SHOULD YOU BE PERSUADED - TWO SAMPLES OF DATA-DRIVEN LEARNING MATERIALS

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INTRODUCTION

In recent publications (Johns 1986, 1988) I have described a microcomputer-based approach to foreign language learning that takes seriously the notion that the task of the learner is to "discover" the foreign language, and that the task of the language teacher is to provide a context in which the learner can develop strategies for discovery - strategies through which he or she can "learn how to learn".

At the heart of the approach is the use of the machine not as a surrogate teacher or tutor, but as a rather special type of informant. The difference between teacher and informant can best be, defined in terms of the flow of questions and answers. The teacher typically asks a question (answer already known) to check that learning has taken place: the learner attempts to answer that question: and the teacher gives feedback on whether the question has been successfully answered Such is the I(nitiation)-R(esponse)-F(eedback) structure of the classroom exchange as described in Sinclair and Coulthard (1975): and such, too, is the structure of the typical "tutorial" computer program that purports to "teach a foreign language". The informant, on the other hand is passive - and silent - until a question (answer unknown) is asked by the learner. The informant responds to that question as best he (or she) can: and the learner then tries to make sense of that response (possibly asking other questions in order to do so) and to integrate it with what is already known.

If computers are to act as informants the problem is how to get the machine to respond to learner-generated questions. The obvious answer is that we should try to make it as intelligent as possible: that we should build up a system of rules (morphological, syntactic, semantic, sociolinguistic ...) that would allow the computer to act as an "expert system" on the language in question. This prospect has in the past attracted some language teachers (including the present author) with an amateur interest in Artificial Intelligence, and has also attracted researchers in Artificial Intelligence who have found that they could use a perceived need for "intelligent" language-teaching software as a lever to obtain research funds. It is not surprising that such research has to date had disappointing results (Farrington 1989). This failure has been due not merely to the ignorance of linguistics and pedagogy of AI researchers, or to the ignorance of information technology of language teachers, but rather to the nature of the enterprise itself: the "rules of language" cannot with any plausibility be specified in computer terms to allow the

machine to carry out as apparently simple an "informant" task as correcting the English of a piece of student writing. A spelling checker can make a reasonable stab at identifying and suggesting corrections for mis-spellings, while a so-called grammar checker can look for a limited range of "obvious" blunders (and may not be very good even at identifying those). Otherwise, a rule-based system is helpless: it cannot begin to come near the ability of the human informant/teacher to work out what the writer was trying to say or to find an appropriate way of expressing that meaning for the intended audience.

If we wish to use the computer as an informant there is, however, an alternative to a rule-based approach which attempts to encapsulate linguistic "competence", and that is a data-driven approach which gives the learner access to the facts of linguistic "performance". If we take this second approach we do not attempt to make the system intelligent: we simply provide the evidence needed to answer the learner's questions, and rely on the learner's intelligence to find answers. The most important computing tool for the data-driven approach is the concordancer, which is able to recover from text all the contexts for a particular item (morpheme, word or phrase) and to print them out in a way which facilitates rapid scanning and comparison. The most usual format is the keyword-in-context (KWIC) concordance in which the keywords are arranged one below the other down the centre of the page, with a fixed number of characters of context to the left and to the right. A useful refinement, particularly where one is concerned with regularities and patternings in large numbers of citations, is the ability to sort alphabetically the contexts to the left or right of the keyword so that similar contexts are grouped together.

There is, of course, nothing novel in the use of the concordancer to examine large quantities of text for the purpose of discovering patternings in the use of language: it is a computing tool that has been used by linguistic and literary researchers for over 25 years, and during that time has accumulated its own mystique and methodology. What is novel about the work reported in this paper is the perception that "research is too serious to be left to the researchers": that the language-learner is also, essentially, a research worker whose learning needs to be driven by access to linguistic data - hence the term "data-driven learning" (DDL) to describe the approach.

During the past three or four years I have used concordance output regularly with students (overseas postgraduates in a wide range of subject areas who need to improve their English for instrumental reasons), and on the basis of that experience have come to the following conclusions:

1. The use of the concordancer can have a considerable influence on the process of language learning, stimulating enquiry and speculation on the part of the learner, and helping the learner also to develop the ability to see patterning in the target language and to form generalisations to account for that patterning. These benefits are often claimed for other inductive approaches to language learning that require the student to move from data to generalisation. Traditionally these have been based on "rule-hiding": the materials writer decides what rule or rules are to be

taught and writes a set of examples (sentences or pseudo-text) to encapsulate them. The task of the learner is to work in the opposite direction and to recover the rules from the examples. It is, perhaps, not surprising that despite its supposed advantages language-teaching based on rule-hiding may show no discernible advantage over the more traditional deductive approach of "rule first, practice second" (Seliger, 1975). What is distinctive about the DDL approach to inductive language teaching is the principle that the data is primary, and the teacher does not know in advance exactly what rules or patterns the learners will discover: indeed, they will often notice things that are unknown not only to the teacher, but also to the standard works of reference on the language. It is this element of challenge and of discovery that gives DDL its special flavour and stimulus.

2. The second main effect of DDL is on the role of the teacher, who has to learn to become a director and coordinator of student-initiated research. That change is, it seems to the writer, entirely a healthy one; nevertheless it can be difficult for teachers to come to terms with it. Once the concordancer becomes an important focus of activity in the classroom, many old certainties start to crumble (for example the central position of the syllabus and of the teacher's key at the back of the textbook) and many new questions have to be answered: How far can students in a particular educational setting take charge of their own learning? Can the new approach be integrated with older and more familiar methods? How much help can and should be offered to students to develop appropriate research methods?

3. The third main effect of DDL is a revaluation of the place of grammar in language-learning and language-teaching. Traditional grammar-based methods are vitiated by assumptions about *how* grammar is learned, and *what* is to be learned. The how usually involves presenting the student with a known set of "rules" or "patterns" that are then applied in "constructing" text in the foreign language. That view is not only psychologically implausible but also practically impossible since it is simply not the case that we have full and reliable descriptions of how English (or indeed any other language) operates. There are large areas of English syntax which have traditionally been neglected in the standard descriptive and pedagogic grammars not because they are unimportant but because they are too difficult (e.g. Article Usage) or because they have simply been overlooked (e.g. Transitivity). For other areas, descriptive grammars rely mainly on the descriptions given in other grammars: even where the description is original that originality is more often based on the "armchair intuitions" of the grammarian than on any close analysis of data. It is, therefore, not surprising that even the best grammars, whether for teachers or for students, are usually rather than exceptionally incomplete, partial and misleading: nor that in the last twenty-five years there has been a reaction against grammar in language teaching. The DDL approach, on the other hand, makes possible a new style of "grammatical consciousness-raising" (Rutherford 1987) by placing the learner's own discovery of grammar at the centre of language-learning, and by making it possible for that discovery to be based on evidence from authentic language use. One interesting side-effect of the approach seems to be that when grammatical description is the product of the learner's own engagement with the evidence, that description may show a far greater degree of abstraction and subtlety

(c.f. Berman's concept of the "general generalisation") than would normally be allowed for in the type of pedagogic description that is presented as a "given".

The special flavour of DDL can best be conveyed by concrete examples, and for that purpose I attach two handouts ("Convince v. Persuade" and "Varieties of Should") prepared in the English for Overseas Students Unit in the Spring Term 1989. What the two handouts have in common is that they were prompted by student queries, and that in both cases students discovered things in the data that had not been noticed by the teacher. The handouts differ mainly in the scale of the work involved for teacher and for student. The first required little more than the printing out of two machine-sorted concordances based on approximately 250,000 words of text and took approximately 40 minutes to prepare, while work in class on it took no more than ten minutes out of the lesson following that at which the question was raised. The second handout involved a search through approximately 760,000 words of text, and a great deal of work also in classifying and hand-sorting the resulting citations: work which took about 4 hours for preparation of the original handout, and as much time again in preparing the revised version shown here. Class work on the handout lasted 45 minutes, and could have taken much longer if time had been available. While all the citations shown in the handout are authentic, there is in this handout a degree of "rule-hiding" in the selection of citations, the categories adopted, and the sequencing of citations within each category.

CONVINCE v. PERSUADE : DISCUSSION

One of the commonest types of question asked by the enquiring learner is "What is the difference between ...?": here preparation of the handout was prompted by the question "What is the difference between *convince* and *persuade!"* Citations were recovered for *convinc** and *persua** (the asterisk being a "wild card" meaning "any number of characters") and were automatically sorted, first priority being given to the keyword itself and second priority to the word to the right of the keyword.

The basic procedure I teach for concordance-based learning research is "Identify - Classify - Generalise". It did not take my students long to identify and classify the most striking difference in the contexts of the two words: for 11 citations for the verb *convince* 10 show it being followed by a that-clause (the *that* being omitted in citations 9 and 10), while of the 18 citations for the verb *persuade,* 14 have the verb followed by a to-infinitive and 4 by a that-clause. Two points need to be made about these results as they bear on inductive learning in general:

1. Students (and teachers) should be wary of over-generalising on the basis of negative evidence. The fact that in 11 citations there are no instances of *convince* followed by a to-infinitive does not mean that the to-infinitive is impossible in that context: and indeed a later search through a larger corpus has thrown up a solitary example of to-infinitive after *convince.* What it does indicate is that the that-clause is the normal form in this context. In general the concept of "normality" plays an important role in inductive learning, but only a marginal role in deductive learning.

2. The idea of normality is illustrated also by the results with *persuade* which indicate that this verb is most often followed by the to-infinitive. Where statements about relative frequency occur in pedagogic grammars they are unlikely to be of much assistance to the learner (and may well, in any case, not be based on empirical evidence): where such statements are generated by learners themselves as a result of analysing data they can, I believe, give considerable insight into the way the language works.

The possibility of both to-infinitive and that-clause complements with *persuade* led to the question of what the difference is between them in this context. That question produced two answers - one (from the teacher) conventional and the other (from a student) unconventional.

1. The teacher's explanation was that where there is no change of subject between main clause and complement the infinitive is preferred: where there is a change of subject the that-clause must be used. This is an explanation that can be checked against the citations: notice that one can also use the citations as the basis of an exercise in which the one structure is converted to the other:

"It **is trying** to **persuade researchers that** it **is a good thing** to **work** in **industry.**"

"It **is trying** to **persuade researchers** to **welcome the idea of working in industry.**"

2. The student's explanation was that the to-infinitive refers to actions: thus we typically persuade someone to do something (to spend money, to write something, to make some contribution, to invest in British satellite technology, etc.) while the that-clause refers to truths: thus we typically convince someone that something is the case (that popularising research is rewarding, that talking heads are valuable, that behaviour can seem intelligent, etc.)

In subsequent discussion it was evident that the class found the student's generalisation more useful than the teacher's, not only in relation to the particular problem of *convince* v. *persuade,* but as a way of thinking in general about the difference between to-infinitives and that-clauses. I remember that one student observed that only *convince* had an example with the reflexive pronoun: perhaps it is easier to make yourself believe something than to make yourself do something!

VARIETIES OF SHOULD : DISCUSSION

The handout attached is a revised and expanded version of one prepared in response to a request by a student to do some revision on the word *should.* He added that he sometimes found "shoulds that aren't real shoulds": could I help him and the other students in the class to work out how the word *should* is used in English? I was already suspicious of the way in which *should* is handled in the standard descriptive and pedagogic grammars of English: however those suspicions were of the armchair variety, and I realised that they needed to be checked against a

corpus. Here, then, was a good case for basing some work for the whole class on concordance output. One strategy would have been simply to produce a substantial KWIC concordance of *should* (the New Scientist files had over 800 citations) and see what the students would make of it. That might have produced some interesting results, but would also have been a task of considerable difficulty: it might make the work more manageable if I sorted the data into some basic categories in advance.

I accordingly prepared a handout which showed citations for eight categories of *should* (reduced in the revised version attached to six categories), but left it to the students to determine the basis of the categorisation, what labels could be given to the categories, and possibly what the relationship between them might be. In what follows I summarise how I decided to define the categories and what transpired when the students worked with the data, and suggest some other concordance-based learning materials that could supplement the basic handout

Category A

These examples are drawn at random from the very large number of citations which show the "Basic" or "Deontic" (Lyons 1977) sense of *should:* the label most often used in teaching materials being "Obligation". These citations caused no difficulty for the students, one of whom suggested that they should be labelled "Advice". This label in turn suggested we look at the citations to see who is advising whom, and we noticed that advice is often offered to powerful institutions (the government, universities etc.) who may, we can guess, be disinclined to accept it. In other cases (e.g. A7) something rather stronger is involved - this is advice that can be disregarded only at one's peril!

Category B

This category was at first rather more puzzling: the students observed that in most cases *should* seemed to have the same meaning of "advice" as in Category A. Prompted to find a common feature of context for all the citations, they noticed that here all the *shoulds* were in that-clauses, with a limited range of preceding verbs nouns and adjectives:

VERB		NOUN		ADJECTIVE	
recommend (B1-6)		recommendation (B7)		important (B17-19)	
propose	(B8)	proposal	(B9-10)		
suggest	(B11-15)	suggestion	(B16)		

Citation B20 is, at first sight, a little different from the others, but its placing in the listing brings out the similarity of meaning between "X is important" and "X is a matter of considerable concern".

Listing the preceding verbs, nouns and adjectives spells out the common theme clearly: the fact that advice is being offered (including the "strong" advice that can hardly be disregarded) is already present in the context of *should.* The next step - the perception that *should,* being

redundant, can here be omitted - was a difficult one, and I realised that to reach that conclusion for themselves most students would need a supplementary concordance of parallel citations in which it is, indeed, omitted:

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1) ity School of Medicine, Indianopolis. They said ". . . we recommend that the dose of benoxaprofon be decreased (approximately 50
2) Over the following fortnight, during which the Home Office recommends that people cocoon themselves in some form of shelter, the
3) cilities if any of the reprocessing plants breaks down. It recommends that France take a second look at following the policy that
4) guru, Arthur Palmer, is not optimistic. The committee also recommended that the government clarify the rules covering the supply o
5) see government research funds for 10 years, the panel also recommended that Dr Farsee be excluded from serving on any NIH advisory
6) as of severe damage to the fuel. The report stops short of recommending that the project be abandoned. But it told research minist
7) , and exclaimed in an anguished voice: 'Then will somebody propose that this paper be rejected irrespective of its contents?' The
8) e when the future of CMAG is under review. An HSE document proposes that CMAG be turned into ACGM - an Advisory Committee for Gene
9) t step length would be increased, and with it, speed. They proposed that Harvard create such a super-track tuned to human elastici
10) the Committee on Safety of Medicines on 7 October it also proposed that the data sheets of information to doctors be changed to g
11) he sixth week after childbirth. The coordinating committee suggests that the appeal panel ask why this change has been made, and
12) in and Perception Laboratory of the University of Bristol, suggests that a group of babies be trained to use a "baby-operated tape
13) uff up your head with things you don't understand. I would suggest that Bernard Dixon, and any other hypochondria sufferers, try t
14) ented to the chemist without first reading it. The chemist suggested he try the Co-op, or an hotel. The prescription read: 1 lb be
15) - often on shoestring budgets. Eighteen months ago the CBI suggested that the HSE take on a number of extra people to monitor the
16) lone, the report closes with alternative budget proposals, suggesting for example that proposed spending on nuclear energy be halv
17) On 3 January, 1974, the BBC wrote to the Musicians' Union suggesting that the BBC reissue old material on video, with appropriate
18) sad reflection on the Opposition. It makes it all the more important that, as a country, we hold fast to the alliance and to the p
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This concordance could be used for a simple exercise, the student being asked to mark all the verbs to which a *should* could be added.

It should be noted that it was this second concordance that was used to define Category B in the re-write of the handout. There were in the data a number of other verbs close to *recommend* in meaning (e.g. *urge, insist)* followed by that-clauses containing *should:* however the data did not for those verbs show any clear examples of that-clauses with *should* omitted.

After some discussion the label we hit upon for Category B was simply "Advice - can be left out" (a rather friendlier label than such terms as "Putative" or "Quasi- subjunctive" used in the scholarly descriptive grammars). With very advanced students the idea of omissibility could be taken further. For example, while with a verb such as *recommend* it appears that *should* is always omissible, with *suggest* it can only be omitted where *suggest* means "recommend an action" but not, as in the following citations, where it means "make a tentative statement or claim":

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| ification schemes suggest that other modes of proton decay should be more common, such as the decay into a muon and two . No dou|
| under study, Sokolov suggested that an acoustic microscope should in theory be able to resolve images just as well as the standa|
| s interior suggest that some three times as many neutrinos should reach Earth from the Sun as are in fact detected. One solution|
| , even simple estimates for the W particle suggest that it should weigh in at something like 30 times the proton's mass. In the|
| rhaps too, Land is right in suggesting that computer users should have been brought more into the argument. Japan's plan to buil|
| ature's forces within one framework suggest that monopoles should have been produced in the early stages of the Universe: and ju|
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Notice the effect of the perfective in examples 5) and 6) above, which blocks the reading of "recommend" (we can make recommendations for the future, but not for the past) and thus blocks also the omission of *should.* Compare:

"I suggest that he should be brought more into the argument."

"I suggest that he be brought more into the argument."

"I suggest that he should have been brought more into the argument."

"I suggest that he have been brought more into the argument."

The ambiguity of *suggest* could form the basis of a concordance-based exercise, the student having to work out for a mixed set of citations the meaning of *suggest,* and from that to decide whether a *should* in a following that-clause could be omitted.

Category C

It was immediately clear that "Advice" is not involved in these examples, which are traditionally classified as the Epistemic use of *should.* A student suggested the label "Probable": I would have been ready to leave these citations there, but another student made an observation which took things a bit further. She said that Category A and Category C are, in fact, very similar: they both mean "What will happen if rules are followed". It did not take us long to realise that that is indeed the case: for Category A the rules are those of self-interest or morality, while for Category C the rules are the Laws of Nature working within the observed situation. This generalisation would, of course, help to explain why the translations of Deontic *should* and Epistemic *should* are identical in many languages.

Category D

Here the arrangement of the citations tells the story clearly enough, and it was not difficult for students to find the label *Condition* for all of them.

Two further points are worth noting with regard to these data. The first is that pedagogic grammars always deal with the inverted form (D2-20) as a variant of the pattern with *should* in an if-clause (Dl), using examples such as:

a) **If** you should see him, please give him my regards.

b) Should you see him, please give him my regards.   (Alexander 1988, p.275)

The implication of this treatment is that b) is less usual than a), which is assumed to be the "normal" form. In these citations, however, the normal form seems to be the inverted form (19:1 citations).

Secondly, those pedagogic grammars only show these forms for "Open" (or Type 1)

Conditionals. In these data, while 18 of the citations are of Open Conditionals, there are also two citations (D11 & D17) which show inverted *should* in the conditional clause of "Hypothetical" (Type 2) Conditionals.

Category E

The distinguishing features of these citations are:

a) In all cases the subject is the lst-person pronoun "I" **or** "we"

b) In all cases *should* could be replaced without substantial change of meaning by *would,* cf. the following citations from the corpus:

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1) rades, and Party Leader Gaitskell, if I lived in Britain I would vote Conservative!* - and with that remark he and his party depar
2) e it puts the subject in historical context. Personally, I would like to see more direct quotations from Franklin's pamphlets and
3) d back its drive with financial incentives if necessary. I would like to highlight five other important matters. 1. The need to in
4) deotext and expect their lecturers to know more! Finally I would like to mention three boods which appeared during the year which
5) lute space. There are important issues here. Personally, I would think that Searle is not particularly concerned about *intrinsic
6) s the politics of the environment: one of the few areas, I would have thought, where a lobby is likely to bring about chnage. What
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conditionals, with *should* being used in the main clause to mark the (non-factive) consequence of accepting the hypothetical situation set up in the if-clause. That raises the question, for both linguist and learner, of whether the citations for "I should like/have preferred" (E3-6) and "I should think/have thought" (E7-13) can and should be analysed in the same way as non-factive consequences of an (unstated) hypothetical situation. For "I should like" such an analysis is straightforward, the unstated hypothesis clearly being something on the lines of "if I had the opportunity (as I may)": while for the contrafactive "I should have preferred" (as for "I should have liked", unattested in the corpus) the hypothesis would be "if I had had the opportunity (which, unfortunately, I did not)". It is more difficult to state precisely what the unstated hypotheses might be for "I should think" and "I should have thought". The first reaction of my students was to suggest that the difference between the forms

a) "I **think that a piece of string would do just as well.**"
b) "I **should think that a piece of string would do just as well.**"
c) "I **should have thought that a piece of string** would **do just as well.**"

is merely one of politeness: on the reasonable assumption that "the more words one uses, the politer one is trying to be", b) is more polite than a), and c) is more polite again than b) (Cf. Coates 1983 p. 222 which explains *should* in this context as a form of "hedging"). My own feeling was that if this is politeness, it is is a dangerous sort of politeness. Some years ago I transcribed a number of programmes in the BBC Radio 4 discussion series "A Word in Edgways" and noticed that "I should think" and "I should have thought" were frequently used at tum-taking points, particularly by university teachers and politicians, and usually - it seemed - as a "put-down" of what a previous speaker had said. Given the readership of New Scientist it is not surprising that the forms should also occur in Letters to the Editor, nor that the common factor in the citations appears to be that they signal the casual dismissal of the significance and relevance of someone else's line of argument The nature of that dismissal can be understood if the "missing hypotheses" are read as:

"I should think (if I were invited to think about such matters) that a piece of string would do just as well."

"In London, I should have thought (if - as is of course not the case - I had ever been invited to think about such matters before) it would be out of the question."

If these forms are, indeed, marked in this way for slap-you-down pomposity ("I hereby announce that I do not normally have to address myself to arguments of such triviality or to people of such insignificance") there were good reasons for warning my students against them, and working out the unstated hypotheses proved to be an excellent way of doing so.

Category F

These citations show a use of *should* that is traditionally, and misleadingly, lumped together with that in Category B under the label "putative" or "quasi-subjunctive" (see, for example, Coates 1983, pp. 64-69: see also Murphy 1988, p. 70 which lumps but does not label). What distinguishes these citations from those in Category B is that here *should* is Factive - i.e. in citation F1 the writer is implying that New Scientist has convinced itself: in citation F2 that the protagonist did jump at the chance of establishing a samba school: in F15 that human sinus bones are magnetic, and so on. The citations show that there are two main contexts for Factive *should:*

1. It occurs in that-clauses which are evaluated with adjectives such as "surprising" (F1-3), "amazed" (F4), "wrong" (F5), "unreasonable" (F6) and "appropriate" (F7), or with an evaluative predicate (F8). Notice that in F9, although the evaluative adjective is missing from the KWIC citation, it is possible with a fair degree of certainty to predict what it is from the context that remains. A distinguishing feature of Factive *should* is that where the evaluation is being made of an event in the past the usual implicational difference between non-perfective "*should* + verb" and perfective "*should* + have + verb + en" is neutralised: thus F1 could be written interchangeably:

"It is surprising that New Scientist should have convinced itself..."

"It is surprising that New Scientist should convince itself ..."

2. Factive *should* is also found in a number of why-clauses: in this corpus a majority of *should** in why-clauses are factive. As far as I am aware, this is a phenomenon which has not hitherto been described, and it is not easy to pin down all the features of context that point to the factive interpretation. In some cases, the why-clause is evaluated by means of adjectives and nouns such as "puzzling" (F10) "not clear" (F11-12) and "a mystery" (F13). Paraphrase shows the close relationship in meaning between these why-clauses and the evaluated that-clauses already discussed - e.g.

"It is puzzling that Jeffreys should choose to appear in a court at York ...
"It is surprising that there should be this relationship ..."
"It is strange that birds should want to increase their active sleep ..."

Other contexts that in these citations suggest a factive interpretation of *should* in why-clauses include "probe into why" (F13) and "reason(s) why" (F15). Notice, incidentally, that "no reason why" does **not** allow the factive interpretation:

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1) equivalent lattice sites, so there is no reason why charge should be transferred between them. Consequently in a static diamond th
2) t all. There seems to be no particular reason why the idea should not have cropped up earlier (or indeed, later) but, according to
3) as a primary resource. There is of course no reason why he should propose solutions to the questions he implies about the use of t
4) ny others. For example, many people see no reason why they should run any risk from factories making nuclear weapons when they dis
5) tallations Inspectorate that it sees no reason why the PWR should not receive a licence for construction and operation in the UK.
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Where the why-clause is an independent clause there may be a subde signal of factivity via definite cross-reference: compare for F16 and F17:

"Why should health specialists make *all this* effort..." (Factive) "Why should health specialists make *an* effort..." (Non-factive)

"Why should a subatomic particle cause *so much* excitement... " (Factive) "Why should a subatomic particle cause *any* excitement..." (Non-factive)

(In the last example I have simplified matters by leaving to one side the possible cross-referential implications of "yet another").

Notice that the Factive version of F17 could be re-written

"Why should a subatomic particle have caused so much excitement..."

without any change of implication (the phenomenon of "non-perfective neutralisation" already noticed): on the other hand if the Non-factive version is re-written

"Why should a subatomic particle have caused any excitement..."

the perfective seems to be enough in itself to indicate a Factive interpretation (namely that a subatomic particle did cause **some** excitement, unjustified though that excitement may have been). The Factive-forcing power of the perfective is shown again by citation F18, which clearly implies that the southern oscillation has flipped or did flip.

The way in which the citations were arranged made it fairly easy for the students to work out the main features of context for this *should* (that-clauses & why-clauses: the presence of evaluative adjectives such as "surprising", "puzzling" and "wrong") though it needed a little clueing on the part of the teacher ("Did the New Scientist convince itself?", "Is the Home Office deciding between two competing claims?", etc.) to help them towards the concept of the Factive *should:* once the concept had been grasped, the student whose enquiry had started the whole exercise said that it was precisely examples such as those in Category F that had originally puzzled him: these were indeed the "shoulds that are not real shoulds".

Writing about the "should" experience at an interval of some months I am reminded of how much more complex it turned out to be than most of our other experiments in data-driven learning, and also of how much more the students discovered from the data than I could have expected in advance. Talking about the DDL approach with other language teachers I am sometimes reproached that while this way of language-teaching by stimulating student questions and by doing linguistic research in the classroom on a cooperative basis may be all very well for students as intelligent, sophisticated, and well-motivated as ours at Birmingham University, it would not work with students as unintelligent, unsophisticated, and poorly-motivated as theirs. I would be the last to deny that our students at Birmingham are very remarkable indeed: what I suspect, however, is that most students given the opportunity to show what they are capable of might be (almost) as remarkable. It is in that spirit that I offer the "Varieties of Should" handout to any other teachers with intermediate/advanced students who still have problems with the modal auxiliaries in English: should you be persuaded to try the handout with them, I should be very interested indeed to learn how they react to the methodology and what they do - and do not - discover for themselves from the data.

ACKNOWLEDGEMENTS

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VARIETIES OF SHOULD

Many learners say that 'should' is one of the most difficult words to understand n the English language! Here are some <u>authentic</u> examples of 'should' taken from the magazine 'New Scientist' and from publications on Transportation and Highway Engineering. The main uses of 'should' have been arranged under six categories. Working with your partner, decide for each category:

1. What are the typical contexts for 'should'

2. What is the <u>meaning</u> of 'should'

3. what label you could give the category.

A

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1) eed nearly 20 years ago. Smeed said that traffic in cities should be cut by having electronic tolls. Whenever motorists used a par
2) uld act to stamp out RFI. 'It's like saying the government should advise people not to buy houses with leaky roofs,' says Michael
3) divisions. Equally, he wants to stress that the government should listen to industry and respond to its needs. Hence he attaches i
4) o advice to government on what arrangements the government should make for R&D to best meet national needs Giving ACARD this job a
5) eport on cabling by Lord Hunt. This report said that there should be no pay-TV programmes. The draft White Paper also limited the
6) inally passed in 1976, dictates in detail how universities should be run. It sets down exactly who can teach and who can study, an
7) e exchange (Telecom's contracts specify that its engineers should carry out any work on telephone exchanges). But the engineers, m
8) that she was tired of hearing the claim that universities should aim to produce 'rounded' people; she wanted them to have sharp c
9) ick where 50mm cover should be provided. The reinforcement should terminate at least 40mm and not more than 80mm from the edge of
10) ngineered bugs must be contained. He adds: 'A lot of money should be spent on redesigning filters,' and continuous monitoring of a
11) t of the critical condition. Visual signs of deterioration should therefore be supplemented by measurements of pavement strength (
12) eformed bar reinforcement is used, the overlap of the bars should not be less than 40 bar diameters.
13) 'DoI's cocktail'. This lists the jobs that the department should be doing to help companies. The jobs range between running proje
14) ole elite universities. Others think the 'elitist' element should be provided by the establishment of graduate schools as in the A
15) te political problem for Whitehall and Westminster is what should be done when the value of the pound sterling falls international
16) because two government departments cannot agree on how it should be paid for. At the heart of the row is the question of whether
17) At the heart of the row is the question of whether pay-TV should be introduced to generate immediate cash to finance the cabling
18) equires mental effort to work through, effort which Taylor should have put in before writing off Darwinian explanations as 'pathet
19) periods. Neither viewpoint is absolute, but some reference should have been made to several recent studies of evolutionary rates
20) n after the Windscale accident. The appropriate comparison should have been made by following through a cohort who would have been
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B

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1) on their drinking water. The EEC recommends that tap water should not contain more than 5 micrograms per litre. The Royal Commissi
2) n recommended that the extent of both rutting and cracking should be measured in any survey system. In the United Kingdom rutting
3) advisory committee recommended that last year Depo-Provera should get a licence. Clarke ignored his experts' advice, so his Canadi
4) he scale of the problem. It recommends that the government should set a firm date for these authorities to complete surveys of the
5) . The Greenfield report recommends that prescription forms should contain a box, which doctors should tick if they want to insist
6) nsiderations, it is recommended that a 40-year design life should be adopted for all roads in the first two categories of Table 1.
7) ety's recommendation that all fourth and fifth year pupils should have nine weekly periods of science, an equivalent to 22.5 per
8) uch phenomena from more dubious data, we propose that they should be renamed 'UAPs', for unidentified atmospheric phenomena, as th
9) ate for a scheme. The main proposal is that the government should support a move that the Energy Bill should give electricity boar
10) dministered. The proposal was that the dose for old people should be reduced. It followed the discovery that many old people metab
11) e for the strategy. He suggests that the term 'porpoising' should be used to describe any aquatic animal that leaps out of the wat
12) d that the treatment was over, Freud suggested the patient should give him a present 'so that the feeling of gratitude wouldn't be
13) ptom of previous chronic fluoride poisoning. To suggest we should ignore such a sign is as irrational as saying that the blue-blac
14) t recommended and it is suggested that tapered thicknesses should be adopted, the calculated design thickness for each lane being
15) to ensure a long life, it is suggested that such pavements should normally be designed for a life of 40 years.
16) bsolute veto on any suggestion that Post Office canvassers should be remunerated by outside interests. But Booth did not give up.
17) in structural analysis, it is important that the engineer should be wary of accepting the output of an instant solution to his pr
18) r). But, it is equally important that the imagined outcome should not be set as a goal; it is not possible to imagine the unexpect
19) I was one, how important it was that Third World countries should develop their agriculture without resorting to the internal comb
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Should you be persuaded

C _____

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 1) ains why in graphic terms. Social historians of the future should find it a useful source when quoting the anti Reagan lobby. For
 2) rate of use of some 1.5 x 1012 cubic metres per year, this should be enough for another 50 years or so. Although the reserves are
 3) that still rhymes. Sheldrake's hypothesis predicts that it should be easier for people who do not speak Turkish to learn the real
 4) ene, dissolve in water to make it very slippery indeed. It should be easy to spray polyoxyethylene smoke into local snowstorms, or
 5) es according to plan, the world's first 'freeze-thaw' baby should be born this autumn. Dr Alan Trounson and Dr Carl Wood, Australi
 6) nnual review of research in Britain is almost finished and should be complete by the end of this month. Roger Courtney of the Cabi
 7) the company has so far finished only four chips, all seven should be ready for the prototypes that the company will exhibit at the
 8) . After a month of storage in a tank or lagoon, the slurry should be safe enough for spreading - although cattle should not graze
 9) . However, Moeri says that, with his system, the explosion should have been impossible. Last week, New Scientist showed Moeri a pi
10) eiling and sets off the alarm. Anyone staying in the hotel should have plenty of time to escape before smoke blocks the corridors.
11) bones and teeth. What little the authors can say, however, should stir up debate in the palaeoanthropological world. Their main co
12) that at current rates of use (3 x 109 tonnes per year) we should have enough, both as fuel and a feedstock, for 30 years. There i
13) on in an ancient specimen. With the apparatus, researchers should be able to analyse an item in 15 minutes when the current techni
14) er. Hence the relationship derived using the former model should be more reliable. Some scatter was observed in this relationshi
15) to 5,000 passes x a 2 tonne axle. Examples such as these should encourage all governments to limit the axle loads of goods vehic
16) efficiency of traffic movement. This type of information should prove to be valuable for short and long term traffic management,
17)          4. Theoretical models are attractive because it should be possible to use them in any conditions provided that the assu
18) sufficient. On other 'normal' subgrades an additional 80mm should suffice. Type 1 sub-base material (Clause 803), lean concrete (C
19) mentation of recycling procedures. This scale of reduction should be very attractive to any manufacturing industry.
20) the European price of their products. The watchdog chemist should be well placed to spot abuses such as this. Finally, the chemist
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D _____

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 1) d the strongest winds with a margin of safety. If the ship should become threatened by strong winds, the rotors were simply stoppe
 2) idge are domestic cats, small boys and the occasional fox. Should a cat appear, ducks immediately increase their peeking rates to
 3) ltogether and watch the cat closely. They behave similarly should a man appear carrying anything remotely like a gun (for example,
 4) -the period from landing to readiness for the next flight. Should an accident seriously damage one of the craft it could take year
 5) nipulation experiments, which would provide important data should an epidemiological survey be launched at any appropriate time, a
 6) ed. Persinger has suggested a large number of consequences should his theory indeed be correct. For example, sightings of UAPs sho
 7) SA has decided to launch Challenger without a test firing. Should more hydrogen problems develop, NASA has built a 'purge' system
 8) e hills above the site could collapse into the reservoir'. Should that happen, then a catastrophe could occur. The nearby towns of
 9) d more expensive, but is nevertheless a viable alternative should the Qatif alignment be politically unfeasible.
10) oduced the original programmes. It can only be hoped that, should the book go to a second edition, the publishers will make time t
11) a 100-kg man and, a thousand times lighter, a 100-g quail. Should the man choose to chase the quail rather than shoot it, he would
12) he discussion by lamenting the barrels' disappearance. But should the barrels stay missing for a while, they are not likely to be
13) e ensued, with destruction of nervous and vascular tissue. Should this be proven, it will be a new complication of a conventional
14) ffectively halve the rate of tax that consumers would pay, should a levy be introduced. The VHS video system was launched in Japan
15) aboratory has no money to pick up Charles Brown's project, should AIDS arrive here with a vengeance, although it is currently coll
16) -the period from landing to readiness for the next flight. Should an accident seriously damage one of the craft it could take year
17) nipulation experiments, which would provide important data should an epidemiological survey be launched at any appropriate time, a
18) hat have made inroads into the US's science policy system. Should British researchers hold up their hands in horror at this furthe
19) nce with weather forecasts from the meteorological office. Should the for casts prove wrong, unnecessary salting takes place with
20) the roller runs along the top edges of the sample tray and should the material be flush then it will not receive the compaction ap
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E _____

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 1) AR on acid rain! If Britain were to make such a gesture we should be doing an international service. And even over a period as lon
 2) henomenon. If, say, measles had shown such an increase, we should now be talking about a major epidemic. Secondly, Rutter evidentl
 2) any no longer recommends the use of aldrin in Kenya. But I should like to make it clear that the suggestion that BAT has been 'dum
 3)                                                            I should like to thank the Director of the Transport and Road Research La
 4) e, you can have it tested by thermoluminescence for '80. I should think it will not be long before the laboratory is turned into a
 5) trapped spider will climb up it and away to other parts. I should think that a piece of string would do just as well.
 5) ic theatre were all the work of secondary-school pupils. I should think they and the audience had a whale of a time or, in the rat
 7) glo-Saxons called a rabbit, a candidate for description, I should have thought. Perhaps they did not want to confuse birds with an
 8) pound. This seems an odd argument for smoking to me and, I should have thought, to smokers, too. On the other hand, for all I know
 9) rofessional bodies from people who did not keep abreast. I should have thought that that was the punishment, not the education, th
10) to deal with traffic by using key junctions. In London, I should have thought, it would be out of the question, unless traffic wa
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F _____

1) It is surprising that New Scientist should have convinced itself that the nuclear weapons policy of the SDP
2) nt to help make it happen.' It is hardly surprising that he should have jumped at the chance of establishing his "Samba school" in
3) nd on Hans Eysenck. It is therefore not surprising that he should here stress the psychological aspects of pain and its control ra
4) a Romeo's headquarters in Britain were amazed that charges should be so high. 'It only takes a few minutes,' said one. Across the
5) rdingly. It is wrong that other SERC competitors for money should not get it because international high-energy physics is. Yet we
6) ontractor said it seemed unreasonable that the Home Office should be deciding between two competing claims on the spectrum when it
7) ty. How appropriate, then, that a modern commercial nation should discover the remains of an ancient trading centre, such as Qarya
8) e equivalent of a fire rating of 2000. That these machines should have a market suggests a form of technological masochism. What c
9) he poem inscribed within it make abundantly clear. That it should have been modelled on the Temple of Solomon may seem at first si
10) was a slight resemblance to Judge Jeffreys. (Why Jeffreys should choose to appear in a court at York is puzzling, especially in
11) fruit, seeds and nuts. It is not precisely clear why there should be this relationship, but fruit, in general, is more difficult t
12) cour and a few normal-looking egg cells appeared. Why this should be so is not clear. Perhaps the DNA of the mule germ-cells mutat
13) suffering an increase in the risk of predation. Why birds should want to increase their active sleep is a mystery. An answer to t
14) tic editors. Pardi is not concerned to probe into why this should be so. Nothing so namby-pamby. He is champion of the sceptics, a
15) aker suggests three possible reasons why human sinus bones should be naturally magnetic. One is that they are a dumping site for i
16) y cannot be sure. If risk factors are failing already, why should health specialists make all this effort at helping them along? T
17) te forces of nature within one mathematical framework. Why should "yet another" subatomic particle cause so much excitement? The s
18) ts timing is and so is the strength of the phenomenon. Why should the southern oscillation have flipped, bringing El Nino in May r

CONVINCE — PERSUADE

Look carefully at the following examples of the verbs 'convince' and 'persuade' (and words derived from the verbs such as 'convincing* and 'persuasion'/'persuasive'). What similarities and what differences can you find between the two verbs?

1) ays that universities urgently need to convince academics that popularising research is re
2) rviews by Professor Ian Fells ought to convince producers elsewhere that talking heads are
3) produce literature detailed enough to convince the prospective buyer. Ivanov's major inte
4) hbouring system will find it harder to convince their own establishment that they need new
5) ggling sister or even the queen should convince us that behaviour can seem intelligent in
6) prising that New Scientist should have convinced itself that the nuclear weapons policy of
7) ed the Neolithic revolution and became convinced that it was not a matter of someone havin
8) given. But French nuclear experts are convinced that the "reference accident" (a core mel
9) ating how the British had determinedly convinced themselves they were enjoying themselves
10) s that lead you to think that they are convinced they are doing everyone else a favour, or
11) mpounded the crime by failing to build convincing alternative views of the relationship be
12) Lady Di look-alike. The results looked convincing. Equally important, the need for rigour
13) t ability to make and use maps provide convincing evidence of active intelligence? And if
14) ome of these interpretations. The most convincing example is that of the Davy lamp (New Sc
15) serve its own equilibrium, was never a convincing model of human behaviour. Many observed
16) ad been a success, we would still need convincing that a trial like this, with patients re
17) 1 spent, even if results are less than convincing. When it comes to marketing community in
18) ean areas. It is fascinating and it is convincing. Yet von Daniken is a millionaire and Ra
19) . Early on in both editions he writes, convincingly enough, of those who are unable to pre
20) t has been demolished so often, and so convincingly, that most readers will find further r

1) manager for remote sensing will try to persuade different parts of the government to spend
2) in of sense. Incidentally, how did you persuade Michael Heseltine to write it for you? Gal
3) n early stage. Second, it is trying to persuade researchers that it is a good thing to wor
4) t two years trying, unsuccessfully, to persuade the British government to make some contrl
5) ogy, is planning a mission to India to persuade the country to invest in British satellite
6) ely that only a big fire disaster will persuade the government to look harder at fire rese
7) entry to show farmers its work, and to persuade them to "get more out of muck". Scientists
8) likely to survive. So a female who can persuade two males that they each have a stake in t
9) nisation that focuses on that disease, persuaded both the House and Senate that arthritis
10) 's bad image among many scientists has persuaded it to woo the science community more expl
11) . At the end of last year, the FDA was persuaded that the Utah Medical Center had evolved
12) ncy services. In 1979, the Home Office persuaded the radio conference to allow it to conti
13) bolster Berlin's economy? Kewenig has persuaded the state of Berlin to give him OM 11 mil
14) nd by word of mouth; how people can be persuaded to adopt it by first influencing opinion
15) the state governments, who can also be persuaded to find fairly large experimental facilit
16) at Marly in France where a dragoon was persuaded to pick up a long brass wire inside a gla
17) literature. There is no one better at persuading people to do things they might not other
18) ablish the economic basis of Berlin by persuading researchers of industry to put their hea
19) ment to take action which, if friendly persuasion fails, end up ultimately in the magistra
20) how good they are at communication and persuasion, how resistant the population is to chan
21) he agricultural order. There have been persuasive arguments for the building of raised fie
22) ers that the Milwaukee Project "offers Persuasive evidence that mental retardation in the