government taxes billions of pounds every year the people who voted for that government in the first place.  
Customers tip obscene amounts of money waitresses they think are quite attractive or have done a good job.  
Mary wagered a fiver the nice lad called Harry from down the road that he'd get lost.

### **Heavy NP shifted O1 type 2**

Fred gave on Sunday the girl he had met at the party the night before some lovely flowers that he'd bought in the market the day before.  
Harry bet on Sunday the lovely girl called Mary who he'd met the night before the last five pounds he had.  
The manager billed on Monday the company he'd worked with for twelve years the \$10,000 that needed to be spent on redecorating the office.  
The shop charged on Monday the very rowdy customer it had previously barred from entry the \$49.99 that he hadn't paid the last time he was in the store.  
The government fined last year the oldest company in Europe the billions of dollars it had claimed from the insurers to pay for its false claim.  
Companies overcharge all the time customers who don't know what they're doing a lot of money they could be spending on holidays.  
Harry saved on Friday the lovely girl he met the other day called Mary a fiver he could easily have spent on cigarettes.  
The government spared last year all the taxpayers that were eligible millions of pounds that can be spent on going on holiday.  
The government taxes every year the people who voted for that government in the first place billions of pounds that it needs badly for sorting out its national debt.  
Customers tip every year waitresses they think are quite attractive or have done a good job obscene amounts of money that they could probably do with saving for themselves.

Mary wagered last night the nice lad called Harry from down the road her only fiver which she'd wanted to use to buy some cigarettes that he'd get lost.

### **Heavy NP shifted O2**

Fred gave Ann on Sunday some lovely flowers that he'd bought in the market the day before.

Harry bet Mary on Sunday the last five pounds he had that she'd win the competition. The manager billed the company on Monday the \$10,000 that needed to be spent on redecorating the office.

The shop charged the customer on Monday the \$49.99 that he hadn't paid the last time he was in the store.

The government fined the company last year the billions of dollars it had claimed from the insurers to pay for its false claim.

Companies overcharge customers all the time a lot of money they could be spending on holidays.

Harry saved Mary on Friday a fiver he could easily have spent on cigarettes.

The government spared taxpayers last year millions of pounds that can be spent on going on holiday.

The government taxes people every year billions of pounds that it needs badly for sorting out its national debt.

Customers tip waitresses every year obscene amounts of money that they could probably do with saving for themselves.

Mary wagered Harry last night her only fiver which she'd wanted to use to buy some cigarettes that he'd get lost.

### **Provision of extracted O0**

The manager charged the client to make angry.

The manager charged £50 to give to charity.

Fred fined Mary to make angry.

Mary saved lots of money to spend on herself.

### **Provision of extracted O1**

Harry bet Mary some money to cheer up.

The manager billed the company \$10,000 to irritate a lot.

The shop charged the customer \$49.99 to keep happy.

The government fined the company billions of dollars to bring to justice.

Companies overcharge customers a lot of money to hoodwink.

Harry saved Mary a fiver to cheer up.

The government spared taxpayers millions of pounds to keep happy.

The government taxes people billions of pounds every year to rob of their riches.

Customers often tip waitresses obscene amounts of money to make feel good.

Mary wagered Harry a fiver he'd get lost to make angry.

### **Provision of extracted O2**

Harry bet Mary some money to give to charity.

The manager billed the company \$10,000 to spend on himself.

The shop charged the client \$49.99 to spend on decorations.

The government fined the company billions of dollars to spend on education.

Companies overcharge customers a lot of money to keep for themselves.

Harry saved Mary a fiver to spend on herself.

The government spared taxpayers millions of pounds to keep for themselves.  
The government taxes people billions of pounds every year to spend on important projects.  
Customers often tip waitresses obscene amounts of money to spend on themselves.  
Mary wagered Harry a fiver he'd get lost to give to charity.

# Appendix V

## Summary of ANOVAs

### Passivization

#### Pass ANOVA 1: give

#### Descriptives

response

|                | N  | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |    |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1             | 34 | 4.9412 | .23883         | .04096     | 4.8578                           | 5.0245      | 4.00    | 5.00    |                            |
| O2             | 34 | 2.9706 | 1.14111        | .19570     | 2.5724                           | 3.3687      | 1.00    | 5.00    |                            |
| Total          | 68 | 3.9559 | 1.28637        | .15599     | 3.6445                           | 4.2672      | 1.00    | 5.00    |                            |
| Model          |    |        | .82437         | .09997     | 3.7563                           | 4.1555      |         |         |                            |
| Fixed Effects  |    |        |                |            |                                  |             |         |         |                            |
| Random Effects |    |        |                | .98529     | -8.5635                          | 16.4752     |         |         | 1.92162                    |

#### ANOVA

response

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 66.015         | 1  | 66.015      | 97.139 | .000 |
| Within Groups  | 44.853         | 66 | .680        |        |      |
| Total          | 110.868        | 67 |             |        |      |

**Pass ANOVA 2: bill verbs**

**Descriptives**

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0             | 102 | 4.6471 | .77902         | .07713     | 4.4940                           | 4.8001      | 1.00    | 5.00    |                            |
| O1             | 374 | 4.4251 | .93402         | .04830     | 4.3302                           | 4.5201      | 1.00    | 5.00    |                            |
| O2             | 374 | 2.1684 | 1.08164        | .05593     | 2.0585                           | 2.2784      | 1.00    | 5.00    |                            |
| Total          | 850 | 3.4588 | 1.51127        | .05184     | 3.3571                           | 3.5606      | 1.00    | 5.00    |                            |
| Model          |     |        | .98578         | .03381     | 3.3925                           | 3.5252      |         |         |                            |
| Random Effects |     |        |                | .93847     | -.5791                           | 7.4967      |         |         | 2.19021                    |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F       | Sig. |
|----------------|----------------|-----|-------------|---------|------|
| Between Groups | 1115.973       | 2   | 557.987     | 574.199 | .000 |
| Within Groups  | 823.086        | 847 | .972        |         |      |
| Total          | 1939.059       | 849 |             |         |      |

## Post hoc tests

### Multiple Comparisons

Dependent Variable: response

|            | (I) level | (J) level | Mean Difference<br>(I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|------------|-----------|-----------|--------------------------|------------|------|-------------------------|-------------|
|            |           |           |                          |            |      | Lower Bound             | Upper Bound |
| Tukey HSD  | O0        | O1        | .22193                   | .11012     | .109 | -.0366                  | .4805       |
|            |           | O2        | 2.47861 <sup>*</sup>     | .11012     | .000 | 2.2201                  | 2.7371      |
|            | O1        | O0        | -.22193                  | .11012     | .109 | -.4805                  | .0366       |
|            |           | O2        | 2.25668 <sup>*</sup>     | .07209     | .000 | 2.0874                  | 2.4259      |
|            | O2        | O0        | -2.47861 <sup>*</sup>    | .11012     | .000 | -2.7371                 | -2.2201     |
|            |           | O1        | -2.25668 <sup>*</sup>    | .07209     | .000 | -2.4259                 | -2.0874     |
| LSD        | O0        | O1        | .22193 <sup>*</sup>      | .11012     | .044 | .0058                   | .4381       |
|            |           | O2        | 2.47861 <sup>*</sup>     | .11012     | .000 | 2.2625                  | 2.6947      |
|            | O1        | O0        | -.22193 <sup>*</sup>     | .11012     | .044 | -.4381                  | -.0058      |
|            |           | O2        | 2.25668 <sup>*</sup>     | .07209     | .000 | 2.1152                  | 2.3982      |
|            | O2        | O0        | -2.47861 <sup>*</sup>    | .11012     | .000 | -2.6947                 | -2.2625     |
|            |           | O1        | -2.25668 <sup>*</sup>    | .07209     | .000 | -2.3982                 | -2.1152     |
| Bonferroni | O0        | O1        | .22193                   | .11012     | .133 | -.0422                  | .4861       |
|            |           | O2        | 2.47861 <sup>*</sup>     | .11012     | .000 | 2.2145                  | 2.7427      |
|            | O1        | O0        | -.22193                  | .11012     | .133 | -.4861                  | .0422       |
|            |           | O2        | 2.25668 <sup>*</sup>     | .07209     | .000 | 2.0838                  | 2.4296      |
|            | O2        | O0        | -2.47861 <sup>*</sup>    | .11012     | .000 | -2.7427                 | -2.2145     |
|            |           | O1        | -2.25668 <sup>*</sup>    | .07209     | .000 | -2.4296                 | -2.0838     |

\*. The mean difference is significant at the 0.05 level.

| response                 |       |     |                         |        |
|--------------------------|-------|-----|-------------------------|--------|
|                          | level | N   | Subset for alpha = 0.05 |        |
|                          |       |     | 1                       | 2      |
| Tukey HSD <sup>a,b</sup> | O2    | 374 | 2.1684                  |        |
|                          | O1    | 374 |                         | 4.4251 |
|                          | O0    | 102 |                         | 4.6471 |
|                          | Sig.  |     | 1.000                   | .065   |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 198.000.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

# Extraction

## Extr ANOVA 1: No context

### Descriptives

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0             | 102 | 4.7941 | .53285         | .05276     | 4.6895                           | 4.8988      | 2.00    | 5.00    |                            |
| O1             | 408 | 4.1005 | 1.23312        | .06105     | 3.9805                           | 4.2205      | 1.00    | 5.00    |                            |
| O2             | 340 | 4.7294 | .66764         | .03621     | 4.6582                           | 4.8006      | 1.00    | 5.00    |                            |
| Total          | 850 | 4.4353 | 1.02210        | .03506     | 4.3665                           | 4.5041      | 1.00    | 5.00    |                            |
| Model          |     |        | .97105         | .03331     | 4.3699                           | 4.5007      |         |         |                            |
| Random Effects |     |        |                | .26502     | 3.2950                           | 5.5756      |         |         | .17076                     |

### ANOVA

response

|                | Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------|----------------|-----|-------------|--------|------|
| Between Groups | 88.279         | 2   | 44.139      | 46.811 | .000 |
| Within Groups  | 798.662        | 847 | .943        |        |      |
| Total          | 886.941        | 849 |             |        |      |

## Post Hoc Tests

### Multiple Comparisons

Dependent Variable: response

|            | (I) level | (J) level | Mean Difference<br>(I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|------------|-----------|-----------|--------------------------|------------|-------|-------------------------|-------------|
|            |           |           |                          |            |       | Lower Bound             | Upper Bound |
| Tukey HSD  | O0        | O1        | .69363*                  | .10750     | .000  | .4412                   | .9460       |
|            |           | O2        | .06471                   | .10963     | .825  | -.1927                  | .3221       |
|            | O1        | O0        | -.69363*                 | .10750     | .000  | -.9460                  | -.4412      |
|            |           | O2        | -.62892*                 | .07131     | .000  | -.7963                  | -.4615      |
|            | O2        | O0        | -.06471                  | .10963     | .825  | -.3221                  | .1927       |
|            |           | O1        | .62892*                  | .07131     | .000  | .4615                   | .7963       |
| LSD        | O0        | O1        | .69363*                  | .10750     | .000  | .4826                   | .9046       |
|            |           | O2        | .06471                   | .10963     | .555  | -.1505                  | .2799       |
|            | O1        | O0        | -.69363*                 | .10750     | .000  | -.9046                  | -.4826      |
|            |           | O2        | -.62892*                 | .07131     | .000  | -.7689                  | -.4890      |
|            | O2        | O0        | -.06471                  | .10963     | .555  | -.2799                  | .1505       |
|            |           | O1        | .62892*                  | .07131     | .000  | .4890                   | .7689       |
| Bonferroni | O0        | O1        | .69363*                  | .10750     | .000  | .4358                   | .9515       |
|            |           | O2        | .06471                   | .10963     | 1.000 | -.1983                  | .3277       |
|            | O1        | O0        | -.69363*                 | .10750     | .000  | -.9515                  | -.4358      |
|            |           | O2        | -.62892*                 | .07131     | .000  | -.8000                  | -.4579      |
|            | O2        | O0        | -.06471                  | .10963     | 1.000 | -.3277                  | .1983       |
|            |           | O1        | .62892*                  | .07131     | .000  | .4579                   | .8000       |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

| response                 |       |     |                         |        |
|--------------------------|-------|-----|-------------------------|--------|
|                          | level | N   | Subset for alpha = 0.05 |        |
|                          |       |     | 1                       | 2      |
| Tukey HSD <sup>a,b</sup> | O1    | 408 | 4.1005                  |        |
|                          | O2    | 340 |                         | 4.7294 |
|                          | O0    | 102 |                         | 4.7941 |
|                          | Sig.  |     | 1.000                   | .786   |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 197.419.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**Extr ANOVA 2: Context**

**Descriptives**

response

|                    | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|--------------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                    |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1 (types 1 and 2) | 204 | 4.2451 | .96680         | .06769     | 4.1116                           | 4.3786      | 1.00    | 5.00    |                            |
| O2                 | 102 | 4.6765 | .70587         | .06989     | 4.5378                           | 4.8151      | 1.00    | 5.00    |                            |
| Total              | 306 | 4.3889 | .91027         | .05204     | 4.2865                           | 4.4913      | 1.00    | 5.00    |                            |
| Model              |     |        | .88865         | .05080     | 4.2889                           | 4.4889      |         |         |                            |
| Random Effects     |     |        |                | .22593     | 1.5182                           | 7.2596      |         |         | .08723                     |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------|----------------|-----|-------------|--------|------|
| Between Groups | 12.654         | 1   | 12.654      | 16.023 | .000 |
| Within Groups  | 240.069        | 304 | .790        |        |      |
| Total          | 252.722        | 305 |             |        |      |

**Extr ANOVA 3: No context, 9 O1 type 1 verbs tested against 3 O1 type 2 verbs**

**Descriptives**

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1 type 1      | 305 | 3.9148 | 1.32012        | .07559     | 3.7660                           | 4.0635      | 1.00    | 5.00    |                            |
| O1 type 2      | 103 | 4.6505 | .68182         | .06718     | 4.5172                           | 4.7837      | 2.00    | 5.00    |                            |
| Total          | 408 | 4.1005 | 1.23312        | .06105     | 3.9805                           | 4.2205      | 1.00    | 5.00    |                            |
| Model          |     |        | 1.19234        | .05903     | 3.9844                           | 4.2165      |         |         |                            |
| Fixed Effects  |     |        |                |            |                                  |             |         |         |                            |
| Random Effects |     |        |                | .40772     | -1.0800                          | 9.2810      |         |         | .26142                     |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------|----------------|-----|-------------|--------|------|
| Between Groups | 41.679         | 1   | 41.679      | 29.317 | .000 |
| Within Groups  | 577.201        | 406 | 1.422       |        |      |
| Total          | 618.880        | 407 |             |        |      |

**Extr ANOVA 4: No context, 3 O1 type 1 verbs tested against 3 O1 type 2 verbs**

**Descriptives**

response

|           | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum |
|-----------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|
|           |     |        |                |            | Lower Bound                      | Upper Bound |         |         |
| O1 type 1 | 102 | 4.6863 | .65974         | .06532     | 4.5567                           | 4.8159      | 1.00    | 5.00    |
| O1 type 2 | 102 | 4.6569 | .68209         | .06754     | 4.5229                           | 4.7908      | 2.00    | 5.00    |
| Total     | 204 | 4.6716 | .66952         | .04688     | 4.5791                           | 4.7640      | 1.00    | 5.00    |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F    | Sig. |
|----------------|----------------|-----|-------------|------|------|
| Between Groups | .044           | 1   | .044        | .098 | .755 |
| Within Groups  | 90.951         | 202 | .450        |      |      |
| Total          | 90.995         | 203 |             |      |      |

**Extr ANOVA 5: Context, 4 O1 type 1 verbs tested against 2 O1 type 2 verbs**

**Descriptives**

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1 type 1      | 136 | 4.3897 | .86215         | .07393     | 4.2435                           | 4.5359      | 1.00    | 5.00    |                            |
| O1 type 2      | 68  | 3.9559 | 1.09863        | .13323     | 3.6900                           | 4.2218      | 1.00    | 5.00    |                            |
| Total          | 204 | 4.2451 | .96680         | .06769     | 4.1116                           | 4.3786      | 1.00    | 5.00    |                            |
| Model          |     |        | .94715         | .06631     | 4.1143                           | 4.3759      |         |         |                            |
| Fixed Effects  |     |        |                |            |                                  |             |         |         |                            |
| Random Effects |     |        |                | .22623     | 1.3706                           | 7.1196      |         |         | .08421                     |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F     | Sig. |
|----------------|----------------|-----|-------------|-------|------|
| Between Groups | 8.532          | 1   | 8.532       | 9.511 | .002 |
| Within Groups  | 181.213        | 202 | .897        |       |      |
| Total          | 189.745        | 203 |             |       |      |

**Extr ANOVA 6: Context, O1 type 1 of *charge* tested against O1 type 2 of *charge***

**Descriptives**

response

|                | N  | Mean   | Std. Deviation | Std. Error          | 95% Confidence Interval for Mean |                     | Minimum | Maximum | Between-Component Variance |
|----------------|----|--------|----------------|---------------------|----------------------------------|---------------------|---------|---------|----------------------------|
|                |    |        |                |                     | Lower Bound                      | Upper Bound         |         |         |                            |
| O1 type 1      | 37 | 4.5676 | .86732         | .14259              | 4.2784                           | 4.8567              | 1.00    | 5.00    |                            |
| O1 type 2      | 34 | 4.5588 | .61255         | .10505              | 4.3451                           | 4.7726              | 3.00    | 5.00    |                            |
| Total          | 71 | 4.5634 | .75085         | .08911              | 4.3857                           | 4.7411              | 1.00    | 5.00    |                            |
| Model          |    |        | .75626         | .08975              | 4.3843                           | 4.7424              |         |         |                            |
| Fixed Effects  |    |        |                |                     |                                  |                     |         |         |                            |
| Random Effects |    |        |                | .08975 <sup>a</sup> | 3.4230 <sup>a</sup>              | 5.7038 <sup>a</sup> |         |         | -.01610                    |

a. Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

**ANOVA**

response

|                | Sum of Squares | df | Mean Square | F    | Sig. |
|----------------|----------------|----|-------------|------|------|
| Between Groups | .001           | 1  | .001        | .002 | .961 |
| Within Groups  | 39.463         | 69 | .572        |      |      |
| Total          | 39.465         | 70 |             |      |      |

# Heavy NP shift

HNP ANOVA 1: O0 meet and O1/O2 give

## Descriptives

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0             | 34  | 3.7059 | 1.21927        | .20910     | 3.2805                           | 4.1313      | 1.00    | 5.00    |                            |
| O1             | 68  | 2.0294 | 1.09231        | .13246     | 1.7650                           | 2.2938      | 1.00    | 5.00    |                            |
| O2             | 34  | 3.8529 | 1.25848        | .21583     | 3.4138                           | 4.2920      | 1.00    | 5.00    |                            |
| Total          | 136 | 2.9044 | 1.45490        | .12476     | 2.6577                           | 3.1511      | 1.00    | 5.00    |                            |
| Model          |     |        | 1.16743        | .10011     | 2.7064                           | 3.1024      |         |         |                            |
| Fixed Effects  |     |        |                |            |                                  |             |         |         |                            |
| Random Effects |     |        |                | .67749     | -.0106                           | 5.8194      |         |         | 1.19726                    |

## ANOVA

response

|                | Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------|----------------|-----|-------------|--------|------|
| Between Groups | 104.493        | 2   | 52.246      | 38.335 | .000 |
| Within Groups  | 181.265        | 133 | 1.363       |        |      |
| Total          | 285.757        | 135 |             |        |      |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: response

|            | (I) level | (J) level | Mean Difference<br>(I-J) | Std. Error | Sig.  | 95% Confidence Interval |             |
|------------|-----------|-----------|--------------------------|------------|-------|-------------------------|-------------|
|            |           |           |                          |            |       | Lower Bound             | Upper Bound |
| Tukey HSD  | O0        | O1        | 1.67647*                 | .24521     | .000  | 1.0953                  | 2.2577      |
|            |           | O2        | -.14706                  | .28314     | .862  | -.8182                  | .5241       |
|            | O1        | O0        | -1.67647*                | .24521     | .000  | -2.2577                 | -1.0953     |
|            |           | O2        | -1.82353*                | .24521     | .000  | -2.4047                 | -1.2423     |
|            | O2        | O0        | .14706                   | .28314     | .862  | -.5241                  | .8182       |
|            |           | O1        | 1.82353*                 | .24521     | .000  | 1.2423                  | 2.4047      |
| LSD        | O0        | O1        | 1.67647*                 | .24521     | .000  | 1.1915                  | 2.1615      |
|            |           | O2        | -.14706                  | .28314     | .604  | -.7071                  | .4130       |
|            | O1        | O0        | -1.67647*                | .24521     | .000  | -2.1615                 | -1.1915     |
|            |           | O2        | -1.82353*                | .24521     | .000  | -2.3085                 | -1.3385     |
|            | O2        | O0        | .14706                   | .28314     | .604  | -.4130                  | .7071       |
|            |           | O1        | 1.82353*                 | .24521     | .000  | 1.3385                  | 2.3085      |
| Bonferroni | O0        | O1        | 1.67647*                 | .24521     | .000  | 1.0819                  | 2.2710      |
|            |           | O2        | -.14706                  | .28314     | 1.000 | -.8336                  | .5395       |
|            | O1        | O0        | -1.67647*                | .24521     | .000  | -2.2710                 | -1.0819     |
|            |           | O2        | -1.82353*                | .24521     | .000  | -2.4181                 | -1.2290     |
|            | O2        | O0        | .14706                   | .28314     | 1.000 | -.5395                  | .8336       |
|            |           | O1        | 1.82353*                 | .24521     | .000  | 1.2290                  | 2.4181      |

\*. The mean difference is significant at the 0.05 level.

## Homogeneous Subsets

|                          |      | Response |                         |        |
|--------------------------|------|----------|-------------------------|--------|
|                          |      | N        | Subset for alpha = 0.05 |        |
| level                    | 1    |          | 2                       |        |
| Tukey HSD <sup>a,b</sup> | O1   | 68       | 2.0294                  |        |
|                          | O0   | 34       |                         | 3.7059 |
|                          | O2   | 34       |                         | 3.8529 |
|                          | Sig. |          | 1.000                   | .837   |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 40.800.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

**HNP ANOVA 2: O0/O1/O2 bill verb**

**Descriptives**

response

|                | N    | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|------|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |      |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0             | 102  | 2.8137 | 1.22459        | .12125     | 2.5732                           | 3.0543      | 1.00    | 5.00    |                            |
| O1             | 646  | 2.0666 | 1.09413        | .04305     | 1.9820                           | 2.1511      | 1.00    | 5.00    |                            |
| O2             | 340  | 3.1735 | 1.30888        | .07098     | 3.0339                           | 3.3132      | 1.00    | 5.00    |                            |
| Total          | 1088 | 2.4825 | 1.28313        | .03890     | 2.4062                           | 2.5589      | 1.00    | 5.00    |                            |
| Model          |      |        |                |            |                                  |             |         |         |                            |
| Fixed Effects  |      |        | 1.17750        | .03570     | 2.4125                           | 2.5526      |         |         |                            |
| Random Effects |      |        |                | .47073     | .4572                            | 4.5079      |         |         | .47999                     |

**ANOVA**

response

|                | Sum of Squares | df   | Mean Square | F       | Sig. |
|----------------|----------------|------|-------------|---------|------|
| Between Groups | 285.308        | 2    | 142.654     | 102.887 | .000 |
| Within Groups  | 1504.360       | 1085 | 1.387       |         |      |
| Total          | 1789.668       | 1087 |             |         |      |

**Post Hoc Tests**

**Multiple Comparisons**

Dependent Variable: response

|            | (I) level | (J) level | Mean Difference<br>(I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|------------|-----------|-----------|--------------------------|------------|------|-------------------------|-------------|
|            |           |           |                          |            |      | Lower Bound             | Upper Bound |
| Tukey HSD  | O0        | O1        | .74716 <sup>*</sup>      | .12546     | .000 | .4527                   | 1.0416      |
|            |           | O2        | -.35980 <sup>*</sup>     | .13293     | .019 | -.6718                  | -.0478      |
|            | O1        | O0        | -.74716 <sup>*</sup>     | .12546     | .000 | -1.0416                 | -.4527      |
|            |           | O2        | -1.10697 <sup>*</sup>    | .07889     | .000 | -1.2921                 | -.9218      |
|            | O2        | O0        | .35980 <sup>*</sup>      | .13293     | .019 | .0478                   | .6718       |
|            |           | O1        | 1.10697 <sup>*</sup>     | .07889     | .000 | .9218                   | 1.2921      |
| LSD        | O0        | O1        | .74716 <sup>*</sup>      | .12546     | .000 | .5010                   | .9933       |
|            |           | O2        | -.35980 <sup>*</sup>     | .13293     | .007 | -.6206                  | -.0990      |
|            | O1        | O0        | -.74716 <sup>*</sup>     | .12546     | .000 | -.9933                  | -.5010      |
|            |           | O2        | -1.10697 <sup>*</sup>    | .07889     | .000 | -1.2618                 | -.9522      |
|            | O2        | O0        | .35980 <sup>*</sup>      | .13293     | .007 | .0990                   | .6206       |
|            |           | O1        | 1.10697 <sup>*</sup>     | .07889     | .000 | .9522                   | 1.2618      |
| Bonferroni | O0        | O1        | .74716 <sup>*</sup>      | .12546     | .000 | .4464                   | 1.0480      |
|            |           | O2        | -.35980 <sup>*</sup>     | .13293     | .021 | -.6785                  | -.0411      |
|            | O1        | O0        | -.74716 <sup>*</sup>     | .12546     | .000 | -1.0480                 | -.4464      |
|            |           | O2        | -1.10697 <sup>*</sup>    | .07889     | .000 | -1.2961                 | -.9178      |
|            | O2        | O0        | .35980 <sup>*</sup>      | .13293     | .021 | .0411                   | .6785       |
|            |           | O1        | 1.10697 <sup>*</sup>     | .07889     | .000 | .9178                   | 1.2961      |

\*. The mean difference is significant at the 0.05 level.

# Homogeneous Subsets

| response                 |       |     |                         |        |        |
|--------------------------|-------|-----|-------------------------|--------|--------|
|                          | level | N   | Subset for alpha = 0.05 |        |        |
|                          |       |     | 1                       | 2      | 3      |
| Tukey HSD <sup>a,b</sup> | O1    | 646 | 2.0666                  |        |        |
|                          | O0    | 102 |                         | 2.8137 |        |
|                          | O2    | 340 |                         |        | 3.1735 |
|                          | Sig.  |     | 1.000                   | 1.000  | 1.000  |

Means for groups in homogeneous subsets are displayed.

a. Uses Harmonic Mean Sample Size = 209.892.

b. The group sizes are unequal. The harmonic mean of the group sizes is used.

Type I error levels are not guaranteed.

**HNP ANOVA 3: O1 type 1/type 2 bill verbs**

**Descriptives**

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1 type 1      | 306 | 1.8235 | .90982         | .05201     | 1.7212                           | 1.9259      | 1.00    | 5.00    |                            |
| O1 type 2      | 306 | 2.2876 | 1.20476        | .06887     | 2.1521                           | 2.4231      | 1.00    | 5.00    |                            |
| Total          | 612 | 2.0556 | 1.09164        | .04413     | 1.9689                           | 2.1422      | 1.00    | 5.00    |                            |
| Model          |     |        | 1.06753        | .04315     | 1.9708                           | 2.1403      |         |         |                            |
| Fixed Effects  |     |        |                |            |                                  |             |         |         |                            |
| Random Effects |     |        |                | .23203     | -.8926                           | 5.0037      |         |         | .10395                     |

**ANOVA**

response

|                | Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------|----------------|-----|-------------|--------|------|
| Between Groups | 32.948         | 1   | 32.948      | 28.911 | .000 |
| Within Groups  | 695.163        | 610 | 1.140       |        |      |
| Total          | 728.111        | 611 |             |        |      |

**ANOVA 4: O1 type 1/type 2 give**

**Descriptives**

response

|                | N  | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |    |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O1 type 1      | 34 | 1.8824 | 1.12181        | .19239     | 1.4909                           | 2.2738      | 1.00    | 5.00    |                            |
| O1 type 2      | 34 | 2.1765 | 1.05803        | .18145     | 1.8073                           | 2.5456      | 1.00    | 5.00    |                            |
| Total          | 68 | 2.0294 | 1.09231        | .13246     | 1.7650                           | 2.2938      | 1.00    | 5.00    |                            |
| Model          |    |        | 1.09039        | .13223     | 1.7654                           | 2.2934      |         |         |                            |
| Fixed Effects  |    |        |                |            |                                  |             |         |         |                            |
| Random Effects |    |        |                | .14706     | .1609                            | 3.8980      |         |         | .00828                     |

**ANOVA**

response

|                | Sum of Squares | df | Mean Square | F     | Sig. |
|----------------|----------------|----|-------------|-------|------|
| Between Groups | 1.471          | 1  | 1.471       | 1.237 | .270 |
| Within Groups  | 78.471         | 66 | 1.189       |       |      |
| Total          | 79.941         | 67 |             |       |      |

## Provision of extracted object

### PEO ANOVA 1: O0/O1/O2 *bill* verbs

#### Descriptives

response

|                | N   | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|-----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |     |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0             | 136 | 2.4338 | 1.60417        | .13756     | 2.1618                           | 2.7059      | 1.00    | 5.00    |                            |
| O1             | 340 | 1.6647 | .88544         | .04802     | 1.5703                           | 1.7592      | 1.00    | 5.00    |                            |
| O2             | 340 | 3.3618 | 1.32650        | .07194     | 3.2203                           | 3.5033      | 1.00    | 5.00    |                            |
| Total          | 816 | 2.5000 | 1.44426        | .05056     | 2.4008                           | 2.5992      | 1.00    | 5.00    |                            |
| Model          |     |        | 1.21981        | .04270     | 2.4162                           | 2.5838      |         |         |                            |
| Random Effects |     |        |                | .60013     | -.0822                           | 5.0822      |         |         | .95557                     |

#### ANOVA

response

|                | Sum of Squares | df  | Mean Square | F       | Sig. |
|----------------|----------------|-----|-------------|---------|------|
| Between Groups | 490.316        | 2   | 245.158     | 164.765 | .000 |
| Within Groups  | 1209.684       | 813 | 1.488       |         |      |
| Total          | 1700.000       | 815 |             |         |      |

## Post Hoc Tests

### Multiple Comparisons

Dependent Variable: response

|            | (I) level | (J) level | Mean Difference<br>(I-J) | Std. Error | Sig. | 95% Confidence Interval |             |
|------------|-----------|-----------|--------------------------|------------|------|-------------------------|-------------|
|            |           |           |                          |            |      | Lower Bound             | Upper Bound |
| Tukey HSD  | O0        | O1        | .76912 <sup>*</sup>      | .12376     | .000 | .4785                   | 1.0597      |
|            |           | O2        | -.92794 <sup>*</sup>     | .12376     | .000 | -1.2185                 | -.6373      |
|            | O1        | O0        | -.76912 <sup>*</sup>     | .12376     | .000 | -1.0597                 | -.4785      |
|            |           | O2        | -1.69706 <sup>*</sup>    | .09355     | .000 | -1.9167                 | -1.4774     |
|            | O2        | O0        | .92794 <sup>*</sup>      | .12376     | .000 | .6373                   | 1.2185      |
|            |           | O1        | 1.69706 <sup>*</sup>     | .09355     | .000 | 1.4774                  | 1.9167      |
| LSD        | O0        | O1        | .76912 <sup>*</sup>      | .12376     | .000 | .5262                   | 1.0120      |
|            |           | O2        | -.92794 <sup>*</sup>     | .12376     | .000 | -1.1709                 | -.6850      |
|            | O1        | O0        | -.76912 <sup>*</sup>     | .12376     | .000 | -1.0120                 | -.5262      |
|            |           | O2        | -1.69706 <sup>*</sup>    | .09355     | .000 | -1.8807                 | -1.5134     |
|            | O2        | O0        | .92794 <sup>*</sup>      | .12376     | .000 | .6850                   | 1.1709      |
|            |           | O1        | 1.69706 <sup>*</sup>     | .09355     | .000 | 1.5134                  | 1.8807      |
| Bonferroni | O0        | O1        | .76912 <sup>*</sup>      | .12376     | .000 | .4722                   | 1.0660      |
|            |           | O2        | -.92794 <sup>*</sup>     | .12376     | .000 | -1.2248                 | -.6310      |
|            | O1        | O0        | -.76912 <sup>*</sup>     | .12376     | .000 | -1.0660                 | -.4722      |
|            |           | O2        | -1.69706 <sup>*</sup>    | .09355     | .000 | -1.9215                 | -1.4726     |
|            | O2        | O0        | .92794 <sup>*</sup>      | .12376     | .000 | .6310                   | 1.2248      |
|            |           | O1        | 1.69706 <sup>*</sup>     | .09355     | .000 | 1.4726                  | 1.9215      |

\*. The mean difference is significant at the 0.05 level.

# Homogeneous Subsets

| response                 |       |     |                         |        |        |
|--------------------------|-------|-----|-------------------------|--------|--------|
|                          | level | N   | Subset for alpha = 0.05 |        |        |
|                          |       |     | 1                       | 2      | 3      |
| Tukey HSD <sup>a,b</sup> | 1     | 340 | 1.6647                  |        |        |
|                          | 0     | 136 |                         | 2.4338 |        |
|                          | 2     | 340 |                         |        | 3.3618 |
|                          | Sig.  |     | 1.000                   | 1.000  | 1.000  |

Means for groups in homogeneous subsets are displayed.

- a. Uses Harmonic Mean Sample Size = 226.667.
  - b. The group sizes are unequal. The harmonic mean of the group sizes is used.
- Type I error levels are not guaranteed.

**PEO 2: ANOVA 2: THEME/GOAL of charge**

**Descriptives**

response

|                | N  | Mean   | Std. Deviation | Std. Error | 95% Confidence Interval for Mean |             | Minimum | Maximum | Between-Component Variance |
|----------------|----|--------|----------------|------------|----------------------------------|-------------|---------|---------|----------------------------|
|                |    |        |                |            | Lower Bound                      | Upper Bound |         |         |                            |
| O0 as goal     | 34 | 1.3235 | .58881         | .10098     | 1.1181                           | 1.5290      | 1.00    | 3.00    |                            |
| O0 as theme    | 34 | 2.4118 | 1.23381        | .21160     | 1.9813                           | 2.8423      | 1.00    | 5.00    |                            |
| Total          | 68 | 1.8676 | 1.10500        | .13400     | 1.6002                           | 2.1351      | 1.00    | 5.00    |                            |
| Model          |    |        |                |            |                                  |             |         |         |                            |
| Fixed Effects  |    |        | .96669         | .11723     | 1.6336                           | 2.1017      |         |         |                            |
| Random Effects |    |        |                | .54412     | -5.0460                          | 8.7813      |         |         | .56464                     |

**ANOVA**

response

|                | Sum of Squares | df | Mean Square | F      | Sig. |
|----------------|----------------|----|-------------|--------|------|
| Between Groups | 20.132         | 1  | 20.132      | 21.544 | .000 |
| Within Groups  | 61.676         | 66 | .934        |        |      |
| Total          | 81.809         | 67 |             |        |      |

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