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Compounds or Phrases? - A Look at The Structure of
Atypical Noun-Noun Combinations.

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Abstract

Differentiating between compounds and phrases can often be difficult. One of the main reasons for this is a compound and a phrase can have the same surface form. In this essay atypical noun-noun combination, which could be possible compounds are investigated. The research questions for this essay include if these combinations are compounds or phrases, what these noun-noun combinations look like and the possible structure and head of them. The study is based on corpus data and tests for compoundhood are applied to the data in order to see if the constructions are most likely compounds or phrases. The results show that the constructions are likely phrases. The structure of most of these phrases seem to be minor determiner with the rightmost element in the phrase being the head. Moreover, it seems that the atypical noun-noun combinations investigated might be a result of densification.

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1.Introduction

This paper looks at atypical noun-noun combinations and more specifically at those where the structure is unclear. This means that the functions of the different parts of the construction are not easily defined and analysed. Many noun-noun combinations behave like compounds, meaning that they are a single unit, usually with the rightmost element being the head (Bauer & Huddleston , 2002, p. 1647). A few examples of these kinds of compounds are:

  (1) handbag
  (2) colour TV
  (3) raincoat

In the examples (1) - (3) above, the rightmost element is the head and the left is some kind of modifier that describes what type of e.g. *bag*, *TV* or *coat* it is. However, there are noun-noun combinations which do not behave the same way:

  (4) a good size dress
  (5) a nice colour car
  (6) an English style house

Constructions like the ones in (4) - (6) are examples where the structure on the construction is unclear. These noun-noun combinations are unclear since it is hard to see for example what the head is. This is because *colour* in *colour car* does not have the same describing function as *colour* in *colour TV*. Because a *colour car* is not a type of *car* like a *colour TV* is a type of *TV*. Additionally, it is not clear if these combinations should be treated as compounds or phrases.

Huddleston and Payne (2002) briefly discuss constructions similar to examples (4)-(6). They speak about minor determiners which are determiners in constructions such as:

  (7) what size shoes
  (8) that size shoes

In (7) and (8) the constructions *what size* and *that size* are minor determiners. The minor determiners in (7) and (8) look like the noun-noun constructions investigated in this essay.

Huddleston and Payne (2002) claim that these minor determiners are most common in interrogatives and demonstratives such as in (7) and (8) (p. 357). In fact, they only mention minor determiners in interrogatives and demonstratives (Huddleston and Payne, 2002), which makes examples that are not in interrogatives or demonstratives, like (4)- (6) intriguing. Thus, it becomes interesting to see if the constructions such as *good size dress* in (4) or *English style house* in (6) include minor determiners, which would make the noun-noun constructions NPs or if they have more compound-like properties.

One of the research questions of this essay is if the constructions in (4) – (6) and others like them should be considered compounds or phrases. The reason for trying to determine if the constructions are compounds or phrases is because it is often hard to distinguish between compounds and phrases (Lieber and Štekauer, 2009, p. 4) and many noun-noun combinations are compounds. But, since the structure of examples such as (4) – (6) is unclear, figuring out if they are compounds or phrases is difficult. Thus, the structure of these atypical noun- noun combinations is going to be analysed and the question of what the head is, is going to be considered. Furthermore, questions about what these constructions look like and what the righthand elements look like are going to be answered.

2. Background

2.1 The structure of noun phrases

The basic structure of a noun phrase (NP) is a head noun, either by itself or with one or more dependents (Huddleston & Payne, 2002). Huddleston (2002) states that prototypical NPs "are phrases headed by nouns and able to function as complement in clause structure [..]" (p. 54). Complements are functions in clauses such as subject or object (Huddleston & Payne, 2002, p. 326). Some other functions NPs can have, are illustrated below with examples taken from Huddleston and Payne (2002, p. 327):

(9)   Fred arrived the day before yesterday.

(10)   She was writing a treatise on [the opera 'Carmen']

(11)   I was talking [to the doctor]

In (9) the underlined NP is an adjunct in the clause, in (10) the NP *Carmen* is a modifier of the NP *the opera* and in (11) the NP is a complement of a preposition. Examples (9) - (11) show that NPs can have many functions both at the clause level and at the phrase level. Since NPs often function as subjects in clauses, the verb often agrees with a NP in terms of number (Huddleston, 2002, p. 56). Huddleston and Payne (2002) write that "in simple agreement, the verb agrees with a subject with the form of an NP whose person–number classification derives from its head noun." (p. 499). What is meant by this is that the verb agrees in terms of number and person with the head noun in the NP functioning as the subject. Hence, seeing which noun in the NP that the verb agrees with in terms of e.g. number can help determine the head in the NP. This also holds when the head of the NP is an uncountable noun or an invariably plural noun (Hasselgård, Lysvång and Johansson, 2012, p. 269). Thus, if the head in a NP is realised by a noun such as *jeans*, which is invariably plural, the verb is also going to be in the plural as in (12) below.

(12)   these jeans are great

Seeing which noun in the NP the verb agrees with in terms of number can be an indicator of what the head of the NP is. Hence, this can be used as a test for headedness in NPs.

One of the most important functions in NPs are determiners. Huddleston and Payne (2002) distinguish between three types of determiners: basic determiners, subject-determiners and minor determiners (p. 355). Basic determiners include determiner phrases and determinatives such as *the, a, this, that* etc. The second type of determiner is subject-determiners which are genitive NPs e.g. *the girl's* shoes. The last category, minor determiners, is divided into NPs and prepositional phrases (PPs). Huddleston and Payne (2002) write that only a small class of NPs and PPs are part of the type minor determiners. One kind of NP included in minor determiners are NPs which are headed by "nouns denoting elementary properties such as *size*, *shape* and *colour*" (Huddleston and Payne, 2002, p. 357). These types of NPs are often found in interrogative constructions or with a demonstrative determinative. The examples (13) and (14) below are taken from Huddleston and Payne (2002, p. 357).

(13)   [What size hat] do you take?
(14)   They don't stock [that size shoes].

Example (13) above shows this type of NP in an interrogative and (14) shows it with a demonstrative determinative. Huddleston and Payne (2002) further write that (14) is more commonly written as (p. 357):

(15)   They don't stock [shoes that size].

Hence, (15) is a more common way of conveying the same message as in (14). The minor determiners described by Huddleston and Payne (2002) are of particular interest because some of the noun-noun combinations investigated in this essay look like them.

Determiners are not the only type of dependents that can exist in a NP. Another type of dependents are modifiers. Some examples of modifiers are attributive modifiers, PPs and NPs.

(16)   the tall girl
(17)   the cat with white fur
(18)   a car this colour

(16) is an example of an attributive modifier, (17) a PP as a modifier and (18) is a NP as a modifier. NPs functioning as modifiers of other NPs, like in (18), are quite limited and mostly occur with nouns denoting *age*, *colour* and similar qualities (Huddleston and Payne, 2002, p. 446). The minor determiners in (13) and (14) and the type of NP in (18) are quite similar since they all contain nouns denoting things like *age, size* or *colour* and other types of so called "elementary properties".

Seeing that determiners and modifiers are an important part of the NP structure, an investigation conducted by Leech, Hundt, Mair and Smith (2009) concerning the change of nouns and NPs over time, is of interest. Leech et.al (2009) found an increase in nouns as well as an increase in noun-noun constructions when searching in the 1961 and 1991/2 Brown Family Corpora. Leech et.al (2009) contributed this increase in nouns and noun-noun constructions partly to a process they call "densification". Densification means that the NPs become more compact to contain more information (Leech et.al, 2009). They illustrate this with the examples below (Leech et.al, 2009, p. 209):

(19)   a. the fruit of the coconut palm
         b. the coconut palm's fruit
         c. coconut palm fruit

(20)   a. the behaviour of the patient

         b. the patient's behavior

         c. patient behavior

In (19) and (20) a similar meaning is expressed in three different ways. In (19b) and (19c) as well as in (20b) and (20c) the prepositional phrase with the of-construction has been left out. The article is also missing in (19c) and (20c). The loss of the of-construction and articles are examples of densification (Leech et.al, 2009). Furthermore, Leech et.al (2009) found a decrease in prepositions in the corpora they investigated. The decrease in prepositions might be explained by the densification of NPs. This is because PPs with the of-construction often function as postmodifiers in NPs and if NPs become more compact, their modifiers become less common. There had also been an increase in the s-genitive which could be explained by the densification of NPs (Leech et.al, 2009, p. 222). The type of densification shown in (19) and (20) above is interesting since there is a possibility that the noun-noun combinations examined in this essay have undergone densification.

In conclusion it seems that both minor determiners and densification can have something to do with the atypical constructions looked at in this study. The minor determiners described by Huddleston and Payne (2002) include the same type of nouns which seem to also occur in the atypical noun-noun combinations of interest. Even though some of the atypical noun-noun combinations might include minor determiners the question of what constructions such as examples (4) – (6) and others like them are, is still relevant. Since examples (4) - (6) and others similar to them could be compounds, the question of how to distinguish between compounds and phases is going to be discussed in the next section.

2.2 What is a compound?

Once the definition of a NP and its structure has been established, an attempt at defining compounds is going to be made. Below, compounds are defined and the problems surrounding them are described.

Considering that the constructions investigated in this essay might be compounds the questions of what compounds are and how to define them become apparent. One of the issues with compounds is that a clear definition of what they are does not really seem to exist. Bauer (2017) states that the central idea of compounds is often defined as "words whose

elements are words" (p.3). Even though this definition seems pretty straightforward Bauer (2017) also writes that there is no agreement about for example how compounds are defined and what boundaries exist (pp. 1-2). The notion that compounds are hard to define is further strengthened by Lieber and Štekauer (2009) and Ryder (1994). Lieber and Štekauer (2009) bring up two main problems as to why it is hard to define a compound. Firstly, there are languages in which compounds do not just consist of free-standing words but also roots or stems (Lieber and Štekauer, 2009, p. 4). Secondly, it can be difficult to distinguish between compounds and phrases (Lieber and Štekauer, 2009, p. 4). The first reason mentioned is prevalent in inflectional languages, since they have compounds that do not consist of free words but of stems (Lieber and Štekauer, 2009, p. 5). In inflectional languages inflectional morphemes can be added to distinguish between compounds and phrases that look the same on the surface. However, English is not an inflectional language so, the surface forms of compounds and phrases can look the same (Lieber and Štekauer, 2009, p. 5). An example of this brought up by Lieber and Štekauer (2009, p. 5) is:

(21)   blackboard

(22)   black board

Example (21) is a compound while (22) is a NP. The fact that it often is hard to determine whether a construction is a phrase or a compound on the surface form, highlights one of the questions of this paper. So, in order to find out if something is a compound or a phrase, some tests are needed. Some of the criteria for compoundhood are going to be discussed in the section below.

2.2.1 Distinguish between compounds and phrases

Since it is difficult to distinguish between compounds and phrases in English, a number of tests for compoundhood are going to be presented. If a construction does not adhere to most or all of the criteria for compoundhood, it is more likely that the construction is a phrase and not a compound.

One criterion for compoundhood is **spelling pattern**. The spelling pattern of a compound would be that the words are written without space in between them (Lieber and Štekauer, 2009; Ryder, 1994). However, this definition is not reliable and does not work for English. This criterion is rejected since English has a lot of variation in its spelling of

compounds (Huddleston & Pullum, 2002; Lieber and Štekauer, 2009; Ryder, 1994). The examples (23) - (25) below show how one compound can be spelled in three different ways.

(23)   flowerpot

(24)   flower-pot

(25)   flower pot

Examples (23) - (25) show how spelling patterns can vary and, thus, this is not a good criterion for distinguishing between compounds and phrases in English. This means that it is generally not possible to determine if a construction is a compound or phrase by just looking at it.

Specific **stress patterns** are also brought up to be a criterion for compoundhood. It is often said that compounds in English bear stress on the lefthand element and syntactic phrases on the righthand (Lieber and Štekauer, 2009, p. 8). Even though this is often the case, there are several exceptions. Just like the spelling of compounds in English, the stress patterns also show a lot of variation. Variation in stress patterns can, for example be dialectal or just different from person to person (Ryder, 1994, p. 13). This criterion is, just like the former, not reliable and not strong enough to make clear distinction between compounds and phrases.

One of the more reliable criteria for establishing compoundhood is **syntactic behaviour**. A compound should behave as a single unit, which means that it is inflected as a whole and a modifier cannot be put in the middle of the compound (Bauer, 2017; Huddleston & Pullum, 2002; Ryder, 1994). Huddleston and Payne (2002, p. 449) illustrate this by using the examples (26) - (27) below:

(26)   new cars

(27)   ice cream

The adjective + noun combination (26) *new cars* can easily be coordinated as *new and used cars* or as *new cars and buses* and the coordinator can be put in between the nouns (Huddleston & Payne, 2002, p. 449). This however is not true for (27) *ice cream*: **ice and custard cream*, here coordination does not work in between the nouns without changing the meaning of the compound *ice cream*. Hence, compounds can only be modified and coordinated as a whole (Huddleston & Pullum, 2002, p. 449). An example of how a compound can be coordinated as a whole would be (28) below.

(28)   ice cream and coffee

In (28) the compound *ice cream* has been coordinated with the word *coffee*. Example (28) works because the compound is coordinated as a whole and is not split up. Even though coordination of compounds most often looks like example (28), there are exceptions. One exception brought up by Lieber and Štekauer (2009, p. 12) is:

(29)   wind and water mills

Example (29) is an example where a compound is coordinated with the coordinator between the two elements.

In conclusion, it seems hard to get an absolute definition of compounds and the boundaries of what should be included are fuzzy. Ryder (1994) notes that none of the criteria for compoundhood are foolproof (p. 15). Even though that is the case she still claims that there are many combinations that do adhere to most of the criteria and make up fairly easily definable compounds (Ryder, 1994, p. 16). Seeing this it seems that constructions which do adhere to most of the criteria described above should be considered compounds and those which do not are presumably phrases. In the next section different kinds of compounds are presented as well as the possible semantic relations that can exist in compounds and NPs.

2.3 Nominal compounds and semantic relationships in compounds and NPs

In this section, nominal compounds will be discussed and some of the semantic relations that are possible between the elements in a noun-noun compound and in a NP will be examined .

Jackendoff (2016) explains that two things are needed to determine the structure of a noun-noun compound. Those two things are determining a head and establishing the semantic relationship between the two nouns (Jackendoff, 2016, p. 25). Nominal compounds are common in English and exist in a few different patterns. Ryder (1994) uses Selkirik's (1982) classification of these patterns which are: *noun + noun*, *verb + noun*, *adjective + noun* and *preposition + noun* (p. 16).

(30)   classmate (N + N)
(31)   pushchair (V + N)
(32)   blackbird (Adj + N)

(33)   underworld (P + N)

Examples (30)-(33) above show examples of different types of noun-centred compounds. In noun-centred compounds the first element is, in most cases, dependent on the final, which is always a noun (Bauer 2017; Ryder 1994). The final element, the noun, is often the head. The relationship between the elements in a nominal compound might seem straightforward but the possible semantic relationships are almost endless (Hatcher, 1960; Huddleston & Pullum, 2002; Ryder, 1994). Bauer and Huddleston (2002) give examples of one type of relationship when it comes to noun + noun constructions (p. 1647):

(34)   footpath – "path designed for people who are on foot"
(35)   liferaft – "raft designed to be used for saving life"

In example (34) the first element of the compound is dependent on the second and it says something about what kind of *path* it is. In (35) the relationship is the same as in (34). These types of compounds are called endocentric compounds. In an **endocentric** compound the **whole is a hyponym of the head** (Ryder, 1994; Bauer, 1978; Liber & Štekauer, 2009). That means that the whole compound is a subcategory of the head. Cruse (2011) explains that hyponymy is a relationship of inclusion where the hyponym is included in the superordinate/hypernym (p. 134). An example of this is *banana* which is a hyponym to its superordinate *fruit*. Hence, *banana* is included in the bigger category of *fruit*. Bauer and Huddleston (2002) further explain that "noun X is a hyponym of noun Y when X denotes a subset of what is denoted by Y" (p.1645). Thus, *footpath* is a subcategory of *path* which makes it a hyponym. Additionally, Huddleston and Payne (2002) state that the semantic relationship between the two nouns in a compound and a NP can be the exact same (p. 450). They give the examples below (Huddleston and Payne, 2002, p. 450):

(36)   cutlery box
(37)   matchbox

Huddleston and Payne (2002) claim that (36) is a NP while (37) is a compound. Even though one is a phrase and the other a compound the semantic relationship between the elements in them is the same, namely *box for cutlery* and *box for matches* (Huddleston & Payne, 2002, p. 450). Since the semantic relationship can be the same in noun-noun compounds and phrases,

differentiating between the two becomes more difficult. There are numerous other relations that can exist between the elements of a compound or of a phrase, but since not all relations are of interest in this essay, only the ones discussed above will be brought up.

There are many theories which try to provide an account for how compounds are created and get their meaning. Ryder (1994) brings up Lee's (1963) attempt at creating a model for how compounds are created. The full description of Lee's (1963) categorization is found in Ryder (1994, p. 213). One of the possible underlying structures that is suggested is the NPN structure. The suggestion is that some noun-noun compounds have originally had the structure noun-preposition-noun, with the copular verb *be*. Lee (1963 in Ryder, 1994) divides these NPN structures into four potential prepositions (p. 213):

(38)   a. From: apple sauce, oatmeal.

b. Of: paper money, mud pie

c. With: apple cake, gingerbread

d. Miscellaneous: baseball season, tea party

In (38) the potential underlying structure of a noun-noun compound is shown. The possible structures of the examples in (38) would be something like *sauce from apple, money of paper, cake with apple* etc. These types of underlying structures might be of interest when investigating the atypical noun-noun combinations in this essay. Moreover, Lee's (1963) categorization has some problems in that there is no way of retrieving the material lost when the compound got its meaning. Thus, it is difficult to know what the underlying structure of a compound was from the beginning. One way of trying to establish which underlying structure is the most possible, is trying to find the head. Ways to find the head will be discussed in section 2.4 below.

Looking back at the discussion on the densification of NPs, the structure described in (19a) and (20a) is quite similar to that of (38b), namely an of-construction. This could mean that the underlying structure of a densified NP and a compound can be quite similar or even that densification can generate both compounds and phrases.

2.4 Finding the head

There are a few tests that can be applied in order to find the head of a compound or a NP. One of the tests was described in section 2.1 in the background, namely the test of agreement. Seeing

which noun the verb agrees with in terms of number can help establish the possible head. This is because the verb agrees with the head of the subject in the clause, which is often a NP (Huddleston and Pullum, 2002). Thus, seeing which noun the verb agrees with in number can help establish the head in a NP.

Another test that works to establish the head in compounds is the "type of" or hyponymy test (Bauer, 2017; Ryder, 1994). As discussed before endocentric compounds are often hyponyms of their heads (Bauer, 1978, p. 154) such as:

(39)   sunflower

(40)   apple tree

Both (39) and (40) are hyponyms of their heads which makes them endocentric compounds. Looking at (39) it is clear that it is a type of *flower*. Thus, the head of (39) appears to be *flower* and not *sun* and the same holds for (40) where it is a type of *tree* and not a type of *apple*. Furthermore, this test can work on some phrases as well. The examples (41) and (42) below are NPs and not compounds, according to Huddleston and Payne (2002, p. 449).

(41)   television screen

(42)   cooking apple

In (41) and (42) *screen* and *apple* are the heads since a *television screen* is a type of *screen* and a *cooking apple* is a type of *apple*. According to Huddleston and Payne (2002) examples (41) and (42) are phrases and not compounds since they can be split up by coordination (p. 449). But according to the Oxford English Dictionary (OED) examples (41) and (42) are compounds (cooking, n: cooking-apple, n, 2020; television, n: television screen, n, 2020). It thus seems that the "type of" test might be best applied to compounds or constructions which behave to a large extent as compounds. Hence, this test will be used in the selection process in COCA to exclude examples which are clear compounds and thus not of interest in this essay.

Another test for headedness is to see **where the inflection comes if the compound is modified as a whole** (Bauer, 2017, Lieber and Štekauer, 2009). This test would presumably also work to find the head in a NP. Examples (43) and (44) below show the **pluralization** of the compounds from example (39) and (40)

(43)   sunflowers

(44)   apple trees

Since the plural marker falls on the righthand element in (43) and (44), that noun appears to be the head. Lieber (2009) writes that "it is uncontroversial that endocentric subordinate and attributive compounds in English are right-headed [..] "(p. 366). Therefore, the analysis of (43) and (44) as being right-headed is quite straightforward. When using this test on NPs, the examples below are generated:

(45)   new houses
(46)   black boards

Examples (45) and (46) show where the plural marking falls on two NPs. Since the plural marking falls on the second noun in both constructions, it points to the second noun being the heads. Thus, both the "type of" test and the test of pluralization point to the righthand element being the head in both the phrases in (45) and (46) and compounds in (39) and (40).

3. Methods and materials

The research questions for this essay are:

(47)   a. What do these atypical noun-noun combinations look like?

                b. Should these noun-noun combinations be considered compounds or NPs?

                c. What is the structure and head of these noun-noun constructions?

In order to try and answer the questions in (47) several tests were applied to the atypical noun-noun combinations. Before applying tests to the atypical constructions, eight nouns were chosen. These nouns were chosen with consideration to the type of nouns discussed by Huddleston and Payne (2002). The nouns discussed were "nouns denoting elementary properties such as *size*, *shape* and *colour*" (Huddleston and Payne, 2002, p. 357). Keeping this in mind, the eight nouns in (48) were chosen.

(48)   a. colour

                b. size

       c.   length

       d.   style

       e.   weight

       f.   height

       g.   temperature

       h.   shape

The nouns in (48) all describe so-called "elementary properties". Furthermore, the nouns in (48) can be found as *minor determiners* in examples (13) and (14) and they can also be found in the NPs which can modify other NPs as in example (15).

      The Corpus of Contemporary American English (COCA) was used to try and find what these constructions can look like. It was also used to find additional information when applying tests such as coordination and modification on the constructions. Five specific search strings were used:

(49)   a. noun [n*]

            b. noun and [j*] [n*]

            c. noun and [n*] [n*]

            d. noun [n*] and [n*]

            e. noun [j*] [n*]

In (49) *noun* stands for any of the eight chosen nouns in (48) such as *colour, size* or *temperature*, *[n*]* stands for any noun following and *[j*]* stands for any adjective following. An example of a search sting would be *colour [n*]* where results of *colour + any noun* would come up.

      A selection based on the type of noun-noun combinations looked at in this essay was made. Constructions which were already compounds such as *film length* and *weight loss* were rejected since the structure of them is clear and thus not atypical. In order to know which examples were not of interest tests like the "type of" test were used to see if the constructions behaved like compounds or not. Furthermore, some searches in the OED to see if a particular construction was entered as a compound was also used to choose the examples of interest. Hence, all examples analysed from COCA are of the type of atypical noun-noun combinations instigated in this essay. In some instances, where no examples could be found in COCA, examples were made up instead. The examples were made-up with consideration to the way

the noun-noun combinations found in COCA looked. 40 examples of atypical noun-noun combinations were taken from COCA and they are all displayed in the Appendix.

Once all the examples were collected the tests for compoundhood were applied to them. The tests for compoundhood were spelling pattern, stress pattern and syntactic behaviour. When seeing how the constructions behave syntactically the tests of coordination and modification were used. After that the structure was investigated and the tests of pluralization and agreement were applied.

4. Results and discussion

In order to understand what these types of atypical noun-noun constructions can look like the search *noun* (e.g. *size, colour, style) [n*]* was made in COCA. Some of the constructions found are displayed in Table 1 below. A full account of all constructions taken from COCA with this search string can be found in Tables 1-7 in the appendix.

noun [n*]
Same/what *colour eyes* (from COCA)
Colonial/ Queen Anne/ Big Brother *style house* (from COCA)
Good/medium *size pool* (from COCA)
Medium *length film* (from COCA)
Normal/any *weight people* (from COCA)
Adjustable/variable *height desk* (from COCA)
What/low *temperature water* (from COCA)
Weird *shape desk* (made-up)

Table 1. Some examples from the search string *noun [n*].*

Table 1 above displays some examples of what the atypical noun-noun combinations can look like. Note that there is no example with the noun *shape* taken from COCA because all examples with the search *shape [n*]* had *shape* as a verb and not as a noun. Thus, a construction using *shape* as a noun was made-up. Table 1 shows what the righthand element in these constructions can look like. It seems that the righthand constituent can be either a countable or an uncountable noun. There does not seem to be any pattern or limits as to what kind of noun can appear in the

righthand position. Since the constructions in Table 1 look like possible compounds and it is hard to differentiate between compounds and phrases in English, a number of tests were applied to them. The tests are for compoundhood, but if the constructions do not adhere to most of the tests then they are likely not compounds but phrases instead.

The test of **spelling pattern** i.e. the compound being spelled together, was the first test. The noun-noun constructions are not spelled together or with a hyphen. Something to note is that the way the search strings were formed might be the reason that only constructions where the words are spelled apart were found. This is because the search strings did not include the words with a hyphen or spelled together. This is a limitation in this study. Even though the search strings might not have made it possible to display all ways of spelling the atypical noun-noun constructions, the test of spelling pattern is in general not reliable. Thus, this test cannot really give an indication regarding if the constructions are compounds or phrases.

The second criteria discussed for determining if a construction is a compound was **stress pattern**. English compounds tend to have stress on the lefthand element and phrases on the righthand (Huddleston & Pullum, 2002; Lieber and Štekauer, 2009; Ryder, 1994). This criterion might not be useful for the data in this study because that the data is written and not spoken. It is thus difficult to know the stress pattern of the constructions. Since this is the case, using this criterion does not seem entirely possible or necessary.

The most reliable test for differentiating between a phrase and a compound is the test of the **syntactic behaviour** of the construction. One of the criteria included in syntactic behaviour for compoundhood in English is inseparability i.e. that the two elements in a compound cannot be separated by modification or coordination. Thus, the test of coordination will be applied in the next section.

4.1 Coordination

Before applying the test of coordination on the atypical noun-noun combinations, it was used on the colloquial compound *greenhouse*:

(50)   *green and big house

(51)   *greenhouse and car

Example (50) shows the first element of the compound *greenhouse* in coordination with the adjective *big*. This type of coordination does not work if the meaning of the compound

greenhouse is to stay the same. In (50) it is not a *greenhouse* anymore but just a *house* that is *green* and *big*. In example (51) the coordination of the whole compound *greenhouse* and another noun *car* does not work if the meaning is intended to be *greenhouse and green car*. This is because the adjective *green* in *greenhouse* cannot refer to *car* as well, since it is inside a compound already. Examples (50) and (51) show how a typical compound behaves with regards to coordination. Phrases, however, are able to be coordinated quite easily:

(52)   new and colourful bikes

(53)   new bikes and buses

Examples (52) and (53) show coordination of the construction *new bikes*. Looking at examples (52) and (53) it becomes apparent that coordination of phrases works nicely with both the first and second element and the coordinator can be put in between the two constituents.

Since established compounds are usually not able to be coordinated with other elements, while phrases are, it becomes interesting to see how the atypical noun-noun constructions investigated in this essay behave. Table 2 below was created by coordinating both the first and second elements of the noun-noun constructions. Some of the constructions in Table 2 are from COCA while others are made-up. Some context has been added to the examples in Table 2 below in order to make the examples easier to understand. All results can be found in Tables 10-14 in the appendix.

Coordination of first element	Coordination of second element
A nice *colour and style* car (made-up)	Same colour *eyes and hair* (from COCA)
Your *size and style boat* (from COCA)	Same size *shoes and gloves* (from COCA)
A good *style and size* house (made-up)	Tex-mex style *chicken and rice* (from COCA)
A bad *length and style* hair (made-up)	Their length *head and neck* (from COCA)
Same *weight and height* people (made-up)	Same weight *adults and children* (made-up)
A good *height and size* table (made-up)	Some good height *tables and chairs* (made-up)
The right *temperature and depth* water (made-up)	Right temperature *water and drinks* (made-up)
A weird *shape and size* desk (made-up)	Some weird shape *desks and chairs* (made-up)

Table 2. Possible coordination of the first and second element in the atypical noun-noun constructions.

In Table 2 above, coordination of the atypical noun-noun constructions is displayed. Coordination of the second element in the compound was more common in COCA and seems less problematic. Examples like (54) and (55) below are quite straightforward and well-formed.

(54)   same colour eyes and hair (from COCA)

(55)   tex-mex style chicken and rice (from COCA)

In examples (54) and (55) the nouns denoting an elementary property i.e. *colour* and *style* refer to both nouns following. Looking back to example (51) *greenhouse and car, green* cannot refer to both *house* and *car* like *colour* can refer to both *eyes* and *hair* in (54). There were quite a few examples in COCA where one of the eight chosen nouns had coordination of the second element. Coordination of the first element is also possible, but it was very uncommon in COCA. Even though it was uncommon in COCA it does not mean that coordination of the first element is impossible. In Table 2 above, only one of the examples where the first element is coordinated is taken from COCA. The example from COCA is:

(56)   your size and style boat

In (56) the first element *size* is coordinated with *style*. Here, the first two nouns are nouns of the same "type". What is meant by that is that they are both of the type of nouns denoting elementary properties discussed by Huddleston and Payne (2002). Example (56) above is coordinated with another noun, as are all the made-up constructions with coordination of the first element in Table 2. In order to see if coordination with an adjective is possible the search string *noun and [j*] [n*]* was used. Only one example of the type of atypical noun-noun combinations discussed in this essay coordinated with an adjective was found in COCA. Most examples were constructions such as (57) and (58) below.

(57)   students of colour and low-income students

(58)   style and personal opinion

Examples (57) and (58) are not atypical and not of the kind that are of interest in this essay. The example (59) below came up with the search *temperature and [j*] [n*]* and seems to be atypical.

(59)　　　proper temperature and hot foods

In (59) above it seems that the construction *proper temperature foods* has been coordinated with the adjective *hot*. This would be an example where one of the atypical constructions is coordinated with an adjective. This was the only example of this found in COCA. Even though this type of coordination seems uncommon it does not mean that it is impossible or ungrammatical.

　　　　To conclude, it seems that both the first and second element in the noun-noun combinations can be coordinated. It also appears that the first noun in the construction is most easily coordinated with other nouns that are on the "same level" as the first noun. What is meant with "same level" is that the nouns denote "general" properties and not specific ones like the adjectives that specify e.g. *what colour* or *what size* something is. It would thus seem a bit odd to coordinate a word with a very general meaning with one of a more specific meaning. The fact that all constructions (made-up or found in COCA) were able to be coordinated in some way points to the atypical noun-noun constructions not being compounds. In order to investigate this further the test of modification is used on the atypical noun-noun constructions in the next section.

4.2 Modification

According to Lieber and Štekauer (2009) a compound has to be modified as a whole while a phrase can have modification in between the constituents (p. 11). In order to see how a typical compound behaves the example of *blackbird* is going to be used:

(60)　　　*a black big bird

In (60) the adjective *big* has been put in between the elements in the compound. If the modification is to be in between *black* and *bird* the meaning of the compound *blackbird* is lost. In (60) it is not a *blackbird* (type of bird) but just a *bird that is black and big* (colour and size of the bird). Example (61) below is the correct way of modifying the compound *blackbird*.

(61)   a big blackbird

Putting modification in between two elements is possible if the construction is a phrase and not a compound such as:

(62)   a nice new bike

Example (62) shows modification of the phrase *a nice bike.* In (62) the modification can easily be placed in between the two elements of the construction. The search used for this test in COCA was *noun [j*] [n*].* Some examples from COCA are (63) - (66) below, a full account for all examples found can be found in the appendix in Tables 13 – 17.

(63)   this colour brown shirt
(64)   larger size only feet
(65)   Bridget Jones style Urban family
(66)   full height dead trees

Examples (63) – (66) show some of the chosen nouns in constructions where an adjective is put in between the elements. Modification of the atypical noun-noun constructions with an adjective was not very common and examples for all nouns were not found. With the noun *length*, all constructions found had a compound in the beginning such as:

(67)   floor length purple dress (from COCA)
(68)   shoulder-length black hair (from COCA)

In (67) and (68) the first elements, *floor length* and *shoulder-length* are already compounds and thus they are not part of an atypical noun-noun combination. Even though *length* did not occur in any atypical constructions with an adjective modification in COCA, it does not mean that those constructions are impossible. Constructions like (69) might be possible but uncommon.

(69)   good length brown hair (made-up)

Example (69) above might be a possible modification of the combination *length hair*.

The test of modification further shows that the atypical noun-noun constructions investigated are probably not compounds but phrases. This is because a modifier was able to be placed in between the two nouns in the constructions such as in examples (63) – (66). Once established that the constructions likely are not compounds the question of what the structure of the phrases are, becomes relevant. In the next section, tests to find the head were applied to the atypical noun phrases.

4.3 Structure

Both the tests of coordination and modification indicate that the constructions are more likely to be phrases instead of compounds. If these constructions are to be considered phrases the structure of them is still unclear. The classic NP structure is either a head by itself or with at least one dependent (Huddleston & Pullum, 2002). The first part of the structure that is going to be investigated is the head. In order to find the head a few tests are going to be used. The tests for headedness that work both for compounds and phrases are pluralization and agreement. The tests of pluralization and agreement are going to be applied below. The "type of " test is not going to be applied to the construction since it has been established that they are probably phrases and the "type of" test works better on compounds or very compound-like constructions. Since the constructions failed the test for compoundhood they are now being treated as phrases and thus the "type of" test will not be used.

4.3.1 Pluralization

In order to see what the head of a NP or a compound is, the test of **pluralization** can be used. When using this test, a plural marking is added to the phrase and the place where it is added is usually the head. The examples below show pluralization of the constructions from COCA in Table 1.

(70)   a pair of same colour eyes
(71)   five Colonial style houses
(72)   some good size pools
(73)   some medium length films

As shown in examples (70) – (73), the plural marking consistently falls on the last word of the construction. This would indicate that the last word such as *eye, house* or *pool* is the head of the construction. Something to note is that the opposite happens when the last noun in the construction is an uncountable noun. This is illustrated below.

(74)   *many nice styles hair (made-up)
(75)   *some good temperatures water (made-up)

Examples (74) and (75) above might have the plural on the first noun because the second one is uncountable. Uncountable nouns are always singular and thus the plural marking cannot be added to them. If the plural marking is added on the second noun *hair* in (74) such as *hairs* it would refer to the individual *strands of hair* and not the *hair* as a whole. This might be why the plural ending is added to the first noun instead. So, in the examples (74) and (75) the first noun seems to the head. Even though this seems to be the case it does not hold if the second noun is changed to a countable one.

(76)   *some nice temperature drinks (made-up)

In example (76) the second noun has been changed to a countable noun and the plural now falls on the second noun. It thus seems that the second noun in the noun-noun constructions is the head, except for when the second noun is uncountable. This is something that could be investigated further. Something to note about examples (74)- (76) is that they might not be entirely well-formed. It would thus be interesting to see how native speakers rate the acceptability of sentences such as (74) – (76). Further research on the well-formedness of constructions like (74) – (76) and others like them, could be done with the help of questionnaires. In the next section the test of agreement is used on the noun-noun combinations.

4.3.2 Agreement

Another test to see what the head of the NPs is, is to see which noun the verb agrees with in terms of number. In order to do this the second noun was switched to an invariably plural noun while the first noun remained in the singular. The verb is going to agree in number with one of the nouns and that would then indicate which noun is the head.

(77)   any colour pyjamas are fine (made-up)

(78)   the same size scissors are good (made-up)

In (77) and (78) it seems that the verb agrees in number with the second noun i.e. *pyjamas* and *scissors* which are both in the plural. Furthermore, this same test can be used on examples (71) and (72) which are also in the plural.

(79)   five colonial style houses were sold

(80)   some good size pools are needed

Examples (79) and (80) above also show the verb agreeing in number with the second noun. The constructions (79) and (80) might sound a bit odd and only seem to be possible in the passive voice.

       The tests for the head seem to indicate that the last noun in the constructions is the head. This is because the plural ending comes on the second noun and the verb agrees in number with the second noun. Once established that the head of the NPs possibly is the second noun ,the question of what the other parts of the NPs are still remains.

4.3.3 Determiners and modifiers

The type of minimal determiners discussed by Huddleston and Payne (2002) occurred in COCA with the chosen nouns. Examples of these were:

(81)   what size shoes (from COCA)

(82)   that colour hair (from COCA)

(83)   what colour eyes (from COCA)

Huddleston and Payne (2002) explained that these minor determiners only seem to occur with nouns such as *size*, *colour* or *style* (p. 357). They also stated that minor determiners are most common with demonstratives and interrogatives (Huddleston and Payne, 2002, p. 357). In examples (81) – (83) the type of minor determiners mentioned by Huddleston and Payne (2002) are shown. In (81) – (83) the minor determiners are *what size, that colour* and *what colour*. In examples (81) and (83) the minor determiners are in interrogative constructions and in (82) the minor determiner is in a demonstrative construction. If the second noun is the head, as discussed

in the section above, it would make sense to think of the lefthand elements as some kind of determiner. If Huddleston and Payne (2002) are correct about their discussion of minor determiners, then the constructions such as (81) – (83), which behave the way Huddleston and Payne (2002) describe, are presumably minor determiners.

Huddleston and Payne (2002) show that constructions which look the same as minor determiners can also be used as modifiers in NPs. Trying this with the examples (81)-(83) above would generate the examples below:

(84)   *shoes what size (made-up)

(85)   hair that colour (made-up)

(86)   *eyes what colour (made-up)

In (84) – (86) the combinations *what size*, *that colour* and *what colour* have been moved to a postmodifier position. Huddleston and Payne (2002) also claim that the order in (85) is a more common way to express the same meaning as is in (82), using a minor determiner. Seeing that these minor determiners look the same as a NP modifying another NP such as (82) and (85) above, the constructions *what size, that colour* and *what colour* seem to be a type of very modifier-like determiners. Minor determiners in demonstrative structures are common in postmodifying position while the interrogatives might sound better in determiner position. Example (85) looks like example (15), discussed by Huddleston and Payne (2002) and is therefore presumably well-formed. It is less clear if examples (84) and (86) above are well-formed and if the interrogative constructions works well as a postmodifier. These types of examples could be investigated further and the well-formedness of them could be evaluated in questionnaires. Examples (81) - (83) seem to be clear minor determiners of the type briefly described by Huddleston and Payne (2002). But cases such as *medium length*, *good size* or *Colonial style* are slightly more unclear because they do not include an interrogative or a demonstrative.

The constructions *medium length, good size* and *Colonial style* are not able to be moved to a postmodifying position as easily as the minor determiners:

(87)   *a film medium length

(88)   *a pool good size

(89)   * a house Colonial style

According to my judgements, examples (87) - (89) are not well-formed. Constructions such as (87) – (89) could also be included in further research on well-formedness according to native speakers. In order to make examples (87) – (89) well-formed the of-genitive can be added such as:

(90)   a film of medium length

(91)   a pool of a good size

(92)   a house of Colonial style

In (90) - (92) the of-genitive has been added and the constructions are now well-formed. The addition of the of-genitive could indicate that these NPs have undergone the process of densification. This is because they look like the type of NPs discussed by Leech el.al (2009). Leech el.al (2009) showed how NPs had become denser over time and that the of-genitive had decreased. The examples (19) - (20) brought up by Leech el.al (2009) also show how the words in the NP switched order during the densification. Example (20) was *the behaviour of the patient* which had become *patient behaviour*. Thus, *behaviour* and *patient* switched places and the of-genitive disappeared. This might also have happened with the constructions looked at in this essay.

(93)   a house of Colonial style

(94)   a Colonial style house

Examples (93) and (94) above show how the nouns might have switched places as the of-genitive disappeared. This is similar to what Leech el.al (2009) found in their study. It further seems that the process of densification could create either compounds or phrases. This is because compounds can have an underlying NPN (noun-preposition-noun) structure which is similar to densification. Lee's (1963) classification of compound generation discussed by Ryder (1994) includes this NPN underlying structure for compounds. But since the atypical constructions in this essay failed most of the tests for compoundhood it seems more likely that the process of densification has created NPs and not compounds.

As mentioned before, some of the constructions seem to have the structure minor determiner + head, examples of these taken from Tables 1-3 and 7 in the appendix would be:

(95)   what temperature water

(96)   whatever size bed

(97)   what length books

(98)   that colour hair

Since (95) – (98) above look and behave the way Huddleston and Payne (2002) say that minor determiners do, it seems quite uncontroversial to say that examples (95) – (98) include minor determiners. As mentioned previously, these minor determiners seem to have very modifier-like properties since they can be put in a postmodifier position. All constructions (95) – (98) above are able to be in a postmodifier position as well as in a determiner position. For the other types of constructions found in COCA and investigated in this essay such as *normal weight people, adjustable size desk* or *right size box* the structure is not as clear. As shown above the adjective + noun combinations such as examples (87) – (89) cannot really function as a postmodifier as easily as the examples (84) – (85). In order for constructions like *normal weight, adjustable size* or *right size* to be in a postmodifying position an of-genitive has to be added. This does not mean that they are not minor determiners or at least very similar to minor determiners. Since the phrases seem to have undergone densification a postmodifier has been moved to a determiner/premodifying position such as in (93) and (94). This could be an explanation to why the minor determiners have very modifier-like properties.

5. Conclusions

In conclusion it seems more likely that the atypical noun-noun combinations investigated in this paper are NPs instead of compounds. This is because the majority of the constructions failed the test for compoundhood and thus they are more likely to be phrases. Although most constructions failed the test for compoundhood it still does not mean that none of the constructions are compounds or at least compound-like. Moving on, it also appears that the righthand element of the constructions is the head. The reasons for this are that the plural marking falls on the righthand element and the verb agrees with the righthand constituent when that constituent is a noun in the plural. Furthermore, it also seems that the head of the presumed NPs is the same as the head of the possible underlying structure that generated the atypical combinations. The NPs seem to be the product of densification where a NP with an of-genitive has undergone densification and the elements in the phrase have switched places. Another point of interest is the fact that the minor determiners that appear in these noun-noun combinations

have very modifier-like properties and can thus be moved from a determiner position to a postmodifying position.

The structure of most of these atypical noun-noun combinations is probably minor determiner and a head. This is due to the fact that some of the minor determiners discussed by Huddleston and Payne (2002) were found in the atypical constructions. Furthermore, the other types of constructions such as *medium length* or *good size* have similar properties to the minor determiners. Both minor determiners and constructions similar to them include a word denoting a so-called "elementary property". Even though both minor determiners and constructions like *good size* have this in common, only the minor determiners can be moved to a postmodifying position without anything being changed. The other types of constructions such as *good size* or *Colonial style* are not able to be moved to a postmodifying position without changes being made to the phrase. In order to move structures like *medium length* or *good size* an of-genitive has to be added. Hence, these constructions seem to be a result of densification and that could be why the structure of them is unclear. Further research into this topic can be made in order for the structure of these atypical noun-noun combinations to become clearer. Furthermore, research into the well-formedness and acceptability of some of the examples brought up in this essay would be interesting to see. Since minor determiners are only briefly discussed by Huddleston and Payne (2002) more research into what they are and where they appear etc. could be done. Learning more about minor determiners would presumably also give more insight to the structure of the atypical combinations investigated in this essay.

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Appendix

Colour [n*]
Same/what *colour eyes*
Same/different *colour skin*
That/what/same/ *colour hair*

Table 1. Some examples of the search colour [n*] in COCA.

Size [n*]
Good/medium *size pool*
Same/which/ right *size box*
Whatever *size bed*
What/same/ladies *size shoe*
What/any/that/reasonable *size screen*

Table 2. Some examples of the search size [n*] in COCA.

Style [n*]
Layer/pennant/ open *style window*
Colonial/ Queen Anne/ Big Brother *style house*
Liberal/ military/ old/ 9/11 *style attack*
Japanese/Hawaiian *style garden*
Cruella De Ville/salon *style hair*

Table 3. Some examples of the search style [n*] in COCA.

Length [n*]
Medium *length film*
Normal/book/what *length books*
Mid/ right/what *length skirt*

Table 4. Some examples of the search length [n*] in COCA.

Height [n*]
Lowest *height chair*
Varying/cabinet *height table*
Adjustable/variable *height desk*

Table 5. Some examples of the search height [n*] in COCA.

Weight [n*]
Normal/any *weight people*

Table 6. Some examples of the search weight [n*] in COCA.

Temperature [n*]
What/high *temperature water*

Table 7. Some examples of the search temperature [n*] in COCA.

Colour [n*] and [n*]
Same *colour eyes and hair*
Same *colour door and roof*

Table 8. Some examples of the search string colour [n*] and [n*] in COCA.

Size [n*] and [n*]
Same *size shoes and gloves*
Full *size washer and dryer*
Right *size pots and pans*

Table 9. Some examples of the search string size [n*] and [n*] in COCA.

Style [n*] and [n*]
Tex-mex *style chicken and rice*

Table 10. Some examples of the search string style [n*] and [n*] in COCA.

Length [n*] and [n*]
Their *length head and neck*

Table 11. The atypical example of the search string length [n*] and [n*] in COCA.

Size and [n*] [n*]
Which *size and style boat*
Your *size and style boat*

Table 12. Some examples of the search size and [n*] [n*] in COCA.

Colour [j*] [n*]
This *colour brown shirt*
Same *colour blue yarn*

Table 13. Some examples of the search colour [j*] [n*] in COCA.

Size [j*] [n*]
Larger *size only feet*
Right *size empty bottle*

Table 14. Some examples of the search size [j*] [n*] in COCA.

Style [j*] [n*]
Californian *style Mexican food*
Bridget Jones *style urban family*

Table 15. Some examples of the search style [j*] [n*] in COCA.

Height [j*] [n*]
Full *height dead trees*
Height adjustable desks

Table 16. Some examples of a search in COCA of height [j*] [n*].

Temperature [j*] [n*]
Typical *temperature random errors*

Table 17. The atypical example of the search temperature [j*] [n*] found in COCA.

Temperature and [j*] [n*]

Proper *temperature and hot foods*

Table. 18 The atypical examples of the search temperature and [j*] [n*] found in COCA.