AllinaDay'sWeek [1]

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0.Introduction

This paper presents a Frame Semantics analysis of calendric terms in English, Hebrew, and German, demonstrating the inextricable relationship between morpholog y and semantics. Here, we consider how Frame Semantics can be exte nded to morphological analysis.

Traditionally, the morpheme has been taken as the smallest unit of meaning in linguistic analysis, with generative word formation rules genera ting words from individual morphemes (Hockett 1954, Kiparsky 1968, Aronoff 1976, Scalise 1986). However, the traditional definition of morpheme is problematic when it comes to words containing parts that do not have meaning in isolation (so-called *cranberry*-morphs). For example, Bybee (1988: 128) and Waugh (1996: 257) point out that English weekday names consist of two parts, the morpheme *day* in combination with other units (e.g. *Mon-*, *Tues-*, *Wed-*), the latter of which do not encode meaning in isolation. [2] To overcome the theoretical problems associated with empty morpheme s, Bybee's (1988) alternative model regards the morphological component of the grammar as part of the lexicon.

Section one of the paper discusses Bybee's (1988) morphological anal ysis of English weekday names within her storage and processing model. Se ction two takes Bybee's approach and applies its findings to the analysis of Hebrew and German weekday names. We show that Bybee's approach is problematic when applied to sets of weekday names that do not follow a coherent morphological pattern indi cating their membership in the same class of semantically related words. In section three, we propose a frame semantic analysis, and show that a more detailed morpholo gical analysis reveals information about the frame structure needed for the use and inte rpretation of weekday names in English, Hebrew, and German. We define the Calendric Unit f rame with words that name the different parts of the calendric cycle, both man-made and natural. In addition, by employing the frame to organize and characterize t he underlying conceptual structure of the Calendric Unit terms, we illustrate the effi cacy of Frame Semantics for research in contrastive lexicology. Our discussion illustrates tha t a frame-semantic approach to morphology accounts for the " *cranberry*-morpheme problem" straightforwardly by not considering empty morphemes in isolation. Instead, we argue that *cranberry* morphemes become interpretable because of the background frame

[2] Note that diachronic aspects of the meanings assoc iated with *Mon-*, *Tues-*, *Wed-*, etc. cannot be taken into consideration for a synchronic analysis in this con text because speakers of modern-day English typical ly do not possess such knowledge. For an overview of t he development of English and German weekday names, see, for example Gundel (1938), Strutynski (1975), Zerubavel (1985), Bammesberger (1999), and Grezega (2001).

against which they are set. Finally, in section four, we summariz   e our findings and suggest directions for future research for a frame semantic approach to morphose   mantics.

1. Bybee's (1988) 'Morphology as Lexical Organization'

Traditionally, morphological analyses assume the morpheme to be the   smallest unit of meaning, and investigate the structural patterns of combining morphemes   to produce words (e.g., Spencer 1991). In this view, morphological rules and lexic   al representations are located in separate compartments of the grammar. Whenever new   morphological forms are derived, a morphological rule is applied to a lexical r   epresentation (e.g., Kiparsky 1968).

In contrast, Bybee's (1988, 1995, 2001) storage and processing model proposes that morphology is a set of relations among words rather than a se   t of relations among morphemes. Her model sees morphology as crucial to the organizat   ion of the lexicon and recognizes the intimate connection between form and meaning.   [3] This approach assumes that "morphological rules and lexical representations are not sepa   rate from each other" (Bybee 1988: 125), rather they are both contained in the lexicon. The adva   ntage of this approach is that the

> …morphological facts of natural language are described in terms of
> independently necessary mechanisms of lexical storage: the abili   ty to
> form networks among stored elements of knowledge and the ability to
> register the frequency of individual items and patterns. (Bybee 1988: 125)

At the core of Bybee's approach is the idea that there are "semantic parame   ters by which morphemes are organized", such as semantic fields, scripts,   and lexical relations (1988: 125). Parallel to semantic organization, there are phonological connec   tions that link stored forms. Bybee's model also includes information about the de   gree of relatedness among words, "which is primarily determined by the   number and type of semantic features shared" (1988: 131). The strength of the connections   between words captures word-frequency effects that research has shown to be cruc   ial for lexical access (e.g. Bates & McWhinney 1987, Moder 1992).

Using this approach to the analysis of English weekday names, B   ybee points out that *Monday*, *Tuesday*, *Wednesday*, etc., all contain the meaningful morpheme   *day*. She characterizes the lexical relation between these words and the word   *day* as follows:

> With lexical connections we can associate the   *day* sequence in these
> words with each other and the word   *day* without requiring that the
> remainder of the word be meaningful. Rather the first syllable re   mains as
> part of the whole word, but it has no connections to other items. (Bybee
> 1988: 128)

A major advantage of Bybee's approach over traditional rule-based   accounts is that it does not require every part of a word to contribute meaning. Phonologic   al and semantic

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[3] Matthews (1991) and Stump (2001) also adopt a para   digm model.

similarityofpartofaword(tootherknownwords)issufficient forinterpretingunknown words and connecting a whole word to other semantically related for ms. Having discussed Bybee's explanation of the distribution of English weekday names, we now examinehowwellherproposalsfittheanalysisofweekdaynamesinotherlangua ges.

2. Weekday names in English, Hebrew, and German

A comparison of weekday names in English with those in Hebrew and G erman shows thateachofthethreelanguagesexhibitsadifferentpatternof naming,asseenin(1). [4] As detailed above, English weekday names follow a regular patte rn by employing the morpheme/word *day* toidentifyeachday.

(1) Weekday Names

English	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Hebrew	yomrišon	yomšeni	yomšliši	yomrvi'i	yomxamiši	yomšiši	šabat
German	Sonntag	Montag	Dienstag	Mittwoch	Donnerstag	Freitag	Samstag

For the most part, Hebrew weekday names also follow a consistent pa ttern, namely the noun *yom* - 'day' followed by an ordinal number, as for example *yom šliši* (day third) - 'Tuesday'. Note, however, that *šabat* (Sabbath) - 'Saturday' does not fit the regularpattern.Similarly,inGermanwefindapatterninwhic hthereismuchregularity - i.e. most weekday names use the morpheme/word *Tag* - 'day' to identify the day, and oneexception: *Mittwoch* - 'Wednesday'.BecauseBybee'smodelreliesonrelatednessof forms,exceptions-i.e.thosewordsthatdonotfitthepattern-remainunaccountedfor.
Further problems arise for Bybee's model because it does not acc ount for the common semantic background structure against which weekday names are understood. Thisisimportantwhenitcomestotheinterpretationoftheso-ca lledirregularforms(e.g. German *Mittwoch* or Hebrew *šabat*). With the set of weekday names each language appeals to the concept DAY; except for German *Mittwoch* - 'Wednesday', these languagesdonotappealtotheconceptWEEK.Moreover,onlytheHe brewdataprovide an indication of the sequential ordering of the days, which is motivate d by a system external to Calendric Units, namely ordered numbers. To explicat e, we take the perspectiveoflanguagelearnersencounteringthesewordsforthefi rsttimeandconsider whattheymightconcludeabouttheoverallstructureoftheweekbas edonthenamesof thedays.
When language learners encounter the word *Tuesday*, they might conclude that thereisarelationshipwith *day*, asBybeesuggests.However,theydonotknowthatthere are six other days, totaling seven days in the week, or what position Tuesday has with respecttootherpossibledays.Thus,nothingaboutthenamesofthedays oftheweekin Englishrevealsinformationaboutthepositionadayholdswithinthes equenceofdaysin the week. As a consequence, it is also not possible to know which days precede and

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[4] While outside the scope of the present study, we n ote work on different naming patterns for weekday names in other languages of the world, specifically Brown (1989) which addresses the issue of lexical acculturation,aswellasZerubavel(1985)onthed evelopmentofthesewords.

which days follow any particular day based on the name of that day.   In short, the arbitrariness of these terms is manifest. Furthermore, while   the concept DAY is explicit, its relation to a larger calendric structure is not. The Engl   ish terms tell us nothing about WEEK.

German is similar to English in that it also exhibits a high   degree of arbitrariness in naming the days of the week. Except for the word/morpheme   *Tag* - 'day' that occurs in all but one weekday name, the terms are not transparent. Germ   an differs from English in that when language learners encounter *Mittwoch* ("middle of week") - 'Wednesday' in isolation, they can conclude that there is a concept WEEK and t   hat the named entity falls in the middle of it. However, there is no information provided a   bout the concept DAY, that the named entity is a day, or that there are six other   such entities in the week. The term *Mittwoch* is unique for following reasons: (1) it is the only weekday name whose literal meaning, given a morpheme for morpheme gloss, reveals   nothing about being a day; and (2) it is the only weekday name that evokes the la   rger structure of which it is a part. In Bybee's terms *Mittwoch* is closely related to *Woche* - 'week', and not to *Tag* - 'day'.

The situation in Hebrew is worth comparison. For the most part, w   eekday names are highly motivated based on their ordered sequence of occurrence in   the week. From the perspective of the language learner, most Hebrew weekday name   s evoke the concept DAY and reveal information about the position that the day holds with r   espect to the preceding days, but not about a larger structure such as WEEK. Much   like *Mittwoch*, the Hebrew word *šabat* (Sabbath) - 'Saturday' constitutes an exception with no formal relationship to any other weekday name. Unlike   *Mittwoch*, the term *šabat* does not make reference to any calendric unit. The so-called irregular way   of naming the seventh day of the week reflects the significance that the culture attributes   to the category *šabat*, and as such, the language has a special way for naming it.

All three languages have a certain degree of arbitrariness i   n the terms that name the days of the week, as apparent from the above discussion, with Hebr   ew exhibiting the greatest degree of motivation. Our interest in arbitrariness/   motivation stems from the desire to substantiate the frame, against which the meanings of   these terms are unbderstood.

Such phenomena are beyond the purview of Bybee's model which is based on a   notion of phonological and semantic relatedness of words. A comprehensive a   ccount of the cross-linguistic data requires going beyond the surface formal   relationships among the words and necessitates appealing to the underlying conceptual   structures against which these words are understood. The following section presents an alt   ernative approach to analyzing the organization of weekday names in English, Hebre   w, and German. It first introduces Frame Semantics, and then gives a de   finition of the Calendric Unit Frame used to account for the distribution of weekday names in the three langu   ages.

3. Frame Semantics and the Calendric Unit Frame

In the Frame Semantics (Fillmore 1982, 1985) approach to the study of   the lexicon, the frame provides the basis for the organization of the le   xicon. In this approach individual word senses, relationships between the senses of polysemou   s words, and

relationships among semantically related words are linked via the frame. In this conception of the lexicon, there is a network of hierarchically organized and intersecting frames through which semantic relationships between collections of concepts are identified. A *frame* is any system of concepts related in such a way that to understand any one concept it is necessary to understand the entire system; introducing any one concept results in all of them becoming available. In Frame Semantics, word meaning is characterized in terms of experience-based schematizations of the speaker's world - i.e. frames. It is held that understanding any element in a frame requires access to an understanding of the whole structure.

The notion can be exemplifed with the Commercial Transaction Frame, whose elements include a buyer, a seller, goods, and money. The large set of semantically related verbs linked to this frame includes *buy*, *sell*, *pay*, *spend*, *cost*, and *charge*, each of which evokes different aspects of the frame. The verb *buy* highlights the buyer and the goods, backgrounding the seller and the money; *sell* highlights the seller and the goods, backgrounding the buyer and the money; *pay* highlights the buyer, the money, and the seller, backgrounding the goods, etc. Knowing the meaning of any one of these verbs requires knowing what happens in a commercial transaction, and, in a certain sense, also means knowing the meaning of all of them. The knowledge and experience structured by the Commercial Transaction Frame provide the background and motivation for the categories represented by the words. The words, that is, the linguistic material, evoke the frame; the interpreter invokes the frame.

A complete description of these and other Commercial Transaction verbs must also include information about their grammatical properties and the full range of syntactic patterns in which they can occur. What elements of the frame are realized as the subject of the verb, as its object, if there is one, and what will be the surface form of the other elements? Which of these elements are optional; which are obligatory? For instance, in *Carla bought the computer from Sally for $1000*, the subject, *Carla*, is the buyer and the direct object, *the computer*, is the goods; both elements are obligatory. The optional backgrounded elements surface as oblique objects: *from Sally*, the seller, and *for $1000*, the money. While *from* is the only preposition allowing the interpretation that *Sally* is the seller, other prepositions may be used for the money-e.g. *with*. Although grammatical information about the syntactic-semantic valence description of each verb is not specified in the frame, it is deducible from the rich descriptions of the different elements of the frame. [5,6]

For the most part, work in Frame Semantics has focused on characterizing and accounting for lexical semantic phenomena, in the broadest sense, and specifically addresses syntactic phenomena particularly as it attends to the grammatical function of lexical items depending on their syntactic realization in sentences. The present study takes a new direction by considering morphosemantics in a Frame Semantic approach. More specifically, we take the idea of valence description on the syntactic level and apply it to the morphological level. We suggest that providing valence descriptions for the morphological structure of words resolves the *cranberry*-morph problem. First, we describe the Calendric Unit frame in order to provide the background structure against

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[5] The foregoing discussion of Frame Semantics was adapted from Petruck (1996).
[6] See Fillmore (2003) for more detailed discussion of *valence*.

which these words are understood. Then, we illustrate valence descri   ptions for the morphologyofthewordsunderconsiderationhere.

  We characterize the Calendric Unit Frame as one with words tha   t name the differentpartsofthecalendriccycle,bothman-madeandnatural   . Theweekdaynames, discussedabove,illustrateaman-madecycle;namesforpartsof   theday,e.g. *morning*, *afternoon*, *evening*, *night*,etc.,exemplifyanaturalcycle. Whileman-madecycles   have anarbitrary,butfixed,startingpoint,thereisno   *apriori* startingpointfornaturalcycles. Onlytheimpositionofaman-madecycleontoanaturalcyclesets   itsstartingpoint. In addition,thenotionofrelativetimefiguresintotheCalendricUnit   frame,locatingtime with respect to an identifiable reference point. For example,   in the expression *this coming Monday* , the modifying phrase   *this coming* locates the time with respect to *Monday*.Moreover,theideaofaniteratedsequenceplaysaroleinourunders   tandingof words in theCalendric Unit Frame. Our focus on the concepts DAY and W   EEKisa reminderthatthepart-wholerelationshipalsofiguresintothisfra   me. Whileknowledge of both key concepts is required for the use and interpretation of these   terms, the languagesdifferinthedegreeofmotivationandidiosyncrasywit   h which theweekday namesarerealizedlexically. [7]

  InEnglishweekdaynamesthemorpheme/word   *day*istheonlymeaningfulunit thatgivesinformationabouttheframetowhichthelargerwordbe   longs.Theword *day* subcategorizesforaspecifyingmorphemethatmakesmoreexplic   itthedaytowhichthe word refers. In the case of cranberry morphs such as   *Mon-*, *Tues-*, *Wed-*, etc., *day* combineswiththecranberrymorphbecauseithasanopenslotonitss   ubcategorization list. Assumingknowledgeofthebackgroundframe,whencranberrym   orphscombine with *day*,theyonlycontributemeaningaboutwhereadayislocatedwith   respecttoits temporalsequencevis-à-visotherdaysoftheweek.Suchinformationisstructuredi   nthe frame, but not even addressed in Bybee's account. In contrast, when meani   ngful morphemessuchas *Christmas*or *Independence*combinewith *day*,theycontributetheir own meaning, since it is only the regular Calendric Unit frame   that specifies the sequenceofdays.Inthecaseof   *Christmas*,forexample,themorphemescombiningwith *day*helptolocateaspecificdaybeingcommemorated.Thus,thevale   ncedescriptionof *day* includes grammatical information about its realization in combinat   ion with *cranberry*-morphs (e.g. *Mon-*) and independent meaningful morphemes. An analogous illustration can be offered for German: the morpheme/word   *Tag* may be realized in combination with the bound morpheme   *Mon-*, as in the name for the day of the week *Montag*,aswellaswithunboundmorphemes,asin   *Unabhängigkeitstag*-'Independence Day' (where the underlined portion of the word is the free-standing   noun meaning 'independence'). Similarly, in Hebrew the valence of   *yom* allows the word to be realizedincombinationwithordinalnumberssuchas   *šeni* -'second', yieldingforms like *yom šeni* - 'Monday', as well as with nouns such as   *huledet* - 'birth', yielding Noun+Nouncompoundssuchas   *yomhuledet* -'birthday'.Whilethemajorityof Hebrew

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[7]Whileourdescriptionofthe CalendricUnitframe   mayappeartobedifferentfromtheonegiveninth   e FrameNet database (http://www.icsi.berkeley.edu/~fr amenet), the two are completely compatible. The focus of the present work is the morphological stru   cture of weekday names, and not the larger constructionsinwhichtheyorothertermslinkedt   othisframeoccur(SeeFillmore2002forananalys   isof time-whenexpressionsinEnglish).Assuch,weha   velittlemoretosayaboutthenotionofRelative   time here. Inaddition,since FrameNethasaseparateI   terationframe,wehavedeliberatelyavoidedsaying   that iterationisanelementoftheCalendricUnitframe   .

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weekday names are Noun +Adjective constructions, much of the general Hebrew lexicon can be characterized in terms of lexical items consisting of a (tri-consonantal) root and a pattern, as in *šabat* (Sabbath) - 'Saturday', consisting of the root *ŠBT*, which incorporates the notion of stopping or resting, and the nominal pattern CaCCaC. As such, the specifics of applying a Frame Semantic approach to a language with non-concatenative morphology remain to be determined.

We now consider the concept WEEK in the three languages being examined. Neither English nor German has a set of terms that structures the week. In contrast, for the most part, Hebrew weekday names provide information about the sequence of days in the week, knowledge of which is also structured in the frame. Next, we address the relationship between the concepts of DAY and WEEK. To illustrate, the German term *Mittwoch* ("middle of the week") - 'Wednesday' is the only weekday name in the languages examined here which reveals nothing about being a day. Instead, it evokes the larger structure of which it is a part, WEEK. Finally, we note the influence of culturally significant categories on the naming and structuring of different parts of the week. For instance, Hebrew uses a special name for the seventh day of the week, š*abat* (Sabbath) - 'Saturday', where the language deviates from a regular and functional naming pattern. The word itself also evokes a resting frame, the Sabbath being a day of rest, a reminder that words may be linked to more than one frame at the same time. In a similar vein, English *weekend* and German *wochenende* - 'weekend' also show that languages lexicalize salient categories of experience in the culture, while at the same time illustrate the part-whole relationship (i.e. a weekend is part of a week). Knowledge about cultural conventions and practices is included in the description of the Calendric Unit Frame.

4. Summary and Directions for Future Research

In this paper we presented a Frame Semantics analysis of calendric terms in English, Hebrew, and German, demonstrating the inextricable relationship between morphology and semantics. In contrast to Bybee's (1988) approach to lexical organization, we proposed to link and interpret semantically related words against a common background frame, namely the Calendric Unit Frame. The research presented here shows that the Frame Semantics approach to lexical semantics offers a unique way of capturing both generalizations and idiosyncrasies in the description of calendric terms. In addition, by employing the frame as an analytic tool, it is possible to include references to culturally significant categories in the lexicon. Moreover, taking the frame as a universal cognitive structuring device provides the apparatus for analyzing semantic fields both within and across languages, thus providing a perspicuous way of characterizing cross-linguistic differences.

Future research is required to investigate extending a Frame Semantic approach to morphology to analyze weekday names in other languages, as well as the relationships between weekday names and other terms linked to the Calendric Unit Frame. To illustrate, consider words for the temporal sequence of days *yesterday*, *today*, and *tomorrow*, along with their Hebrew and German counterparts, as well as day part names in all three languages (i.e. *morning*, *afternoon*, and, *evening*, *night*). The goals of the present paper have been more modest: to set out an investigation of how a Frame Semantics approach can be employed for the study of morphology. More specifically,

much the same way that a verb has arguments that instantiat e frame elements, a morpheme may also require "arguments" to fill its frame slots.

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