

The correctness fallacy and lexical semantics

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1. Introduction

The *correctness fallacy* is the name I use to refer to the assumption that there is always a unique correct answer to any question asked. It is part of a folk model of logic, philosophy, and science that linguists naturally inherit, but I will argue here that we must avoid falling prey to this fallacy in order to practice the science of linguistics empirically. Specifically, I will show that the correctness fallacy often leads to untenable assumptions in lexical semantics. I will describe three studies that reveal the great danger of implicitly accepting the correctness fallacy in lexical semantic research. The first involves investigating the extremely common assumption that any use¹ of a polysemous lexeme is motivated by exactly one of the lexeme's senses; the second involves the common assumption that lexemes either have force dynamic properties (Talmy 2000), or they don't; and the third is an examination of the methodology of colostruational analysis (Gries 2012), showing how implicit acceptance of the correctness fallacy can cause the method to run awry. The results of the three studies will argue that the influences of the correctness fallacy on lexical semantic analysis are widespread and pernicious.

Both as scientists and from our folk theories, we are extremely familiar and comfortable with a paradigm in which, for many or most questions, there can and must be just one correct answer, and it is easy to forget that this is a culture- and task-dependent perspective. In mathematics, the product of two numbers has exactly one correct answer. If we appear on a televised game show, with the grand prize behind one of three doors, we may assume that there is one "correct" choice, and that we are either lucky enough to choose it, or not. However, many situations aren't so simple (or easy to simplify). It is clearly not always true that there is a single correct solution to a

¹ In this paper, I use the terms *use* and *token* interchangeably, as well as the terms *type* and *usage-type*.

problem, as all of us have experienced in our daily lives – should we take the shortcut or go the long way through more beautiful scenery? Each has benefits and drawbacks, and we choose largely based on our purposes and our psycho-emotional state.

Implicit acceptance of the correctness fallacy has snuck into the methodological assumptions of linguistics, including lexical semantics, on a vast scale, and the implications are broad and significant. I will argue that much of lexical semantics, as practiced by cognitive linguists, may be imperiled by this apparently subtle glitch in mindset. The primary goal of this paper is to detail several ways the correctness fallacy has compromised the study of lexical semantics in order to suggest the extent of the scale and shed light on some of the dangers associated with the fallacy.

The paper is structured as follows: section 2 will serve as an introduction to the correctness fallacy, as well as to the related but better-recognized myth of homogeneity, and the following sections will be used to argue that unconscious adherence to the correctness fallacy carries with it unwarranted assumptions. I will report on studies of word senses in section 3 and force dynamics in section 4, as well as a study of the methodology of collocation analysis, in section 5, as evidence. Section 6 will conclude the paper, arguing that, in order to perform an empirically valid semantic analysis, we must proceed with a heightened awareness of the correctness fallacy.

2. Background

This section will begin with discussion of the closely related but better-recognized myth of homogeneity in section 2.1 before addressing the correctness fallacy, discussing some assumptions to which the fallacy leads within lexical semantics, and noting some already-existing evidence against it from studies of language acquisition, in section 2.2.²

2.1. The myth of homogeneity

Studies of lexical semantics typically make certain assumptions that I, and many others, have argued are untenable. The assumption that all language users behave identically is what I will refer to as the myth of homogeneity.

Despite the fact that the complexity of any two real-world situations is sufficient for there to inevitably be differences, human beings are extremely adept at categorizing similar situations or concepts as instances of (roughly) ‘the same thing’. While this process is revealing (of, e.g., the nature of categories, as well as human propensity to focus on or overlook certain differences for particular reasons), it can also mask differences which are important to consider in a scientific approach to data analysis. The myth of homogeneity, widely prevalent in many fields of science, as well as in folk philosophy, is what allows linguists to abstract away from details in order to study a ‘typical’ language user, who is assumed to be functionally equivalent to any other language user. This myth has far-reaching effects on the study of language. The fact that, for example, spoken language is notoriously difficult to describe using the rules

² This section is slightly revised from Benom (2007 §2.3)

of syntax that were developed to describe idealized, homogenous grammatical systems (Crystal 1976, Milroy 2001) can be seen as a result of this myth. Practitioners of cognitive linguistics generally subscribe to a usage-based view of language, which means that language structure emerges from and is grounded in language use (see e.g. Barlow and Kemmer 2000, Croft and Cruse 2004, Langacker 1987, 1991, Tomasello 2003). This bottom-up approach includes a nonreductive view of linguistic structure. This is in diametric opposition to 'reductive' or 'minimalist' approaches used by generativists who state that their (top-down) work is exclusively on 'competence', or that they are only interested in an ideal speaker, which is essentially an open ticket to ignore heterogeneity. Part of the acceptance of real, 'dirty' data in cognitive linguistics is, or should be, openness to language internal linguistic diversity, which may be referred to as 'lectal variation' (Geeraerts 2005); this term refers to intralanguage variation involving idiolects, dialects, sociolects, register differences, etc. Yet the myth of homogeneity has pervaded linguistics to such an extent that only infrequently do linguists dare entertain the majority of its effects, other than to ascribe it to some (possibly 'inferior' or 'less interesting') other facet of language than the one being researched. This permits the researcher to continue on a program or with a paradigm that essentially ignores heterogeneity for all intents and purposes, which in turn typically leads to the unabated perpetuation of the myth.

Variation seems to exist meaningfully at all levels of communication. For instance, research on birdsong (Balaban 1988) shows that variation in the 'syntax' (temporal arrangement and order of acoustic units) of the elements of birdsong within individuals of a single species is behaviorally salient to both males and females.

The myth of homogeneity has been discussed within modern linguistics at least since the time of Ferdinand de Saussure (1916/1977, 2006), who needed to differentiate between *langue* and *parole* precisely to avoid the complications of heterogeneity. Sapir's insight into the issue is worth quoting: "Two individuals of the same generation and locality, speaking precisely the same dialect and moving in the same social circles, are never absolutely at one in their speech habits. A minute investigation of the speech of each individual would reveal countless differences of detail..." (1921:147)

Sociolinguistics, in opposition to the rest of linguistics, accepts and embraces variation in language use. Variation has always held a central place in sociolinguistics, and continues to do so (e.g. Chambers et al 2002, Labov 1963, 1966, 2001, Eckert 2012, Tagliamonte 2006, Trudgill 1974, Weinreich et al. 1968, Wolfram 1969). The consequences of questioning homogeneity in sociolinguistics were vast, but other branches of linguistics were slow to accept this rejection of homogeneity, for several reasons. Most significantly, it is not clear how to reconcile syntactic and semantic theory, which assume homogeneity, with individual variation and heterogeneity.

Cognitive-functional linguistics took note of heterogeneity from early in its history through the work of Givón (1979), Langacker (1987), and others. Givón (1979) notes that syntactic phenomena may be expressed without exception in a particular way in one language but that variation in use may exist in another language, and that generativists are forced to consider the former communicative tendencies as

‘competence’, and the latter as ‘performance’. Givón goes so far as to state “When live discourse data are taken into account...it becomes obvious that noncategorical phenomena (i.e. phenomena which are expressed variably) are the rule rather than the exception in human language.” (1979:31, parentheses added). Some of the work done from a cognitive-functional perspective that embraces variation includes diachronic work by Bybee (2001) on phonological change, Heine, Hopper, and Traugott’s work on grammaticalization (e.g. Hopper and Traugott 2003, Traugott and Heine 1991), Geeraerts’ (1997) work on semantic change, and the work of Levinson (Levinson & Wilkins 2006) and Slobin (2004) on typology. But almost none is synchronic and intralinguistic, though recently this area has begun to receive some initial interest, and the importance of undoing the myth of homogeneity has been explicitly recognized (Croft 2009, Gondelaers et al 2002, Kristiansen and Dirven 2008, Stefanowitsch and Gries 2008). For instance, Croft (2009) argues that linguistic meaning is indeterminate and may only be construed through interaction, leading to a variationist, utterance-based model of grammar. This type of insight is welcome and necessary, but it is not always obvious how to implement it in one’s research program, and much work in cognitive linguistics continues to assume homogeneity.

2.2. The correctness fallacy

The correctness fallacy is closely related to the myth of homogeneity. For instance, assuming that ‘all people would behave the same way in a given situation’ can easily be extended to ‘...and that is the correct way’ in folk philosophy. The correctness fallacy is widely assumed within (and outside) linguistics, and its effects can be felt from phonetics to syntax to pragmatics, but as this study is focused on lexical semantics, I will consider its consequences in that field.

With very few exceptions, such as Relevance Theory (Sperber & Wilson 1986/1995, 1998, Wilson 2004, Wilson & Sperber 2004), nearly all work in lexical semantics makes the following assumptions, which are based on the correctness fallacy:

- 1) In communication, each word or utterance has one ‘correct’ meaning.**
- 2) The speaker performed the utterance in order to convey this meaning.**
- 3) Any listener who performs adequately will grasp this meaning.**

The basis of the fallacy in semantics can be seen in (1), whereas (2) and (3) are corollaries of (1).³ Within lexical semantics, the correctness fallacy is found in most work on polysemy, in the form of the following implicit assumption:

- 4) Each token of a polysemous item is motivated or licensed by a single (‘correct’) sense of the item.**

³ With certain other assumptions, such as the maxim of relevance (Grice 1975).

This could be considered a direct application of the assumption in (1) to the methodology of polysemy analysis. Finally, most research on force dynamics⁴ (see Talmy 2000) – with a few exceptions – makes the implicit assumption in (5) below.

5) Lexemes either denote a force dynamic configuration, or they do not.

The prevalence of these assumptions within lexical semantics, as well as their overarching effects, cannot be overstated. The assumption that a word or an utterance has exactly one correct meaning is nearly ubiquitous, though how the researcher is to establish which of multiple competing potential meanings is the correct one for any given piece of data isn't often addressed. Moreover, in cases for which two potential meanings exist, the assumption is often that the speaker was referring to exactly one and the hearer's job is to ascertain which one is correct (the hearer's interpretation is seen as either successful or unsuccessful in receiving and unpacking the speaker's message; Reddy 1979). Note that attempting to address variation by placing percentage marks next to grammatical patterns (which symbolizes the idea that some portion of native speakers accept, and another portion reject, the data) doesn't solve this problem, though it does take a (very small)⁵ step toward faithfully describing (some types of) data. Implicit acceptance of the correctness fallacy results in some essential questions based on assumptions (1) to (5) above remaining concealed or even un-askable, such as whether speakers and hearers always assign tokens of polysemous lexemes to distinct senses. I will argue that the assumptions arising from the fallacy cannot be maintained in the face of the evidence presented below.

2.2.1. Cognitive linguistics grapples with the correctness fallacy

Langacker (2008) discusses the question of whether an individual speaker ever really knows "the meaning" of a word or an expression, since one could see meaning as distributed over the entire speech community, rather than as something found in any person's head. "[T]he conclusion depends on the simplistic assumption that just one kind of entity counts as "the meaning" of an expression...For purposes of studying language as part of cognition, an expression's meaning is first and foremost its meaning for a single (representative) speaker." (2008:30). The fact that he addresses the

⁴ A description of force dynamics will be provided in section 3 below.

⁵ I deem this step to be very small because, presumably, given a large enough sample size, almost no data would receive unanimous grammaticality judgments. Therefore, nearly all data falls between the extremes of 0% and 100% grammatical, and percentage marks do not distinguish between data that is accepted by, say, 27% or 77% of respondents, nor do they explain the reason for the discrepancy – is it a difference in register, dialect, idiolect, sociolect, gender-based language use, or something else? Furthermore, some (or even most) data may be acceptable given a certain context, and unacceptable in other contexts, and percentage marks may represent the portion of respondents that were able to imagine an appropriate context, rather than speaking to the grammaticality of an utterance.

correctness fallacy is both unusual and admirable, but by calling on the myth of homogeneity in order to resolve the problem, in the form of positing an idealized “representative” speaker – which, we need not doubt, is unlikely to have intuitions distinctly different from those of Langacker himself – it is unclear to what extent he has emerged from the grasp of these fallacies, if at all.

Croft (2009) also addresses the correctness fallacy in his discussion of differing possible construals of a linguistic expression, stating, “...we cannot avoid construing the scene in one way or another...[N]o construal has an *a priori* privileged status as the “best” or the “correct” construal of a scene. It is not “better” or “more correct” to construe the scene as homogeneous (*foliage*) or an aggregate (*leaves*). Either is valid *a priori*, although one may be considered more useful on a particular occasion of use, depending on the goals of the interlocutors.” (Croft 2009:410; parentheses in original).

Some cognitive linguists assume that all linguistic expression is incomplete in specifying for meaning, arguing that conceptualization of linguistic form requires integration of both linguistic and nonlinguistic information, under the guidance of general cognitive principles (e.g. Fauconnier 1994, 1997; Fauconnier and Turner 1998, 2002; Turner 1991, 1996, Tyler and Evans 2001). In other words, some semantic features inherently absent in the linguistic content of the utterance are filled in by the larger context, including both immediate context and larger context such as cognition and culture. I am deeply sympathetic to this idea, but the question of how to undertake semantic analysis, given this proposition, is not always clear.

Despite the fact that many influential figures in cognitive linguistics have recognized the problem, not only does the extent of the problem remain concealed, I will argue, but it is not always obvious how this recognition can be applied to an empirically valid study of meaning. In section 3, I will attempt to take steps toward remedying this by discussing several ways that the correctness fallacy is implicit in studies of lexical semantics, as well as demonstrating methodologies that, to the greatest extent possible, don’t assume correctness.

2.2.2. Evidence against homogeneity and correctness in language acquisition

The field of language acquisition research has long been concerned with the individual, and as such, researchers have been forced to explicitly denounce homogeneity (and correctness, to some extent, though typically less explicitly). Nelson (1973) initially demonstrated that children vary tremendously in the vocabulary they control during the one word stage, sparking early interest in this topic (Dore 1974, Horgan 1978, 1981, Peters 1977, Starr 1975). Bloom (1970) hypothesized that differences in children’s grammatical strategies reflected divergent underlying linguistic organization. Bloom et al. (1975) studied individual differences in early grammatical development, including the tendency to use full nominals versus pronominals. Bates and colleagues (Bates et al. 1995) recognize the myth of homogeneity and the correctness fallacy and take steps to counter them by embracing variation as the basis of their work. “It is our contention that quantitative and qualitative variations within and across components of early language are also relevant, indeed

essential, if we want to understand the mechanisms that underlie normal language development. Far from simply reflecting noise in our measuring instruments or variability in low-level aspects of physiological maturation, the variations that we will document here are substantial, stable, and have their own developmental course.” (Bates et al. 1995:96).

Beginning in the next section, I will discuss my own evidence for the prevalent and harmful effects of the correctness fallacy in lexical semantics. In order to sufficiently discuss and effectively argue against them, I will focus my efforts on the two assumptions in (4) and (5) above, which I will address in §3 and §4, respectively. At that point, to suggest the breadth and depth of the problem, in §5 I will argue that the insidious effects arising from acceptance of the correctness fallacy have penetrated even collocation analysis, which proponents claim is an extremely objective methodology of corpus-based lexical semantic analysis, and is considered one of the most empirical methodologies in cognitive linguistics.

3. The correctness fallacy and word senses

Nearly all studies of word senses, both within and outside of cognitive linguistics, make the assumption that each use of a polysemous item must be motivated or licensed by a single one of that item’s senses (the ‘correct’ one, in terms of both communicative and analytical efforts). Simply put, if (e.g.) the word *over* is used, exactly one of the senses of *over* must be responsible for or motivate the use. Often, the influences of this fallacy work in two directions; when linguists posit that (again, e.g.) *over* has X number of senses, it is typically on the basis of looking at various (intuited or attested) uses of *over* and assigning each to a separate sense, except when multiple uses seem to fit in a single category. In other words, since (the assumption goes) each token of the item “belongs” to one of the item’s senses, we can discover the senses by collecting the tokens and putting them into categories. Exceptions to this include various corpus-based approaches (e.g. Kilgarriff 1997) including collocation analysis (Gries 2012), which will be discussed further in §5 below.

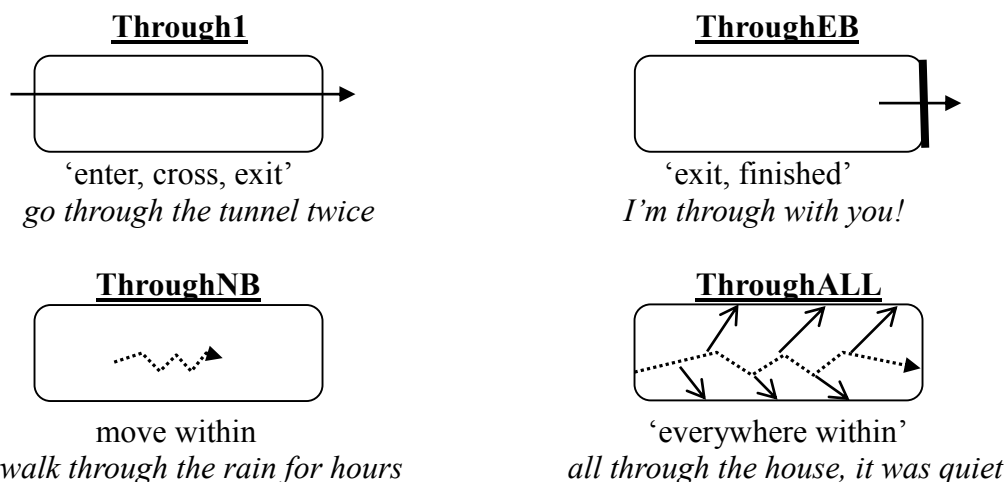
3.1 Background

Elsewhere (Benom 2007, 2008), I have undertaken a corpus-based study of English *through* that suggests that uses of this polysemous lexeme are not always ‘resolved’ by language users into a single sense. The study, which involves both qualitative and quantitative analysis of corpus data, can only briefly be summarized due to space limitations. I will first present an extract of a single case study from among the nine that comprise the qualitative analysis, and then I will describe the overall results of the qualitative studies, which show the wide variety of usage-types for which this type of situation is found to exist. Finally, I will mention the results of the quantitative study, which speak to the frequency with which a single sense of the item is not obviously motivating a particular use.

It is notoriously difficult to assess the descriptive or cognitive validity of word senses (Fillmore and Atkins 2000, Geeraerts 1993, 1994, Goddard 2000, Lyons 1977, Quine 1960, Raukko 2003, Zwicky and Sadock 1975). Therefore, the methodology employed here is based on the identification of maximally entrenched – by which I mean syntactically differentiable – word senses, which I refer to as *primary senses*. Once this step is taken, and the linguist can assume that s/he is working with “cognitively real” word senses (stemming from the assumption that speakers’ grammatical behavior reflects cognitive organization), the classification of corpus data based on these high-level senses is undertaken.

As an initial step, thousands of tokens of *through* occurring in the British National Corpus (BNC) were examined, and the syntactic and semantic potential of each category was ascertained. (For more details on this methodology, see Benom 2007:37-43, 80-156.) The primary senses of *through* are represented below, in the following format: name of primary sense, graphic representation of geometry, paraphrase, and example.

Figure 1 – Schematized representations of the geometry of the four primary senses of *through* (Benom 2007, 2008)



Following this, I present Table 1, which characterizes the prototypes associated with each of the primary senses.

Table 1 – Prototypes of the four primary senses of *through*
(adapted from Benom 2007:139)

Primary sense:	Through1	EB	NB	ALL
Characterization of prototype semantics	Enter, cross, exit	Finished/terminative, exit	Motion within	Everywhere within
Specifications				
Path	Crosses two boundaries	Crosses final boundary	Stays within Ground	Fills Ground (or not relevant) ⁶
Ground	Relevant	May be irrelevant ⁷ ; may be focused on ⁸	Relevant; as Medium	Relevant, filled
Motion	Possible	Possible	Yes	Possible
Morphosyntactic Realization				
Lexical class	Prep ⁹	Particle	Prep	Prep, Particle
Collocates	Physical entities ¹⁰	Precedes <i>with</i>	Mass nouns	Follows <i>all</i>
Associated event structure				
Duration	Possible	No	Yes	Usually
Telicity	Usually telic	Telic	Atelic	Either
Category of event structure (Vendler 1967)	Usually accomplishments, achievements	States	Activities	Usually activities, accomplishments

Because primary senses are used in the analysis, there is maximal contrast between senses. This should make it easier to ‘resolve’ tokens into a single (primary) sense.

⁶ The Path for ALL may (conceptually) fill the Ground, as in *I walked all through the building*, or may not exist in the real world, as in *There are flies all through the building*, which could involve fictive motion.

⁷ Examples include *Thanks for coming through in a pinch*.

⁸ Examples include *The night is almost through*.

⁹ It is possible that the semantics of Through1 can be expressed in a verb particle, though the discussion in Benom (2007 §4) was inconclusive.

¹⁰ Among the strongest collocates of *through* in the BNC (within 5 words to the right) are *archway, alleyways, sieve, channels, undergrowth, turnstiles, keyhole, megaphone...*

3.2. Qualitative analysis

Once the primary senses were determined, a list of the verbs most commonly occurring with *through* in the BNC was generated. After examining several dozen tokens of each type, eight case studies of verb + *through* (or *through* as used in various lower-level constructions encountered in the data, such as *go through X's mind*) that included data that appeared likely to be difficult to categorize were undertaken. When possible, all tokens in the corpus were examined, but the number of tokens sometimes made this impractical. In such cases, at least 600 tokens were examined.

In these case studies, uses of *through* that are not clearly motivated by one single primary sense of *through* are discussed. First, due to space limitations, just one of the case studies is extracted and summarized, immediately below, and following this the results of all of the case studies are summarized.

3.2.1. Summarized extract from case study 2: go through X's mind

One idiomatic usage-type based on *go through* takes thoughts as the Figure¹¹, and they are described as *going through* a person's mind. With this usage-type, as will be seen below, it is often difficult to tell if Through1 or ThroughNB is motivating a use, despite the fact that these two primary senses are strongly contrastive. An example can be seen in (8) below.

(1) *you don't know what **goes through kids' minds***

It is not clear if this usage-type refers to a thought going ThroughNB (within) someone's mind (such as circling within), or coming into existence, existing for a while, and then going out of existence (no longer being considered) in the person's mind, which most closely resembles Through1, as this involves the crossing of functionally opposite boundaries ("entry" into and "exit" from the mind). In order to study this, all tokens of *go through* (with any form of the verb *go*) with the item *mind* occurring within three words following *through* in the BNC (N=62) were examined.

Some uses seem to be motivated by ThroughNB, such as the following:

(2) *I talked with other feminists with disabilities about forming an organization for women with disabilities. The same thoughts **had been going through the minds** of two other women with disabilities.*

In this case, due to the fact that a specific, limited range of thoughts are the Figure, and this is combined with an imperfective verb form, an apparent lack of boundedness

¹¹ I use the terms *Figure* and *Ground* as in Talmy (2000) to refer to the located entity (*Figure*) and to the locating entity or reference point (*Ground*).

results (the thoughts seem to be ‘moving within’ the women’s minds for a duration of time). This strongly resembles NB, although it is impossible to rule out a conceptualization in which the particular thoughts repeatedly go Through1 the women’s minds. Cases such as the following, however, seem to suggest a closer relationship with Through1:

(3) *Later in the evening Maura was sitting in a small Chinese restaurant with Terry.*

*What Margaret had said earlier **had been going through her mind over and over again**. She tried to reason with herself.*

In this example, the fact that the progressive verb form is understood iteratively, as shown by the adverbial *over and over again*, suggests that the unbounded NB does not fit well with the semantics of this usage event. However, it is impossible to rule out a conceptualization in which many shorter instances of the thought going ThroughNB Maura’s mind (i.e. ‘moving within her mind’) serve as the individual instances that are repeated.

Put simply, is the thought ‘entering and later leaving her mind’ repeatedly, or is it ‘moving within her mind’ repeatedly? There is no clear way to know.

The data include multiple instances of telic non-durational (i.e. instantaneous, or lacking a process) events (‘achievements’ in the terms of Vendler 1967) coordinated with *go through X’s mind*. In the following example, the clause with the verb *find* is used as an achievement.

(4) *So, what **was going through your mind** when you found this sampler with glued up vents?*

The event structure of each clause and their temporal coordination suggests that the clause with *going through your mind* may be a process that was interrupted with the instantaneous finding event, as would be consistent with NB. However, Through1 can also be seen as consisting of a process, and at the relevant instant some thought(s) may be seen as being on the Path and in motion such that they could have been expected to go Through1 the listener’s mind (i.e. from one end to the other, or into and then out of). Additionally, the speaker could be (and most likely is) using *when* to refer to the time *after* the discovery (since it is the listener’s reaction to the discovery that is relevant), and thus we have no way to ascertain if the use of *go through X’s mind* is motivated by Through1 or by NB.

To summarize, despite examining data with a range of aspect, event structure, and temporal coordination of clauses, this author was unable to identify which of the two primary senses Through1 and ThroughNB, if either, underlies any of the uses discussed here or this usage-type in general.

3.2.2. Results of all case studies: a summary

The claim that individual uses are not always motivated by one single primary sense predicts that this should be the case for a wide variety of different usage types. Benom (2007, 2008) showed that at least some uses of the following usage-types involve uses of *through* that are not clearly derived from a single primary sense:

go through (literal), *go through* ('perform'), *go through* ('experience'), *go through* ('read'), *go through* ('examine carefully'), *go through X's mind*, *move through*, *run through* ('fast pedestrian motion'), *run through* ('to flow'), *run through* ('to continue (to exist) for a certain time period'), *run through* ('to occur regularly or persistently'), *run through* ('to perform, recite, or examine'), *run through* ('to describe'), *get through*, *get X through Y*, *get X through*, *get X ADJ through*, *cut through* (literal), *cut through* ('overcome illusion'), *cut through* ('exist in all parts of'), *read X through*, *read through X*, *think X through*, *think through X*, *have been through* (literal), *have been through* ('experience'), *have been through* ('examine thoroughly'), *come through* ('be finalized'), *talk X through*, *talk through X*, *walk through X*, *rise through X*, *sweep through X*, *skate through X*, *survive through X*, *soften through X* (where X is a time span), *be NOUN through X* (where X is a time span), *work through from TIME to TIME*, *work X's way through Y*, *filter X's way through Y*, *do X all the way through*, *rummage through X*, *flounder through X*, *hear Y through X*, *sit through X* (where X is a time span), *have Y (all) through X* (where X is a time span), *be scattered through X*, *there are Y through X*, 'reflexive' uses e.g. *shine through at the back*, adjectival uses e.g. *a through-street*

3.3 Quantitative analysis

Because there are more than 80,000 tokens of *through* in the BNC, it was not possible to analyze all of them in detail. Therefore, I have created what I call the BNC500, in order to undertake the foundations of a quantitative analysis, simply by attempting to assign a primary sense to each token in the data.

250 tokens of *through* were extracted from the written portion of the BNC, and 250 from the spoken portion, and the two data sets were combined.¹² My purpose in creating this data set was to perform a quantitative analysis of the proportion of uses that are assignable to one single primary sense of *through*. The overall results are shown below in Table 2.

¹² See Benom (2007) for a detailed description of the process of extracting these tokens from the BNC.

Table 2 – BNC500 Results (adapted from Benom 2007:252)¹³

Primary senses assigned	BNC500 TOTALS
1	274 (54.8%)
NB	22 (4.4%)
EB	3 (0.6%)
ADJ ¹⁴	2 (0.4%)
1, NB	124 (24.8%)
1, EB	29 (5.8%)
1, ALL	15 (3%)
NB, ALL	3 (0.6%)
1, NB, EB	1 (0.2%)
1, NB, ALL	19 (3.8%)
1, EB, ALL	5 (1%)
1, NB, EB, ALL	3 (0.6%)
TOTAL	500 (100%)
Tokens assigned to a single sense	301 (60.2%)
Tokens assigned to multiple potential senses	199 (39.8%)

The most striking result of the study is that only 301 (roughly 60%) of the 500 tokens were assignable to a single primary sense. The remaining 199 (roughly 40%) were assigned to multiple potential primary senses. In fact, only uses of the central primary sense (Through1) outnumber uses that are not clearly motivated by any one primary sense; unambiguous uses of the other primary senses were surprisingly infrequent.

3.4. Interim conclusion

The results of these quantitative and qualitative studies suggest that the categories defined by word senses, even those that are maximally entrenched (by which I mean syntactically differentiable), while relevant to processing in some situations, are often left unemployed as part of the processing of polysemous items. Despite the use of primary senses in the analysis, which make it easier to categorize tokens as being an instance of a sense, it was shown that many tokens are not clearly motivated by a single primary sense.

The studies described here suggest that speakers employ polysemous terms without requiring them to be motivated by a single sense of the term not just occasionally, but systematically – that it is a fact of processing that occurs frequently in speaking and comprehending, as well as reading and writing.

¹³ There are no uses isolating ALL as the single motivating primary sense.

¹⁴ Adjectival uses, such as *a through street*, are not discussed here due to limited space.

As for issues of processing: because a substantial portion of uses of *through* were not clearly motivated by a single primary sense, it suggests that speakers are using a higher-level, abstract meaning to effectively neutralize the word-sense distinctions. To do so requires them to ignore certain contradictory facets of two or more of these potentially-competing primary senses. The result could be referred to as a *superschema* (Langacker 1987, 1999:93) or as a *good-enough representation* (a product of processing that is sufficiently complete for the current purpose, e.g. Christianson, Hollingworth, and Ferreira 2001, Ferreira, Bailey, and Ferraro 2002, Poesio, Sturt, Artstein, and Filik 2006, Sanford and Graesser 2006). For more discussion surrounding this issue, including an in-depth review of good-enough representations, see Benom (2007).

Finally, to clarify and to connect the discussion here and questions of processing to issues of research methodology: what I have shown is that a particular use of *through* may not be motivated by a unique, syntactically and semantically defined (primary) sense of *through*. However, the implications of these results for the analyst should be clearly identified.

To do so, we need to differentiate between two types of situations.¹⁵ In the first, which we could refer to as ambiguity, there are two or more potentially relevant categories of meaning (e.g. word senses), and we are not certain which one the speaker / writer intended to refer to, or if she simply ignored (e.g.) word sense distinctions and employed a higher-level, abstract representation (i.e. a superschema). This may be exemplified by examples (1-4) above.

In the second, which we could refer to as vagueness, two potentially relevant meanings can overlap or be simultaneously activated. This could be the case with the abstractness/concreteness of the Ground in examples (5-14) in section 5 below (though we cannot be certain what the speakers of these uses had in mind).

In cases of both ambiguity and vagueness, quantitative studies of lexical semantics could easily be negatively impacted by an implicit belief in the correctness fallacy. With vagueness, even a qualitative study could potentially be affected by belief in the correctness fallacy, e.g. by forcing the analyst to “push” uses into one category or another (see section 5 below, and also Langacker 2006).

However in qualitative analysis involving cases of ambiguity, it should be possible for an analyst to describe the potential semantic structure or various potential semantic structures of a use without knowing if the speaker herself intended to convey such a structure. In other words, an empirical, qualitative analysis of the potential semantic structure of a use in situations of ambiguity, undertaken for certain purposes, may be possible even if the researcher lacks awareness of the correctness fallacy.

¹⁵ I am indebted to an anonymous reviewer for pointing out the need for this discussion, which is based on his/her insightful comments.

4. The correctness fallacy and force dynamics¹⁶

Force dynamics (Talmy 2000) is a basic cognitive category describing how entities interact with respect to force. It appears to be universal and fundamental to the conceptual structure of language. It categorizes the interaction of two entities with respect to such aspects as their inherent tendencies toward motion or rest, their relative power and the outcome of their interaction.

In the literature on force dynamics, one can find descriptions of lexemes that are claimed to 'be force dynamic', and this certainly appears to be the case for *despite*, *block*, *resist*, *force*, and many other forms. However, much of the discussion makes it seem as if force dynamics were always an all-or-none property of a form, rather than allowing that a form may be more- or less-closely associated with a force dynamic pattern.

Not all research makes this assumption, to be sure; Coventry and Garrod (2004, and the work cited therein) investigate the meanings of spatial relations terms by presenting subjects with images of scenes with varying geometric or force dynamic relationships and asking them to match each scene with or give confidence ratings for a linguistic expression. This type of empirical approach is not found in most studies of force dynamics, however, and despite its virtues, it is not applicable in every investigation. For instance, it is limited to testing situations that are sufficiently concrete to be represented graphically.

The corpus-based approach described and employed in Benom (2007, 2013, 2014) has the advantage that it can also be used to study abstract situations. It does not attempt to replace the methodology employed by Coventry, Garrod, and colleagues – there is a need for multiple methods of testing for force dynamics to support each other and strengthen researchers' confidence in their results.

The hypothesis tested in this study is that there is a gradation of strength with which a form may be associated with a force dynamic property, and that English *through* is an instance of a form associated with a force dynamic pattern – specifically, that of **resistance** – to a non-trivial and non-maximal extent.

In this investigation, I am only concerned with two primary senses of English *through* (Through1 and ThroughNB; see §3.1 above). I will show that they have a strong affinity for the force dynamic configuration of resistance (i.e. that resistance is included as a flexible aspect of their meaning), despite the fact that they cannot be said to denote resistance.

It is obviously not the case that force dynamics are 'present' in the meaning of *through*, unlike lexemes such as *despite*, *block*, and *force*, if one is referring to the denotation of a force dynamic pattern. *Through* has many uses that do not appear to include force dynamic characterization, including uses of the primary senses hypothesized here to suggest force dynamics. For instance, it is hard to imagine that resistance is specified in uses such as *She looked out through the window* and *My office*

¹⁶ This section is fundamentally different from what appeared in Benom (2007), including being distinct methodologically, and supersedes what appeared there. What is presented here is a summary of Benom (2013, 2014).

is right through that door, though the primary sense from which these uses are drawn is one that is argued here to be statistically linked to force dynamic properties (Through1). Furthermore, situations explicitly lacking resistance can be described using this primary sense of *through*, as in the following example from the Corpus of Contemporary American English (COCA): *Colene tried to kiss the image, but her head passed right through without resistance*.

We can define a form that includes force dynamics as a flexible aspect of meaning as one that shows a measurable, relatively¹⁷ strong association with situations involving the force dynamic meaning. This meaning should be entrenched (or stored in semantic memory, e.g. Croft & Cruse 2004, Evans 2005, Langacker 1999) rather than pragmatically generated or contextually derived, though it may be entrenched to some non-maximal (and non-trivial) extent.

The methodology primarily makes use of two corpora, in which identical queries are performed, in order to minimize corpus-specific bias: the British National Corpus (BNC) and the Corpus of Contemporary American English (COCA; Davies et al 2008). Statistical co-occurrence information about *through*, *over*, and *across* (three lexical alternatives; Douglas et al. 1987, MacWhinney 1987) and certain environments expressing resistance is generated. The hypothesis predicts that 1) (These senses of) *through* will occur in environments involving resistance more frequently than in neutral environments, which in turn should be more frequent than environments implying ease of motion or lack of resistance, and 2) (these senses of) *through* will appear in environments involving resistance more often than *across* and *over*, which are not claimed to suggest resistance.¹⁸ First, due to space limitations, I will briefly summarize the environments investigated, the predictions made, and the results¹⁹, and then I will go into some additional detail about the statistical methods used to investigate two of the environments.

4.1. Summary of environments investigated, predictions, and results

Environment 1) Proximity to 33 adjectives for Grounds that are easy or difficult to traverse (e.g. *effortless, difficult, easy, grueling, painful, painless*)

¹⁷ By employing the word *relatively*, I purposely leave the definition open, because I believe that the particulars of the situation must be determined (and argued) based on the research program and topic, and the types of evidence that are employed or available.

¹⁸ Note that *across* and *over* may be linked to a different category of force dynamic meaning without contradicting the premise of this argument. Also, if one or both is linked to resistance, it will simply make it more difficult to provide evidence supporting the hypothesis.

¹⁹ While I recognize that to present the results before describing the methods is not the traditionally preferred order, based on the thought to optimize clarity while considering constraints of space I judged it to be sufficiently motivated in this case.

Predictions

- a) *Through* should be more strongly attracted to Grounds that are difficult-to-traverse than those that are easy to traverse.
- b) *Through* should be more strongly attracted to Grounds that are difficult-to-traverse than *across* and *over* are.

Results

In both corpora, *across* and *over* showed no discernable pattern of preferring difficult- or easy-to-traverse Paths, while *through* revealed a strong preference for difficult-to-traverse Paths. The top 10 collocations for *through* in the BNC, and the top 13 in the COCA, are all from the difficult-to-traverse group.

Environment 2) The ‘way’ construction, including six verbs of difficult motion
Here, I investigate the ‘way’ construction (V NP’s way PATH - e.g. *He made his way through the crowded room*), which is argued to involve resistance (Goldberg 1995, 1996, 2010, Jackendoff 1990, 1992, 2010, Michaelis 2005, Nakajima 2005). First, the strength of correlation of the bulk of this construction, but without a specific verb (which could influence the force dynamic interpretation), is tested using *through*, and the results are compared to those for *over* and *across*. Then, in order to encourage a force dynamically powerful reading, the verbs *fight*, *make*, *push*, *force*, *struggle*, and *work* are used in this construction, and the results with each of the three prepositions are compared.

Predictions

- a) *Through* should be attracted to the ‘way’ construction, which involves resistance.
- b) *Through* should be attracted to verbs of difficult motion in the ‘way’ construction.
- c) *Through* should be more closely attracted to the ‘way’ construction than *across* and *over* are.
- d) *Through* should be more closely attracted to verbs of difficult motion in the ‘way’ construction than *across* and *over* are.

Results

The results robustly and unanimously supported the hypothesis. All of the predictions were met. A sub-set of the results is discussed in greater detail below within the context of a discussion of the methods used.

Environment 3) The ‘make it GOAL’ construction (e.g. *I made it through the tunnel*)

Predictions

- a) *Through* should be attracted to the ‘make it GOAL’ construction, which involves resistance.
- b) *Through* should be more closely attracted to the ‘make it GOAL’ than *over* and *across* are.

Results

The results robustly and unanimously supported the hypothesis. Both of the predictions were met. Some of the results are discussed in greater detail below.

4.2. Methods used to investigate environments (2) and (3)

To investigate the relationship between *through*, *over*, and *across* and the ‘way’ and ‘make it GOAL’ constructions, collexeme analysis (Gries and Stefanowitsch 2004, Stefanowitsch and Gries 2003, 2005²⁰) is employed. Collexeme analysis takes into account the overall frequencies of both the word and the construction when calculating the strength of attraction or repulsion of a lexeme and a construction in a corpus. The statistical analysis proceeded as follows, taking the case of *through* and the ‘way’ construction as an example. First, the crosstabulation of *through* and the ‘way’ construction in each corpus was calculated. The results from the BNC are given in Table 3 below.

Table 3 – Crosstabulation of *through* and the ‘way’ construction in the BNC
(adapted from Benom 2014:38)

	<i>through</i>	all other preps	row totals
‘way’ construction	1086	4400	5486
All other constructions	70744	10,883,900	10,954,644
Column totals	71,829 ²¹	10,888,301	10,960,130

The Fisher-Yates Exact test is then applied to the data in table 3, resulting in a p-value that is effectively zero. Many studies within the framework of collostructional analysis use a log-transformed p-value (e.g. Stefanowitsch and Gries 2005), taking the negative base-10 logarithm of the p-value for several reasons, including the fact that lexemes attracted to constructions and those repelled by constructions can be distinguished by assigning a negative value to the latter, and I follow this practice. Based on this procedure, it follows that log-transformed values exceeding 1.30103 are significant at the level of 5% (since $10^{-1.30103} = 0.05$), values exceeding 2 are significant at the level of 1%, and values exceeding 3 are significant at the level of 0.1%. In cases such as this

²⁰ Because it may appear odd to employ the very methodology I plan to criticize later in this paper, it is worth clarifying that I believe that collostructional analysis can be a valuable tool in the description of lexical meaning, depending on the way in which it is employed. I will object to the practice of assigning data to categories without critically assessing the potential effect of the correctness fallacy, i.e. without description of how the unclear cases were assigned and without a clear definition of the category labels. However, I consider the statistical methodology of collostructional analysis to be rigorous, given appropriate input, and thus make use of one facet of collostructional analysis (collexeme analysis) in the research presented here.

²¹ This number represents the total number of tokens of *through* coded as prepositions in the BNC, and excludes particles.

one, for which the p-value is effectively equal to zero, the log-transformed p-value is equal to infinity, showing that *through* is attracted extremely strongly to the ‘way’ construction in the BNC. Table 4 below includes data for all three lexical alternatives.

Table 4 – Collexeme analysis of the three lexical alternatives in the ‘way’ construction in the BNC (adapted from Benom 2014:42)

BNC results	across (N=20,707)	over (N= 71,350)	through (N=71,830)
(Total tokens of PREP in ‘way’ construction) as % of all tokens of PREP	(152) 0.63	(146) 0.11	(1086) 1.34
Strength of attraction/repulsion	109.07	18.36	∞

From Table 4, it can be seen that *across*, *over*, and *through* are all strongly attracted to the ‘way’ construction in the BNC, but also that *through* is by far the most strongly attracted of the three, as predicted by the hypothesis. Similar results were seen in the COCA.

At this point, a covarying collexeme analysis was performed with the same verbs of difficult motion, and the results are presented in Table 5 below. Here, queries were for each of the three lexical alternatives in the ‘way’ construction co-occurring with (all morphological variants of) each verb of difficult motion (*force*, *push*, *fight*, *work*, *shove*, and *struggle*).

Table 5 – Covarying collexemes in the ‘way’ construction – the three lexical alternatives with verbs of difficult motion in the ‘way’ construction in the BNC²²
(adapted from Benom 2014:42)

across	over	through
Make 2.77	Work 2.51	Make 31.66
Work 0.66	Make 1.70	Work 22.98
Force 0.62	Push 0.05	Push 19.05
Fight 0.10	Force 0.09	Fight 2.43
		Force 0.64

²² Values shown are p-log10 values; some verbs returned insufficient data.

Here, it can be seen that *through* is strongly attracted to three of the verbs (*make*, *work*, and *push*), while *over* and *across* each show little or no attraction to the verbs. There is not a single verb among those tested which is more attracted to either *over* or *across* than it is to *through*. (Searches including *struggle* returned insufficient results.) Similar results were seen in the COCA.

As for the ‘make it GOAL’ construction, the results for *through*, *across*, and *over* are seen in table 6 below.

Table 6 – Collexeme analysis of the three lexical alternatives in the ‘make it GOAL’ construction in the BNC (adapted from Benom 2014:44)

BNC results	across (N=20,707)	over (N= 71,350)	through (N=71,830)
(Total number in ‘make it GOAL’ construction) as % of total number of PREP	(9) 0.04	(12) 0.02	(68) 0.09
Strength of attraction/repulsion	4.63	1.38	59.17

Table 6 shows that *through* is by far the most strongly attracted of the three prepositions to the ‘make it GOAL’ construction in the BNC. Similar (but even more robust) results were found in the COCA.

4.3 Interim conclusion

These results provided evidence that there is a gradience of strength with which a form may be associated with a force dynamic property. They uniformly and robustly support the argument that *through* is linked to resistance without denoting resistance, and show that force dynamics is not an all-or-none aspect of lexical meaning.

5. The correctness fallacy and collostructional analysis²³

Collostructional analysis (Gries 2003, 2006, 2010, 2012, Gries and Divjak 2009, Gries, Hampe and Schönefeld 2006, Gries and Stefanowitsch 2004, Hilpert 2006, Stefanowitsch 2003, Stefanowitsch and Gries 2003, 2005) is a corpus-based methodology in cognitive linguistics. It is fair to say that it is, deservedly, well respected because it takes great efforts to aim for empirical validity and objectivity, and it can reveal patterns in data through statistical methods that the “naked eye” is unable to discern. One methodology (“collexeme analysis”) within the family of collostructional methods was exemplified above in section 4, but here I will examine and test a different method that can be called the behavioral profile (BP) approach

²³ This section is revised and abridged from Benom (2007:55-80).

(detailed in Gries 2010). The data is derived from a corpus, and the research then proceeds through several steps. In a BP analysis, the first step is to manually create ID tags, which are simply category labels that reflect analysis of the context in which the word/ construction appears. Morphosyntactic, semantic, and pragmatic factors can all be labeled using ID tags. Second, a co-occurrence table is generated based on these ID tags (such that, for example, out of the total number of tokens of the word, the number that occur in main clauses and the number that occur in subordinate clauses are shown). Finally, multivariate statistical techniques are applied to these figures in order to ascertain which trends/differences are meaningful.

Here, I will argue that a great deal of subjectivity may be hidden within a BP analysis. This is in contrast to what practitioners claim, as seen below.

“...while the choice of ID tags to be included in the analysis and the subsequent interpretation of the results contain elements of subjectivity – as does, if to a lesser degree, the annotation/coding of the dataset – a substantial part of the analysis is entirely objective.” (Gries and Divjak 2009: 73)

I would like to take issue with one part of this statement. I find the subjectivity introduced by some coding of data to potentially be deeply problematic, particularly without explicit and detailed discussion of the coding protocol, as is the case in all the work on colostruational analysis cited above. The most troubling issue is that of semantic ID tags, any or all of which may be assigned by the linguist to each piece of data in the data set, apparently without a more precise formulation or discussion of marginal cases. Some semantic ID tags listed in Gries and Divjak (2009) are given in Table 7 below.

Table 7 – Some semantic ID tags used in colostruational analysis
(based on Gries and Divjak 2009, cf. Benom 2007:170)

ID tag	Levels of ID tag
semantic types of subjects, objects, etc.	concrete vs. abstract, animate (human, animal) vs. inanimate (event, phenomenon of nature, body part, organization/ institution, speech/text, etc.)
properties of the process denoted by the verb	physical actions, physical perception, communication, intellectual activities, emotions, etc.
controllability of actions	high vs. medium vs. no controllability
adverbial/PP modification	temporal, locative, etc.

In even the most casual attempts to apply some of these categories to my data, I found

that the assignment of these semantic categories to linguistic data is not a straightforward procedure, despite this appearance in the literature. I suspect that applying nearly all of the semantic ID tags listed by Gries and Divjak could be problematic, such as having to differentiate between intellectual activities from emotions (e.g. are verbs such as *love*, *gloat*, *sulk*, *admire*, *encourage* etc. emotional, or are they intellectual, or both?), or temporal vs. locative modifiers (e.g. *at this point*), or verbs of communication and physical action (in sentences such as *she winked/glanced/waved/smirked/sneered at him*), or perception vs. cognition vs. emotion (e.g. *I see that you are correct* or *I feel that he has failed me*) – and possibly the most difficult of all – to define a high vs. medium level of controllability (in many unmarked sentences, e.g. if one finds *he laughed* in a corpus, how much can one expect to understand, even from the context, if he was completely in control of his laughter or if part of him hoped that he would stay silent but his laughter got the best of him?). While I admire the methodology on the one hand, I also can't help but question how much and exactly what is lost by forcing continuous data to go into discrete boxes (Langacker 2006). I also wonder if the cost of such data coding in order to perform a quantitative analysis is that the results may reflect the analyst's judgments and biases more than any qualities of the data itself.

Here, I will document my attempts to apply one ID tag, “semantic type of Ground” with levels *abstract* and *concrete*, to the data. In my experience, it quickly became clear that the process of applying the methodology to the data would require a substantial number of decisions to be made, and the effect of these decisions on the results could be significant. I have experienced immense difficulties and uncertainties that are not addressed in any of the literature on collocation analysis cited above. In this section, I will document some of these uncertainties and decisions I was forced to make.

To take an example of a study that is potentially compromised by acceptance of the correctness fallacy, in Gries (2006) all data get assigned to one of the two categories *concrete* and *abstract*, without any mention of unclear cases or problems coding the data, and without providing any definition of these terms. In Benom (2007:169-181), I attempt to apply the category labels *abstract* or *concrete* to 250 tokens of English *through* derived from the written portion of the British National Corpus (BNC).²⁴ To do so, I rely on the rough folk definitions of ‘visible and tangible’ for *concrete* and ‘invisible and intangible’ for *abstract*. I engage in semantic analysis of these data without assuming the correctness fallacy, and my results differ greatly from those of Gries (2006), supporting the idea that *concrete* and *abstract* would be better considered extremes on a continuum, rather than a simple binary choice.²⁵ Some may contest that Gries may be making use of a form of the correctness fallacy simply in order to perform quantitative analysis (i.e. a working assumption that ‘if two category labels are antonyms, then one or the other is the correct label for each token’), but I will argue

²⁴ The written portion of what I call the BNC500, which was discussed in section 4 above.

²⁵ Though even this is insufficient to capture some of the data I present below.

that, without careful definitions of the categories and discussion of problematic cases, such assumptions undermine the results of the analysis.

It is not my intention to claim that Gries (2006) is a particularly egregious example of the problems associated with an unquestioning belief in the correctness fallacy, but I chose to use the example of collostructional analysis to show that even the most methodologically sophisticated analysis requires solid foundations on which to derive numbers to then be analyzed using statistical methods, and any weakness in the foundations of the study can effectively compromise the results.

Concrete and *abstract* are antonyms, which makes the assignment of one or the other to each Ground in the data seem simple. However, they must be assigned on a case-by-case basis, as will be seen below. I will claim that they represent opposite ends of a spectrum, but also that it is possible for something to be both abstract and concrete simultaneously, as in this example:

- (5) *I had only seen a wall there before, and now my heart leapt when I saw, through the Bride and the Bachelors, **through the Milky Way and the Chariot and the Grinder and the Sieves** - someone moving.*

Here, the Milky Way and other collections of astral bodies serve as Ground. This Ground is concrete in the sense that at least parts of it exist physically, can be seen and could potentially be touched. It also can be thought of as an abstraction, invoking both physical entities and the space between them, with a fuzzy boundary (e.g. some asteroids and comets, at some times, are difficult to categorize as being 'in' a galaxy or not). However, the Milky Way exists in an objectively measurable way in one location. *The Chariot*, etc., on the contrary, may not exist in one location except from the vantage point of the Earth. The stars that comprise most constellations are located in different, distant galaxies that are related only due to our perspective. Of course, this is a universal perspective as far as we are normally concerned²⁶, but if this is determined to affect concreteness/abstraction, it means that part of the Ground could be considered more abstract than another part. In fact, other such instances were found in the data, including this:

- (6) *my life, madam is a perpetual stream of pleasure, that glides **through such a variety of entertainments***

If one of the entertainments is food, should that be considered concrete, whereas another entertainment such as music should be treated as abstract? How would the analyst know which type(s) of entertainments are being referred to? Even if s/he did, and knew that it was (e.g.) food, would it be treated as abstract because of its generality, or concrete because any specific instance is tangible and visible?

²⁶ Though of course changing hemispheres or going to the moon would quickly change our minds.

(7) *somehow, through **talk or action**, the decisive event would be warded off.*

Many problems arise when trying to determine whether *talk* and *action* are concrete or abstract. If *talk* is used in such a way to refer to the semantic content of the linguistic signal, as it seems to be here, should we ignore the fact that physical speech has tangible qualities that can be measured, such as phonetic properties? We could cite the indefinite, non-referring nature of *talk* and *action*, as they are used here, as evidence that they are actually abstract, or we could argue that *action* here is fundamentally concrete, as it refers to some movement or series of movements typically performed by a human body, which are (potentially) both visible and tangible. The question of which aspects of language are concrete also creates difficulties in assigning a category to other tokens, such as the following.

(8) *Cutting through **technical jargon***

Does the use of *jargon* evoke a conceptualization of specific instances of words in print, which would then be visible and arguably tangible, or of an area of the lexicon, which would be invisible and intangible?

The issue of definiteness and referentiality, mentioned above, needs to be accounted for, as it comes back in other examples, such as the following:

(9) *Pechorin... loves to ride "a spirited horse **through the long grass** against a desert wind".*

In this case, the definite NP *the long grass* is non-referring, and as such invokes a concept, rather than an actual instance of grass. I would argue that, as such, it is not tangible or visible, despite the fact that any actual instance of grass is tangible and visible. However, without an explicit protocol describing how to handle such cases, we could introduce a great deal of confusion into our analysis, which would then not be replicable.

In many other types of cases, it is also unclear if the Ground is abstract or concrete or both, such as the following.

(10) *support for these patients which have been grossly lacking **through the conventional channels***

Here, the Ground could be completely abstract or completely concrete, but there's no way to tell (and the larger context gives no further clue). If the speaker is referring to a specific list of locations where support is conventionally given, this Ground may be best labeled 'concrete', but what is to be done if it is a metonymic use (based on 'the Place for the Institution'; Lakoff and Johnson 1980)? Finally, if the conceptualization invoked is solely of an abstract, metaphorical sense of *channel*, such as *something*

servicing as a conduit, then there is no question that it should be considered abstract.

Similar problems arise with many other examples as well. For example, the following could be an instance of metonymy (the Place for the Institution) or the speaker could really be conceptualizing the physical building (or, possibly, both).

- 11) *we have an open policy and people come **through** with problems that they've got because they know us*

People come through the location, which is so closely tied to the institution in everyday experience that it seems strange to assume that such an utterance could only be invoking either the location or the institution, but not both. We commonly experience the location and the institution as one; it seems reasonable that the use of a lexical item that refers to the location or the institution could result in speakers conceptualizing both as part of processing a single utterance, or that some speakers may think of the location, and others, the institution.

Similarly, with many cases of metaphor, being forced to choose between the two labels *concrete/abstract* is problematic, as most metaphors evoke both concrete and abstract aspects, often using a concrete entity to refer to an abstraction (such as in metaphors such as TIME IS SPACE or STATES ARE LOCATIONS (Lakoff and Johnson 1980, 1999). Assigning either of the category labels to data such as these is difficult, and it is convenient to accept the myth of homogeneity and the correctness fallacy.

Another similar problem is found in the following example:

- 12) *...a delightful way that the reader is led on **through the book**.*

Croft and Cruse (2004) discuss the polysemy of *book*, including the [TOME] and [TEXT] readings, which presumably differ in their concrete/abstract status. They say that the noun phrase *two books* is ambiguous between the two readings, and it's also not clear how to choose one or the other in a principled manner in the example above. Is the reader led through the content of the book, or through the physical text? It is not clear why we could not suspect that the [TOME] and the [TEXT] readings are *both* relevant in this case, particularly given the frequency of their coexistence in human experience. Another, similar, example from the data is presented below.

- 13) *to work my way **through the manuscript***

Manuscript passes the tests Croft and Cruse use as evidence for *two books* having two sub-senses (which they refer to as 'facets'): both *a red manuscript* and *an interesting manuscript* are grammatical. This suggests that *manuscript*, like *book*, is both concrete and abstract. The same seems to be true for all the words describing

printed language in the data, including *article* (thick²⁷/interesting article), *policy review* (thick/interesting policy review), *computer print-out* (etc.), *script*, *computer magazine*, and *manual*.

For these cases, I would suggest that there is a distinct possibility of a conceptualization that covers both an abstract level and a concrete level – a ‘good enough’ representation (mentioned above in section 3; see Benom 2007 for discussion of psycho- and neuro-linguistic evidence supporting this possibility) that includes various facets of the potential meaning of the lexical item without being ‘resolved’ into a single usage-type. This position may run counter to that of Croft and Cruse, who state that *two books* “can designate either two copies of the same text (i.e. two ‘tomes’) or two texts” (2004:118), apparently proposing a binary choice. If so, it appears that they have fallen victim to the correctness fallacy. In light of the present discussion, and considering the psycho- and neuro-linguistic evidence discussed in Benom (2007), we must consider that there is a third possibility: that of the simultaneous activation of these (and other) meanings in a larger complex of concepts that the lexical item *book* evokes.

Other Grounds found in the data are unclear as well, such as the following.

14) *others* (sic) *feelings he has lived through*

Should we consider feelings such as ‘loneliness’ to be abstract, but feelings that refer to physical sensations, such as ‘pain’, to be at least partially concrete?

5.1 Interim conclusion

In this section, I have discussed some of the 250 tokens of *through* in (one subset of) the data, and though many other data show similar or identical difficulties, I will consider this sufficient to suggest the types and severity of difficulties arising from attempting to apply the category labels *concrete/abstract*. I have argued that the data discussed are not easily categorized in any obvious way without more explicit discussion and definitions. Lacking such discussion and definitions, Gries bases his conclusions partly on his assignment of these (and other potentially problematic) categories, claiming for instance that concrete objects and organizations/ institutions do not appear in his data set as the subject of what he claims is the prototypical sense of *run* (fast pedestrian motion), but the latter are often the subject of the ‘manage’ sense of *run* (2006:86).

Xiao (2009: 995) notes that “applying intuitions when classifying concordances may simply be an implicit annotation process, which unconsciously makes use of preconceived theory”, and that such annotation is “to all intents and purposes unrecoverable and thus more unreliable than explicit annotation.” This is the case with what we have seen here. If collostructional analysis is to be as effective as Gries and

²⁷ Here I take the liberty of substituting *thick* for *red*, as the latter may seem odd with some combinations until an appropriate context is conceived.

Divjak claim it is, substantial effort should be devoted to explicating in detail at least i) a definition of each relevant term or category, ii) which choices were difficult to make, and why, and iii) their rationale for choosing the way they did in each case.

One of the major problems with imposing discreteness on data in order to undertake quantitative analysis in general is that, with a small number of categories into which one must place all tokens that may fall anywhere on a spectrum (or even fall in multiple locations in the spectrum simultaneously), the loss of information when coding the data is extensive (Langacker 2006). If the methodology of collostructional analysis included an explicit definition of each category as well as a discussion of problematic instances, some of the lost information would be recoverable.

At this point, I will note that I believe that it's not just objectivity that defines good science, but it's also the **transparency of the methodology** and its **replicability** (which I would define together, somewhat long-windedly, as *the portion of a scholar's methodology (including specific decisions and their rationale) that a peer could re-create in a straightforward or logical manner based on the methodological description given in the work*). The importance of this aspect, which subjects the relevant details of the research to the critique of the field as a whole, cannot be overstated. To be clear, I consider collostructional analysis a potential step forward in the context of progress toward an empirically responsible corpus-based cognitive linguistics. However, in some sense, it is the process of subjecting one's methodology to the close inspection of the scientific community at large that permits a clear judgment of whether to validate or repudiate the research. Keeping in mind the correctness fallacy and the myth of homogeneity, in addition to providing explicit methodological description and definitions in areas such as the ones explored here, could address this type of problem in collostructional analysis

6. Conclusion

The studies undertaken here showed that the correctness fallacy, which assumes that there is a unique and correct answer to every question, has led to implicit assumptions in studies of lexical semantics, and that only by emerging from our unconscious belief in correctness can we approach semantics empirically.

I have taken steps toward addressing these fallacies in the semantic analysis undertaken here both by i) not insisting that all tokens of a polysemous item belong to exactly one sense of that item, and ii) allowing for the possibility that some lexemes do not denote force dynamics, but are closely associated with force dynamic configurations nonetheless, and iii) carefully analyzing the data with respect to concreteness and abstraction, revealing that the two do not form a black-and-white, binary category but rather – at best – a continuum, and that individual tokens can be extremely difficult to classify.

In this paper, I have shown several ways that the correctness fallacy has undermined the study of semantics. I have addressed these assumptions in my own work, and my hope is that more cognitive linguists and lexical semanticists also take the correctness fallacy into consideration. To emerge from the grasp of such subtle and

implicit assumptions may take time, but I believe that I have both revealed the breadth, depth and subtlety of the problem and made some important advances towards solving it.

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正しさの誤信と語彙意味論

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正しさの誤信とは、いかなる問いにも常に 1 つの正解があると想定することである。それは、言語学者が自然と受け継ぐ論理学、哲学、科学の通俗モデルの一部となっている。本論文では、語彙意味論に焦点をあて、それが言語学で支持できない仮定を導くものであることを論じる。正しさの誤信に起因する問題を例示するために、3 つの研究を論述する。第一の研究は、多義語の各トークンは、たった一つの意味によって動機づけられているという頻出の仮定を探るものである。定性的および定量的研究結果は、トークンの中には言語使用者によってどの語義も喚起されていないか、あるいは多義が喚起されているものがあることを示している。第二の研究では、「力動性」(force dynamics)は語彙素の全か無かの特質であるという一般的な仮定を吟味し、代案として力動性特質の関連の強さの段階があることを主張する。第三の研究は、認知コーパス言語学で使用される統計的に洗練された方法論であるコロストラクション分析 (collostructional analysis) の調査であり、この高度な方法論でさえ、正しさの誤信を暗に受け入れていることによる問題があることを論じるのものである。総合的に、これらの結果は、語彙意味論者への注意を喚起する役割となり、正しさの誤信を受け入れることから生じうる過度に単純化した語彙意味論、そして言語学一般への反論となる。

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