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Abstract: In this paper, we report an experiment on the naming of household containers in Dutch and Icelandic carried out as part of the Evolution of Semantic Systems project (EoSS; Majid et al., 2011). This naming experiment allows us to support and elaborate on a hypothesis by Malt et al. (2003) that productive morphology in the naming domain can have an influence on boundary placement within the extensional space. Specifically, we demonstrate that the Dutch diminutive -(t)je favours a cut between small items versus others, whereas Icelandic, which does not use the diminutive in this domain, favours a cut between large items and others. This is not a typological effect, as Dutch and Icelandic are both Germanic languages and both have diminutive morphology available in principle. We find no evidence that the diminutive produces a proliferation of terms and/or fine-grained nesting within the extensional domain. Rather, the Dutch diminutive favours a more even distribution of terms across the space whereas Icelandic favours broad inclusive terms with a number of narrower specialist terms. Further, the extensional space defined by the diminutive is not associated with its own clear prototypical exemplar. Using evidence from compounding and modification, we also consider which semantic features are prominent in differentiating categories within the domain. By far the most prominent in both languages is the inferred contents of the container. Other than contents, however, the languages differ in the range and prominence of features such as intended usage or material of composition. Our results demonstrate that in order to understand the processes that produce semantic divisions of basic object classes, we should consider fine-grained analyses of closely related languages alongside analyses of typologically different languages.

The Semantics and Morphology of Household Container Names in Icelandic and Dutch

Abstract

In this paper, we report an experiment on the naming of household containers in Dutch and Icelandic carried out as part of the Evolution of Semantic Systems project (EoSS; Majid et al., 2011). This naming experiment allows us to support and elaborate on a hypothesis by Malt et al. (2003) that productive morphology in the naming domain can have an influence on boundary placement within the extensional space. Specifically, we demonstrate that the Dutch diminutive *-(t)je* favours a cut between small items versus others, whereas Icelandic, which does not use the diminutive in this domain, favours a cut between large items and others. This is not a typological effect, as Dutch and Icelandic are both Germanic languages and both have diminutive morphology available in principle. We find no evidence that the diminutive produces a proliferation of terms and/or fine-grained nesting within the extensional domain. Rather, the Dutch diminutive favours a more even distribution of terms across the space whereas Icelandic favours broad inclusive terms with a number of narrower specialist terms. Further, the extensional space defined by the diminutive is not associated with its own clear prototypical exemplar. Using evidence from compounding and modification, we also consider which semantic features are prominent in differentiating categories within the domain. By far the most prominent in both languages is the inferred contents of the container. Other than contents, however, the languages differ in the range and prominence of features such as intended usage or material of composition. Our results demonstrate that in order to understand the processes that produce semantic divisions of basic object classes, we should consider fine-grained analyses of closely related languages alongside analyses of typologically different languages.

Keywords

Naming strategies; object classification; extensions; intensions; compounding; diminutives

1. Introduction

“Many a slip twixt cup and lip” runs the proverb, and the act of drinking from a container suitable for the purpose seems so natural that we rarely question how we know what a cup is. The question seems

especially strange when considering historically and culturally related languages: surely English *cup*, Dutch *kopje* and Icelandic *bolli* mean essentially the same thing? The question of how naming practices relate to concepts on the one hand and the natural organisation of the world on the other is an enduring topic of controversy and debate in a number of fields, including philosophy, psychology, linguistics and anthropology. It has been claimed that in some cases the world is structured in such a way as to cry out to our senses to be named (Berlin, 1992; Hunn, 1977; cited by Malt et al., 2003). Objects, particularly those with boundaries and functions readily discernible from other aspects of our surroundings, could be thought of as exemplifying such external structural categories. Others have claimed that this apparent structure is in fact made by our own senses, and that our minds are innately endowed with instinctive frames of reference that organise the input of our senses in characteristic ways (Fodor, 1975). As Chomsky puts it: "But no one can seriously doubt that for all organisms, what counts as experience is richly determined by internal factors, which construct an organism-specific *Umwelt*" (Chomsky, 2003, p. 301). Others have repudiated the idea that either the world or our minds provide any inherent structure at all. Rather it is the systematic pattern of our own language, its vocabulary and grammatical organisation, which imposes a structure upon our perceptions where no such structure exists (Sapir, 1929, 1912; Whorf, 1956). Or again, it may be that language only has the influence it does because it is culturally-transmitted, and it is really cultural practices in all their forms that are decisive in categorisation: as Malt and Majid (2013, p. 590) put it, "could perception and cognition be culture-dependent all the way down"?

In this paper, we follow up on a series of psycholinguistic experiments concerning the naming of household containers as a class within the domain of objects, and we report our own experiment on the naming of household containers in Dutch and Icelandic carried out as part of the Evolution of Semantic Systems project (EoSS; Majid et al., 2011). We argue in favour of a hypothesis by Malt and her colleagues (Malt et al., 2003, p. 35; Malt and Majid, 2013, p. 588) that the morphology of a language can have an influence on the placement of extensional boundaries within a lexical domain. Specifically, we argue that the diminutive suffix *-(t)je* in Dutch encourages a separation of small from other objects in the lexicalisation of the container domain. This is not observed in Icelandic, where the break is more typically between small and medium objects on the one hand and large ones on the other. This is a significant extension and refinement of Malt et al.'s observation, as our analysis is based on two typologically closely related languages and involves a detailed analysis of a morphological process that Malt and her colleagues do not consider: diminutive formation. We also consider evidence from

compounding and modification in the two languages to identify other features of meaning that are used for object differentiation in container naming and consider in a preliminary fashion the degree to which these represent variable cultural constructions.

We address the following questions in this paper. Can differences in morphological strategy influence the way that an extensional domain is carved up? If so, do the differences relate to broad typologically-based differences or narrower differences in the productivity of particular morphemes? We then consider what *kinds* of differences are produced. For instance, are there differences in extensional boundary placement, and/or proliferation of terms within the domain? If our results suggest that a morpheme does influence boundary placement in the extensional domain, can we also see the morpheme attracting a strong prototypical exemplar within that extensional space, as revealed in high inter-speaker agreement in naming? Finally, what features of meaning are important for differentiation within the domain, and to what extent are they variable?

To provide context for these questions we review the background literature on container naming (section 2.1) and our assumptions concerning diminutive formation and compounding (2.2). In section 3, we describe the data collection and coding methodology used by the EoSS project data and results that we report here, as well as some of the methodological issues that emerged with respect to our data. In section 4, we present our findings and in section 5 our conclusions.

2. Background

2.1 Literature on containers

2.1.1 General background

Naming practices can vary considerably between languages, even in the naming of familiar physical objects such as household containers. Kronenfeld et al. (1985) investigated the naming of 11 drinking vessels (such as cups, mugs and glasses) by Japanese, American English, and Israeli Hebrew speakers. They found that the extensional range of names in the languages varied considerably, guided by different prototypical exemplars and salient attributes. Hebrew speakers distinguished between two broad categories, separating tea and coffee cups from other kinds of drinking vessels. English speakers also made a two-way distinction but separated glass drinking vessels off from the others (e.g. cups). Japanese speakers made a three-way distinction, using a special category for wine glasses. Malt et al. (2003) found similar cross-linguistic diversity and no “compelling structure... in the world” (p. 21) in

their study of the naming of household containers such as bottles, jars and cans by speakers of (Argentinian) Spanish, (American) English and (Mandarin) Chinese. Ameel et al. (2005) replicate the findings of Malt and her colleagues for Belgian speakers of Dutch and French, showing not only that monolingual speakers have distinct naming practices, despite their largely shared cultural environment, but also that Dutch-French bilinguals develop their own partially merged classification system distinct from the systems of monolinguals.

Collectively, these findings might be seen as providing support for a strong version of the linguistic relativity hypothesis (cf. Boroditsky, 2006; Lucy, 1992), i.e. that arbitrary linguistic categories condition thought and conceptualisation. Malt et al. (1999) challenged this position in their study of Spanish, English and Chinese naming practices. Here they also collected non-linguistic similarity judgements, where participants sorted the picture stimuli into piles on the basis of (a) overall similarity (no conditioning context), (b) physical similarity only, and (c) functional similarity only. Although they found that naming practices diverged between the three languages, the non-linguistic similarity judgements were extremely similar (p. 245): there was only a negligible difference in overall similarity, and only small differences in physical and functional similarity (though still significantly higher in similarity than for naming conventions).

Even in their 2003 study, where they establish clear differences in naming practices, Malt et al. (2003) argue strongly against a radical cross-cutting of categories which would imply that there is “a large degree of independence of linguistic categories from any shared understanding of the domain... [implying] either that sufficient perceived structure in the world does not exist to compel shared naming patterns, or that such structure exists (and may underlie non-linguistic groupings) but the processes that produce linguistic diversity overwhelm the influence of such structure in naming patterns” (p. 22). Rather, they argue that there are sufficient signs of extensional correspondence and nesting in their naming data that a mixed approach is necessary, i.e. that their naming data reflect the interplay of individual conceptualisations, cultural and linguistic naming practices, and structure within the domain itself.

In their discussion of linguistic factors (p. 35), they take a position that we argue in favour of here, namely that productive morphemes in a naming domain can influence the assignment of extensional boundaries. They give the example of the productive Spanish instrumental suffixes *-ero/-era/-or* which describe objects used for performing a particular action, e.g. *mamadera* naming an object for sucking on. They suggest that the availability of these morphemes for container naming might

explain the proliferation of names within their Spanish data, as opposed to the English and Chinese data. We establish that this effect is not a broad typological one but rather related to the specific morphology which is productive in a particular naming domain. We compare Icelandic and Dutch, two closely related languages, which differ in their use of diminutive morphology and show that the Dutch diminutive suffix *-(t)je* has a significant effect on the placement of extensional boundaries. However, unlike Malt and her colleagues, we see no evidence for proliferation in naming.

Another influential tradition in the analysis of categories established by naming is prototype theory (Rosch, 1973, 1975). Labov (1973) used container naming in a set of experimental approaches to the study of words and meanings. In these experiments, American English speakers were asked to name outline drawings of cups, bowls and vases that varied along certain dimensions; various imagined features of the contexts were altered as well, such as the materials the objects were made of and their potential contents. Results demonstrated that speakers named these items variably but with consistent patterns that were evoked by different imagined settings or features. For example, imagining ‘coffee’ as a context led speakers to name an item as ‘mug’ more so than in a neutral context; imagining ‘flowers’ for the same item led to speakers using the name ‘vase’ (Labov, 1973, p. 51). Extending this, Rosch’s approach led to her formulation of prototype theory, where a prototype is a central member of a category and other members are more-or-less like their prototype. These theoretical perspectives are useful for the interpretation of patterns of inter-speaker agreement in our data as well as the analysis of semantic features in compounding in sections 4.3 and 4.4.

2.1.2 *Dutch containers*

The stimulus materials used in these investigations and as part of the EoSS project are the “dishes set” described in Ameel et al. (2005, p. 64). In that work, Ameel and her colleagues compare the naming practices of three linguistic groups in Belgium: Dutch monolinguals, French monolinguals and Dutch-French compound bilinguals, i.e. those who were exposed systematically from birth to two languages and so grew up with two native languages (Ameel et al., 2005, p. 78). In addition to the dishes set of stimuli, they also used a “bottles set” similar to that reported on in Malt et al. (1999). Their aim was to test hypotheses concerning the naming practices of bilinguals (Ameel et al., 2005, p. 62): broadly, do bilinguals command two separate linguistic systems for naming which are essentially the same as for monolinguals (the two-pattern hypothesis) or do bilinguals have a single linguistic system for naming which accommodates the categories of the two languages (the one-pattern hypothesis)? Their

experimental design allowed them to test the findings of Malt and colleagues that divergent naming practices do not necessarily imply divergent non-linguistic similarity judgements, and to do so in a context where culture is largely shared, so that differences in naming practices must be a result of divergent linguistic conventions reflecting the distinct histories of the languages.

Using the dishes and bottles stimuli, they collected naming data and non-linguistic similarity judgements. Their analysis confirms that the monolingual naming practices of Belgian French speakers are markedly divergent from the naming practices of Belgian Dutch speakers, whereas their non-linguistic similarity judgements are extremely similar (Ameel et al., 2005, p. 70), thus replicating the findings of Malt et al. (1999). Their analysis disproves the two-pattern hypothesis: the naming practices of Dutch-French bilinguals differ from the naming practices of monolingual Dutch and French speakers from the same cultural environment. However, their analysis also disproves a strong version of the one-pattern hypothesis, which claims that bilinguals have a single set of naming conventions and the two languages simply provide different labels for those naming categories. Rather, the bilinguals showed slightly different naming practices in their two languages. Ameel and her colleagues therefore argue in favour of a weak version of the one-pattern hypothesis, in which bilinguals accommodate towards a single system, with each language pulled slightly towards the naming patterns of monolingual speakers: “The moderate hypothesis allows the portions of stimulus space associated with a word in one language and its translation equivalent in the other language to be more shared than they are in monolinguals, but not perfectly identical” (Ameel et al., 2005, p. 77).

2.1.3 *Icelandic containers*

Little research has been conducted on container names in Icelandic, though the Department of Lexicography at the Árni Magnússon Institute for Icelandic Studies does have lists of container names and associated information (including etymology and translation information in some cases). Only one major study has been conducted on the semantics of Icelandic container terms: Höskuldur Þráinsson’s (1979) replication for Icelandic of Labov’s (1973) study. Þráinsson took the 19 line drawings of containers used by Labov and supplemented them with 9 additional drawings, created by removing the handle from a subset of the original drawings, giving a total of 28 drawings.

There were 68 participants in the study (Þráinsson 1979, p. 99). Some participants were presented the stimuli individually and asked to name the container orally; their responses were recorded

and then transcribed. Others were presented with the stimuli in small groups and asked to write the corresponding term on a handout provided. Participants were also divided into subgroups according to contextual biasing: 31 participants were simply told that they would see a kitchen container (Ic. *eldhúsilát*); 16 participants were asked to imagine that they had arrived for a visit and their host was pouring coffee into the container; 10 participants were asked to imagine that they walked into the kitchen and saw the relevant container on the table, full of mashed potatoes; finally, 11 participants were asked to imagine that they saw the container on a shelf or table with flowers in it.

In the summary of main responses from the 31 neutral-context participants (Þráinsson 1979, p. 101, his Table 2), 6 terms occur as the most often given response: *bolli* (a cup), *kanna* (a tall drink container such as a mug, tankard or jug), *staup* (a shot glass), *skál* (a bowl), *glas* (a drinking glass) and *dolla* (a pot). Of these, only *bolli*, *staup*, *skál*, and *glas* are given as majority responses to at least one drawing and only *bolli* is ever given as the sole response to a drawing (in fact, twice). The word *bolli* has a strong prototypical core (Þráinsson 1979, p. 106): a height:width ratio of 1:1.6, tapering convex sides and handle. Deviations from this core triggered modification (e.g. *lágur víður bolli* 'low wide cup') and compounding (e.g. *tebolli* 'teacup').

With respect to contextual biasing, Þráinsson (1979, p. 104) discovered that in some cases container contents had a strong effect on classification but in others almost no effect at all: essentially prototypical items resisted biasing where intermediate items were strongly affected. For instance, items which resemble cups without handles (#20-22) were only named as *bolli* in a very few cases in the neutral group. However, *bolli* was the majority response in the group asked to image the container with coffee in. On the other hand, the stereotypical *bolli* (#1) was called *bolli* by all participants in all groups, regardless of coffee, mashed potato or flower contents.

This study therefore demonstrates standard prototypicality effects with exemplar items receiving high inter-speaker agreement in naming. The form of the container appears to have a decisive effect on receiving the name *bolli* but in doubtful cases the contents of the container has a significant effect also. In section 4.3, our naming data shows the same prototypical focus for *bolli* as in Þráinsson's study and in section 4.4., our analysis of compounding patterns confirms container contents as the most salient additional classificatory factor in both languages. However, other factors appear in our data than are reported in the Þráinsson study and our languages differ in the prominence of those additional factors.

2.2 Word formation, Dutch and Icelandic

In this article, we consider evidence relating to two word formation processes with respect to categorisation in the container domain in Dutch and Icelandic. Our primary claim concerns the influence of diminutive morphology in Dutch on the extensional boundaries in the container domain in contrast to Icelandic, where diminutive morphology is not used¹. We follow Jurafsky² (1996) in understanding the diminutive broadly to be "any morphological device which means at least 'small'" (534). Crosslinguistically the diminutive can be realised by a range of morphological devices and expresses a radial category with a number of characteristic sense extensions. However, in this paper, we refer by the term *diminutive* primarily to the morpheme *-(t)je* in Dutch, the sole diminutive morpheme to occur in container names in our data. It is primarily used with the core sense of relative smallness or "smallness in kind" as Shetter (1959, p. 79) puts it in his analysis of the Dutch diminutive, though in our discussion of prototypicality we see possible evidence of its attitudinal use (Shetter and Ham, 2007).

It is not surprising that the diminutive *-(t)je* emerges so prominently in our data given that Dutch has been noted for its "fondness for the diminutive" (Brachin, 1985, p. 63). The Standard Dutch diminutive nominal suffix comes in a small number of phonological allomorphs of *-tje* (Shetter, 1959; van der Hulst, 2008; Booij and van Santen, 1998), and all nouns as well as some adjectives, verbs, and adverbs are liable to be used in a diminutive form (Cohen, 1958; Shetter, 1959). Semantically, diminutives do not necessarily express small size, although that is their basic function (Jurafsky, 1996). In some cases they introduce an individuating sense which shifts the denotation of the word e.g. *brood* 'bread' > *broodje* 'bread roll', *scheermes* 'razor' > *scheemertje* 'razor blade' (Shetter and Ham, 2007; Shetter, 1959). Of particular relevance here, diminutives may act to itemize mass nouns, particularly food and drink, e.g. *bier* 'beer' > *een bier(tje)* 'a glass of beer', *drop* 'licorice' > *een drop(je)* 'a piece of licorice' (Donaldson, 2003; Shetter, 1959). Further, diminutives may be used to convey endearment, to soften, or express something modestly, but may also be used to convey contempt or disrespect (Brachin, 1985), i.e. evaluative attitudes of the speaker to the item named or a personal response to it (Shetter and Ham, 2007).

¹ However, see section 4.4 for our discussion of compounded adjectives expressing small size such as *ör-* 'tiny'.

² We thank a reviewer of this paper for directing us to this useful reference.

Diminutives do exist in Icelandic, though there is very little scholarly literature concerning them. Guðrún Kvaran (2005, p. 138) observes that the suffix *-lingur* is used to derive diminutives, e.g. *grís* 'pig' + *lingur* 'DIM' gives *gríslingur* 'piglet' and *strák* 'boy' + *lingur* 'DIM' gives *stráklíngur* '(young) lad'. This suffix has been used to support the drive for pure lexical stock, for example in naming new technologies: *disk* 'disc' + *lingur* 'DIM' gives *disklíngur* 'diskette'. Jóhannesson (1927) describes this suffix as very productive at that time but Kvaran observes that though it is still available it is no longer as productive. Another diminutive that occurs in child language is *tásla* (sometimes *tása*) 'toesie' which is a diminutive of *tá* 'toe'. In contemporary Icelandic, neither diminutive is particularly productive and no diminutives at all were used as container names in the Icelandic data reported here.

We also include a discussion of compounding patterns in the Icelandic and Dutch data. By compound we refer to the combination of two or more nouns into a single nominal constituent (e.g. English *coffee cup*, Icelandic *kaffibolli*, Dutch *koffiekopje*). Both Icelandic and Dutch form right-headed compounds, so that *kaffibolli* is a kind of *bolli* and shares the distributional and inflectional properties of *bolli*; similarly for *koffiekopje* and *kopje*. Whether or not the compound is written as one or two words is not relevant to it being treated as a compound in our analysis. We also include adjectival compounds in Icelandic where the adjective is compounded in its root form rather than taking the agreement morphology required for attributive uses (e.g. *djúpdiskur* vs *djúpur diskur*). Some of these may be seen as taking a diminutive semantics (e.g. *ör-* 'tiny') and we discuss this in section 4.4.

Icelandic has a highly productive system of compounding, which was clearly reflected in our data, as compounding is the primary strategy used by Icelandic participants to elaborate their container descriptions. This is in part driven by the strong purist tradition which supports a preference for native-stock alternatives to foreign word loans. New terminology is often created by compounding rather than borrowing. A typical example is *umhverfis+mála+ráðu+neyti* (lit. environment+matters+control+group) 'ministry of the environment'. Guðrún Kvaran (2005, p. 151) reports that in a survey of a corpus of 610,500 words, 85% involved compounding (Jónsson, 1988, p. 5). Vikør (2001, p. 216) comments that "[t]here is little doubt that the Icelandic *nýyrðastefna* ('new-word-ism') has a solid majority of the population behind it". It is certainly a robust word-formation strategy in our data.

Dutch shares with Icelandic and other Germanic languages the capacity for arbitrarily long compounds, leading to an extensive vocabulary and the largest dictionary in the world (the *Woordenboek der Nederlandsche Taal*). The most frequent kind of Dutch compound is when multiple

nouns are joined together, with the last noun as the head element (Shetter and Ham, 2007). Nouns can also be compounded with verb stems, adjectives, adverbs, and prepositions, and non-noun compounds can be formed as well. Compounding was also a prominent feature of the Dutch EoSS data but, as we will see, was considerably less elaborate than in Icelandic.

3. Evolution of Semantic Systems Project and Methodology

The data reported in this paper was originally collected as one part of the EoSS project (Majid et al., 2011), using a standardised elicitation task.

3.1 The elicitation task

In the EoSS container naming task, participants were asked by the native-speaker experimenter to name 67 different household containers: these stimuli were the "dishes set" from Ameel et al. (2005), available from the lead author's website³ and used with permission as part of the EoSS project. Pictures were presented in a colour booklet where each container had been photographed from a constant distance to preserve size information, and a ruler was included in the photograph for reference. Participants were instructed that they would be shown a series of common household containers and asked to give a simple description: the first name that came to mind. The prompt question "What do you call this?" was used occasionally throughout the session. Each session was audio recorded and later transcribed by the experimenter.

3.2 Participants

The EoSS protocol required a minimum of 20 participants. The Netherlands Dutch native-speaker participants (n=21, 16 women) were currently all students at the Radboud University, Nijmegen, and aged between the ages of 19-27 years (mean = 21.5). The Icelandic native-speaker participants (n=21, 10 women) were aged 19-57 years (mean = 29). 14 were either currently university students or had completed higher education, though 4 had completed only compulsory primary schooling.⁴

³ <http://fac.ppw.kuleuven.be/lep/concat/eef/index.php?stimuli>

⁴ As the reviewers pointed out, this mixed education background may be potentially problematic for comparing naming practices. The conclusions of this paper are based primarily on dominant responses to the stimuli to minimise the effect of this factor. High proficiency in English is common in both Iceland and The Netherlands, especially amongst the university educated; our participants were not unusual in this respect. Given Ameel et al.'s (2005) study of bilingual naming

3.3 Data coding

The complete response given by each participant to each stimulus was transcribed into a standardised spreadsheet as the **full response**. That full response was then associated with the transparent morphological and semantic head of the noun used to name the stimulus as the **main response**. For instance, if a participant responded “it’s a black coffee cup” (full response), then *cup* was coded as the main response because *cup* is the morphological head of the compound *coffee cup* and the semantic relation between the compound and the morphological head is transparent: a coffee cup is a kind of cup (hyponym relation). Where a participant gave more than one possible response, each noun was coded as a main response. For instance, the full response “it’s a cup, a mug”, would be coded for two main responses *cup* and *mug*.

In some cases, the choice of a coded main response was problematic, usually because the relationship between the nominal in the full response and the morphological head noun was not (entirely) semantically transparent. For instance, the compound noun *ashtray* is made up morphologically of two nouns *ash+tray*. However, most speakers do not accept that an ashtray is a kind of tray and ashtrays can take a form which is quite different from the form of trays. In this case, the whole nominal term “ashtray” is coded as the main response. In Icelandic, examples of this are: *kertastjaki* (lit. candle+stake) ‘candlestick’, *sykurkar* (lit. sugar+tub) ‘sugar bowl’, *undirskál* (lit. under+bowl) ‘saucer’ and *öskubakki* (lit. ash+tray) ‘ashtray’. In Dutch, examples are: *asbak* ‘ashtray’, *dienblad* ‘tray’, *eierdopje* and *eierdop* ‘eggcup’.

In some cases, the transparency issue is not quite so straightforward. In Icelandic, the term *kertastandur* (lit. candle+stand) ‘candle stand’ is coded as *standur* because the compound is semantically transparent, i.e. a *kertastandur* is a kind of *standur*. The term *kertahaldari* (lit. candle+holder) ‘candle holder’ is formally and semantically analogous with *kertastandur* in the sense that a *kertahaldari* is a kind of *haldari*. The problem is that *haldari* does not naturally occur on its own as a free lexeme: here it appears to be a nonce formation, possibly influenced by the English term *candle holder*. The whole compound has therefore been coded as a main response. Similar terms

categories, this raises important questions concerning the structure of contemporary Icelandic and Dutch naming categories versus those of a century ago. It is nevertheless part of the current sociolinguistic reality of Northern European nations that English proficiency is high.

occurred in Dutch but there it was judged that both terms were dependent, like the *-haldari* example in Icelandic. Both *waxinelichthouder* (lit. wax + light + holder) ‘tealight candleholder’ and *kaarsenstandaard* (lit. candle + stand) ‘candleholder’ were coded as main responses. *Standaard* was not judged to occur freely in this sense, as it requires further elaboration by compounding to be acceptable, as in *fietsenstandaard* ‘bicycle stand’ or *muziekstandaard* ‘music stand’.

Where the full response did not contain a container name, then the main response was coded as an error. Non-responses were therefore coded as errors, as were responses like *hettan* in Icelandic, the word for a contraceptive diaphragm given in response to a picture of a small pink bowl; *hettan* was coded as an error on the basis that the object in the picture was perceived as something other than a container. As long as a container reference could be established, the term was coded. For instance, the term *fungurbjörg* (lit. finger+protection) ‘thimble’ in Icelandic was originally coded as an error on the grounds that it does not refer to a container term. However, further research revealed that this term is in fact used for a drink container, especially a very small cup for strong espresso coffee⁵: *fungurbjörg* was therefore coded as a main response.

One other important coding point needs to be mentioned. In the parent EoSS project, diminutives were coded as main responses separately from their root terms to allow for the possibility of lexicalisation effects in the use of diminutive terms. This paper argues that the productivity of diminutives in the Dutch naming data encourages the placement of extensional boundaries in a different place from Icelandic, which does not use the diminutive at all in container naming. In Ameel et al. (2005) diminutives were collapsed with their root forms on the basis that adjectival modification relating to size was also ignored. In section 4.1, we therefore provide both versions of our data (with and without diminutives) for the comparison with Ameel et al. (2005). The issue of compounding versus modification in the expression of size is taken up in section 4.4.

In this paper, we refer to coded main responses as **head terms** because they are the smallest semantically transparent term containing the morphological head (but may, as in the case of *ashtray*, be morphologically complex). We refer to the nominal portion of the full response (e.g. *coffee cup*) as a nominal term. So, the nominal term *coffee cup* would be coded as the head term *cup*. In this paper we make special reference to **high-frequency head terms**, by which we refer to those head terms which

⁵ <http://parisardaman.free.fr/?s=ordalisti>

are used at least 20 times (overall token frequency for all stimuli and all participants) and by over half of the participants (i.e. over half the participants used the term for at least one stimulus). These high-frequency head terms represent the salient lexical divisions in the semantic extensional space.

4. Results

4.1 General Overview

The stimuli elicited 36 head terms in Icelandic, shown in (1), and 35 head terms in Dutch, shown in (2) (excluding the error category). The terms are ordered by token frequency (in brackets) and the bold items are high-frequency head terms in the sense defined in section 3.3 (11 for Icelandic; 12 for Dutch).

- (1) **skál** (509); **bolli** (287); **diskur** (166); **fat** (97); **glas** (69); **kanna** (59); **mót** (56); **krús** (31); **öskubakki** (30); **mál** (29); **undirskál** (25); ílát (25); bakki (24); krukka (11); kertastjaki (7); dallur (6); panna (6); fantur (5); sykurkar (4); form (3); dolla (2); munur (2); prammi (2); áhald (2); box (1); coaster (1); fingurbjörg (1); hirsla (1); ker (1); kertahaldari (1); koppur (1); mortél (1); pottur (1); standur (1); staup (1); vasi (1)
- (2) **schaal** (277); **schaaltje** (194); **bord** (132); **kopje** (122); **bakje** (119); **mok** (111); **kom** (68); **beker** (66); **glas** (59); **kommetje** (56); **bordje** (35); kop (30); **pul** (28); bak (18); glaasje (15); potje (14); schoteltje (11); bekertje (10); schotel (7); asbak (6); dienblad (6); mokje (4); pannetje (4); pot (4); doosje (2); eierdopje (2); kroes (2); plaat (2); blad (1); eierdop (1); kaarsenstandaard (1); kalebas (1); standaard (1); vaas (1); waxinelichthouder (1)

The Dutch list includes 12 diminutives, 10 of which occur along with their root term, as shown in (3).

- (3) **schaal-schaaltje**; **bord-bordje**; kop-**kopje**; bak-**bakje**; **kom-kommetje**; **beker-bekertje**; **glas-glaasje**; pot-potje; schotel-schoteltje; eierdop-eierdopje; pannetje; doosje

Only *pannetje* and *doosje* occur exclusively in diminutive form. Amongst the high-frequency terms (again marked in bold), there are 5 diminutives, including three pairs (*schaal~schaaltje*; *kom~kommetje*; *bord~bordje*). Among the Icelandic head terms, no diminutives occur at all (but see our discussion in section 4.4 on compounded adjectives).

Following Malt et al. (2003), Ameel et al. (2005) report the dominant terms for their stimuli, including the Dutch responses to the 67 dishes stimuli, where dominant terms refers to the term given most often for a particular stimulus. Table 1 shows a list of the dominant terms reported for Belgian

Dutch in Ameel et al. (2005, p. 68, from their Table 2), as well as the dominant terms from our participants, first with diminutive and non-diminutive terms collapsed and then non-collapsed; for the sake of completeness we also show the list of Icelandic dominant terms. Note that, where there was a tie for most frequent response, we included both terms for the object (see Table 2 for full details), whereas Ameel and colleagues appear to have had a unique dominant term for every item. In brackets is the number of stimuli that received that term as the dominant term.

[Table 1 here: Dominant terms in two studies]

An immediate conclusion with respect to our research questions is that the use of the diminutive in Netherlands Dutch is not producing a proliferation in naming terms of the kind that Malt et al. (2003) describe for Spanish. Indeed Icelandic has more dominant terms than Dutch, even with diminutives counted. The question of whether the diminutive suffix affects extensional boundary placement – and in particular, the kind of fine-grained nesting that Malt and her colleagues observe for the instrumental suffix in Spanish – will be addressed in the next section.

A comparison of the results in Ameel et al. (2005) for Belgian monolingual speakers of Dutch (Leuven University, Belgium) and the EoSS results for Netherlands speakers of Dutch (Radboud University, Nijmegen, the Netherlands) shows some striking dialect differences. In the Ameel results, *kom* is the dominant bowl term, with *schaal(tje)* coming in third place. In the EoSS data *schaal(tje)* is by far the most frequent dominant name with *kom* towards the bottom of the list. In the Ameel results, *tas* emerges as the clearly salient term in the cup domain, with the two other drinking vessels (*beker* and *glas*) serving distinct functions (see more detailed discussion in section 4.2). However, in the EoSS data, drinking vessels are more evenly distributed across a broader number of names with *kop(je)* and *mok* and *pul* sharing the space along with *glas* and *beker*. The dialect term *tas* does not appear at all. Similarly, the dominant drinking vessel term in the EoSS data, *kop(je)*, does not appear in the Ameel list. The term *tas* seems to be similar in dominance to *bolli* in Icelandic (and *tasse* in French in the Ameel data) and suggests a broad drinking vessel category, whereas in Netherlands Dutch the same domain is broken down into smaller groups with greater sensitivity to size. We therefore turn in more detail to the extensional patterns in our data.

4.2 Comparing Extensions

We follow Malt et al. (2003) and Ameel et al. (2005) in comparing extensions by the dominant term (the term most frequently given in response to a particular stimulus). Table 2 lists the dominant terms for each language, ordered to the left by the Icelandic term and to the right by the Dutch term. The stimuli are listed by the number and the English label (description of what is shown in the stimulus picture) that was used by Ameel et al. (2005). When we refer to the extension of a term in this section, we refer to these dominant terms.

[Table 2 here: Dominant Terms for Stimuli, Sorted by Icelandic (Left) and Dutch (Right)]

For ease of comparison, we also include Table 3 which shows the Icelandic dominant terms listed against the Dutch dominant terms with which they share a stimulus item; the numbers indicate how many stimulus items are shared by the terms. Table 4 shows the Dutch dominant terms listed against the Icelandic ones. Our data elicits two major clusters of terms in each language: one roughly relating to food containers, which we loosely refer to as the bowl-domain; one roughly relating to drink containers, which we loosely refer to as the cup-domain. These are purely terms of convenience to refer to the extensional range of these clusters of terms. It is not intended to imply any privileged status to the English terms *cup* and *bowl* nor to the actual divisions that those terms make. As our discussion in section 4.2 amply demonstrates, languages differ in the placement of specific extensional boundaries and the characteristic properties that influence this boundary placement. Indeed, as our discussion of Dutch *kom* will show, even the food~drink division is not a necessary one.

[Table 3 here: Icelandic Dominant Terms Listed against Dutch Dominant Terms]

[Table 4 here: Dutch Dominant Terms Listed against Icelandic Dominant Terms]

Consider first the extension of the most frequent dominant term in the Icelandic data: *skál*. The extension of the Icelandic term is divided between the Dutch terms *schaal*, *schaaltje*, *bakje*, *bord* and *kom*. The diminutive term *schaaltje* is practically a subset of Icelandic *skál* with the exception of Item 49, which the Icelandic participants primarily perceived as a candleholder but the Dutch participants perceived as a bowl-like item (*schaal*, *schaaltje*); both Icelandic *skál* and *öskubakki* were

co-dominant terms for the ashtray which in Dutch receives the dominant term *schaaltje*. The *schaaltje* items are at the smaller end of the size range for the extension of Icelandic *skál*. The Dutch term *schaal* covers the generally larger items (though overlapping with Dutch *schaaltje* even here in dominant responses) and extends into much larger items that Icelandic lexicalises with separate terms: *mót* and *fat*. The Icelandic term *mót* is generally used for large baking dishes; the Icelandic term *fat* is generally used for large serving trays or platters.

In addition to Dutch *schaal* and *schaaltje*, the extensional space of Icelandic *skál* is intersected in Dutch by the extensions of *bakje*, *bord*, and *kom*. The extension of Dutch *bakje* is a subset of the extension of Icelandic *skál*. It includes small to medium sized round bowl-like items. The Dutch term *bak* also occurs in our data but never as a dominant term; only one item was named *bak* by 5 or more participants: a large metal food preparation bowl (Item 50). The Dutch diminutive term *bakje* is therefore the more frequent and conventionalised in this domain and its extension falls between Dutch *schaal* and *schaaltje*. The Dutch term *bord* cuts across the extension of Icelandic *skál*, including plate-like and dish-like items referred to in Icelandic as *diskur* by a majority of respondents, as well as a number of decorative bowls referred to as *skál*. The extension of Icelandic *diskur* is a subset of Dutch *bord*. The term *bord* is also used for the saucer (Item 3), which is referred to with a separate head term in Icelandic (*undirskál*). The Dutch term *kom* occurs for a single item in the extension of Icelandic *skál* (Item 51, a smallish white bowl, rather low and wide, with black stripes). As Dutch *kom* also intersects with the extension of Icelandic *bolli*, which we discuss below, we will deal with it there.

Considering the extension of Icelandic *skál*, we find evidence for diminutive semantics having an effect on the preferred division within the extensional space. Dutch separates off smaller items under the diminutive term (*schaaltje*), while grouping together larger items, possibly of a different shape and function, under the non-diminutive form (*schaal*), whereas Icelandic groups together the small to medium-large items, usually with a round shape, under one broad term (*skál*) and has specialised terms for large cooking containers (*mót*) and serving platters (*fat*). There is also evidence of cross-cutting (Dutch *schaal*, *bord* and *kom*) and nesting (Dutch *schaaltje* and *bakje*). This suggests that the presence of productive diminutive morphology in the container naming domain has an influence on the placement of extensional boundaries in this domain, interacting with the idiosyncratic language-specific inventory of roots.

Now consider the second most frequent term in the Icelandic data: *bolli*. Again, this appears to be a rather broad and inclusive category, intersecting with the extensions of Dutch *kopje*, *mok*, *glas* and

kom. Although the Dutch term *kop* occurs in our data, it is never a dominant term (and does not in fact meet our criteria for a high-frequency head term). The extension of Dutch *kopje* is a subset of Icelandic *bolli* and it picks out the smaller items, usually with a height no greater than the width, with a single handle or without. The extension of Dutch *mok* is almost a subset of the extension of Icelandic *bolli*. It includes items that are generally taller than they are wide, with straight rather than curving sides, a single handle and made of clay or plastic (cf English *mug*). The one item in the extension of Dutch *mok* that does not fall in the extension of Icelandic *bolli* (Item 10) is described as *krús* in Icelandic. The term *krús* occurs as a dominant term twice, the other instance being Item 55, which is described in Dutch as *pul*. The Dutch term *pul* is used for two large drinking vessels, taller than they are wide with a single handle, one clay, one glass: the clay item is named *krús* in Icelandic and the glass item is named either *glas* or *kanna* in Icelandic. The Dutch *pul* items would be appropriate for beer and the Dutch *mok* items for coffee.

In the cup-domain, like the bowl-domain, Icelandic has a broad inclusive term (*bolli*) which includes small to medium sized items of various shapes, with a number of more specialised terms dealing with larger items (*krús* and *kanna*), whereas Dutch has a diminutive term picking out the smaller cup-like items (*kopje*). In this case, however, the remainder of this extensional space in Dutch is not taken out by the non-diminutive form (*kop*) but rather by independent lexemes. Icelandic *krús* and Dutch *mok* are often treated as translation equivalents (cf English *mug*), but it is interesting to note that Dutch *mok* has a wider extensional range as a dominant term than Icelandic *krús*. This is a natural consequence of Dutch using a diminutive term restricted to the smaller end of the extensional space, whereas Icelandic favours a broad inclusive term (*bolli*) which is often selected in preference to *krús*.

As mentioned earlier, Dutch *kom* includes one item from the extension of Icelandic *bolli* (Item 14), which is mug-like in having straight sides but cup-like in being slightly wider than it is tall, and one item from the extension of Icelandic *skál* (Item 51), which is a bowl-like item, rather small and low and much wider than it is tall. The Dutch term *kom* typically refers to a container for liquid or semi-liquid food, which would usually be eaten with a spoon but may be drunk—‘soup’ is the major compounding noun, as in *soepkom*. A *kom* is typically shallow and wider than it is tall and may or may not have a handle. In Icelandic, the presence of a handle shifts the item to the extension of *bolli* and its absence together with the wide, low, rounded shape shifts it to *skál*. The presence or absence of a handle is not decisive for Dutch *kom*, though its low wide shape and its characteristic function is.

Finally consider the term *glas*, which occurs in both Dutch and Icelandic. As mentioned earlier, the Dutch term *glas* intersects with the extension of Icelandic *bolli*. Icelandic and Dutch differ in how the material of composition of the container interacts with its typical functions to produce the name *glas*⁶. In Icelandic, items that might be used for drinking coffee or tea are given the name *bolli*, even when they are made of glass, whereas Dutch uses the term *glas* in each case instead of *mok* or *kopje* (Items 32, 37, 42). For each of these stimuli, the item is taller than it is wide, meaning that Dutch *mok* would be more appropriate than Dutch *kopje*; however, in our stimulus set, *mok* is only used for clay and plastic items. Given the non-typicality of these items for both *kopje* (because of tallness) and *mok* (because of material of composition), *glas* is the dominant choice in Dutch. In Icelandic, the tea/coffee-drinking function is overriding. However, glass vessels typically used for consuming other kinds of drinks receive the name *glas* in Icelandic but not Dutch. Item 27 is a large beer mug made out of glass with a brewery logo on it, named *glas* in Icelandic; this receives the name *pul* in Dutch given its function and large size. Item 16 is labelled as a wine glass in the stimulus label. It is unusual as a wine glass in being squat and it is unusual as a bowl in having a stem, and in Icelandic the material of composition determines the naming (*glas*). In Dutch, the diminutive form is used (*glaasje*), presumably due to its rather squat shape. Item 30 receives the EoSS label “green glass” but the material might just as easily be a light green plastic. It receives the name *beker* in Dutch, as does a two-handed mug presumably for children (Item 25). English *beaker* is also used for brightly coloured, usually plastic, drinking vessels for children. In Icelandic, this container receives the name *glas*, presumably related to a typical function of cold drink consumption.

Overall, we have to agree with Malt et al. (2003) that a comparison of the extensional space of these languages supports a mix-and-match approach, in that a variety of factors interact to produce the particular pattern of lexicalisation that we find in a language. One important factor, as they suggest, is the availability of productive morphology in the container-naming domain. We claim that diminutive semantics has an influence on the preferred division in the extensional space: this is through separating smaller items from others, rather than larger items from others. However, this claim does not deny that factors relating to form and function are also relevant to differentiation patterns. As we observe,

⁶ The Icelandic for the material glass is *gler* not *glas*, which is used only for the drinking container

alternative lexicalisations and different prioritisations of semantic features can produce cross-cutting effects in even closely related languages.

With respect to our research questions, we come to the following conclusions: the productivity of the diminutive suffix *-(t)je* in the container naming domain in Dutch does have an effect on the placement of extensional boundaries. This effect does not relate to a broad typological difference, as Dutch and Icelandic are both Germanic languages and both have diminutive morphology available in principle. However, only in Dutch is the diminutive highly productive and used in the container domain. As observed earlier, the diminutive does not produce a proliferation of terms in Dutch. Nor does it produce fine-grained nesting of the kind described by Malt et al. (2003) for Spanish. Although *schaaltje* is nested in the extensions for *skál*, *schaal* is not and cross-cuts *skál*, *mót* and *fat*. In the cup domain, *kopje* is nested in the extension of *bolli* and *mok* is almost nested as well. But these terms do not represent narrow specialised terms but rather two reasonably broad terms sharing the bulk of the extensional space of *bolli*. Even in the cup domain, one might say that the diminutive encourages a more even distribution of terms across the space, rather than a proliferation of fine-grained distinctions.

4.3 A comment on prototypicality

We saw in the last section that Icelandic has two dominant terms with broad extensions in dominant naming: *skál* and *bolli*. Dutch on the other hand favoured diminutives in both these extensional spaces to pick out a size-defined subset, with other lexemes filling in the remaining space. This pattern is also reflected in the patterns of high inter-speaker agreement on naming, which may be taken as evidence of prototypicality of the named item⁷. Six items received unanimous naming responses in Icelandic for the two head terms *skál* and *bolli*.

⁷ We sound one note of caution here. As our discussion of the naming of Items 32, 37 and 42 in Dutch as *glas* rather than *mok* or *kopje* shows, a dominant term can win out because the items in question lack a salient property for other terms (here, too tall to be *kopje*; inappropriate material for *mok*), so that they represent a kind of fall-back name: *glas* in Dutch is compatible with a glass vessel for drinking tea or coffee, rather than being prototypical for it. Nevertheless, near-unanimous interspeaker agreement is a strong index of prototypicality. None of these Dutch items had near-unanimity for *glas* and in Icelandic, there is close agreement between our results and those of Þráinsson.

- (4) *bolli*: Item 1 - white cappuccino cup (21); Item 7 - white "café au lait" cup (21); Item 11 - black cup (21); Item 14 - white cup with a drawing (21).
 (5) *skál*: Item 9 - red deep bowl (21); Item 52 - glass bowl (21)

The cup items fit fairly well with the properties identified in Þráinsson (1979), each having handles and their relative dimensions corresponding to his items 1, 2 and 5; EoSS items 1, 7, 11 are convex and tapering, though item 14 has straighter sides. However, it is not just relative dimensions that appear to influence this choice, as all four cup items are fairly small. Two of the items also explicitly mention their intended contents – varieties of coffee – and as we will see in a moment, content is a salient feature in classifying containers. The bowl items are rather small and round and might typically be used for preparing or serving food.

In Dutch, no item receives a unanimous response. There are however six items that receive very high inter-speaker agreement for the dominant head terms *beker*, *bord* and *schaal*.

- (6) Item 30: green glass = *beker* (20), *glas* (1)
 (7) Item 8: white long dish = *bord* (19), *schaal* (2)
 (8) Item 36: white plate = *bord* (19), *bordje* (1), *schaal* (2)
 (9) Item 43: red rectangular dish = *schaal* (17), *schaaltje* (2), *bakje* (2)
 (10) Item 63: white serving dish = *schaal* (17), *schaaltje* (4)
 (11) Item 58: large square glass bowl = *schaal* (16), *schaaltje* (5)

Each of the *schaal* items also receives *schaaltje* as a response and in the case of two of the three items, this is the reason that *schaal* is not a unanimous response. What is particularly striking is that in each of these three cases, the item is definitely large and none of them are round. This suggests (cf. our discussion in section 2.2) that factors other than simple relative size are at play in the semantics of the diminutive here. It also suggests that although the diminutive form creates a salient division at the smaller end of the extensional space, it is still in some sense derived: the salient exemplar items belong to the non-diminutive category (*schaal*) and are therefore at the large end of the space, unlike the salient exemplar items for Icelandic *skál* which are at the smaller end of the scale. Indeed, the three terms with highest inter-speaker agreement in Dutch are all non-diminutives (*beker*, *bord*, *schaal*), even though the related diminutives all occur in our data as head terms.

These differences in inter-speaker agreement emphasise the finding that even closely related speaker communities can differ not only in their category boundaries but also in their salient exemplars. In our study, it is the boundary cases which revealed cross-linguistic convergence, as Icelandic and Dutch agree on the item that is hardest to classify: a painted pot with a lid (Item 6). This received nine head terms in Icelandic and seven in Dutch.

- (12) Icelandic: *krukka* 'jar' (8); *skál* 'bowl' (4); *sykurkar* 'sugar bowl' (3); *krús* 'mug' (2); *ílát* 'container' (2) ; *bolli* 'cup' (1); *dolla* 'pot' (1); *hirsla* 'chest' (1); *ker* 'tub' (1)
- (13) Dutch: *potje* 'pot-DIM' (10); *pot* 'pot' (4) ; *bakje* 'container-DIM' (2); *doosje* 'box-DIM' (2); *vaas* 'vase' (1) ; *kommetje* 'bowl-DIM' (1) ; *schaaltje* 'dish-DIM' (1)

Participants were apparently confused by this item, especially with its decorative appearance and lid. The range of responses suggest a number of possible functions for the item. As we will see in the next section, function of item is one critical semantic feature in its classification.

Our analysis points to two important conclusions. First, although the diminutive has an important effect on the placement of extensional boundaries, it is nevertheless not a focus for prototype formation as reflected in high inter-speaker agreement. One might say that diminutive *-(t)je* is not just derived in the standard morphological sense but also semantically in that it is the root term not the derived diminutive that provides the prototypical exemplar. Second, the prototypical items in Dutch and Icelandic are quite different, strikingly so in the bowl-domain, where Dutch favours large dishes and Icelandic favours small bowls. This underlines the well-established variation in lexical categories even between closely related languages. This variability is confirmed in the next section, where we will consider some of the salient semantic features that speakers used in compounding and modification to elaborate on the nature of the named object.

4.4 *Semantic features in compounding and modification*

The majority of individual responses in both Icelandic and Dutch were single words naming the object. However, participants often wanted to elaborate their descriptions with greater detail. This was most often achieved by using a compound word that included extra information concerning the stimulus object, e.g. coffee cup, where the typical contents of the stimulus is named as well as the container itself. Sometimes, syntactic modification was used, e.g. a bowl for putting potatoes in, where the

information is provided via phrasal periphrasis. And of course, both methods could be used in a single response. In total there were 1407 full responses (21 participants * 67 stimuli). In Icelandic, 31% of full responses included compounds and 21% syntactic modification; in Dutch, 12% of full responses included compounds and 4% syntactic modification. If one considers only the nominal types (compounds and single nouns), then 83% of the nominal types were compounds in Icelandic and 66% were compounds in Dutch.

We classified both the compounds and the syntactic modifiers according to our intuitions concerning the type of semantic information that they added to the head term. These classifications were derived independently by the authors (MW/pGB for Icelandic and FMJ for Dutch) prior to any comparative analysis. We were interested to see whether there was considerable variation even between such closely related languages or whether there were strong candidates for fundamental features of classification which one might predict would occur crosslinguistically. We found one strong candidate for a stable crosslinguistic feature, which chimes well with other findings in the literature: inferred contents of the container. Other than that, there was considerable variation in the kinds of information that was marked, its relative frequency with respect to other marked information and also the way that different kinds of information were marked. Tables 5 and 6 show the results for Icelandic and Dutch respectively. Each semantic feature is listed with the number of full response tokens marking that feature by compounding or syntactic modification. The features are ordered by the total frequency, showing how often a particular feature was mentioned by one of the two strategies.

[Table 5 here: Summary of Icelandic compounds and modifiers by semantic type.]

[Table 6 here: Summary of Dutch compounds and modifiers by semantic type.]

Notice that in both Icelandic and Dutch, by far the most frequently marked information concerns inferred contents of the container and this is marked largely by compounding not modification. After this, there are a number of differences. For instance, material is the second most prominent feature in Icelandic but the third most prominent in Dutch. In Icelandic, material is marked predominantly by compounding but in Dutch predominantly by modification. The second most prominent feature in Dutch is usage, i.e. the action performed with the container (e.g. baking), which is also directly related to characteristic function but comes eighth in Icelandic overall and fourth in compounding. It is

difficult to argue from this for a universal palate of semantic features that condition container classification, though inferred contents does appear to be a strong candidate: it is apparently not merely a form of words to say that containers are defined by the things they contain. This fits well with both the Labov and Þráinsson studies, where contents were seen to have a biasing effect on non-prototypical items. Similar features are also often mentioned in the container literature (cf. Kronenfeld et al., 1985; Malt et al., 2003).

For our purposes, the most important point to note relates to size. There are 588 diminutive tokens in the Dutch data (42% of full responses). Two points are worth noting. First, despite the extensive use of diminutives, information on size is nevertheless coded by modifiers in Dutch. Indeed one example is *heel klein kopje* 'a very small cup.DIM'. This suggests that diminutive forms like *kopje* are partly conventionalised and cannot simply be interpreted as 'small cup', a point emphasised in our initial discussion of the semantic range of diminutives in Dutch. Diminutive objects are readily modified to express (yet) smaller size, without tautology.

The second point is that there is a real difference with Icelandic here. There are 4 tokens of size compounding⁸ in Icelandic (out of 431 compounding tokens in all) and 33 tokens of size modification (out of 293 in all). That is 37 tokens marking size information, compared with the 588 diminutives and 18 modifiers in Dutch. Further, even if one ignores diminutives, size is the fourth most common feature marked in Dutch by either compounding or modification, whereas size is the sixth most common feature in Icelandic.

Overall, the compounding and modification data confirms the importance of inferred contents to container classification and shows a strong tendency in both languages to mark this feature by compounding. Other than this, however, there is considerable variation in the type and prominence of semantic features which are marked by participants as well as in the preferred strategies for marking these features. However, the difference with respect to diminutives is not merely a difference in strategy: Icelandic does not mark size-related information as extensively by compounding or modification as Dutch does by diminutives. Rather, the diminutive in Dutch gives a prominence to size-related information that we do not see in Icelandic.

⁸ *smá*- 'small' (2), *mini*- 'mini' (1), *ör*- 'tiny' (1)

5. Conclusion

An analysis of the extension of dominant terms for containers in Dutch and Icelandic suggests that productive morphology in the naming domain can have an influence on boundary placement within the extensional space, as suggested by Malt et al. (2003): the Dutch diminutive *-(t)je* picks out the smaller items in a domain, leaving the non-diminutive or other lexical items to fill the remaining space. In Icelandic, wide coverage terms are used for the small to medium-large items, with narrow terms carving up the larger items. This effect does not relate to a broad typological difference, because Dutch and Icelandic are both Germanic languages and both have diminutive morphology available in principle. Rather it is simply a reflex of the particular morphemes that are productive within the relevant domain. Unlike Malt et al. (2003), we find no evidence of such morphemes producing a proliferation of terms and fine-grained nesting within the extensional domain, even though about a third of the high-frequency head terms are diminutives. Rather, the use of the diminutive favours the differentiation of a set of "smaller" items with a sharing out of the remaining space by other lexemes. Icelandic has two very wide coverage terms; Dutch has a more even spread across the extensional space.

Despite this influence on the placement of extensional boundaries, diminutive formation does not produce an independent prototypical exemplar reflected in inter-speaker agreement. On the contrary, it is the non-diminutive term *schaal* that produces the clearest inter-speaker agreement, not *schaaltje*. All three high-agreement terms in Dutch (*beker*, *bord*, *schaal*) are non-diminutives. The fact that diminutive *schaaltje* is also a marginal response for the large items with high inter-speaker agreement for *schaal* suggests other aspects of the sense network of diminutives is also at work here, for instance the 'attitudinal' use of the diminutive (Shetter and Ham, 2007), conveying some evaluative stance on the part of individual speakers with respect to an item or their classification of it.

Our analysis of compounding and modification points to a number of semantic features which speakers use when attempting to differentiate an item, such as typical contents, material of composition, shape, intended usage and intended user. By far the most common feature in both languages is the typical content(s) and this appears to play a crucial role in defining the characteristic function of the container (a container is defined by what it contains). Beyond this commonality, we see variation in the range of semantic features profiled in the two languages and sharp differences in the frequency with which particular features occur.

Considering the extensional space as a whole, we agree with Malt et al. (2003) that a mix-and-match approach is necessary in considering the data, with extensional divisions in particular languages reflecting a complex interplay of different factors, including linguistic, cultural and cognitive factors. Linguistic factors include not only the lexical stock that happens to be available in a language and their conventions of use but also the availability of productive morphology within the domain in question. Our results demonstrate that in order to understand the processes that produce semantic divisions of basic object classes, we should consider fine-grained analyses of closely related languages alongside analyses of typologically different languages.

References

- Ameel, E., Storms, G., Malt, B.C., Sloman, S.A., 2005. How bilinguals solve the naming problem. *J. Mem. Lang.* 53, 60–80.
- Berlin, B., 1992. *Ethnobiological Classification: Principles of Categorization of Plants and Animals in Traditional Societies*. Princeton University Press, Princeton, N.J.
- Booij, G.E., van Santen, A., 1998. *Morfologie*. Amsterdam University Press, Amsterdam.
- Boroditsky, L., 2006. Linguistic Relativity, in: *Encyclopedia of Cognitive Science*. John Wiley & Sons, Ltd.
- Brachin, P., 1985. *The Dutch Language: A Survey*. Brill, Leiden.
- Chomsky, N., 2003. Reply to Horwich, in: Antony, L.M., Hornstein, N. (Eds.), *Chomsky and His Critics*. Blackwell, Oxford ; Malden, MA, pp. 295–304.
- Cohen, A., 1958. Het Nederlandse diminutiefsuffix: een morfonologische proeve 51, 40–45.
- Donaldson, B., 2003. *Dutch: A Comprehensive Grammar*. Routledge.
- Fodor, J.A., 1975. *The Language of Thought*. Crowell, New York.
- Hunn, E.S., 1977. *Tzelta Folk Zoology: The Classification of Discontinuities in Nature*. Academic Press, New York.
- Jóhannesson, A., 1927. Die Suffixe im Isländischen. Gutenberg, Reykjavík.
- Jónsson, J. H., 1988. Hefð og hneigð í íslenskri orðmyndun. *Málfregni* 2 (1), 3–11.
- Jurafsky, D., 1996. Universal Tendencies in the Semantics of the Diminutive. *Language* 72, 533–578. doi:10.2307/416278
- Kronenfeld, D.B., Armstrong, J.D., Wilmoth, S., 1985. Exploring the internal structure of linguistic categories: An extensionist semantic view, in: Dougherty, J.W.D. (Ed.), *Directions in Cognitive Anthropology*. University of Illinois Press, Urbana, pp. 91–113.
- Kvaran, G., 2005. *Íslensk tunga II: Orð*. Almenna bókafélagið, Reykjavík.
- Labov, W., 1973. The boundaries of words and their meanings, in: Bailey, C.-J.N., Shuy, R.W. (Eds.), *New Ways of Analyzing Variation in English*. Georgetown University Press, Washington, pp. 340–373.
- Lucy, J.A., 1992. *Language Diversity and Thought: A Reformulation of the Linguistic Relativity Hypothesis*. Cambridge University Press, Cambridge.
- Majid, A., Jordan, F., Dunn, M., 2011. *Evolution of Semantic Systems Procedures Manual*. Max Planck Institute for Psycholinguistics, Nijmegen.

- Malt, B.C., Majid, A., 2013. How thought is mapped into words. *Wiley Interdiscip. Rev. Cogn. Sci.* 4, 583–597. doi:10.1002/wcs.1251
- Malt, B.C., Sloman, S.A., Gennari, S., Shi, M., Wang, Y., 1999. Knowing versus Naming: Similarity and the Linguistic Categorization of Artifacts. *J. Mem. Lang.* 40, 230–262. doi:10.1006/jmla.1998.2593
- Malt, B.C., Sloman, S.A., Gennari, S.P., 2003. Universality and language specificity in object naming. *J. Mem. Lang.* 49, 20–42. doi:10.1016/S0749-596X(03)00021-4
- Rosch, E., 1973. On the internal structure of perceptual and semantic categories, in: Moore, T.E. (Ed.), *Cognitive Development and the Acquisition of Language*. Academic Press, New York, pp. 111–144.
- Rosch, E., 1975. Cognitive representations of semantic categories. *J. Exp. Psychol. Gen.* 104, 192–233.
- Sapir, E., 1912. Language and Environment. *Am. Anthropol.* 14, 226–242. doi:10.1525/aa.1912.14.2.02a00020
- Sapir, E., 1929. The Status of Linguistics as a Science. *Language* 5, 207–214. doi:10.2307/409588
- Shetter, W.Z., 1959. The Dutch diminutive. *J. Engl. Ger. Philol.* 58, 75–90.
- Shetter, W.Z., Ham, E., 2007. *An essential grammar*. Routledge, London.
- Þráinsson, H., 1979. Hvað merkir orðið bolli? [What does the word cup mean?]. *Íslenskt Mál* 1, 96–106.
- Van der Hulst, H., 2008. The Dutch diminutive. *Lingua, Trends in prosodic phonology* 118, 1288–1306. doi:10.1016/j.lingua.2007.09.012
- Vikør, Lars S. 2001. *The Nordic Languages. Their Status and Interrelations*. Nordic Language Council & Novus Press, Oslo.
- Whorf, B.L., 1956. Science and linguistics, in: Chase, S., Carroll, J.B. (Eds.), *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf*. MIT Press, New York, pp. 207–219.

Table 1

Dominant container terms in two studies. Numbers in brackets indicate the number of different container stimuli for which that term was dominant.

Ameel et al. (2005) Belgian Dutch monolinguals (9 head terms)	EoSS: Dutch diminutives collapsed (10 head terms)	EoSS: Dutch diminutives separate (12 head terms)	EoSS Icelandic (13 head terms)
kom (19)	schaal (30)	schaal (19)	skál (29)
tas (15)	bord (11)	schaaltje (12)	bolli (16)
schaal (13)	kop (8)	bord (11)	diskur (6)
bord (8)	mok (5)	kopje (8)	mót (5)
beker (4)	glas (4)	bakje (6)	glas (3)
pot (4)	bak (4)	mok (5)	fat (3)
glas (2)	beker (3)	glas (3)	krús (2)
asbak (1)	kom (3)	pul (2)	kertastjaki (1)
houder (1)	pul (2)	beker (2)	mál (1)
	pot (1)	kom (2)	krukka (1)
		glaasje (1)	undirskál (1)
		potje (1)	kanna (1)
			öskubakki (1)

Table 2

Dominant terms for stimuli, sorted by Icelandic (left) and Dutch (right).

Dominant Terms Sorted by Icelandic Term				Dominant Terms Sorted by Dutch Term			
Stimulus #	Stimulus label	ISL	NLD	Stimulus #	Stimulus label	NLD	ISL
32	glass cup with metal handle	bolli	glas	23	small brown dish	bakje	skál
37	glass mug with black handle	bolli	glas	26	pink bowl	bakje, schaalte	skál
42	glass mug	bolli	glas	28	striped wooden bowl	bakje	skál
14	white cup with a drawing	bolli	kom	52	glass bowl	bakje	skál
1	white cappuccino cup	bolli	kopje	53	square white bowl	bakje	skál
7	white "café au lait" cup	bolli	kopje	54	white plastic bowl	bakje	skál
11	black cup	bolli	kopje	30	green glass	beker	glas
12	little green cup	bolli	kopje	25	white mug with two handles	beker	mál
34	large white cup	bolli	kopje	8	white long dish	bord	diskur
35	blue cup with green inside	bolli	kopje	36	white plate	bord	diskur
44	light brown cup without handle	bolli	kopje	41	plate with green rim	bord	diskur
45	red cup without handle	bolli	kopje	47	green and yellow bowl	bord	diskur, skál
19	red "tik-tak" mug	bolli	mok	62	black shiny dish	bord	diskur
21	plain white mug	bolli	mok	67	square white serving dish	bord, schaal	diskur
46	green mug with face	bolli	mok	13	white bowl with a drawing	bord	skál
48	white mug with drawing	bolli	mok	15	white bowl with black rim	bord	skál
8	white long dish	diskur	bord	18	plain white bowl	bord	skál
36	white plate	diskur	bord	60	white bowl with roses	bord	skál
41	plate with green rim	diskur	bord	3	white cappuccino saucer	bord	undirskál
47	green and yellow bowl	diskur, skál	bord	16	wine glass	glaasje	glas
62	black shiny dish	diskur	bord	32	glass cup with metal handle	glas	bolli
67	square white serving dish	diskur	bord, schaal	37	glass mug with black handle	glas	bolli
57	oblong white dish with black trim	fat	schaal	42	glass mug	glas	bolli
63	white serving dish	fat	schaal	14	white cup with a drawing	kom	bolli
64	square dish with roses	fat	schaal	51	white bowl with black stripes	kom	skál
30	green glass	glas	beker	1	white cappuccino cup	kopje	bolli
16	wine glass	glas	glaasje	7	white "café au lait" cup	kopje	bolli
27	glass "stella" beer mug	glas, kanna	pul	11	black cup	kopje	bolli
49	glass dish with thick rim	kertastjaki	schaal, schaalte	12	little green cup	kopje	bolli
6	painted pot with lid	krukka	potje	34	large white cup	kopje	bolli
10	tall "gouden hoorn" mug	krús	mok	35	blue cup with green inside	kopje	bolli
55	brown "artois" mug	krús	pul	44	light brown cup without handle	kopje	bolli
25	white mug with two handles	mál	beker	45	red cup without handle	kopje	bolli
43	red rectangular dish	mót	schaal	19	red "tik-tak" mug	mok	bolli
58	large square glass bowl	mót	schaal	21	plain white mug	mok	bolli
59	brown dish with small handles	mót	schaal	46	green mug with face	mok	bolli
61	clay pot with handle	mót	schaal	48	white mug with drawing	mok	bolli
66	white ridged bowl	mót	schaal	10	tall "gouden hoorn" mug	mok	krús
23	small brown dish	skál	bakje	6	painted pot with lid	potje	krukka
26	pink bowl	skál	bakje, schaalte	27	glass "stella" beer mug	pul	glas, kanna
28	striped wooden bowl	skál	bakje	55	brown "artois" mug	pul	krús
52	glass bowl	skál	bakje	57	oblong white dish with black trim	schaal	fat
53	square white bowl	skál	bakje	63	white serving dish	schaal	fat
54	white plastic bowl	skál	bakje	64	square dish with roses	schaal	fat
13	white bowl with a drawing	skál	bord	49	glass dish with thick rim	schaal, schaalte	kertastjaki
15	white bowl with black rim	skál	bord	43	red rectangular dish	schaal	mót
18	plain white bowl	skál	bord	58	large square glass bowl	schaal	mót
60	white bowl with roses	skál	bord	59	brown dish with small handles	schaal	mót
51	white bowl with black stripes	skál	kom	61	clay pot with handle	schaal	mót
2	wooden bowl	skál	schaal, schaalte	66	white ridged bowl	schaal	mót
4	glass dish	skál	schaal	2	wooden bowl	schaal, schaalte	skál
20	white dish with handles	skál	schaal	4	glass dish	schaal	skál
22	coconut bowl	skál	schaal	20	white dish with handles	schaal	skál
29	metal bowl	skál	schaal	22	coconut bowl	schaal	skál
31	white bowl	skál	schaal	29	metal bowl	schaal	skál
38	earthenware bowl	skál	schaal, schaalte	31	white bowl	schaal	skál
50	metal dish	skál	schaal	38	earthenware bowl	schaal, schaalte	skál
65	bowl with feet	skál	schaal	50	metal dish	schaal	skál
5	yellow deep bowl	skál	schaalte	65	bowl with feet	schaal	skál
9	red deep bowl	skál	schaalte	5	yellow deep bowl	schaalte	skál
17	yellow dish	skál	schaalte	9	red deep bowl	schaalte	skál
24	small white bowl	skál	schaalte	17	yellow dish	schaalte	skál
33	black dish	skál, öskubakki	schaalte	24	small white bowl	schaalte	skál
39	black bowl	skál	schaalte	33	black dish	schaalte	skál, öskubakki
40	bowl with chinese pattern rim	skál	schaalte	39	black bowl	schaalte	skál
56	small square glass bowl	skál	schaalte	40	bowl with chinese pattern rim	schaalte	skál
3	white cappuccino saucer	undirskál	bord	56	small square glass bowl	schaalte	skál

Table 3

Icelandic dominant terms listed against Dutch dominant terms.

Icelandic	Dutch
skál	11 schaal, 9 schaal, 6 bakje, 5 bord, 1 kom
bolli	8 kopje, 4 mok, 3 glas, 1 kom
diskur	6 bord, 1 schaal
mót	5 schaal
fat	3 schaal
glas	1 beker, 1 glaasje, 1 pul
kertastjaki	1 schaal, 1 schaal
krús	1 mok, 1 pul
öskubakki	1 schaal
kanna	1 pul
krukka	1 potje
undirskál	1 bord
mál	1 beker

Table 4

Dutch dominant terms listed against Icelandic dominant terms.

Dutch	Icelandic
schaaltje	11 skál, 1 öskubakki, 1 kertastjaki
schaal	9 skál, 5 mót, 3 fat, 1 diskur, 1 kertastjaki
kopje	8 bolli
bord	6 diskur, 5 skál, 1 undirskál
bakje	6 skál
mok	4 bolli, 1 krús
glas	3 bolli
pul	1 glas, 1 kannu, 1 krús
beker	1 glas, 1 mál
kom	1 bolli, 1 skál
glaasje	1 glas
potje	1 krukka

Table 5

Summary of Icelandic compounds and modifiers by semantic type.

Semantic Type (e.g.)	Compound	Modification	Total
Contents (coffee)	230	34	264
Material (metal)	126	3	129
Shape (deep)	13	59	72
Attribute (fire-resistant)	0	65	65
User (kid)	37	6	43
Size (small)	4	33	37
Colour (red)	0	33	33
Usage (baking)	25	5	30
Evaluative (posh)	0	22	22
Hedge (could be)	0	17	17
Comparison (cup-like)	5	3	8
Standard (normal)	0	7	7
Origin (Japanese)	0	6	6
Placement (under)	3	0	3

Table 6

Summary of Dutch compounds and modifiers by semantic type.

Semantic Type (e.g.)	Compound	Modification	Total
Contents (coffee)	86	1	87
Usage (baking)	61	2	63
Material (metal)	9	22	31
Size (small)	0	18	18
Shape (deep)	0	14	14
User (kid)	11	0	11
Colour (red)	0	1	1
Comparison (cup-like)	1	0	1
Hedge (could be)	0	1	1
Placement (under)	1	0	1
Attribute (fire-resistant)	0	0	0
Evaluative (posh)	0	0	0
Origin (Japanese)	0	0	0
Standard (normal)	0	0	0

Table2

Dominant Terms Sorted by Icelandic Term				
Stimulus #	Stimulus label	ISL	NLD	Stimulus #
32	glass cup with metal handle	bolli	glas	23
37	glass mug with black handle	bolli	glas	26
42	glass mug	bolli	glas	28
14	white cup with a drawing	bolli	kom	52
1	white cappuccino cup	bolli	kopje	53
7	white "café au lait" cup	bolli	kopje	54
11	black cup	bolli	kopje	30
12	little green cup	bolli	kopje	25
34	large white cup	bolli	kopje	8
35	blue cup with green inside	bolli	kopje	36
44	light brown cup without handle	bolli	kopje	41
45	red cup without handle	bolli	kopje	47
19	red "tik-tak" mug	bolli	mok	62
21	plain white mug	bolli	mok	67
46	green mug with face	bolli	mok	13
48	white mug with drawing	bolli	mok	15
8	white long dish	diskur	bord	18
36	white plate	diskur	bord	60
41	plate with green rim	diskur	bord	3
47	green and yellow bowl	diskur, skál	bord	16
62	black shiny dish	diskur	bord	32
67	square white serving dish	diskur	bord, schaal	37
57	oblong white dish with black trim	fat	schaal	42
63	white serving dish	fat	schaal	14
64	square dish with roses	fat	schaal	51
30	green glass	glas	beker	1
16	wine glass	glas	glaasje	7
27	glass "stella" beer mug	glas, kanna	pul	11
49	glass dish with thick rim	kertastjaki	schaal, schaalte	12
6	painted pot with lid	krukka	potje	34
10	tall "gouden hoorn" mug	krús	mok	35
55	brown "artois" mug	krús	pul	44
25	white mug with two handles	mál	beker	45
43	red rectangular dish	mót	schaal	19
58	large square glass bowl	mót	schaal	21
59	brown dish with small handles	mót	schaal	46
61	clay pot with handle	mót	schaal	48
66	white ridged bowl	mót	schaal	10
23	small brown dish	skál	bakje	6
26	pink bowl	skál	bakje, schaalte	27
28	striped wooden bowl	skál	bakje	55
52	glass bowl	skál	bakje	57
53	square white bowl	skál	bakje	63
54	white plastic bowl	skál	bakje	64
13	white bowl with a drawing	skál	bord	49
15	white bowl with black rim	skál	bord	43
18	plain white bowl	skál	bord	58
60	white bowl with roses	skál	bord	59