

The Syntagmatics of Metaphor and Idiom

Patrick Hanks

Brandeis University and Berlin-Brandenburg Academy of Sciences and Humanities

patrick@cs.brandeis.edu, hanks@bbaw.de

Abstract

Corpus linguistics prompts a lexicocentric approach to linguistic theory. The theory of norms and exploitations (TNE; Hanks, forthcoming) is such a theory, applying the insights of prototype theory and Sinclairian text analysis to the empirical evidence of large corpora. By studying words in context, we can identify the normal patterns of usage that are associated with each word. A meaning, or meaning potential, can then be associated with each pattern. A central question in this approach to language analysis concerns metaphors and idioms. In the present paper, conventional metaphors and idioms are classified as “norms” (i.e. conventional uses), while dynamic, ad-hoc metaphors are classified as “exploitations” of norms. Evidence is adduced to show that, at least in some cases, conventional metaphors can be distinguished from “literal” senses by their particular syntagmatic patterns. The paper also discusses the importance of text type and domain in achieving a satisfactory interpretation of idiomatic expressions.

1. Norms and Exploitations

This paper proposes an approach to the analysis of metaphors and idioms in accordance with the **Theory of Norms and Exploitations (TNE)**, a new approach to analysis of language in use, in which the word (rather than the syntactic structure) plays a central role as theoretical entity. TNE has been developed gradually over the past decade in the course of editing large dictionaries. In part it has been presented elsewhere (e.g. Hanks 1993, 1996, 1998, 1999, 2000, 2001). A fuller account is to be published in book form by MIT Press. The pressure for new theoretical foundations came from two sources: on the one hand the need for a robust framework within which to account for the meaning and use of words and phrases (associated with the rejection of many traditional lexicographic practices and, perhaps more importantly, a very selective approach to the linguistic theory that was fashionable in the 1970s and 80s), and on the other hand the development of very large corpora, evidence from which provided a dramatic challenge to received lexicographical and grammatical accounts of how words and phrases are actually used in a language—increasingly dramatic as corpora grew in size and the evidence became more and more compelling. The dictionary-publishing community has been slow to respond to this challenge, while the theoretical linguistics community is divided between those who are responding to the challenge of empirical evidence and those who ignore it or dismiss it as irrelevant. TNE is an attempt to meet the challenge of empirical evidence in a robust way, incorporating such aspect of previous theories as are useful to account for observed phenomena, without being driven by a-priori theoretical preoccupations.

The general idea behind the theory of norms and exploitations is a straightforward one: human beings store in their brains not just words in isolation, but also sets of **stereotypical syntagmatic patterns** associated with each word. These patterns are part of the everyday experience of ordinary

users of a language from birth. It is entirely possible that the prototypes of belief associated with each word are structured differently in the head of each member of a language community, but social pressures are such that gross differences in the *use* of the words concerned are constantly eliminated in the course of first-language acquisition by each individual member of a speech community. As a result, linguistic behaviour among users of a language is highly stereotypical, even in matters of fine detail. What do you *hazard*? You *can* hazard all sorts of things, but stereotypically in English, what you normally do hazard is a *guess*. How, stereotypically, do we talk about a lot of *protest* or a lot of *abuse*? We use the stereotypical phrases *a storm of protest* but *a torrent of abuse*. There are no necessary conditions compelling us to do this; it is just the way that English is. Other patterns are somewhat more subtle and variable, but no less real for that. They can best be described in terms of prototypes or stereotypes, with rules for exploiting them. TNE seeks to map actual linguistic behaviour (words in use) onto meanings (beliefs associated with words and phrases). It does this, in part, by invoking prototype theory to account for the uses of words. Use is measured by analysis of large electronic corpora, in a way described in Pustejovsky and Hanks (2001). Some uses of words are stereotypical; others **exploit** stereotypes, typically for rhetorical effect. Stereotypes of words in use require an account of the combinations in which each word normally participates (a lexicographic task). Exploitations require an account of the rules governing metaphor, metonymy, ellipsis, and other rhetorical devices.

It is many years since Mel'čuk (see Mel'čuk and Zholkovsky 1984; Mel'čuk et al. 1984, 1988, 1992, 1999) first proposed that an explanatory dictionary should focus on words in combination and provided an apparatus for doing this. Mel'čuk's work, however, relies on introspection as a research technique, not only for interpretation but also for construction of examples, and it seeks necessary and sufficient conditions for word meaning. Corpus evidence and theoretical work since 1984 have shown that statements of necessary and sufficient conditions are not a tenable goal in lexicography, while corpus linguists have argued (e.g. Hanks 1990, Sampson 2001) that introspection is a flawed technique for obtaining data.

What is new in TNE is that, using the corpus evidence that is now available, corpus-driven lexicographers are in a position to observe and analyse the patterns surrounding the words that people experience and use—or at any rate a large subset of them, including all that are widespread and general. Each syntagmatic pattern is associated with a **meaning potential**—the potential of a word or phrase to contribute in a given context to the meaningfulness of an actual utterance. By attaching meaning potentials to patterns rather than words, we can greatly reduce the entropy (uncertainty) of 'meanings' associated with any given word. Questions such as "What is the meaning of *take someone's breath away*? What is the meaning of *take something from one place to another*?" are much easier to answer with reasonable confidence than the question, "What is the meaning of *take*?" This is not merely an idiosyncrasy of idioms, but can be applied as a general principle to meaning statements about any verb, adjective, or noun. The interpretation of everyday expressions such as "*How long will it take*?" and "*What will it take*?" depends upon a patterned relationship between the verb *take* and nouns denoting TASKS on the one hand (here, the subject of *take*) and nouns denoting RESOURCES such as TIME (the direct object of *take*) on the other hand. A noun example highlighting the importance of collocations can also be given: the meaning of "The decision provoked *a storm of protest*" is distinguished from the meaning "They were caught in a *thunder storm*" by the collocations involved in each case.

The term **meaning potential** was used by Halliday (1971 and elsewhere) to denote the potential of individuals to make appropriate utterances in given social situations. In the theory of norms and exploitations it has a different, though related meaning. It is applied to the potential of words to contribute appropriately to the meaningfulness of an utterance. The theoretical position is that there are no literal meanings, only varying degrees of probability. However, it has to be said that

the likely interpretation of many normal patterns is often indistinguishable for all practical purposes from a certainty.

Describing the normal patterns of use of words and their association with meaning potentials is a task for lexicographers. The extent to which lexicographers have failed to carry out this task is a reflex of three quite different but equally baleful influences in the history of lexicography. Partly it was a reflex of insufficient evidence (a situation that changed radically with the advent of very large corpora in the 1990s). Partly it was a measure of the inadequacy of syntactically driven linguistic theory to explain how people actually use words. And partly it was a reflex of other preoccupations, in particular the preoccupation with historical principles in the largest and most scholarly dictionaries. Big historical dictionaries such as OED (Murray et al. 1878-1928; Simpson et al. 2000-) and the *Deutsches Wörterbuch* (Jakob and Wilhelm Grimm et al., 1854-1971) are concerned with tracing the history of morphological and semantic change, rather than with how words are – or were – used. The objection that they say little or nothing about how to distinguish one sense of a word from another is equally applicable to popular dictionaries and to dictionaries compiled on historical principles. There is, for example, no large body of theoretical work on lexical semantics associated with the great historical dictionaries such as OED.

Dictionaries for foreign learners generally contain more information about syntagmatics than historical or popular dictionaries, in a tradition that started with A.S. Hornby's pioneering *Oxford Advanced Learners' Dictionary* (1948), the sixth edition of which (Wehmeier, 2000) made much use of corpus evidence to place the current meaning of a word first and to write accurate definitions. However, for obvious reasons, the syntagmatic information in learners' dictionaries has a pedagogical rather than an analytic focus and errs on the side of caution. For example, nothing is said in the front matter of Wehmeier (2000) about how to distinguish one sense of a word from another, while quite a lot is said about what the learner needs to know about the basic meaning of certain words.

The idea of giving priority to the current meaning of a word was first attempted in a principled way in English in Funk and Wagnall's *Standard Dictionary of the English Language* (1894). The announcement for this dictionary (1891) stated, among other things, that it would place "the etymology *after* the definition" and that it would place "the most important current definition *first*, and the obsolescent and obsolete meanings last—that is, the substitution of the order of usage for the historic order usually followed in dictionaries." (Italics in the original.) Easily said! In practice, for many words it is surprisingly hard to decide, without benefit of corpus evidence, what is "the most important current definition" at any given time. To take a simple example, which is the most important current definition of the word *funk*: a state of cringing terror, or a style of dance music? For someone born in the 1940s with a traditional British education, this is hard to answer by consulting intuitions. It turns out that the dance-music sense is eleven times more common in the British National Corpus (BNC) than the terror sense. This is a statistic that is potentially relevant for computational natural language processing of contemporary texts. The terror sense, according to OED, is first found in 18th-century Oxford slang. Readers living in 2005 may associate it with archaic British public-school literature.

The notion that words have meaning in isolation is encouraged by the numbered definitions in standard 20th-century British and American dictionaries, but this is misleading. Dictionaries of all kinds give inadequate clues as to how one meaning of a word is to be distinguished from another. The claim made by TNE is that in the vast majority of cases one meaning of a word can be distinguished from other meanings of the same word by the local context, and that these local contexts can be stated explicitly—not as a set of necessary and sufficient conditions, but as a set of contrasting probabilities. For example, if the verb *toast* has as its direct object any member of the

(infinite) set of words denoting persons, or a member of the (much smaller but still unbounded) set of words denoting achievements, or the (single) word *memory* with a possessive determiner, it almost certainly means “celebrate by raising a glass containing alcoholic liquor and then drinking some” (as opposed to “make brown and crisp by exposure to radiant heat”).

This is a pattern. It can be expressed as in 1:

1. [[Person 1]] toast { [[Person 2] | [Achievement]] | {[POSDET] memory} }

In turn, 1 contrasts with the other meaning pattern (2) of the verb *toast*:

2. [[Person]] toast [[Food = Bread | Nuts]]

[[Food = Bread | Nuts]] in double square brackets denotes a lexical set with two aspects: a **semantic type** (food) and a **stereotypical semantic role**. Stereotypically, food that is toasted is *bread*, including anything like bread, for example *rolls, baps, bagels, buns, crumpets, sandwiches*, and *tea-cakes*. A secondary semantic role for the same semantic type consists of *almonds, hazelnuts*, and other kinds of nuts. That peculiarly British delicacy *toasted cheese* may be classified as an exploitation of the norm, not only because it is rarer than *bread* or *nuts*, but also because the cheese in question is normally toasted on an unlexicalized slice of *bread*.

Verb patterns are expressed in the framework of clause roles: Subject, Predicator, Object, Complement, Adverbial (SPOCA), together with a Clausal role for verbs such as reporting verbs. The patterns as expressed in 1 and 2 trade on normal English word order. More formally, they could be posted in a template, e.g.:

Subject: [[Person 1]]
 Verb: *toast*
 Object: { [[Person 2] | [Achievement]] | {[POSDET] memory} }
 Subject-Complement: -
 Object-Complement: -
 Adverbial: -
 Clausal: -

Subject: [[Person]]
 Verb: *toast*
 Object1: -
 Object2: [[Food = Bread | Nuts]]
 Subject-Complement: -
 Object-Complement: -
 Adverbial: -
 Clausal: -

Many dictionaries state no more about the syntagmatics than that the verb *toast* is transitive in both senses, thus failing to provide sufficient evidence for distinguishing one sense from another of this verb (and thousands like it). Defenders of inadequate syntagmatics in dictionaries sometimes assert that the distinction is quite obvious: no one is likely to be confused about the meaning of ‘toast the bridesmaids’—only a theoretical linguist with little regard for empirical evidence would postulate that this could mean ‘expose the bridesmaids to radiant heat into order to make them turn brown and crisp’. So (the defence goes) it is unnecessary to state the semantic values explicitly. There are at least two answers to this excellent commonsensical defence. Firstly, the assumption that meaning

distinctions are obvious may be all very well for human beings, but even an ‘obvious’ distinction is seriously problematic for computational applications if the criteria are not stated explicitly. Secondly, in most cases the problem is generally more complex than this simple example suggests. A deliberately simple and obvious example has been chosen here for expository purposes. Many verbs present much more complex sets of patterns, where there very often is real difficulty, for human learners as well as for computers, in selecting appropriate complementation to express a particular meaning.

A further problem with standard 20th-century British and American dictionaries is that the numbered word senses may appear to a casual observer to be mutually exclusive, but they are not. Very often, senses 2 and 3 of a word are subsenses of sense 1; in other cases, actual uses do not map satisfactorily at all onto the idealizations stated by pre-corpus dictionaries, for a variety of reasons too complex to go into here. This is a problem for WordNet (www.cogsci.princeton.edu/cgi-bin/webwn), where the fact that a word has been inserted into different synonym sets at different places in a semantic hierarchy has been equated with difference of sense, and it is an even more serious problem for computational linguists who, encouraged by the series of SenseEval projects (www.senseval.org), attempt to use WordNet as a ‘gold standard’ for word-sense disambiguation, a use for which it is thoroughly ill suited.

2. Corpus Pattern Analysis, Cobuild, and FrameNet

By studying concordances of words in a large corpus, it is now possible to identify patterns of usage associated with each word. In turn, it is possible to associate a meaning potential with each pattern and to measure the frequency of each pattern. Intuitions are used to interpret data, but not to create it. It should be acknowledged from the outset that the patterns are semantically motivated and that therefore a certain amount of art is involved in deciding how best to represent them. It is not possible – for principled reasons – to write a computer program that will create patterns on the basis of input text data. In part, the difficulty is that the patterns vary according to the intended application – machine translation, information retrieval, natural-language generation, or whatever. Another problem is that the lexical analyst has a number of choices to make regarding the appropriate level of delicacy. For example, we may notice that “storm abate” and “problem abate” are both very common, and we could go on to say that a storm is a problem or that a problem is a metaphorical kind of storm. The corpus pattern analyst will not take this step.

Corpora provide no direct evidence for meanings. Meanings are inferred from contexts in corpus text, in much the same way that meanings are inferred in reading any other kind of text, but with this difference: by seeing many uses of the target word in close proximity (as a concordance), the corpus analyst can associate patterns with a target word according to common syntagmatic features in the concordance – patterns which are likely to escape the text linguist proceeding in a linear fashion through texts. A large corpus provides evidence of the patterns of usage with which meanings are associated. The larger the corpus, the more strikingly the patterns stand out. The analytic procedure is called **Corpus Pattern Analysis (CPA)**. This procedure is an indirect descendent of the programme of language analysis outlined in theory by Halliday (1966) and Sinclair (1966, in the same volume). An attempt to implement this programme was the *Cobuild* dictionary (Sinclair, Hanks, et al. 1987), which remains the only dictionary that has seriously attempted to show the lexicosyntagmatic patterns associated with each sense of each word. The principles underlying Cobuild are set out in Sinclair (1987 and 1991).

By definition, patterns of linguistic behaviour are recurrent, so it is a reasonable hypothesis that the association of meanings with patterns will have considerable predictive power for interpreting the meaning of words in unrestricted texts. While it would obviously be impossible to list all possible uses associated with a particular word, it is by no means impossible to list all *normal* uses. For this to succeed, it is necessary to take seriously Fillmore's 1975 proposal that, instead of seeking to satisfy a set of necessary and sufficient conditions, the meanings of words in text should be analysed by calculating resemblance to a prototype. Fillmore is himself associated with an attempt to implement his proposal, in the form of a project called **FrameNet**, which, laudably, is freely available on line in a beautifully designed data base (www.icsi.berkeley.edu/~framenet/). It is necessary to say a few words about the differences between FrameNet and CPA.

CPA is concerned with establishing prototypical norms of usage for individual words. It is possible (and certainly desirable) that CPA norms will be mappable onto FrameNet's semantic frames (for which see the whole issue of the *International Journal of Lexicography* for September 2003, in particular two papers by Atkins et al. and three by Fillmore et al.). In frame semantics, the relationship between semantics and syntactic realization is often at a comparatively deep level, i.e. in many sentences there are elements that are potentially present but not actually expressed. For example, in the sentence *he risked his life*, two semantic roles are expressed (the risker and the valued object – his life – that is put at risk), but at least two other roles are subliminally present although not expressed: the goal (why he did it) and the means (how he did it).

CPA, on the other hand, is shallower and more practical: the objective is to identify, in relation to a given target word, the overt textual clues that activate one or more components of its meaning potential. There is also a methodological difference: whereas FrameNet research proceeds frame by frame, CPA proceeds word by word. This means that when a word has been analysed in CPA the patterns are immediately available for disambiguation. FrameNet will be usable for disambiguation only when *all* frames have been completely analysed. Even then, FrameNet's methodology, which requires the researchers to think up all possible members of a Frame a priori, means that important senses of words that have been partly analysed are missing and may continue to be missing for years to come. There is no attempt in FrameNet to identify the senses of each word systematically and contrastively. In its present form, at least, FrameNet has at least as many gaps as senses. For example, at the time of writing *toast* is shown as part of the Apply_Heat frame but not the Celebrate frame. It is not clear how or whether the gaps are to be filled systematically. We do not even know whether there is (or is going to be) a Celebrate frame and if so what it will be called. What is needed is a principled fix – a decision to proceed from evidence not frames. This is ruled out by FrameNet for principled reasons: the unit of analysis for FrameNet is the frame, not the word.

3. Verb Norms

The current focus of CPA (but not of this paper) is on norms for verbs. CPA verb norms show typical clause roles (valencies), with detailed information about the prototypical semantic values of the words that are normally found in each clause role. A simple example of a set of verb norms is shown in Figure 1.

abate/V BNC FREQUENCY: 185

1. [[Event = Storm]] abate [NO OBJ] (11%)
2. [[Event = Flood]] abate [NO OBJ] (4%)
3. [[Process = Problem]] abate [NO OBJ] (40%)
4. [[Emotion = Bad]] abate [NO OBJ] (20%)

5. [[Person | Action]] abate [[Activity = Nuisance]] (17%) *Domain: Law.*

Figure 1. The set of patterns for the verb *abate*

The norms consists of sets of patterns accounting for all normal uses of the verb in question. The norms in a set are mutually exclusive except where there is genuine ambiguity in the language. An NLP grammatic application using the norms in Figure 1 to process unrestricted text first has to establish whether the verb *abate*, when found, is being used transitively or intransitively. If transitive, it activates the legal sense. If intransitive, it first has to decide whether the subject of *abate* has a semantic value more like [[Storm]] or a semantic value more like [[Process=Problem]] or [[Emotion=Bad]] before it can activate the relevant sense. It is not always easy to make desired distinctions, for example it is hard to distinguish [[Process=Problem]] from [[Emotion=Bad]] because some of the problems are emotional and the emotions are problematic, for example *nationalist fervour* and *anti-Japanese fury*.

Most verbs have very few norms, but a few are very complex. *Take*, for example, has over 200 CPA norms. The distribution of norms is broadly Zipfian. For many practical purposes, rare norms such as “[[Flood]] abate” or “[[Fever]] abate” can be ignored or regarded as an exploitation of another, more common norm. The delicacy of norm distinctions is a variable determined at the decision of the analyst by the intended application: for example in a medical application, “[[Fever]] abate” is likely to be more important—and therefore more normal—than in a non-medical context. It may or may not be a domain-specific norm. There is only one example of “[[Fever]] abate” in BNC. For purposes of CPA, therefore, it is not salient enough to be mentioned as a norm of general British English. If, in a corpus of specialist texts, it turns out to be a domain-specific norm, it can added to the inventory.

Any uses of a word that do not fit a norm are either **alternations** or **exploitations**. Alternations are unremarkable cases of regular polysemy (Apresjan 1974). For example, anything that a human being can do cognitively (e.g. *think, hope, expect, negotiate*) can also be done by a human group such as a nation, a political party, or a social organization. So [[Human Group]] alternates regularly with [[Person]]. There are many other such regular alternations, for example [[Plan]] alternating with [[Activity]]. Activities that people normally do can also (normally) be planned.

Exploitations include many different kinds of rhetorical device, including **metonymy** (e.g. a waiter referring to a customer as “the ham sandwich” because that’s what he ordered), **ellipsis** (e.g. “She hazarded various destinations such as Bali and Florence” is elliptical for “She hazarded a guess at various destinations such as Bali and Florence”), and **metaphor** (e.g. “Dubrovnik became a mousetrap” or “the sun struck the glass”). Metaphors are typical exploitations. Many exploitations, but by no means all, achieve their semantic interpretations through the kind of semantic coercion described in Pustejovsky’s Generative Lexicon theory (Pustejovsky 1995).

The semantic values shown for verb arguments in TNE are in fact no more than named clusters of lexical items in particular clause roles. The lexical items that cluster this way into lexical sets are open-ended. It remains to be seen to what extent they can be correlated effectively with a semantic type system such as that of WordNet or EuroWordNet.

4. Noun Norms

Norms for nouns are constructed quite differently from norms for verbs. Noun norms say nothing about valencies or argument structures. Instead, they focus on significant collocates, making

statements about prototypical usage that have an uncanny resemblance to Old English gnomic poetry. Most significant collocates are in a standard syntactic relation with the target word, e.g. *protest* is a statistically significant collocate of *storm*, and usually (but not always) occurs in the phrase “a storm of protest”. Other collocates must be mentioned that are not in any fixed syntactic relation to storm, but are freely associated, eg words such as *rain, wind, hurricane, gale, flood*. Together, all these statements add up to a combinatorial profile of the way the noun is normally used. An example is given in Figure 2. The gnomic statements in this combinatorial profile are not random, but are taken from the corpus. In fact, they are not merely corpus-derived but corpus-driven. Human intervention is used to organize the relations between the target word and its significant collocates. The collocates in this profile are the statistically significantly collocates associated with *storm* by the WaspBench program (Kilgarriff and Tugwell 2001). Collocates are highlighted in boldface. The bits of text not in boldface represent human intervention. It should also be noted that any one of these phrases may be taken as a chunk and used in a metaphorical way.

WHAT DO STORMS DO?
Storms <i>break</i>
Storms <i>blow</i> .
Storms <i>rage</i> .
Storms <i>lash</i> coastlines.
Storms <i>batter</i> ships and places.
Storms <i>hit</i> ships and places.
Storms <i>ravage</i> places.
BEGINNING AND END OF A STORM
Before it breaks, a storm is <i>brewing, gathering, or impending</i> .
There is often a <i>calm</i> or a <i>lull before</i> a storm.
Storms last for a certain period of time.
A major storm may be associated with a certain year or as <i>the great storm of</i> [Year]
Storms <i>abate</i> .
Storms <i>subside</i> .
Storms <i>pass</i> .
WHAT HAPPENS TO PEOPLE IN A STORM
People can <i>weather, survive, or ride (out)</i> a storm.
Ships and people may get <i>caught in</i> a storm.
WHAT KINDS OF STORMS ARE THERE?
There are <i>thunder storms, electrical storms, rain storms, hail storms, snow storms, winter storms, dust storms, sand storms, and tropical storms</i> .
Storms are <i>violent, severe, raging, howling, terrible, disastrous, fearful, and ferocious</i> .
Storms, especially snow storms, may be <i>heavy</i> .
An unexpected storm is a <i>freak</i> storm.
The centre of a storm is called the <i>eye of the storm</i> .
STORMS ARE ASSOCIATED WITH <i>rain, wind, hurricanes, gales, and floods</i> .

Figure 2. Corpus-based combinatorial profile of *storm*, noun (literal uses)

5. Analytic Procedure

The methodology is to extract a concordance for each target word, scan it to get a general overview of the word's behaviour, then select a random sample of between 200 and 1000 concordance lines for detailed analysis. In the course of detailed analysis, concordance lines are sorted into groups that have approximately the same meaning and similar syntactic structures. Semantic values are given for the arguments or valencies of the target word in each group. Methodological discipline requires that every line in the random sample should be classified. The classifications are:

Norms
 Exploitations
 Names (*Midnight Storm* is the name of a racehorse, not a kind of storm)
 Mentions (to mention a word is not to use it; the syntagmatics are different)
 Mistakes (*learned* is sometimes mistyped as *leaned*)
 Unassignables

Unassignables are kept to a minimum. For example, expressions involving anaphoric pronouns could, strictly speaking, be classified as unassignable. However, in CPA anaphora are resolved as far as possible in order to assign semantic values.

The rest of this paper discusses just two points:

1. Can syntagmatic criteria be used to distinguish metaphorical uses from literal uses?
2. What is the relationship between metaphors, idioms, and literal uses?

6. Gradability of Metaphor and Idiom

Three conventional idioms containing the word *storm* are found. These are:

a storm in a teacup
any port in a storm
to take (a place) *by storm*

In addition, two syntagmatic contexts normally indicate that *storm* has a conventionalized metaphorical meaning. The prototypical syntagmatics of all these idiomatic and metaphorical uses of this word are summarized in Figure 3, in descending order of metaphoricality.

A lot of fuss about a comparatively trivial event is described as a <i>storm in a teacup</i> .
Someone who is in trouble is glad to find <i>any port in a storm</i> .
A personality such as an artist, or an artefact such as a work of art or a product, may <i>take</i> a place <i>by storm</i> .
A military force or a military officer may <i>take</i> a place <i>by storm</i> .
An action may <i>cause, provoke, raise, create, or unleash</i> a storm.
A bad or unpopular thing may cause <i>a storm of protest, controversy, or criticism</i> .
A successful performance may be greeted by <i>a storm of applause</i> .
Someone who is upset may burst into <i>a storm of weeping or tears</i> .

Figure 3. Metaphorical and idiomatic uses of *storm*, noun

It is often said that an idiom, strictly defined, is semantically distinct from the sum of its parts, i.e. its meaning cannot be derived from analysis of the literal meanings of the words of which it is composed. This is a useful generalization as far as it goes, but it is of course an oversimplification. There are degrees of metaphoricity. The most literal uses of *storm* involve storms *blowing* and then *abating* or *subsiding*, and things being *damaged* in a storm—uses where a reductionist interpretation is appropriate. In other cases, the word *storm* itself is used in a literal sense, but the associated verb is more metaphorical. Typical of this second class is the expression *to get caught in a storm*, also expressions in which storms *brew* and *rage*, and expressions in which storms *lash*, *batter*, and *ravage* places. These clichés are so common that it is easy to overlook the metaphorical status of the verb. Thirdly, we come to cases where the noun *storm* itself is metaphorical: *a political storm*, *a storm of protest*. Fourthly, in the most extreme type of case, none of the content words are used in their most literal senses: a *storm in a teacup* is not literally a storm, nor is it literally located in a teacup. Insofar as cases of this fourth type are conventionalized, they are idioms.

Furthermore, whereas the meaning of an idiom is distinct from the sum of its parts, the meaning of a metaphor is less than the word's full normal meaning. For a word to be used metaphorically, at least one of its semantic values has to be set aside, while some other semantic feature is emphasized. In terms of Pustejovsky's Generative Lexicon theory, one or more of its qualia are set aside, while some other quale is emphasized. According to Pustejovsky (1995), qualia structure "specifies four essential aspects of a word's meaning". These are as follows:

- CONSTITUTIVE: the relation between an object and its constituent parts
- FORMAL: that which distinguishes an object within a larger domain
- TELIC: the purpose and function of the object
- AGENTIVE: factors involved in the origin or "bringing about" of something

Not all lexical items carry a value for each qualia role. In the case of *storm*, the qualia for its most literal sense can be stated as follows:

- CONSTITUTIVE=high winds, precipitation, thunder, lightning
- FORMAL=atmospheric phenomenon, violent
- TELIC=disturbing effect
- AGENTIVE=atmospheric conditions

We see immediately that metaphorical expressions such as *a political storm* or *a storm of feathers* emphasize the telic and overrides the semantic values of the other qualia. The CONSTITUTIVE of a political storm is human interaction, specifically political interaction, its FORMAL is quarrelling, and its AGENTIVE is disagreement. Only the telic is unchanged. The mechanism here is similar to that of Wilks's preference semantics (1975).

The CONSTITUTIVE of a storm of feathers is feathers, its FORMAL is floating through the air like large snowflakes (because that is what feathers do), and its AGENTIVE is something like a burst pillow. In this second case, the relationship between the metaphorical storm and the literal storm is even more tenuous, relying on a perceived similarity between snowflakes and feathers floating in the air in the formal and the constitutive. Extraordinary as it may seem, it seems to me that combining Wilks's semantics and Pustejovsky's qualia in this way is the only satisfactory way of explaining the meaningfulness of these phrases.

7. Syntagmatic Criteria for Metaphoricity

In a large number of expressions, the fact that *storm* is being used in a (conventional) metaphorical sense is signalled either by a causative verb or by a partitive use of the preposition *of*.

7.1 [[Human]]/Subj + [[Causative]]/V + *storm* =conventional metaphor

Uses of *storm* after a causative verb are quite frequent; they are almost always metaphorical (see Figure 4). It is hard to be sure why this should be so, but it is an observable fact. There is no reason in principle why texts should not discuss the atmospheric causes of storms in terms in which *storm* is the direct object of a causative verb, but in practice, such uses are rare in general English. A causative verb with *storm* as its object typically signals metaphoricity.

some buffing up. Their book caused a storm in America last year, mainly because waiting. The Daily Telegraph caused a storm in a teacup last week at the Queen's cond instalment of the essay caused a storm. It appeared anonymously, but the au ive comments to referees, he caused a storm by branding his players as # boozers sperson. The proposal, which caused a storm at last week 's council meeting, has difficult. Then, in 1989, he caused a storm over Wild Orchid, refusing to promot wo years after Sir Claus had caused a storm by warning our crumbling schools wer xandra and Sir Angus Ogilvy, caused a storm when she had Zenouska before her mar terday. Judge Geoffrey Jones caused a storm by making the comment at an earlier HAW DESPERATE John Major has caused a storm by trying to stop newspapers telling a consultant. Lady Thatcher caused a storm by considering the lucrative offer. is new autobiography. He has caused a storm with his claim that their bowlers "s fervour, the party 's leader caused a storm earlier this year when he said his , Minister for the Arts, has caused a storm by calling into question one of th the proposed deal which caused such a storm that it was dropped within days of l soon see why they 've caused such a storm # VDO COMPACT SOUNDER Microprocessor d comes on to the market it creates a storm. Most of the top dealers in the worl and forget the exceptions. What a storm Sandy Lyle created by making himself n they heard what was afoot, raised a storm of protest and demanded that their r f its existence and location raised a storm of protest from Nordic governments a t it, the wider conflict "may raise a storm in Sussex, which county is full of n president, Daniel, recently aroused a storm by pinning the Sandinistas ' highest of football hooliganism and sparked a storm when he called English supporters de r US series, Witness Video, sparked a storm of protest. The NBC show 's opening al sex MIKE TOWERS A bishop sparked a storm last night after using the F-word in OGER TODD. Mortgage lenders sparked a storm yesterday by launching a campaign to ter. CHOICE LAMB Allan Lamb sparked a storm with his revelations OSLEAR was vote is years in office which will spark a storm in Westminster. In the interview, Mr er intended for the press, provoked a storm by declaring that God was in part th emerge well. The article unleashed a storm about his head, the more so because d them. Jockey Club ruling whips up a storm. Isobel Cunningham reports on the la ional Olympic Committee, whipped up a storm when she missed the spectacular open h sous chef Mark Jordan whipping up a storm in the kitchen. The Park Room rest seems to have whipped up as much of a storm around its head with its plunge into OCK Britain 's big banks stirred up a storm last night after threatening to char r leases. The leases have brewed up a storm in Darlington as landlords say they

Figure 4. *storm* as direct object of a causative verb

The metaphorical status of ‘[[Causative]] + *storm*’ is reinforced to the point of virtual certainty if the subject of the verb has the semantic value [[Human]].

Here we must distinguish between possible usage and probable usage. *Storm* in this sense is found as the direct object of both literal and metaphorical causative verbs. The apparent mixing of

metaphors in expressions such as *sparked a storm*, *unleashed a storm*, and *whipped up a storm* has proved no obstacle to these expressions being conventionalized as normal expressions in English.

It is entirely possible that some text—a work of science fiction perhaps—may one day be found in which a human being causes a storm of thunder, lightning, rain, and wind. However, it so happens that no such texts are found in BNC (100m. words). My former colleague Ramesh Krishnamurthy kindly checked the Birmingham–HarperCollins Bank of English, a much larger corpus of general English (450 million words). He reports that there are over 500 occurrences of ‘[[Causative]] + *storm*’ in the Bank of English. Over 99% of them are metaphorical storms. Only one instance (sentence 3 below) was found of an animate subject with a causative and a literal sense of *storm*:

3. As the invading ships came within sight, he created a storm that drowned them all.

On resolving the anaphora, we find that ‘he’ is not in fact a person, but a deity (the Great Spirit in Ojibway legend):

Ojibway legend has it that the giant was once Nanibijou, or the Great Spirit, who lived on Mount McKay, which is today an Indian reserve. He protected his tribe, but he warned that they would perish and he would be turned into stone if the white man ever discovered their silver mine. Alas, he was betrayed, and as the invading ships came within sight, he created a storm that drowned them all. The next morning he had turned to stone and was left in the bay to guard the silver mine.

We can therefore safely conclude, that the numerous occurrences of causative verbs with *storm* as a direct object all involve the metaphorical ‘violent disturbance’ sense of *storm*, not the literal sense of a disturbance in the atmosphere. However, the corresponding inchoatives make no such distinction. If someone *brews up* a storm, you can be pretty sure that the storm is a metaphorical disturbance of some kind; however, if a storm is *brewing up*, the storm itself may equally well be literal or metaphorical, although *brew* is metaphorical.

7.2 *storm* + *partitive of* = *conventional metaphor*

If *storm* is used partitively, there is a high probability that the meaning is metaphorical (Figure 5). The expression ‘a storm of something’ almost always signifies a violent disturbance in the social sense rather than an atmospheric condition. Typical phrases are *a storm of protest*, *a storm of controversy*, *a storm of criticism*. Less common are storms of positive reactions—*a storm of applause*, *a storm of cheers*. There is something slightly odd about these positive reactions, and readers familiar with William Golding’s *Lord of the Flies* will know that the ‘storm of laughter’ in the last line of group I.1 is not positive, but rather hostile or threatening. A third group consists of storms of emotion, in particular *a storm of weeping*. This third set illustrates the tension between prototype and superordinate: the superordinate is ‘a storm of emotion’, but the prototype is *a storm of weeping/tears*. Finally, there are storms of a miscellaneous ragbag of things, both entities—locusts, feathers, stones, etc.—and events—movement, noise, sexual behaviour, etc.—in all of which the storm is metaphorical.

I. A STORM OF NEGATIVE REACTIONS

llowing August. This unleashed such a storm of protest, in which branches in the en Belt land is guaranteed to raise a storm of protest. As well as supporting hi Federation they are likely to raise a storm of protest from residents and local in addition to Waterloo has raised a storm of protest not only from Camden Coun ent origin. Its growth was to cause a storm of protest in the next century from

sing insulting language. Last night a storm of protest was growing over the Gove
 influence of town halls would spark a storm of protest around the country. Gover
 nd ordered the flogging. Last night a storm of protest was growing over the Gove
 or the winter tour of India sparked a storm of protest, warned # These people ma
 sas, were forced to back down after a storm of protest from residents. Price of
 oode, a former number one, provoked a storm of protest after it was played on Ra
 e to Manchester United has provoked a storm of protest in Leeds, with local radi
 l Kingdom in Bedfordshire following a storm of protests. Lord Howland, son of th
 from ref Roger Dilkes, who provoked a storm of protest when he decided an accide
 e sense be # privatised # unleashed a storm of protest in the national press. Th
 costs, but it has predictably met a storm of protest from the consumer lobbies
 o the Musée d'art Américain created a storm of protest. When the matter was disc
 ovoked a major political crisis and a storm of protest throughout Japan, not onl
 l The abortion pill has already met a storm of protest from anti-abortion campai
 n they heard what was afoot, raised a storm of protest and demanded that their r
 our Party made its voice heard, and a storm of protest blew up in Parliament. In
 ed at him. He could n't be serious. A storm of protest broke out. "Aw no, corp."
 r US series, Witness Video, sparked a storm of protest. The NBC show 's opening
 nts in Africa. And rightly there is a storm of protest aimed at saving them. But
 crimination." The decision provoked a storm of protest from civil rights organiz
 ed cuts in pensions on Nov. 7 after a storm of protest including marches by reti
 ion was suspended on June 28, after a storm of protest. China, which had reporte
 f its existence and location raised a storm of protest from Nordic governments a
 n the USA, it notes, there has been a storm of protest over a government decisio
 pose of BSE infected cattle, caused a storm of protest when it was built. Fears
 ity was minimal. The killing caused a storm of protest and an emergency meeting
 eup. When the revival was announced a storm of protest followed. The Commission
 llow homes to be built has provoked a storm of protest from local people. Reside
 anti-racist policy, failed to quell a storm of protest over Mr McNeill 's remark
 rt. Stephan Heitmann has stirred up a storm of protest for suggesting the German
 anti-union legislation. It provoked a storm of protest from politicians, unions
 of Jesse Ferguson. Bowe faced another storm of protest about the quality of his
 ans, but these did not prevent a huge storm of protest at the time of the introd
 rds or folders make up for the likely storm of protest that inevitably follows t
 werfully demonstrated recently in the storm of protest which greeted, and revers
 ovoked a major political crisis and a storm of protest throughout Japan, not onl
 IRS issued earlier this year caused a storm of international protest; they are w
 e had entered the police station in a storm of self-righteous protest and had be
 Save The Queen, which has provoked a storm of patriotic protests, was not influ
 Aston Villa in November 1987, amid a storm of controversy, for just 150,000 pou
 e National Lottery Bill has sparked a storm of controversy with charities, footb
 the 13th minute. The second created a storm of controversy. Robins looked offsid
 iece of literature. The book raised a storm of controversy, and two of the autho
 violence. Lord Justice Kelly faced a storm of controversy and provoked sustaine
 y the BBFC last week in the wake of a storm of controversy over claims that the
 gn. On June 8, however, he ran into a storm of controversy by suggesting that th
 runway has whipped up the inevitable storm of controversy among local residents
 pact, and became more so as a violent storm of influential criticism burst over
 ing to the crowds. Next day a violent storm of criticism and derision was let lo
 subsidies. The announcement provoked a storm of criticism and anxious residents v
 altogether excluded from the angry storm of criticism which arose from the
 e in August, and has had to weather a storm of objections from shareholders and
 put it, "counting the bodies." The storm of objections seems in have set Reag
 ries of Jerry Lee Lewis who blew up a storm of indignation in the 1950s, not to
 establish our own diplomacy." In this storm of righteous indignation few comment
 once, and Mr Appin found himself in a storm of angry questions. You must stop th
 eality, it provided no warning of the storm of anger and abuse which my series o
 Throughout the 1970s, in a gathering storm of discontent, the same accusations
 n Ireland toured there in 1981 amid a storm of public and governmental condemnat
 eks(as it were) during which a rotary storm of collective fulmination conjures u
 nts that have been obscured by a dust storm of other allegations about the audit
 and added their voices to the growing storm of unrest. Labour 's John Aberdeen t
 He was the first star to weather the storm of a dope scandal, emerging unscathe

sword: Lloyd George had weathered the storm of labour unrest, and after "Black Friday" for the Assembly. The same month the storm of strikes at last abated, peace was

I.1 A STORM OF REACTIONS, PROBABLY NEGATIVE (by exploitation of 1)

hopping Day at the last minute amid a storm of publicity over its tuna fishing movie. *Apocalypse Now* (1979) arrived amidst a storm of publicity attracted by its long and divert a footpath which have aroused a storm of debate. But two Babergh District Council members, "his real name 's Piggy." A storm of laughter arose and even the tiniest

II. A STORM OF POSITIVE REACTIONS

rightening in itself. But to hear the storm of applause with which his BUF followed the hole. Patrick heard the roar and the storm of applause and guessed that his current, a seven-year-old child is raising a storm of cheers. It 's time for revolution all to within five feet of the hole. A storm of cheers. Andy, smiling despite the very ago, in 1887, to be greeted with a storm of ecstasy or alternatively of approval

III. A STORM OF NEGATIVE PERSONAL EMOTIONS

at was too deep for tears. And in the storm of emotion that threatened to overwhelm her. She closed her eyes, buffeted by the storm of her own emotions. Well, Shae ... heart, and begin to bring calm to the storm of our emotions. Ask yourself: "Am I looking onto the settee. He waited till the storm of weeping had passed. Then he went through the last phase of his youth, and that his storm of weeping had swept him into manhood because you will finish your small storm of weeping here and be composed before you go in earnest, abandoning himself to a storm of weeping, sobbing against his forehead as this activity began in Vicky, a storm of weeping # as I judged the sensation against the stone curls, and burst into a storm of silent weeping. Aber: May to early gone, Nancy fell to the ground in a storm of tears. Meanwhile, Noah Claypole, the sp stuff: it happened in the eye of a storm of tears that the whole house must have said, before suddenly bursting into a storm of tears. Oh, yes, I have # How could her being. After a while, that first storm of angry passion seemed to dissolve, and time, Franca contained in her breast a storm of anguish and violence so terrible as to tower that spiked into her brain. A storm of pain ripped through her like the r four, when I exist in a bewildering storm of hope, joy, incomprehension and shivering, the force at the centre of a storm of sensation. The intimacy with which his arms. His mouth covered hers in a storm of intemperate kisses and then his hand which united them almost at once in a storm of love and need as fierce as the on

IV. A STORM OF OTHER THINGS

in true Exorcist 2 style from within a storm of locusts. The music and lyrical idiom per flapped off round the corner in a storm of feathers with the blood coming out of the ceiling, the Retreat demolished in the storm of stones and a new structure raised immediately, shedding a little, grey storm of cigarette ash. I realized, sudden gust just blows it all away in a prodigal storm of confetti and rice." She gave me ten banks of units, sucking up a whirling storm of glass and wires that whiplashed through the air. All she could see before a whirling storm of foam obscured everything were at the heart of a blizzard of wind and sleet, like a storm of human souls. Each day, when Tod and I could survive in the middle of that storm of blades. Then Tyrion slipped and Ursula Forster were engulfed in a hammering storm of water that forced them almost to stop food still, providing a centre for the storm of his movement; sometimes the roles are reversed. Storm Over the Nile, there is such a storm of noise in the cinema from the drumming of a heart attack reacted with a storm of sexual behaviour with a succession of comparative quiet before another storm of quick-changes and running repairs, parties, theatricals -- "a perfect storm of unending pleasure," wrote Count Henry de la Roche the island vanished, around it the storm of magical energy. The ritual had been prepared for saints and sinners, "before the storm of the Reformation razed its holy places were mere frissons compared with this storm of need." How had she managed to sur

Figure 5. Four prototypical classes of *storm* as a partitive noun (highly productive)

It is possible, but not normal, to talk about 'a storm of thunder', 'a storm of rain' or 'a storm of hail' in English. Only three such usages are found in BNC (Figure 6).

ere was the most awful and tremendous storm of thunder and lightning and hail I than the back when you run through a storm of vertically descending rain. The b ed to "stand behind a wall out of the storm of wind and dust." The wind and the

Figure 6. The few literal partitive uses of *storm* in BNC

Storm is not the only word denoting a natural phenomenon to be used as a metaphorical partitive. Other words exhibiting similar behaviour include *torrent*, *flood*, *deluge*, *ocean*, *lake*, and *river*. All of these words denote bodies of water. It would take a full-scale lexicographical study of partitives, beyond the scope of this paper, to determine exactly how many words are used as metaphorical partitives and what semantic features they share.

Fontenelle (1994, 1997) discusses conventional metaphors like these in terms similar to those of Lakoff and Johnson (1980). Lakoff and Johnson claim that "our ordinary conceptual system ... is fundamentally metaphorical in nature." They argue that "we understand one thing in terms of another", by which they seem to mean that we very often talk about abstract things using words and phrases that also denotes physical things. Thus, a sentence like "he broke down" is interpreted in terms of the metaphor THE MIND IS A MACHINE. In support of this claim they adduce a large number of ordinary uses under headings such as ARGUMENT IS WAR (for which their examples include "Your claims are *indefensible*", "I *demolished* his argument" and "He *attacked* every weak point in my argument").

Following Lakoff and Johnson, Fontenelle posits the existence of a conventional metaphor A GROUP OF PROJECTILES IS A METEOROLOGICAL PHENOMENON (*a cloud/rain/shower of arrows, a storm of missiles, a rain of bullets, a shower of stones, etc.*). He also posits the existence of conventional metaphors GROUPS OF WORDS ARE PROJECTILES and GROUPS OF WORDS ARE LIQUIDS (applied to speech act nouns), and analyses this double system of metaphors in terms of Mel'čukian lexical functions (in particular, "Mult" for groups of things: *a ripple of laughter, a stream of curses, a wave/storm of protest, etc.*).

8. Relationship between Metaphors, Idioms, and Literal Uses

Now we come to the relationship between metaphors, idioms, and literal uses. For this purpose, we may look at a difficult case: the idiom *to take (a place) by storm*. According to OED, this idiom is first recorded in the 17th century as a military term, in association with the verb *to storm (a place)*. In those days it was a metaphorical exploitation of the atmospheric-disturbance sense of *storm*. But, as Taylor (1995) points out, prototypicality is recursive, i.e. an exploitation of a prototype may itself become established as a prototype. This is what happened to *take by storm*. The military sense of *take by storm* is regularly exploited in several domains: for example in sports, culture, fashion, and commerce. In each of these domains a new norm for this expression has become established, contributing to the norm for general English. Partly because it originated itself an exploitation of an older idiom, syntactic clues that distinguish the newer metaphorical extensions from the 'literal' military sense are quite hard to establish. The basic pattern in all cases is:

[[Person]] take [[Location]] by storm

In cases where [[Person]] alternates with [[Artefact]] as the grammatical subject, a metaphorical interpretation is appropriate. Only military leaders and armies take places by storm in the military sense, but designs, works of art, and new products take places by storm in the fashion, cultural, and commercial sense. An exception would be a case in which [[Artefact]] had the CONSTITUTIVE [[Military]], but no such case is found in BNC.

When [[Location]] is realized as *world*, the interpretation is likewise metaphorical. However, when the direct object denotes a city, e.g. 'took Paris by storm', the interpretation is genuinely ambiguous. Further textual clues are required before the meaning can be determined. The most important clue in such cases is the domain in which the text belongs: military, sport, culture, fashion, or something else. And, of course, this is the way in which readers normally proceed. The text type and domain of a document set semantic parameters as soon as a reader picks it up and even before they start reading. Further semantic parameters are established in the early sentences of a document. A corpus linguist puzzled by an unusual use of a word in a set of concordances may sometimes find the answer to the problem in the opening paragraphs of the document, where writers sometimes declare text-specific meanings. The corpus linguist's habit of plunging *in medias res*, focusing on small fragments in the middle of texts, is illuminating in one way but also potentially distorting in another. The corpus linguist must bear in mind that in reality the meaning of a text or discourse are built up as it proceeds. The BNC's practice of taking samples from the middle of documents is regrettable for this reason.

I MILITARY USES OF 'take by storm'

anta Ana decided to take the Alamo by storm. He succeeded, and all the resisters illy, Captal de Buch, took Limoges by storm and ruthlessly sacked it. Its destru They took St-Léonard-de-Noblat by storm, massacred its inhabitants, and then orinth, which is very hard to take by storm: its most famous capture, by Aratos arkably reluctant to take the city by storm. Despite all the obvious practical d castle could not have been taken by storm up the sheer cliffs rising from the t Poitiers and took the city gates by storm. Richard and a few followers escaped , especially when a city was taken by storm with all the looting, killing and de heir ships and took their position by storm (455). A remnant escaped across the ld not be betrayed or easily taken by storm. The English feared for their lives

II SPORTING USES OF 'take by storm'

t took the motorcycle racing world by storm 40 years ago. In the 1950 Isle of Ma f young players can take the world by storm. Unfortunately it may not be this Wo rd who had taken the golfing world by storm to win the 1979 British Open, Seve B is new putter would take the world by storm because it was revolutionary and, as llaby backs have taken world rugby by storm. If mckenzie ultimately gains the ca lic to the finals could take Italy by storm # if the isobars are favourable. Bin n went on to take the 1st Division by storm. Jerry also earned three full Intern he can take the Centenary Olympics by storm in his other sport, hockey. Olympic t. GOLD STARS: Taking the Olympics by storm. RINK OUTSIDERS: D.B.Sweeney and Moi t Andrews, the Reds take the crowd by storm with their immaculate formation rout he can take the Centenary Olympics by storm in his other sport, hockey. Olympic llaby backs have taken world rugby by storm. If McKenzie ultimately gains the ca

III USES OF 'take by storm' in the arts, fashion, and commerce

at the time and he took the world by storm. The Junior Gaultier collection pres later they took the fashion world by storm. At the end of the first public show n is set to take the fashion world by storm as she steps out in the latest clot collection took the fashion world by storm, breathing new life into the stuffy aken the beauty and exercise world by storm. Our telephones have not stopped rin ess, yet grew up to take the world by storm. But he was also a complex, highly s ughing and going to take the world by storm with our painting, our films, our cr eckons it is set to take the world by storm. The systems integration company was of ska music (which took the world by storm in the 1950s) and then to reggae, th take the city 's cosy legal world by storm. And in notebook, popular at home bu nd r20x have taken the radar world by storm, it 's time for a little more radar ranz Anton Mesmer first took Paris by storm with his new, bizarre technique. Mes ion the latest novel to take Paris by storm, the politics of the Comédie Francai olence in LA that 's taken America by storm. Here he talks to Neil McCormick abo

down And preparing to take America by storm. Two businessmen have just completed ok the Moo-nited States of America by storm, bringing their brand of psychedelic w cartoon series has taken America by storm. The Ren & Stimpy Show, featuring America, which..they hoped to take by storm. Wishart frequently saw Minton in th as already taken the United States by storm and is now doing the same here. Cine when he was trying to take London by storm. Foreigners always find that a diffi ax legs and cat litter take London by storm. Reminiscent of the peak days of Stu ch painters, Bonington took London by storm when he first exhibited at the Brit e show was now called, took London by storm. The street procession prior to each work that took 18th century London by storm with its rich mixture of ballads and -like cheekbones have taken Europe by storm and she is currently the toast of Ne Gorbachev took the United Nations by storm and wrongfooted the American adminis War Babies. The Teds took Britain by storm. The man who can win the allegiance nd. On her visit Diana took France by storm and she has shown the world how happ three years," and has taken Japan by storm, was another winner as was Ipswich, an faces get set to take Hollywood by storm. MICHAEL TARAT. Asians in the West a r whose nose-rings take Manchester by storm." If you can do business each week f d takes Bristol and the South West by storm?" Answer: the Bristol Amnesty Film W had taken the Vale of Aylesbury by storm. The Victorian worship of money was who did not quite take the country by storm during the election, as predicted, h slide technique took the audiences by storm, and Gary has extended the invite to he Daleks "took the viewing public by storm". David Whitaker contributed every b British natural history community by storm is simply not true # Gale himself qu but she has taken the indie scene by storm by writing some starkly troubled sex known, has taken the French media by storm. In the past month, not a day has go Carol took the local Theatre Royal by storm. She went on to win a host of medals Edinburgh and the Financial Times by storm: basic, profound, thrilling musical pected to take the American market by storm. It had overlooked the fact, however ns to take the open systems market by storm with a range of ready-configured, in the US are taking the market by storm, with ... 15,000 to 30,000 sq ft of re taking the hospitality industry by storm. Whether your company prefers physic t to take the hospitality industry by storm. Lauren Sterling is director of Ster was supposed to take the industry by storm. But nothing really happened. This y ducts Group to take the Unix field by storm ... and there remains the Interactiv al buzz takes the country 's raves by storm. Europe 's top glamour model launch . She wants to take the pop charts by storm in the multi-talented manner of her 's young men are taking the charts by storm as a string of young dance bands fro rk discounting took food retailing by storm, creating local Danish discounters, at six, she takes the other rooms by storm. At about eight-thirty, headlights s r, jewellery shops have been taken by storm. Moscow stores alone report sales of

Figure 7. *take by storm*

The military metaphor of *take by storm* is further exploited in a few rather complex cases where more information from the wider context (to be specific, from the preceding part of the text) is required to enable the reader to know what's going on. In such cases, pragmatic knowledge about the domain is often important: one has to know not only what kind of document one is reading but also what normally happens in that kind of document. However, in the vast majority of uses of polysemous words, a satisfactory interpretation can be derived from close study of the immediate context.

4. [From a Christian religious tract about heaven] There are no gate-crashers; it can not be taken by storm. To enter the Kingdom of Heaven one has to come as a little child.
5. [From a review of a classical music recording] The very Spanish serenader of [Debussy's] 'La sérénade interrompue' [as played by Cortot] takes his intended by storm rather than stealth.

6. [From a review of a performance of Wagner's *Meistersinger*] Transfers are good, though not of the sort that take the unsuspecting listener by storm.
7. [From a book about living in the English countryside] I love to be here, private, subversive and free, in friendly company, where pigs on tip-toes piss with such a haunted look, you'd swear there was something amiss, and sleep-walking cattle dump wherever they go. Hens are galleon-hulled: we take them by storm, plucking the eggs from under their bodies, bony and warm freebooters against a proud and panicky-wheeling armada.

In example 7, the metaphor is complex and extended. The writer and her friends are portrayed as taking hens' eggs from under them just as English pirates in the 17th century took Spanish gold from the galleons carrying it from central America to Spain. If one of the functions of metaphor in literature is to make the reader see the familiar world in a new way, then (for me) this is good writing. This ornate excerpt evokes a sense of enhanced recognition, in contrast to the apparently unmotivated violation of norms that characterizes the romantic fiction of Mills and Boone and other soft pornography preserved in BNC.

9. Identifying Conventional Metaphorical Uses by Collocates

Somewhat similar to partitive uses are cases in which metaphoricity is signalled by a modifier or classifying adjective. Part of the function of a classifying adjective (as opposed to a qualitative adjective) is to pick out an appropriate subset. The prototypical classifying adjective in this case is *political*. Clearly, a political storm is not a natural phenomenon, whereas a tropical storm is. However, for NLP purposes, we now run into a snag. If the correct interpretation of *storm* is to be activated, it is necessary first to distinguish between those classifying adjectives that identify kinds of storms as natural phenomena and those where the word is used metaphorically. The set of classifying adjectives and noun modifiers that activate a metaphorical sense of *storm* is very large indeed: virtually unbounded, in fact. Examples found in BNC are given in Figure 8.

g up a rescue plan amid a *political* storm that resulted in the resignation of tw
nd became the centre of a *political* storm between Michael Heseltine, then Defenc
from the government. The *political* storm disguised the fundamental problems fac
another inflationary and *political* storm for a government that could do without
mination to ride out the *political* storm surrounding its compulsory repatriatio
ncing the calm before the *political* storm could well be proved right. And with h
ue for mid-size bands. A *political* storm has also been sparked by the closure,
who escaped the immediate *political* storm by heading for his holiday home at Cam
e public reaction and the *political* storm created, but by Pilkington 's better t
r, the government faced a *political* storm. It followed shortly after the Westlan
still seemed remote. The *political* storm generated in 1986 by the proposals to
sked being dragged into a *political* storm. And he suggested she had responded wi
arges " plan</headline> A *political* storm erupted today over suspicions -- not d
eat on sale of islands. A *political* storm which had developed in September aroun
aised more than the usual *political* storm, and plenty of ammunition for the Oppo
s of any abatement of the *political* storm after the mysterious appearance on a P
ing himself for a furious *political* storm when he unveils his autumn package on
ee to weather the current *financial* storm. ACE Bill(above and left) with Telepro
e weathered every kind of *financial* storm over the centuries and have skills whi
ufacturer will weather the *economic* storm, while competitors that have n't been
shington. Late in 1895 a *diplomatic* storm blew up between Britain and America o
ave caused a *religious* and *academic* storm. They have provided a fascinating insi
nches grass, unaware of the *ethical* storm brewing around it. In the wake of the
es will not only result in a *social* storm around both the adult and child concer
h after the period of *revolutionary* storm and stress. After this time they were
ved the trigger for a *revolutionary* storm which the regime had barely survived.
nt to step in. As yet another *royal* storm burst, an angry Palace aide, referring

ine>Previn slams Woody in **sex abuse** storm</headline> Music maestro rages at comi
 girl at the centre of a **Home Alone** storm should be returned to her mother when
 aid. <headline>RTE in **gender bender** storm </headline> A ROW was raging last nigh
 charged. <headline>Julia faces **Cash** Storm</headline> Miss World flew back to
 of Rusayev. <headline>Palace in **Cup** Storm</headline> Des Kelly. Liverpool
 iverpool ran into a **Cup-Winners Cup** storm. Stewart was sent off 18 minutes from
 heila Ferguson cooks up a **soul food** storm. Soul food is all that 's best about
 giant at the centre of a **Government** storm seven years ago, has managed to lift
 <headline>**Judicial Review Legal** Storm Brewing</headline> Local authorities a
 SULT: Stunned Tory runs into a **race** storm</headline> MARK ELLIS Beauty queens br
 e Premier, rocked by the **Maastricht** storm and last week 's sterling crisis, does
 <headline>Eyesore: BR **office** storm looms</headline> Chester City Council
 me, usual outcome. Beat back a **pawn** storm on Queen side and eventually turned it
 Sharry, despite the current **protest** storm over the CAP cuts. Many observers beli
 in the morning. An enormous **public** storm ensued -- both internally and external
 attan: Airlines fly into **regulatory** storm</headline> By LARRY BLACK Re-regulatio
 headline>Kelly hits back over **trial** storm</headline> Mike Walters GRAHAM KELLY,
 ather the **quiet** and **unargumentative** storm. After one hundred days of world peace

Figure 8. metaphorical uses of *storm* identified as such by a modifier

So far, we have identified two specific clues for metaphoricity in the use of *storm* (causative verb and partitive *of*) and a generic clue (semantically mismatched modifiers). We have also identified an idiomatic catchphrase, *any port in a storm*, and two idioms or so-called fixed phrases: *a storm in a teacup* and *to take (a place) by storm*, the latter having several levels of metaphoricity. In all these cases the syntagmatics are clear. Are there any examples of metaphorical uses of *storm* for which the clues are in a less clear syntagmatic relationship to the target word? Possible cases are shown in Figure 9.

<headline>Storm **over race killers ' sentences**</headlin
 <headline>Archbishop in storm **over contraception**</headline>
 er this week to try to sort out the storm **over the Pakistanis**. But he may well h
 they would lead separate lives. The storm **over the "Squidgy" tapes** kept the pres
 dan, said he is concerned about the storm **surrounding his MP**. Off-licence men su
 hangers-on from the Civil List. The storm **surrounding the Queen 's children** has
 ive rather than harming it. In this storm **about finance**, one phenomenon attracts
the government from an approaching storm. But the military failures revealed
 vent. <headline>Bann in calm before storm</headline> **MEN 'S HOCKEY**. An afternoon
 r in **August 1914**, and the gathering storm **in 1938-39**. This too affected the soci
 nails. He could sense the gathering storm **in the room**, and knew it was only a ma
 <headline>Pakistan in New Storm</headline> No one shall **rub the ball** o
 ma of storm in nature, the drama of storm **in life**, is indeed the best # By its t
 t seemed best to counter a possible storm by **innocent guile**. I now see the meani
 as the one rock in **his own private** storm. From that day, early in the October
happy words which quell the rising storm # wrote one of them. His gentle wit wa
 ivate sectors, Cuckney rode out the storm calmly. Once the Prime Minister had de
 away, Cullam, **explain it away**. The storm 's blowing over and you 've nothing to
 ey watches **the champion** weather the storm with a **mixture of shots** to mount a spi
 er **drew its horns in** to weather the storm and re-opened under a new charter as t
 a record victory. In the eye of the storm, **England prop Jason Leonard** gets to gr
 of a **new product**. We are riding the storm at the moment but things are getting w
penalty area. **Norwich** weathered the storm after the break and looked likelier wi
donna likes being in the eye of the storm but this time she was safely tucked aw
 ater. Then came the lull before the storm. **From the mid-50s**, things were never t
 r his departing figure, a turbulent storm gathering momentum **in her green eyes**.
irachs 's sculptures for the cathedral have placed him at the centre of a storm.

Figure 9. metaphorical uses of *storm* identified by collocates

In fact, each of these metaphorical uses can be identified by a particular collocate, though in these cases the relevant collocate is not always in a structured relation to the target word. The first seven lines are uses in which *storm* governs a preposition, so they could be seen as variations on the partitive theme “storm of something”, but of course it would be quite wrong to say that *storm* governing any preposition is a signal of metaphoricity. For this reason, in such cases much more weight has to be placed on the semantic value of the noun phrase governed by the preposition.

In a few cases it is helpful or even necessary to import knowledge from outside the immediate context to make a correct interpretation, as we have already noted. So, for example, it is necessary to know what happened in European history in August 1914 and again in 1938-39 to interpret the tenth line of Figure 9 satisfactorily. It is possible, but exceedingly improbable, that the writer is talking about rain storms or thunder storms in those years, and of course the wider context confirms this to the point of certainty.

10. Conclusions

This paper has made the following points:

- The *theory of norms and exploitations* (TNE) postulates that people make meanings both by adhering to and by exploiting the normal patterns of usage in their language.
- The norms of a language can be identified by corpus pattern analysis (CPA). CPA identifies syntagmatic patterns that are associated with different *meaning potentials*. This is a task requiring lexicographical rather than theoretical linguistic skills.
- Pattern elements consist of *lexical sets* (semantic sets), as well as syntactic structures.
- In TNE, the notion of the *normal use* of a word replaces the notion of the *literal meaning* of a lexical item, although there is clearly a relationship between the two.
- Norms for nouns are different in kind from norms for verbs. Norms for verbs are expressed mainly in terms of valencies and subvalency features, with semantic attributes, whereas norms for nouns consist of statistically significant collocations, only some of which are in a regular syntactic relationship with the target word.
- In addition to semantic criteria for identifying metaphors and idioms, prototypical syntagmatic criteria for idiomaticity and metaphoricity can also be identified.
- A conventionalized metaphor is a kind of *norm*. So is an *idiom*. Regular syntagmatic patterns for at least some conventional metaphors distinguish them from literal senses.
- A dynamic metaphor, on the other hand, is a kind of *exploitation*. Dynamic metaphors have no place in a dictionary.
- In most cases, the unique contribution of a word to the meaning of a text can be deduced with reasonable confidence from clues in the immediate context. In a few cases, however, other clues are needed, in particular the domain of the discourse.
- In addition to semantic criteria for identifying idioms and metaphors, prototypical syntagmatic criteria for idiomaticity and metaphoricity can also be identified.

References

- Apresjan, Juri D.** 1974. 'Regular Polysemy' in *Linguistics* 142.
- Atkins, Sue, Charles J. Fillmore, and Christopher Johnson.** 2003. 'Lexicographic Relevance: Selecting Information from Corpus Evidence', in *International Journal of Lexicography* 16:3.
- Atkins, Sue, Michael Rundell, and Hiroaki Sato.** 2003. 'The Contribution of FrameNet to Practical Lexicography' in *International Journal of Lexicography* 16:3.
- Fillmore, Charles J.** 1975. 'An Alternative to Checklist Theories of Meaning'. Berkeley Linguistic Society.
- Fillmore, Charles J., Christopher R. Johnson, and Miriam R. L. Petruck.** 2003. 'Background to FrameNet' in *International Journal of Lexicography* 16:3.
- Fontenelle, Thierry.** 1994. 'Using Lexical Functions to discover metaphors', Euralex '94 Proceedings, Amsterdam.
- Fontenelle, Thierry.** 1997. *Turning a bilingual dictionary into a lexical-semantic database*. Lexicographica Series Maior 79. Niemeyer.
- Funk, Isaac K.** (ed.). 1894. *Funk and Wagnall's New Standard Dictionary of the English Language*. New York.
- Grimm, Jakob and Wilhelm, et al.** 1854-1971. *Deutsches Wörterbuch*.
- Halliday, Michael.** 1966. 'Lexis as a Linguistic Level' in C. E. Bazell et al. (eds.): *In Memory of J. R. Firth*. Longman.
- Halliday, Michael.** 1971. 'Language in a Social Perspective' in *Education Review* 23.
- Hanks, Patrick.** 1990. 'Evidence and Intuition in Lexicography' in Jerzy Tomaszczyk and Barbara Lewandowska-Tomaszczyk (eds.), *Meaning and Lexicography*. Benjamins.
- Hanks, Patrick.** 1993. 'Norms and Exploitations: why Lexicographers Need Prototype Theory, and Vice Versa'. Complex '93, Budapest, Hungary.
- Hanks, Patrick.** 1996. 'Contextual Dependency and Lexical Sets' in *International Journal of Corpus Linguistics* 1 (1). Benjamins.
- Hanks, Patrick.** 1998. 'Enthusiasm and Condescension' in T. Fontenelle et al. (eds.) *Euralex'98*.
- Hanks, Patrick.** 1999. 'How to Tell a Meaning from a Metaphor', unpublished paper read at the Dictionary Society of North America, Berkeley, CA.
- Hanks, Patrick.** 2000. 'Contributions of Lexicography and Corpus Linguistics to a Theory of Language Performance'; keynote address in U. Heid et al. (eds.): *Euralex 2000*.
- Hanks, Patrick.** 2001. 'The Probable and the Possible: Lexicography in the Age of the Internet', in Lee Sangsup (ed.): *Asialex 2001 Proceedings*, Seoul, Korea.

- Hornby, A.S.** 1948. *Oxford Advanced Learners' Dictionary* (first edition). Oxford University Press. See also Wehmeier.
- Kilgarriff, Adam.** 1997. 'I don't believe in Word Senses' in *Computers and the Humanities* 31 (2).
- Kilgarriff, Adam, and David Tugwell.** 2001. 'Word Sketch: Extraction and Display of Significant Collocations for Lexicography' in *Proceedings of the Workshop 'Collocation: Computational Extraction, Analysis and Exploitation'*. ACL, Toulouse, France.
- Lakoff, George, and Mark Johnson.** 1980. *Metaphors we Live By*. Chicago University Press.
- Mel'čuk, Igor A., et al.** 1984, 1988, 1992, 1999. *Dictionnaire explicatif et combinatoire du français contemporain : Recherches lexico-sémantiques I, II, III, IV*. Montréal: Les presses de l'Université de Montréal.
- Mel'čuk, Igor A., and Zholkovsky, A.** 1984. *Explanatory Combinatorial Dictionary of Modern Russian*, Vienna: Wiener Slawistischer Almanach.
- Murray, James, et al.** 1878-1928. *Oxford English Dictionary*. Oxford University Press. See also Simpson.
- Pustejovsky, James.** 1995. *The Generative Lexicon*. MIT Press.
- Pustejovsky, James, and Patrick Hanks.** 2001. 'Very Large Lexical Databases: a Tutorial'. ACL Workshop, Toulouse, France.
- Sampson, Geoffrey.** 2001. *Empirical Linguistics*. Continuum International.
- Simpson, John, et al.** 2000-. *Oxford English Dictionary, Third Edition: On-Line*. Oxford University Press.
- Sinclair, John M.** 1966. 'Beginning the Study of Lexis' in C. E. Bazell et al. (eds.): *In Memory of J. R. Firth*. Longman.
- Sinclair, John M.** (ed.). 1987. *Looking Up: an Account of the Cobuild Project in Lexical Computing*. HarperCollins.
- Sinclair, John M.** 1991. *Corpus, Concordance, Collocation*. Oxford University Press.
- Sinclair, John M., Patrick Hanks, et al.** 1987: *Collins Cobuild English Language Dictionary*, subsequently re-titled (third edition, 2001) *Collins Cobuild English Dictionary for Advanced Learners*. HarperCollins.
- Taylor, John R.** 1989, second edition 1995. *Linguistic Categorization: Prototypes in Linguistic Theory*. Oxford University Press.
- Wehmeier, Sally (ed.).** 2000. *Oxford Advanced Learners' Dictionary* (sixth edition). Oxford University Press.
- Wilks, Yorick.** 1975. 'A Preferential, Pattern-Seeking Semantics for Natural Language Inference' in *Artificial Intelligence*, vol. 6.