

## Hand and Heart:

A Study of the Uses and Phraseology Associated with Two Common Nouns

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### 1.0 Introduction

This paper reports on an exploratory study of the phrasal patterns associated with the common nouns *hand* and *heart*. The use of these words is of interest because they are among the most frequent nouns in English. *Hand*, in particular, has a very high frequency, being the 26<sup>th</sup> most frequent noun in English according to frequency lists based on the British National Corpus (Leech, et.al. 2001). Since it is unlikely that speakers (or writers) would have occasion to talk about their hands so frequently, it can be hypothesized that *hand* is frequent because of its use in phrases, where it may have a non-literal use. Similarly, with *heart*. Although health is a common general topic, we would not expect people to talk frequently about specific organs and we can surmise that the frequency of *heart* results from metaphorical or metonymic uses of the term. Indeed, research on the metaphorical use of language has shown that body part names are very common in phrases, where they often have a metaphorical function. Recent research in the area of phraseology has usually been based on data drawn from large corpora, and in the present study I have made use of the British National Corpus (BNC) as a data source.

### 1.1 Aims

The main aims of this paper are to identify, analyze and describe phrasal patterns associated with the lexical items, *hand* and *heart*. Both are very common and frequent nouns in English, and *hand* is especially frequent. What accounts for this high frequency of occurrence? Stubbs (2007) suggested that many words are frequent because of their tendency to be used in phrases, what he called “their constructional tendency.” Is the high frequency of *hand* attributable to its use in phrases? *Heart* is also a frequent noun, although it has a much lower frequency than *hand* in the BNC. What accounts for the different frequencies of *hand* and *heart*?

*Heart* has multiple meanings or senses. In its literal sense, *heart* can be defined as the organ which pumps blood through the body. But of course, it is obvious that *heart* is not always used in this anatomical sense. It is often used in a metaphorical sense and it seems probable that it is used more frequently in this sense than in its literal sense though as Lindquist and Levin (2007) have observed, the distinction between literal and non-literal uses is not always clear-cut. One purpose of this study

was to investigate the usage of *hand* and *heart* to see if there were also instances in which the literal and non-literal uses overlapped, or whether it is possible to see development of metaphorical usages from literal ones.

## 2.0 Background

### 2.1 Related studies

In 1980 Lakoff & Johnson published a book entitled, *Metaphors We Live By*, and since that time there has been increased interest in the use of metaphor in language. The metaphorical use of names of body parts has been noted by researchers (e.g. Gibbs, et. al. 2004). Gibbs & Wilson (2002) observe that, “The human body serves as a frequent source of our metaphorical thought and language.” This idea is now well accepted in cognitive linguistics (Langacker 1987, 1991).

Lindquist & Levin (2007) investigated the phrasal patterns associated with the words *foot* and *mouth* in a corpus-based study. As a starting point, they wished to test Stubbs (2007) claim that many words are frequent because of their tendency to occur in phrases. They were also interested in the metaphorical and metonymic uses of these terms and how the literal and figurative meanings were related. Their findings supported Stubbs claim: in a random sample, more than half of the usages of *foot* and *mouth* occurred in phrases. The two words differed of course as to the types of phrases in which they occurred and their functions in those phrases. Lindquist & Levin also found that the borderline between literal and non-literal meanings was not clear-cut in many cases.

In another study, the same researchers (Levin and Lindquist 2007) analyzed the use of the word *nose* in phrases, this time with special attention to the evaluative function of the phrases. They found that the word *nose* often had negative connotations associated with it and that this was also true for the phrases in which it was used. As with *foot* and *mouth* there were both literal and non-literal uses of *nose* and sometimes literal and non-literal meanings could exist simultaneously.

### 2.2 The lexical item *heart*

In *Webster’s Revised Unabridged Dictionary* (1996) the first definition for *heart* is: “(Anat.) A hollow, muscular organ, which, by contracting rhythmically, keeps up the circulation of the blood.” Many dictionaries give longer, more detailed definitions of this sense of *heart*, but in five dictionaries that I checked (*Collins CoBuild*, *Longman Dictionary of Contemporary English*, *MacMillan English Dictionary*, *Oxford Dictionary of English* and *Webster’s Revised Unabridged Dictionary*) the anatomical sense was listed first, implying that it is, in some way, the most basic meaning of *heart*. But while this meaning has the primary place in dictionaries, it does not seem to be one which is used most frequently.

Intuitively, it is obvious that *heart* is often used in metaphorical ways. It is used metaphorically in all kinds of writing, from literary works to personal letters, and in spoken texts of all kinds. Some phrases

containing *heart* have become familiar through their use in well-known texts. For example, in the Bible *heart* is used repeatedly: a computer search of the Bible for the word *heart* returns about 1660 hits. It is used sometimes as a synonym for *soul* (e.g. Matt. 22:37, Mark 12:30) and other times, it seems to mean something closer to conscience (e.g. Romans 2:15). Expressions such as “hardness of heart,” “heart of stone,” “pure in heart,” “heart’s desire” and many others are familiar from their usage in the Bible.

The Phrases In English (PIE) program (described below in section 3.0) identified 13,323 tokens for *heart* in the BNC, and there were 1,443 tokens for the plural form, *hearts*. Additionally, *hearts* was used as a proper noun 25 times in the corpus.

### 2.3 The lexical item *hand*

The frequency figures for *hand* are much higher than those for *heart*. The PIE program identified 32,571 tokens of *hand* and 17,703 tokens of *hands* in the BNC. There were also 3 occurrences of *hands* in which it was used as a proper noun. One difference in the figures for the two words is in number of tokens for plural forms. Presumably the difference is partly due to the fact that human beings normally have two hands but only one heart. There can be some differences in the ways that singular and plural forms are used, but I have limited this study to analysis of the singular forms.

As with *heart*, there are many meanings and senses associated with *hand*, but the meaning which comes first in dictionaries is its meaning as a body part. And, like *heart*, *hand* is used very frequently in metaphorical or metonymic ways. In an article about the systematic conceptual motivation for the meaning of idioms, Kovecses and Szabo (1996) analyzed a large number of idioms that have to do with the human hand. The idioms came from a variety of sources, especially standard dictionaries. They found that *hand* was used in many metaphoric and metatonymic expressions. The examples they present are from many semantic domains including control (*to have something in hand*, *to be out of one’s hands*, *to get out of hand*), freedom or authority (*to have a free hand*, *to tie someone’s hands*), activity or inactivity (*to turn one’s hand to something*, *to sit on one’s hands*), and involvement (*to have a hand in something*) among others.

### 3.0 Data and Methodology

Recent work on phraseology (e.g. Moon 1998) has usually been based on investigations using large scale corpora. The use of corpora for this purpose has many advantages. Because the corpora are composed of texts from a variety of genres and are both written and spoken, they enable researchers to study authentic language use in a wide range of contexts. In the present study, I investigated the use of *heart* and *hand* in phrases by extracting and analyzing phrases containing those words from the British National Corpus (BNC). The BNC is a large, 100 million word corpus composed of spoken and written

texts (of primarily British English) collected between 1991–1994. Most of the corpus, approximately 90 million words, consists of written texts and about 10 million words are from spoken texts. A variety of distinct genres are included in the corpus. For example, the written component contains texts from newspapers, magazines, books, periodicals, letters and others. The spoken component contains transcriptions of spoken texts including lectures, casual conversations, and so on. The structure of the corpus enables researchers to compare the use of lexical items in texts of different genres or between the spoken and written modes.

Various interfaces have been developed for searching the BNC. I used one which was developed for the specific purpose of investigating phraseology. This interface is called *Phrases in English* (PIE) and was developed by Fletcher (2003/2004). It is freely available. PIE enables a user to search for phrases of up to eight words in length. For the purpose of this study I looked for phrases between two and eight words in length, and I searched for phrases in which the lexical item occurred in various positions. For example, in checking for 8 word phrases with *heart*, I first searched for phrases in which *heart* was in first position, then for phrases in which *heart* was in second position, then for phrases in which *heart* was in third position, and so on. I carried out the same procedure to search for phrases of all lengths and with *heart* in all possible positions.

By *phrases* I mean something like fixed multi-word sequences. In corpus studies the term *n-gram* is sometimes used to refer to a recurrent string of uninterrupted word forms. But the fact that the same sequence of words recurs does not necessarily mean that it is a phrase. It is sometimes difficult to decide what constitutes a phrase, and the identification of phrases relies partly on the intuitive judgments of the researcher. There can be some question about whether or not short sequences should be considered as phrases. For example, should *at heart* be considered a phrase? In the case of idioms, one criterion for deciding whether or not an expression is an idiom is whether or not it has a compositional meaning, that is, whether its meaning can be derived from the meanings of the parts. However, not all phrases are idioms so this criterion cannot always be used. For the purpose of this research I have used a rather loose definition of *phrase* as a “more-or-less fixed” recurrent multi-word sequence. To illustrate the issue of identifying phrases, consider the “6-grams” in Table 1 below that were obtained by using the PIE program to identify recurrent sequences of six words that included the word, *heart*.

Clearly one would not want to say all of these are set phrases, but it is difficult to determine where phrases begin and end. The four-word sequence *the heart of the* occurs 935 times in the BNC, and it seems reasonable to identify it as a five-word phrase in which there is some variability possible in the fifth word slot, e.g. *the heart of the city*, *the heart of the matter*, *the heart of the problem*, *the heart of the town*, *the heart of the forest* (these sequences all occurred more than 10 times in the BNC).

**Table 1.** 6-grams containing *heart* with 10 or more occurrences in the BNC

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in the heart of the city (44)
to the heart of the matter (24)
is at the heart of the (36)
at the very heart of the (34)
are at the heart of the (15)
died of a heart attack in (13)
situated in the heart of the (12)
lie at the heart of the (10)
which is at the heart of (19)
which lies at the heart of (16)
to be at the heart of (14)
he died of a heart attack (12)
didn't have the heart to (10)
from the bottom of my heart (10)

## 4.0 Results

### 4.1 Use of *heart* in phrases

One of the aims of this study was to investigate whether the relatively high frequency of *heart* was due to its being used metaphorically and in phrases. It seemed unlikely that speakers or writers would have many occasions to talk or write about their hearts in the anatomical sense, and it was therefore predicted that the frequency of *heart* was attributable to its metaphorical use and to its tendency to be used in phrases. In order to test the second part of that prediction, I analyzed a concordance consisting of 100 lines in which *heart* was used to see if it was used as part of a phrase or used independently. The 100 lines were selected at random from the BNC by the PIE interface program. In the 100 randomly selected lines, *heart* appeared in phrases 29 times. The phrases in which *heart* was used included, for example, *know sth. by heart*, *believe sth. with (his/her) heart*, *coronary heart disease*, *heart attack*, and so on. In this sample, *heart* was used in phrases less than 70% of the time, which suggests that its relatively high frequency is not due solely to a tendency to be part of phrases.

The 100 lines were also analyzed to check whether the use of *heart* in them was literal or non-literal. *Heart* was used in a literal sense in 31 cases out of 100, which means that in the majority of cases (about 70%) it was used in a non-literal sense. However, there were a couple instances in which it was not clear whether *heart* was being used in a literal or non-literal sense. For example, the expression, “her heart was pounding,” would probably be understood as metaphorical, but with “her heart was thumping,” a literal interpretation might be possible.

In the cases in which *heart* was used in a literal sense in phrases, it was almost always in relation to some medical problem related to the heart. The following short phrases occurred frequently: *coronary heart disease, heart disease, heart attack, heart condition, heart rate*. These five phrases accounted for all the cases in which *heart* was used in phrases in a literal sense in this data sample.

While each of the five phrases in which *heart* was used literally recurred many times, the phrases in which *heart* was used in a metaphorical sense tended to occur only once. However, there was a much greater variety in the phrases used. These phrases in which *heart* was used non-literally included, for example, *know sth. by heart, believe sth. with all one's heart, a heart of gold, holds very dear to her heart, a place in her heart*, and so on.

The extent to which *heart* is used metaphorically is immediately apparent from an inspection of the verbs that most frequently follow *heart*. Excluding forms of *be* and modal verbs, the following verb forms occurred more than ten times in the position following *heart* in the BNC: *sank, beating, beat, began, thumping, gave, thudding, went, leapt, seemed, racing, stopped, lurched, hammering, missed, thudded, jumped, beats, felt, leaped, going, grow, started, set, turned, bleeds, ached, pounded, turn, sinking, skipped*. With some of these verbs, (*sank, leapt, racing, lurched, hammering, jumped, leaped, pounded, sinking*) a literal use is precluded. With other verb forms (*thumping, thudding*) the metaphorical usage with *heart* has become entrenched to the point that it is recognized as one of the senses of the verb and is included in dictionary definitions.

#### 4.2 Use of *hand* in phrases

The lemma HAND had a much higher frequency in the BNC than HEART (lemma refers to all associated word forms, e.g. *hand, hands*): 532 tokens per million words for HAND, and 152 tokens per million words for HEART (Leech et. al. 2001). No doubt this is due in part to the fact that people are more conscious of what they do with their hands since at some level they are making decisions about how they will use their hands. On the other hand, the heart does its work automatically and under normal circumstances we are not very much aware of its activity, nor do we make decisions about how to use it. Also, hands are used to carry out a wide variety of different tasks while the functions of the heart are limited. This accounts, in part, for the higher frequency of HAND as compared to HEART.

Lindquist & Levin (2007) found that *foot* and *mouth* were used in phrases in a variety of semantic categories including location, posture, locomotion, measurement, extent, emotion and communication. They examined how *foot* and *mouth* were used in phrases about location and emotion. For the sake of comparison, I have examined how *heart* and *hand* are used in these same semantic areas.

#### 4.3 *Heart* and *hand* in location phrases

*Heart* and *hand* are both used extensively in phrases for indicating location. *Hand* is used very frequently, but the variety of phrases in which it appears is limited. Conversely, there are fewer

phrases with *heart*, but *heart* is used in a much wider variety of phrases.

*Hand* is especially frequent in locative phrases following *right* or *left*. After *other*, *right* and *left* are the adjectives that most frequently occur in the position before *hand*. In the BNC, *right* occurred 1,102 times in the position before *hand*, and *left* occurred 896 times in that position (*other*, the most frequent adjective collocate, occurred 5,564 times). *Right hand* and *left hand* are used in a variety of phrases, but especially in phrases where they precede the word *side*. The six-word phrase *on the left hand side of* occurred 12 times in the BNC, and *on the right hand side of* occurred 11 times. The following can be considered an approximate frame: \_\_\_\_\_ (on (the (left/right hand) side) of) \_\_\_\_\_. Elements in parentheses on either side of *right hand* or *left hand* are optional. Shorter versions of this phrase occurred more frequently, for example, *the left hand side of* occurred 27 times.

The phrase *right hand* collocates with some other nouns: *man*, *corner*, *light*, *column*, *drive*, *lane*, *edge*, *page*, *set*, and *end*, but among these only *man*, *corner*, *light* and *column* collocate more than 10 times, and only *side* collocates very frequently, with 158 occurrences in the BNC. Fewer nouns collocate with *left hand*; only *corner*, *light* and *end* collocate more than 10 times.

There are a couple phrases with a locative meaning that consist of preposition plus *hand*: *at hand* and *to hand*. Merriam-Webster's Online Dictionary defines *at hand* as, "near in time or place: within reach," and *to hand* as, "within reach." A few variants on these phrases also occur: *near at hand*, *close at hand* and *close to hand* (*near to hand* is listed in dictionaries — *Collins CoBuild*, for instance — but it did not occur in the BNC). *At hand* occurred 482 times in the BNC, *near at hand*, 42 times, *close at hand*, 105 times, *to hand*, 540 times, and *close to hand*, 6 times.

As for the use of *heart* in locative phrases, examination of data from the BNC shows that this is a very prevalent use. The four-word sequence *the heart of the* occurs 935 times in the BNC. It is commonly followed by *city*, *matter*, *problem*, *system*, *town* and *forest*, among others. In these phrases it has a general meaning of center or core. *Heart* is also very prevalent in locative expressions with a directional meaning, such as *straight to the heart of* or *right into the heart of*.

From examination of these phrases and their frequencies, it is clear that *hand* and *heart* are frequently used in phrases with a locative meaning, and their high frequency in the BNC is partly attributable to their widespread usage in such locative phrases.

#### 4.4 *Heart and hand* in emotive phrases

If an English speaker were asked to draw a symbol for human emotion, s/he would be likely to draw a heart. The heart symbol is commonly associated with emotion, especially love, and the association of *heart* with emotion is evident in numerous English expressions. It is observable when we look at the adjectives that appear in the position before *heart*. A search of the BNC revealed that there were 88 adjectives with a mutual information score of above 3.0. (In corpus linguistics, a mutual information score higher than 3.0 is usually considered to be an indication of a strong bond or collocation

tendency.) A few of the adjectives with the highest frequency are ones that are used in connection with the anatomical sense of *heart* (e.g. *coronary*, *ischaemic*, *artificial*, *massive*), but most of the other adjectives, by far the majority of them, are used in expressions with an emotional meaning. These adjectives include for example, *sinking*, *joyous*, *broken*, *timid*, *mild*, *foolish*, *fiery*, *glowing*, *pioneering*, *restless*, *loving*, *pure*, *warm*, *hungry*, *kindly*, *mysterious*, *troubled*, *sweet*, and *serious* among others. The collocation of *heart* with these adjectives is evidence of the extent to which *heart* is used in emotive expressions.

Although *hand* does not seem to be used in emotive phrases, the plural form *hands* is used in a couple phrases, e.g. *to wring (one's) hands* (to express despair), *to throw up one's hands* (to express disgust). Phrases with a form of *wring* + pronoun + *hands* occurred 34 times and phrases with a form of *throw* + *up* + pronoun + *hands* occurred 40 times.

One question of concern in this study was the relationship between literal and metaphorical meanings. In their analysis of *foot* and *mouth*, Lindquist & Levin (2007) observed that there were some phrases which could be used both literally and metaphorically (e.g. *at the feet of*). They suggested that in such cases the metaphorical usages were derived from literal ones. Similar examples can be found among phrases with *heart*, for example, *her heart missed a beat*. While this could be interpreted in a literal sense, in ordinary usage, this expression is used not to describe the action of the heart, but to describe an emotional state, namely a state of great agitation or excitement. The emotional state is described in terms of the action of the heart. It is doubtful if the heart actually misses a beat or that a person would be aware of it if the heart did. But hearing the expression, a listener could interpret this expression and understand that something extraordinary had occurred to disrupt the natural order of things. Of course, to the extent that the expression is conventionalized, the listener would not need to work out an interpretation. The listener would understand that this was simply an expression used to describe a condition of excitement and would not interpret it as a description of the heart's activity. The phrase *her heart was pounding* can be interpreted in the same way. It may be possible to hear one's heart beating, but it would be an exaggeration to say that the heart is pounding. But this exaggeration is not likely to cause confusion for interlocutors, even for ones that are unfamiliar with this conventionalized expression. A listener could easily work out that hearts do not usually pound and therefore the intended interpretation is not a literal one. Although a literal interpretation would be dispreferred, it is not completely ruled out in these two cases. It is perhaps possible for one to sense an irregularity in one's heartbeat or to hear one's heart beating loudly. But our knowledge of the world informs us that this is not likely to be the case and it is therefore difficult to interpret these phrases in a literal way. These two examples, and others like them, show a relationship between literal meaning and metaphorical use.



## 5.0 Conclusion

*Hand* and *heart* are very frequent nouns in English. This study began with a question as to why these two nouns should be so frequent. An investigation of their use in BNC showed that their high frequency of usage was related to their extensive metaphorical use. It was also found that in the case of *hand*, the high frequency could be attributed partly to the tendency of this word to be used in phrases.

Unlike *hand*, *heart* did not exhibit a strong tendency to be used in phrases, but its use in a metaphorical sense was noteworthy. Of course, this is hardly surprising since the heart symbol is widely associated with emotion. But inspection of collocating adjectives furnished ample evidence of this tendency and provided an indication of the extent to which *heart* was used metaphorically.

The large difference in frequency between *hand* and *heart* was noted: *hand* was more than three times as frequent as *heart*. Several factors were identified to account for this difference. One factor was simply that the hands are used for many different kinds of tasks while the heart's functions are more limited. Also, people are more aware of their hands because they make decisions about actions to carry out with their hands, but the heart carries out its functions automatically and people are not ordinarily aware of its functioning.

Both *hand* and *heart* are used in a variety of expressions in various semantic domains. In this study I examined their use in two semantic domains: location and emotion. These domains were selected so that the results could be compared with those of Lindquist & Levin (2007) who analyzed the use of *foot* and *mouth* in those domains and whose study was one stimulus for the present one. Like *foot* and *mouth*, both *hand* and *heart* were frequently used in locative expressions, and their usage in locative expressions contributed to their high overall frequency in the BNC. However, the two words showed different patterns of usage. *Hand* was used with very high frequency but in a restricted set of phrases, particularly in directional phrases where it collocated with *right* or *left*. *Heart* was used in a variety of expressions in a metaphorical sense. In the semantic domain of emotion, *heart* was frequently used, as expected. *Hand* was not used, though the plural form *hands* was used in a few expressions of emotion (*to wring one's hands*, *to throw up one's hand*) with a fairly high frequency.

This study provides further corpus-based support for the observation that body part names are a very important source for metaphors to describe human experience. Further future study of *hand* and *heart* and their use in phrases in other semantic domains will help to elucidate the central role of body part terms in the development and use of metaphor.

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