Essay Cover Sheet

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Essay contents

1. Introduction

Collocation is a pervasive aspect of texts (Hoey, 2005) but it has many different definitions. This paper is an attempt to take a definition of collocation wider than the traditional notion of lexical collocation (Sinclair, 1991: 170) and apply it to examples taken from an authentic text to demonstrate the constraints on word combinations. Section 2 provides the definition of collocation used together with its derivation, and highlights the importance of collocation to language learners as well as the types of constraints acting on word-combinations that will be considered in the following analysis. Section 3 describes the teaching-learning context and the reasons for the choice of text; it also outlines the method used to identify the collocations and fixed expressions focussed on. Section 4 lists the collocations with their co-texts and gives an analysis of the constraints acting on them. Finally, section 5 discusses how the collocations were presented in class, some student feedback and suggested follow-up work. Section 6 concludes with a discussion of the effectiveness or otherwise of the materials presented as well as ideas about ways forward.

2. Overview of collocation and its relevance to language learning

2.1 Definition of collocation

As Firth puts it, collocation is 'the company that words keep' (Firth, 1957, cited in Fernando, 1996: 29). This refers to the fact that words have a habit of occurring with certain other words in particular contexts, and that, to sound natural, a text or an utterance needs to show an awareness of such tendencies of occurrence.

This view of language is developed by Sinclair in his principle of idiom:

> 'A language user has available to him or her a large number of semi-preconstructed phrases that constitute single choices, even though they might appear to be analysable into segments' (Sinclair, 1991: 110)

Here Sinclair is offering an alternative to the traditional way of viewing how text unfolds – what he terms 'the open choice principle' – to account for the fact that, while anything is theoretically possible in language use, a large amount of language use is in fact formulaic (Wray, 2002). What is important in this view of language is not what is possible, but what is probable and natural (Hoey, 2005).

Noting that collocation as it is conventionally conceived, that is, as words which frequently co-occur in text – is purely a 'surface' phenomenon of texts (Sinclair, 2004), Sinclair developed the concept of the 'lexical unit', basing his analyses on corpus data. This takes collocation narrowly defined as just the first level of analysis. To account for the regularities of patterning of words in texts and the kinds of constraints acting upon them one also needs to consider: **colligation**, which is the co-occurrence of the 'core' – the node word or words – with a grammatical class of words, or preference for certain clause positions (Hoey, 2005); **semantic preference**, which is the co-occurrence of the core with words belonging to a particular semantic set; and **semantic prosody**, which, in Sinclair's definition is an expression of the attitudinal or pragmatic function of the whole unit (Sinclair, 2004). Interestingly, this sequence is the reverse of that proposed by Becker (1975, cited in Wray, 2002:17) to describe the way utterances are constructed.

Siepman, whose aim is to define the 'full range of collocational phenomena' (Siepman, 2006: 2) so that learner dictionaries account for this central aspect of language, has since built on Sinclair's work to offer a wide-ranging definition of collocation:

> 'a collocation is any holistic lexical, lexico-grammatical or semantic unit which exhibits minimal recurrence within a particular discourse community.' (ibid.)

There are several important aspects of this definition. The first is that, in this view, collocations are 'holistic', that is intuitively recognisable by a proficient user as complete units. This emphasis reflects findings from psycholinguistics that items are generally stored in the brain as prefabricated units to make the processing load lighter when producing or understanding fluent speech or writing (Ellis, 1997; Wray, 2002). The idea of 'minimal recurrence' is a second important aspect; to be worth learning, a unit needs to recur regularly. Finally, there is the emphasis on the particular context in which the collocation occurs; aspects such as genre, register and style need to be considered since different varieties of language show different patterns of usage (Partington, 1998:16).

2.2 Importance of collocation to language learners

Clearly, the fact that collocation is pervasive (Hoey, 2005) indicates that any learner of a language needs to be aware of this phenomenon. As Lindstromberg and Boers (2008:424) put it, 'anyone wanting to attain a high level of L2 proficiency had better set about trying to learn lots of lexical chunks'. Moreover, as pointed out by Sinclair (1991; 2004), and Hoey (2000), learning words as part of collocations helps avoid the problem of potential ambiguity that arises from the apparent polysemy of words as presented in dictionaries, since different senses of the same 'word' have different collocational and colligational patterns and preferences.

This means learners need to be guided in their learning of collocations by being presented with typical collocational and colligational patterns (Hoey, 2000). It is possible to conceive of these patterns as constraints acting upon a particular sense of a word within a lexical unit, with the constraints being expressed in terms of word + word, word + grammatical class, and word + semantic set, all of which may be considered within the 'semantic prosody' (Sinclair, 2004); these are encompassed by Siepman's definition and his typology of collocation (2006).

3. Choice of text and method of identification of collocations

3.1 Text choice: the context and the text

The choice of text for this assignment (see Appendix 1) was based on the teaching-learning context. The students involved are studying on a programme which aims to prepare them to study at an English-medium university in Turkey. They are aged 17 to 20 and the class is of mixed ability, with a range of proficiency from high intermediate to advanced level. Although they have been accepted to study at the university in different faculties, for the first two years of their university life they follow compulsory courses in both social science and science subjects; their typical reading matter on these courses are extracts from general textbooks on the subject or general interest history and science books. They do not in general have to study highly academic texts such as journal articles. These factors were taken into account when choosing the text, as well as when choosing which items to focus on in the text.

The text itself was also chosen to fit in with the current topic of study, which is extinction in general and the possible extinction of humans and indeed life on Earth in particular. Texts from the course book that the students generally study were inappropriate since they were all too long, not to

mention adapted for this audience. The article chosen was taken from the science pages of the BBC website, and was thus written for a native speaker audience. It was also considered suitable since its style is quite similar to that used in textbooks, containing a relatively high use of passive forms (Biber, 2006) but a lack of hedging and general 'metadiscourse' (Johns, 1997).

3.2 Identifying collocations in the source text: methodology

The choice of a text relatively close in terms of style to the kind of texts students can expect to meet in their first year at the university was intended to ensure that the collocations identified within it would be useful to the learners. It was also considered important to cover a range of items that could be considered to fall within Siepman's (2006) definition of collocation (see section 2.1) so that students would be aware of the types of constraints that might act on word combinations in natural sounding language. The following section will elaborate on the means of identification of these collocations.

The first stage of identifying the collocations in the source text proceeded intuitively. Support for such initial analysis, which is based on the concept that collocations have a psychological reality for language users, can be found in Partington (1998), Wray (2002), Stubbs (2002) and Hoey (2005), who emphasize the importance of the analyst's judgement of what is or is not a collocation based on their own particular experience and knowledge of language.

While the intuitive identification of collocations is a useful starting point, it is not always a reliable guide as to the frequency of collocations in particular contexts. To be sure that an intuitively identified collocation is in fact typical and frequent, one needs to check a reference corpus composed of texts that reflect the target language use (Lewis, 2000; Oakey, 2002). To this end, the British Academic Written English (BAWE) corpus (Nesi et al, 2007) was chosen as a reference corpus, since it is composed of mainly undergraduate level student assignments covering a range of university written genres and disciplines and is thus representative of the genres and disciplines this group of learners will be exposed to, as well as the kind of language that they should be aspiring to use. To investigate the corpus, the Antconc 3.2.2 software (Anthony, 2007) was used; this allowed the occurrences of collocations within the corpus to be identified and analysed.

The collocations identified in stage 1 were checked in the corpus for their frequency and their typical patterns of occurrence. It was felt that as the corpus consists of 6.5 million tokens, it was unlikely that any pattern with less than 13 occurrences would either be frequent enough to be worth

drawing students' attention to or provide enough evidence to identify common patterns. This compares with Moon's findings that many idioms and 'fixed expressions' occurred only once or less per million words in the corpora she investigated (Moon 1998); in contrast, Biber (2006) used a higher cut-off point of 40 per million for their investigation into 'lexical bundles'. The other aim of referring to a corpus check was to find out if the collocations and patterns identified in the text were representative uses of the items in question; as Hoey (2000) points out, accepting the fact that collocation is an important part of learning a word has important implications for the language learner in terms of the extra learning burden it places on them. This puts the onus on the analyst and through them the teacher to give guidance so that examples that recorded are typical.

4. Analysis of collocations identified in source text

In this section, each collocation is presented in its original co-text (see Appendix 1); the collocations are analysed in terms of the kinds of constraints they demonstrate and to what extent they reflect 'generalisations about the way these words are used' (Hoey, 2000:232) which were based on analysis of the reference corpus (see Section 3.2).

> 1. Scientists say <u>reports that</u> the Earth could be struck by an asteroid <u>are wildly exaggerated</u>.

The first example taken from the text (see Appendix 1), when compared with examples found in the BAWE corpus (Nesi et al, 2007) was found to be quite a good example in that it gives an example of the limited group of adverbs – others include *grossly*, *greatly*, *highly*, and *totally* – that are used to intensify the meaning of *exaggerated.* Also, some indication is given of what is generally *exaggerated* in this context; often this relates to a statement by a third party, hence the use of *report*. This is a constraint on word combinations resulting from the use of the word *exaggerate*. A further constraint emerging from the examples suggesting this is a typical example of *exaggerate* is that it is almost invariably used in the passive form.

> 2. it will in fact <u>miss</u> the Earth <u>by about</u> <u>five million kilometres</u>.
>   the space rock will <u>miss</u> us <u>by about</u> <u>five million kilometres</u>

The fact that there were two examples of *miss + the Earth/us by about + unit of distance* in the article makes it a significant collocation in this text at least. Comparisons with other examples taken from the BAWE corpus (Nesi et al, 2007) revealed that in fact these sentences give a very good idea of the constraints acting on the core *by about* which forms part of a collocation which may be expressed as: phrase expressing 'difference' of some kind + *by about* + unit of measurement.

> 3. it is the first object to have a threat <u>rating</u> of greater than zero <u>on the 0-10</u> Torino <u>scale of</u> dangerous objects from space.

The combination *on a/the scale of* intuitively seems a useful phrase for university students being useful for expressing how evaluation is quantified, although this particular example seems to be an unusual formulation of this collocation. The core item tends to be *on a scale of* and is relatively fixed; where the meaning is related to measuring something in terms of a range, it is preceded almost invariably by a word semantically related to *rating*: examples include *score*, *grade*, *measure*, and *rank*. The range of the scale is routinely stated after the core.

> 4.   the object <u>had</u> about <u>a 1-in-500 chance of</u> striking the Earth
>   No object has ever been <u>rated</u> with so <u>high a chance of</u> impact.

Chance in the sense of 'likelihood' appears twice in the source text, both times in patterns that are intuitively collocations, namely *have a … chance of + (verb)ing* and *high chance of + noun phrase*. Both of these examples indicate the kinds of constraints on word choice when using *chance* to talk about the likelihood of an event or phenomenon happening. First, there is an assessment of the size of the risk expressed with an adjective such as *high* or in numerical terms. The options beyond this to the left are *(subject) has/have/had*, which constrains *chance* to be followed by *of + (verb)ing* or *noun*; the noun is almost invariably a nominalisation, which can be explained in Halliday's terms as a form of grammatical metaphor, where the action or process is reified (Halliday & Martin, 1996: 13). The only other option before *a chance of* is *there is/was* which also offers the option of *chance that + clause*.

> 5.   they looked at data to see if <u>the object had been picked up</u> in earlier observations.
> astronomers continue to monitor <u>the asteroid</u>, which <u>was picked up</u> in September

Pick up, glossed as 'perceive or register a signal or message' also intuitively seemed a useful phrasal verb in academic writing. This proved the case; the use of *pick up* to refer to scientific instruments locating difficult to find signals or objects forms part of a common lexical unit in the reference corpus. This means that the constraints that act upon *pick up* as shown in this example can be expressed in rather abstract terms: the object of *pick up* needs to be something that is by implication hard to find or measure, meaning that equipment or instruments will probably be needed to do this. In the examples, the use of *observations* and *monitor* clearly imply the use of scientific equipment, while the asteroid is certainly difficult to spot.

> 6. astronomers began looking at sky survey data to see if the object had been picked up but not recognised in earlier observations. This <u>turned out to be</u> the case

The choice of *turn out* was motivated largely by the fact that this phrasal verb demonstrates all the classic features of idioms: it is a multi-word item, it is conventionalised, and, in this sense, it is

semantically opaque (Carter, 1998). It is also helpful that it is combined here with another very common collocation *(be) the case*, which is also noted by Moon (1998; 228). *Turn out to be* is by far the most common pattern with the phrasal verb *turn out* in its sense of 'have as a (previously unknown) result'. In an academic context, *turn out* seems most often to report on the validity of a model or a theory or the results of some kind of experiment. This common usage effectively limits the kinds of words that can co-occur to those connected with experiments, models and so on. It is frequently followed by an expression that evaluates the hypothesis or experience.

> 7.   The new orbit reveals a <u>slight risk of</u> a collision
> when the orbit is better known this <u>risk</u> will <u>disappear</u> as well.

Whereas *chance* carries the sense of likelihood and hence can refer to positive or negative events, *risk* by implication refers to danger and one constraint on the use of *risk of* is therefore that it is followed by a negative event. The examples also suggest that *risk* tends to occur with words that indicate the size of the risk and whether it is increasing or decreasing. Once again this could be seen as implicit in the choice of *risk* and hence a constraint on the types of items it can co-occur with.

> 8. a <u>slight risk</u> of a <u>collision with</u> the Earth

The word collision entails that two objects are involved and that at least one of them is moving; if one mentions both objects, then collision is followed by *with* or *between*. The example from the text, using *with* is representative in that it is more common in the reference corpus. A further constraint on combinations containing *collision* is that it tends to co-occur with either words related to *risk* or *likelihood*, or in the possible *effects* of the collision. This is the case here; the effects are mentioned elsewhere in the article.

> 9. <u>it is thought that</u> when the orbit is better known this risk will disappear
> 10. <u>it has been suggested that</u> it might be an old Saturn upper-stage rocket

These two fixed expressions are examples of a more generalised '*it be V-ed that*' pattern which is extremely common in academic prose (Oakey, 2002). They are both useful for students in that they are typical of the conventional forms of these expressions, which while they are labelled 'fixed' do actually allow for some variation, especially in the case of *it has been suggested that*, which allows for syntagmatic as well as paradigmatic variation. They are perhaps more interesting for the discourse function they perform than for the constraints which they impose on the co-text. In Wray's terms, these are part of a group of 'formulaic sequences' which are very much associated with the style or genre in which they are used and can be said to 'mark the style' (Wray, 2002: 83). They are also very useful for the writer to hide behind, and, certainly in the case of *it has been suggested that*, which is more tentative, to distance him/herself from the proposition that follows.

> 11.   Some scientists <u>have criticised</u> the IAU and Nasa <u>for</u> releasing warnings
>   Some scientists <u>have criticised the way</u> the information was released to the media

These examples show clearly two patterns that co-occur with *criticise*: that it can be followed by *for + (verb)ing / noun (usually nominalisation)* and by *the way (something was done)*. It is noticeable here that *for* is used and not another, possibly more intuitively appropriate preposition such as *against* or *about*. However, the examples do not indicate that *criticise + for* frequently occurs in the passive mood in academic discourse as indicated in the examples found in the reference corpus.

> 12.   Scientists <u>revise</u> <u>asteroid</u> <u>warning</u>
>   criticised the IAU and Nasa for <u>releasing warnings about</u> the asteroid
>   only for those <u>warnings</u> to be <u>rescinded</u> less than a day

These examples of warning are typical in that they clearly indicate that a warning is given, or taken back, by an agent, who probably needs to be in some kind of position of authority to do so; the content of the warning also needs to be either stated explicitly or derivable from the context. The constraints that this places on the use of *warning* are that it co-occurs with verbs such as *give, issue, provide* and the content of the warning is given by using a *that* clause, *about* or *of*. Where the examples are less typical is that warnings, once given, are rarely rescinded in the reference corpus.

5. Demonstration of the constraints on word combinations to students

5.1 Previous student exposure to collocation

The students already had an awareness of collocation and phraseology. This awareness has been encouraged through: vocabulary lists which mention common collocates; teaching materials used in class based on concordances derived from the BAWE corpus (Nesi et al, 2007); the investigation of keywords in texts set for a text-based essay (see Appendix 5); and work using online tools such as the Cobuild Concordance and Collocations Samplers () to find collocations and then investigate how they are realised in the sample online corpus, for example by searching *node+4collocate*. Work such as this had already introduced the concepts that constraints act upon word combinations and that different patterns are connected with different meanings of a word (see Appendix 5). For these reasons, it was felt that the students were ready for more in-depth analysis of collocational patterns, adopting a staged approach to help guide them through the process of pattern recognition, or noticing, and recording what is most important about the lexical items identified.

5.2 materials used and procedure

After an initial reading of the text, using questions elicited from students based on the title, the students worked through the classroom worksheet (see Appendix 2). To explain the design of the sheet and how it encouraged students to discover the constraints involved, some examples are given below with explanatory comments.

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2. it will in fact miss the Earth by about five million kilometres.
   the space rock will miss us by about five million kilometres

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                        overestimates muscle area by about 20-25% (Gibson, 2002), and thus may
                    human mtDNA lineages differed by about 8.0 + or - 3.1 substitutions, whereas
GDP per capita increases life expectancy at birth by about 0.07 years. Education measured by the
g losses. In general, the exhaust losses decrease by about 50 Watts, and the air cooling losses
                Total revenues from exports fell by about US$3bn. This in turn lowers the
      by the engine on diesel is always greater by about 0.81 kW than the power converted by
        air was released. This reduced its height by about 5cm. To collect any particles stuck in
ation diminishes incidence of neural tube defects by about 70%.
```

The sentences above all contain *by about*, just like our two examples. What do all the sentences have in common? What goes before and after *by about*?

_____ by about _____

Almost all of the examples of collocations found in the source text were presented together with attested uses of the core selected from the BAWE corpus (Nesi et al, 2007) as shown in the example above. They were selected to make the underlying patterns fairly obvious but still to require students to engage with the material. This combination of salience, which is related to noticing, and involvement in the task are thought to lead to an increased likelihood of the item being remembered (Nation, 2001). Moreover, the presentation of the item as a 'chunk' may also aid retrieval for future use as well as focussing students on the constraints applying here – in that all the items to the right of the node were units of measurement and the left-hand co-texts all included words relating to 'difference' in some way. With students less experienced with this type of material, it may be necessary to bold words to the left of the node such as *fell, differed, overestimates* which seem important to the pattern, but it was not necessary with this group of students.

A further advantage of this means of presentation is that it helps learners to identify which aspects of collocation are purely arbitrary, such as *collision _with_* or *have a chance of* and which aspects may be more associated with the general meaning of the unit which may be explained in terms of conventional usage (Hoey, 2005) or perhaps in terms of cultural expectations (Stubbs, 2002), such as the verbs expressing difference which collocate with *by about*.

1. Scientists say reports that the Earth could be struck by an asteroid are wildly exaggerated.

i) what does 'wildly' mean here? What words could replace it in this sentence?
ii) In this sentence what is 'wildly exaggerated'? What other things might be described as exaggerated?

In this example, it proved difficult to find examples from the BAWE corpus (Nesi et al, 2007) that showed the pattern clearly; either they contained examples of adverbs with *exaggerated* or words like *report* but not both together. This is a clear example of how examples are frequently 'problematic' (Sinclair, 1991:84), but also of the fact that 'stating the basic regularities does not preclude a user deviating from them' (ibid.:61). In this case, the students were encouraged to reflect on their own experiences of language, but were also shown examples from JusttheWord (Sharp, 2008), an online tool which is based on an 80-million-word chunk of the British National Corpus, which helped them complete the exercise.

Once the students had finished working through the worksheet and identifying patterns and constraints, their hypotheses were checked as a class. At this stage, it was possible to clear up misunderstandings related to the wording of some of the questions, and to discuss what is possible and not possible in the lexical items identified. The students were in fact able to identify most of the patterns and even some that had been missed, for example adjectives that can go with *warning*; I had not noticed the presence of the collocates *strong* and *drastic* in the concordance examples but this was pointed out to me. It was also important to point out at this stage that, while the items identified showed tendencies of word combinations, that, given the small number of examples and the limitations in size of the corpus, these cannot be considered as being absolute, but more of a guide to usage (Sinclair, 1991).

While the worksheet itself was quite a useful tool, with some reservations (see section 6), it was less useful as a record of the patterns. For this reason, and based on classroom work, the students were provided with a sheet giving a guide to the usage of the collocational patterns identified in the lesson (see Appendix 3). This was intended also to cover any aspects of the pattern which might have been missed in class.

A further stage, one week later, was to check what students remembered of the patterns studied in this lesson. This was attempted through a gap-fill exercise (see Appendix 4) where key terms from the patterns from the week before were blanked out. Most of the sentences were invented to save time, but contained key elements of the patterns from the week previously. It was clear that several of the patterns had been forgotten, suggesting that more follow-up work is necessary (see section 6).

10

5.3 student feedback

Students who completed the exercises were asked to provide feedback on the exercises done in class. This feedback was universally positive about the usefulness of studying these particular collocations and patterns of this sort in general. Comments included that 'it will be useful for writing' and 'even if we know the word, sometimes we may not know the verbs or the adjectives that go with that word'. It also provided some very helpful data suggesting future directions for this type of work. Comments in this vein suggested that 'it is hard to study and remember these mixed words' and 'you should find a new way to teach these method [sic] because I did not pay attention'. These suggested to me that some of the patterns were not salient enough and therefore still appear arbitrary; moreover, a variety of presentation techniques need to be attempted to try to cater for different learning styles and preferences.

6. Conclusion

While the materials prepared and the analysis undertaken were useful to students to an extent, the performance in the delayed worksheet and some of the comments made in the feedback suggest that there is room for improvement. An important aspect of follow-up work is showing that the collocation patterns and the constraints that they impose on word combinations are frequently not arbitrary (Sinclair, 1991). This could be achieved by, for example, showing that the patterns that apply to *turn out* (see Section 4) also apply to *prove* when they have similar meanings. Equally, although *criticise someone + for* may seem an arbitrary combination at first, it does not when compared with *praise + for* or *thank + for*. Encouraging students to consult reference books such as 'COBUILD Grammar Patterns' (Hunston & Francis, 1996) and online tools such as Just the Word (Sharp, 2008) may also help. Using reference tools of this type may also be useful in the planning stages of lessons in deciding which collocations are more typical and part of productive patterns and therefore are worth drawing students' attention to. This kind of work can guide the choice of example sentences from a corpus, if used.

Perhaps most importantly for language teaching and learning, collocation needs to be integrated into teaching in a systematic way which allows students to gain an increasingly clear idea of the kinds of constraints and possibilities involved as well as giving them the tools to be able to investigate and judge the value of the collocations they meet for themselves. This will necessarily involve a large amount of learner training, but it is likely to result in students who are better judges of what is natural in language.

Appendices

Contents: Appendix 1 – Source Text

Appendix 1: Source text

Scientists revise asteroid warning
Astronomers say reports that the Earth could be struck by a small asteroid in 2030 are wildly exaggerated.

Less than a day after sounding the alert about asteroid 2000SG344, a revised analysis of the space rock's orbit shows it will in fact miss the Earth by about five million kilometres (three million miles). However, astronomers will continue to monitor the asteroid, which was picked up in September and thought to be 30 - 70 metres (100-230 feet) across.
Some scientists have criticised the way the information was released to the media before it had been thoroughly confirmed.

Threat rating
Asteroid 2000SG344 is the first object to have a threat rating of greater than zero on the 0-10 Torino scale of dangerous objects from space. It was spotted on 29 September by astronomers David Tholen and Robert Whiteley using the Canada-France-Hawaii 3.6-metre telescope on the island of Hawaii.
Shortly thereafter, pre-discovery observations taken in May 1999 by the Linear sky survey were also identified.
On Friday, the International Astronomical Union issued an alert saying that the object had about a 1-in-500 chance of striking the Earth on 21 September, 2030. No object has ever been rated with so high a chance of impact. Were it to strike our planet, the results would be devastating, with an explosion greater than the most powerful nuclear weapon.

Sky survey data
But after the announcement, astronomers began looking at sky survey data to see if the object had been picked up but not recognised in earlier observations. This turned out to be the case and these past observations allowed a more accurate calculation of the asteroid's orbit to be made.
The result: in 2030, the space rock will miss us by about five million kilometres, or 12 times the distance from the Earth to the Moon. The new orbit reveals a slight risk of a collision with the Earth about 2071, but it is thought that when the orbit is better known this risk will disappear as well. Currently, asteroid 2000SG344 is about 15 million kilometres (nine million miles) away and getting more distant.

'Premature and alarmist'
Because 2000SG344 is in a similar orbit to the Earth, it has been suggested that it might be an old Saturn upper-stage rocket of the type that was used in the early Apollo Moon missions. If it is manmade and did strike Earth, the effects would be very local and limited.
Some scientists have criticised the IAU and Nasa for releasing warnings about the asteroid only for those warnings to be rescinded less than a day later. Benny Peiser of Liverpool John Moores University, UK, said it was "extremely unwise, premature and alarmist".

Source: http://news.bbc.co.uk/2/hi/science/nature/1006305.stm retrieved 30/10/2008

Appendix 2: classroom worksheet

Look at these sentences from the report and try to answer the questions

1. Scientists say reports that the Earth could be struck by an asteroid are wildly exaggerated.

i) what does 'wildly' mean here? What words could replace it in this sentence?
ii) In this sentence <u>what</u> is 'wildly exaggerated'? What other things might be described as exaggerated?

2. it will in fact miss the Earth by about five million kilometres.
     the space rock will miss us by about five million kilometres

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                              overestimates muscle area by about 20-25% (Gibson, 2002), and thus may
                    human mtDNA lineages differed by about 8.0 + or - 3.1 substitutions, whereas
GDP per capita increases life expectancy at birth by about 0.07 years. Education measured by the
g losses. In general, the exhaust losses decrease by about 50 Watts, and the air cooling losses
              Total revenues from exports fell by about US$3bn. This in turn lowers the
      by the engine on diesel is always greater by about 0.81 kW than the power converted by
      air was released. This reduced its height by about 5cm. To collect any particles stuck in
ation diminishes incidence of neural tube defects by about 70%.
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The sentences above all contain *by about*, just like our two examples. What do all the sentences have in common? What goes before and after *by about*?
_____ by about _____

3. it is the first object to have a threat rating of greater than zero on the 0-10 Torino scale of dangerous objects from space.

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                Although the scores received on a scale of 1-5 were useful for assessing satisfactio
    thought that their artistic ability was on a scale of one to five so that it wouldn't
  asks the patient to rate various symptoms on a scale of 1 to 7. The main drug used
              , whereby housing was graded on a scale of A-H (Table 1.1), depending on the value
        This assessment will measure on a scale of 0-4 the levels of spasticity within
            and Damage Potential are ranked on a scale of 1-10, where 1 is very unlikely/minimal
    reference compound and given on an absolute scale of parts-per-million, defined by  FORMULA
pact occurring has been estimated on an arbitrary scale of 1-10. <table/><heading>Risk Management
```

Scale has several different meanings: what does it mean here? What are the key words in the example from our text?

4.   the object had about a 1-in-500 chance of striking the Earth
        No object has ever been rated with so high a chance of impact.

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s'. When customers trust a site there is a bigger chance that they will give their personal details.
 those without. In this case there is only a 0.1% chance that a type one error has occurred.
the Victorian ideals and therefore have a greater chance of fulfilment. This 'something' comes in a
cedure. Student Y in all probability has a higher chance of gaining leave for review, as her case
d collision is 1 in 20.000 compared to a 1 in 100 chance of dying in a car crash. However asteroid
at all, the reality is that a practice has a slim chance of securing the job in this way unless it
he study. Randomisation ensures there is an equal chance of each hospital being allocated to either
ies were supported by the state, there was little chance of bankruptcy and thus, no motivation for
```

What does *chance* mean in this sentence? What pattern does it follow here?

5.   they looked at data to see if the object had been picked up in earlier observations.
astronomers continue to monitor the asteroid, which was picked up in September

```
your stroke, although sometimes the scans do not pick up all brain injury. Once we are medically
 the frequencies which different species need to pick up. For example, many nocturnal primates have
ulate the model are: Using correlation matrix to pick up the quantitative variables which have high
refore this 'better' proximity matrix is able to pick up the hidden age factor that is still left in
 Niobate. The echoes from the two reflectors are picked up by the antenna IDT and sent back to the
itions and camera were such that less detail was picked up. Figs. 9 and 10 (overleaf) show an
ed to another channel of the oscilloscope, which picked up the pulse once it had travelled through
>PRINCIPLE</heading>It works on the principle of picking up the electrical signals produced by the
 investigation, we have proved that the oximeter picks up on variations in pulse due to exercise,
```

When *pick up* is used like this, *what* is picked up? How is it 'picked up'?

6. astronomers began looking at sky survey data to see if the object had been picked up but not recognised in earlier observations. This turned out to be the case.

What is the relationship between the two sentences in the example?

```
ambert Law, the original DNA sample concentration turned out to be 2140µM/L. The concentration of Ru
o the regression as additional dummy variables it turns out that their effects on the qtmark differ
he thickest in texture among the four. Also, they turn out to be the softest in texture among the
ng field' approaches (Wrench,2004,p.10),it is not turning out to be an easy task. A mere 18% of
 does not cost any job if the statistical testing turned out to be insignificant, but at least, we
 which have insignificant t-statistics and do not turn out to be as significant as anticipated. Thus
h's atmosphere has always remained the same- this turned out to be untrue. As a result of this,
d partly despite of its obvious flaws. "His model turns out to have been wrong in almost every
igation bar provides easy navigation through what turns out to be a very deep website. The 'news and
```

7.   The new orbit reveals a slight risk of a collision
when the orbit is better known this risk will disappear as well.

Why is *risk* used in this sentence? What's the connection between *slight risk* and *this risk will disappear*? Can you find any more examples like this below?

```
e investment in social policies, it will take the risk of being downgraded or it will have to reduce
t the huge majority of women in the UK are at low risk of complications in the third stage of labour
 and is therefore a serious concern. The lifetime risk of developing breast cancer is 1:11 for women
hat cannot be verified, so that it may reduce the risk of error contains in the product. In the
anner. This clearly shows his indifference to the risk of harm in the workplace. His conduct clearly
s (Caspi et al, 1987). These children are also at risk of internalising problems, resulting in
wever, an inappropriate adjustment might have the risk of obtaining a higher voluntary unemployment
orary field heaps must be sited where there is no risk of run-off polluting watercourses. They
ants remaining silent in police interrogation the risk of this occurring has increased.
```

8. a slight risk of a collision with the Earth

What is in collision with the Earth here? What other objects might collide? When you mention a collision between two objects, what are you generally interested in? What part of the sentence does collision with generally occur in?

```
t in 1987 that when the direction of a ball after collision with another ball deviates from the
ef.2]. It is thought that this is the result of a collision with another celestial body, taking
 This film communicates the threat of an asteroid collision with the Earth as a concept worthy of
tely depicts and explains the effects of asteroid collision with the Earth especially the effect
h of a large asteroid in order that it will avoid collision with the earth. Although this is a work
is important that the consequences of an asteroid collision with the Earth be correctly understood
o of the energies of this photon before and after collision with the electron and hence the final
 built up area there may be an accident involving collision with any property on or near the road.
```

9. it is thought that when the orbit is better known this risk will disappear

Who is doing the thinking here? Why aren't they mentioned? What variations are there to the expression 'it is thought that'? Where does it normally appear in a sentence? What is its function?

```
he size of output was sufficient to cheapen iron. It is therefore thought that railways did not have
ge of the cancer at presentation, and as a result it is thought that a reduction in mortality from
e may be modulator genes that interact with CFTR. It is thought that the digenic inheritance of CF
ponsive to both antifungal drugs and terbinafine. It is thought this is due to the ectothrix
o enable transfer from the settee to the commode. It is thought that if  had accepted physiotherapy,
 high and species hunted for bushmeat vulnerable. It is thought that this trade alone might well
```

10. it has been suggested that it might be an old Saturn upper-stage rocket

Who suggested this idea? Why aren't we told? What's the difference between this expression and *it is thought that*? How does this expression vary?

```
ear a temporary peak. In light of this, it can be suggested that shareholders gain a large sum of
ion are historical. Furthermore, it has also been suggested that 'the strict approach towards
```

h of fiduciary duty. For this reason, it has been suggested that finding contributory negligence on
table consent for sex" upon marriage. It was even suggested that a legal obligation for women to
(1999) underline this argument by stating, "It is suggested that the greater the uncertainty, the
imal situations in microeconomics where it is not suggested that the individual can change their
ete and 45 partial houses where found, and it was suggested that up to 21 where used at anyone time

11.   Some scientists have criticised the IAU and Nasa for releasing warnings
        Some scientists have criticised the way the information was released to the media

Our two examples show two patterns of use after *criticise*. What are they? What's the difference
between them? Can you find any more below? And do we always know <u>who</u> is doing the
criticising?

theory (Adorno et al., 1950) has been widely criticised as being inaccurate. However, even with its
nnaliste Paradism?', p. 90. </fnote>Although criticised for its omissions, such as culture,
armaments and weapons. The New Deal has been criticised not only for its failure to return to the
 to second wave feminism. This idea has been criticised by many feminists as the redistribution of
oth the employee and employer can however be criticised as the 'degree of participation offered by
 a visitation site. Archaeologists have been criticised for their "tendency not only to emphasise
his essay 'The Death of the Author', Barthes criticises the way that "The explanation of a work is
s in such an unflattering manner, aside from criticising civil war. At this point, one should

12.   **Scientists revise asteroid warning**
                Less than a day after sounding the alert   about asteroid 2000SG344
         International Astronomical Union issued an alert   saying that …
            criticised the IAU and Nasa for releasing warnings about the asteroid
                                 only for those warnings to be rescinded less than a day

According to the examples from our text, which verbs can you use to give (and take back) warnings
and alerts? Can you find some more below? Can they all go with alert and warning?

ence of her convictions, but without delivering a warning of his dissatisfaction. In Webster's A Ca
 here. Dionysus provides the people with a single warning in the play, towards Pentheus by advising
nt in a passive clause, as in you will be given a warning. The Recipient, as the name suggests is
tures with The Handmaid's Tale, offering a strong warning against totalitarian regimes. Orwell was
ct to the incidents of domestic violence. A final warning had been issued to P and her partner, one
p at different rates within children, and gives a warning that studies on this subject should
   ft Frank time to attack Eliáš and issue drastic warnings respectively. Mastny portrays Neurath as

15

Appendix 3: collocational patterns derived from examples

1. wildly exaggerated
example: <u>reports</u> that the Earth could be struck by an asteroid <u>are wildly exaggerated</u>
other options:

The	report (that…)	was	over-	exaggerated
His	claim		highly	
	assertion		totally	
	account		wildly	
			grossly	

Generalised pattern: (something said by someone) was (greatly) exaggerated
meaning: these people made this claim; but it's absolute nonsense

2. by about
example: it will in fact miss the Earth   by about five million kilometres.
  the space rock will miss us   by about five million kilometres
other options:

a figure/amount	is overestimated	by about	percentage
	increases		number
	decreases		unit of measurement
	differs		amount of money
	is greater/less		fraction

Generalised pattern: amount (is different) by about this much
meaning: this is an estimate of the difference/increase etc.

3. on a scale of
example: it is the first object to have a threat rating of greater than zero on the 0-10 Torino scale of dangerous objects from space.
other options:

rate / be rated	on a scale of	1-5,	where 1 is … and 5 is …
grade /be graded		A-Z	
measure the levels of …		parts-per-million	
rank /be ranked			
estimate / be estimated			

Generalised pattern:
      (something that can be measured) is rated on a scale of (range of measurement)
meaning: I want to tell you how good something was using a scientific-looking method…

4. have a … chance of happening
example: the object had about a 1-in-500   chance of striking the Earth
   No object has ever been rated with so high a   chance of impact.
other options:

(someone/something) has	a bigger	chance of	noun (nominalisation?)
	a higher		(verb)ing
	a greater		
	a slim		
	an equal		
	little		
	a 0.1%		
	a 1 in 100		

Generalised pattern:
a person/people (have) a(n) adjective   chance of happening
an event   numerical probability
meaning: this is likely / unlikely to happen

5. pick up

example: they looked at data to see if the object had been picked up in earlier observations.
other options:

the scans	(do not) pick up	all brain injury
different species	picks up	high frequencies
matrix	picked up	the variables
the oscilloscope		the pulse
the oximeter		the electrical signals
		on variations in pulse

The echoes from the two reflectors	are picked up	by	the antenna
less detail	was picked up		the camera

Generalised pattern:
Some kind of instrument picked/picks/can pick up a signal/pulse etc.
meaning: this machine detected something that humans couldn't

6. turn out

example: astronomers began looking at sky survey data to see if the object had been picked up but not recognised in earlier observations. <u>This turned out to be</u> the case.
other options:

result of experiment	turned out	to be	2140µM/L
they	turn out	to have been	wrong
the statistical testing	turned out		insignificant
the statistics	do not turn out		as significant as anticipated
it	is not turning out		an easy task
His model			untrue

it	turns out	that	their effects differ

Generalised pattern:
(the result of) Some kind of experiment/test   turns out to be + evaluative adjective /
result
                                 (= is)
meaning: this result isn't quite what we expected!

7. risk of

example: The new orbit reveals a slight risk of a collision
      when the orbit is better known this risk will disappear as well.
other options:

there is	a	low	risk of	error
		high		this problem
	no			cancer
it may reduce			the risk of	
increase				

Generalised pattern:
There is a (adjective) risk of a bad thing happening
The risk of this bad thing happening is increasing/decreasing

Function: talking about the size of the risk or whether it is getting bigger/smaller

8. collision with

example: a slight risk of a collision with the Earth
other options:

the direction deviates	after		collision with	another ball
this is the result	of	a		another celestial body
the effects		asteroid		the Earth
the consequences				the electron
the threat				
avoid				

Generalised pattern:
There is a danger of collision with (an object)
The effects of the collision with (the other object) are …
Function: when we talk about a collision, we normally talk about its likelihood (if in the future) or the results of it happening (at any time, but especially if it has already happened)

9. it is thought that

example: it is thought that when the orbit is better known this risk will disappear
other options:

it is	sometimes	thought that + sentence
	generally	
	therefore	
	also	

Generalised pattern:
it is (adverb) thought that + sentence
Function: to make a statement/claim quite formally and give it some support (i.e. other people think this too, not just me)

10. it (can) (be) suggested that …

example: it has been suggested that it might be an old Saturn upper-stage rocket
other forms:

	it can be	
	it has also been	
For this reason,	it has been	
	It was even	suggested that
	It is	
	it is not	
	it was	

Generalised pattern:
it (modal) be (not) (also/even) suggested that + sentence
Function: to make a tentative statement/claim (i.e. I'm saying this but I'm really not sure, so I'm keeping my distance; this may turn out to be wrong)

11. criticise

Examples: Some scientists have criticised the IAU and Nasa for releasing warnings
                    Some scientists have criticised the way the information was released
other forms:

the theory	has been					as being inaccurate
This idea				by many feminists		
		widely	criticised			for its omissions
The policy						not only for its failure to…
the employer	can be					for their tendency to …

Barthes   criticises | the way that …
| them for releasing…

Generalised patterns:
An idea (modal) (be) criticised as (negative adjective)

A person/an idea (modal) (be) criticised for +   noun (nominalisation)
                                            (verb)ing

A person/organisation criticises/criticised   the way that (something was done)
                                            someone for (not) doing something

grammar note: criticise is often used in the passive form (though it depends whether the critic or the person/idea being criticised is important in the text)

12. alert / warning
Examples: Scientists revise asteroid   warning
          Less than a day after sounding the   alert   about asteroid 2000SG344
      International Astronomical Union issued an alert   saying that …
          criticised the IAU and Nasa for releasing   warnings about the asteroid
                          only for those   warnings to be rescinded less than a day

other forms:

deliver	a	drastic	warning	of his dissatisfaction
provide (someone) with		strong		(by) advising/saying
be given				that studies on this subject should
offer				against totalitarian regimes
issue				
	a		warning	was issued to them

Generalised patterns:
Verb meaning 'give' + a (adjective: strong?)+ warning + info about warning (of/about/that)

Appendix 4: Follow-up worksheet

Look at these sentences from the report and find words that fill the gaps.

1. Reports that the world economy is finished are _____exaggerated.
2. Total revenues from exports _____ by about US$3bn last year.
3. The students were asked to _____ their teacher's performance on a scale of 1-5 where 1 was 'very poor' and 5 was 'excellent'.
4. FB has a _____ chance of beating Porto tonight.
5. Even if an asteroid coming towards the earth is picked _____ by telescopes, what can we do about it?
6. Many of the FB fans thought that choosing Aragones as their coach would be a mistake. This turned out to be _____.
7. If you do not cite your sources correctly there is a _____ risk of detection due to turn-it-in.
8. It has been _____ that the dinosaurs were wiped out by hay fever.
9. It is _____ that Global Warming is largely due to human activity.
10. George Bush has been criticised _____ many things, including starting the war on terror.
11. Warnings about the impending global economic crisis were being _____ as much as 2 years ago.

Appendix 5: student-identified patterns of keyword ('addiction') from concordance lines drawn from source texts for text-based essay

```
studies have also drawn conclusions that alcohol addiction is genetic. Groups of males
ed, though, does support the notion that alcohol addiction is influence by genetic

policies and programs that reduce drug abuse and addiction in their communities, and
uffer the harmful consequences of drug abuse and addiction. z Babies exposed to legal and
oes science provide solutions for drug abuse and addiction? Scientists study the effects
 disorders are at greater risk of drug abuse and addiction than the general population.
.  Why study drug abuse and addiction? Abuse and addiction to alcohol, nicotine, and
 problems ahead, among them, substance abuse and addiction. z Method of Administration.

and Physical Dependence  The consequences of drug addiction, tolerance and physical
drugs.  What are the medical consequences of drug addiction? Individuals who suffer from
s adolescence a critical time for preventing drug addiction? As noted previously, early
If we can prevent drug abuse, we can prevent drug addiction. In early adolescence, when
tem.  Can science-validated programs prevent drug addiction in youth? Yes. The term
al problems.  How can medications help treat drug addiction? Different types of
 recovery. How do behavioral therapies treat drug addiction? Behavioral treatments help
s than the already harmful individual drugs.  Can addiction be treated successfully?
sing drugs and resume their productive lives. Can addiction be cured? Addiction need not

ng drug abuse and for helping people recover from addiction. Further research helps
rug abuse, or relapse in patients recovering from addiction. z To do better. The
s of their patients to foster their recovery from addiction.  Cognitive Behavioral
es of drug addiction? Individuals who suffer from addiction often have one or more
search continues, the role that genetics plays in addiction will be better understood. As
d its implications that endorphins play a role in addiction, continues to be favored by
results have implied that genes do play a role in addiction, most specifically to alcohol

, environmental and social factors that influence addiction. Advocates of these theories
lesser extent nicotine, genetic factors influence addiction considerably. Neither is

wal and tolerance." Traditionally, the concept of addiction only applied to substance
 substance abuse. In recent years, the concept of addiction is not only a biological
s are unsettled. Ultimately, however, theories of addiction need to include not just the
man being.  Genetic Theory  The genetic theory of addiction, known as addictive
anations have been associated with other forms of addiction. It has been suggested that
individuals are predisposed towards some types of addiction based on their personality.
Clearly, cultural factors influence the nature of addiction. The exact mechanisms of how
rful myths and misconceptions about the nature of addiction. When science began to study

 known as tolerance, is an important component of addiction and will be discussed later.
iction  There are several essential components of addiction that are considered non-
home front.  Ritual  Another important element of addiction is ritual. As simple, as

hood).  Which biological factors increase risk of addiction? Scientists estimate that
  What environmental factors increase the risk of addiction? z Home and Family. The
g abuse.  What other factors increase the risk of addiction? z Early Use. Although taking

e body on a regular basis will inevitably lead to addiction. The biological, as opposed
emember, drugs change brains—and this can lead to addiction and other serious problems.
dosages to produce an effect, it may also lead to addiction, which can drive an abuser to
ctive Inheritance  Whether genetics contribute to addiction is controversial and is a

ividual's reaction to drugs and susceptibility to addiction. Cultural and historical
 not? As with any other disease, vulnerability to addiction differs from person to
 40 and 60 percent of a person's vulnerability to addiction, including the effects of
```

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