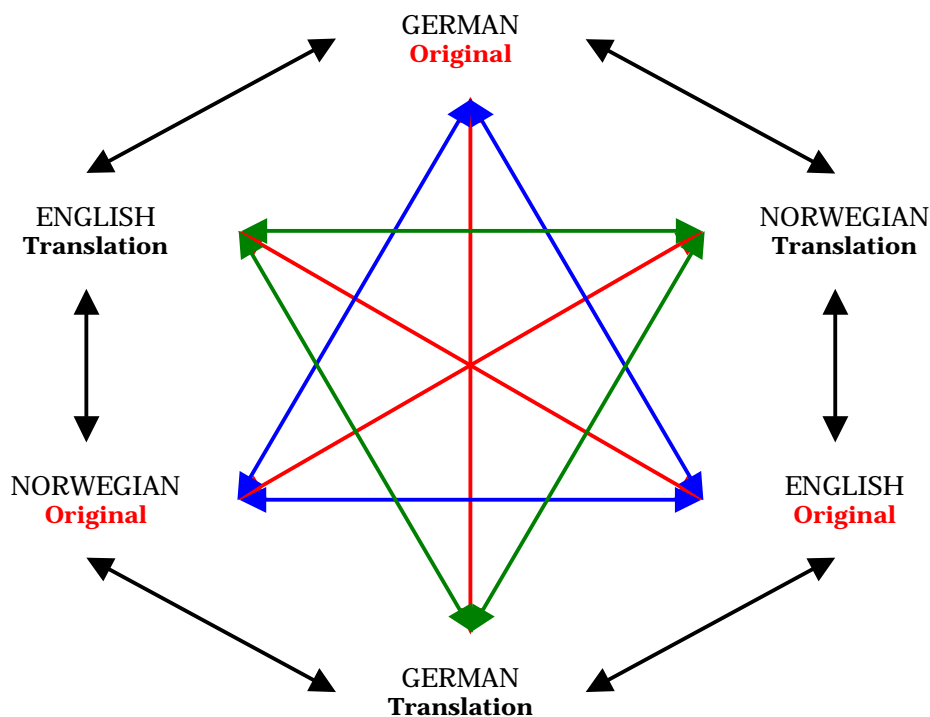


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Probability and necessity in English and German

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If we see a man carrying a particular kind of black bag we may say “He must be a doctor”, i.e. we assume a cause (being a doctor) behind the fact observed (carrying a black bag). We may then say “He should be able to help us”, i.e. we deduce a consequence (possibility of help) from the fact observed (or rather, supposed). Gailor (1983: 346)

“Soll” has no clear meaning in German (more like “muß” or “sollte” or somewhere in between?). To prevent misunderstandings, the use of “soll” should be avoided in standards. “should” must always be translated by “sollte” and “shall” by “muß”. (Kommission Arbeitsschutz und Normung, 1999).¹

1. Introduction

Despite an abundance of research into English modal verbs, several key issues remain unresolved:

- Firstly, do modals have a single underlying meaning, or should they be treated as polysemous?
- Secondly, in analysing the diverse uses of modals how much weight should be given to semantics and how much to pragmatics? These two questions are connected, since analysts who argue that modals are monosemous typically give a greater burden to pragmatic factors.
- Thirdly, what kind of general framework for analysing modality can best be applied to the use of modals in particular languages such as English?

Studies of modality have hitherto tended either to focus on one language in detail (see below for some examples), or to take a broader typological approach (for instance, Palmer (2001)). With monolingual studies a major problem is whether the analytical frameworks proposed only work for one language, or whether they can be generalised across languages. Broader studies tend to be at a level of generality which makes it hard to use them in helping to answer the questions in the previous paragraph. This leaves a gap which can perhaps be filled by contrastive studies of modality in two languages. By taking the most successful monolingual studies of one language and attempting to apply them to another language, we can subject them to a new type of scrutiny. We will then perhaps be able to propose a framework for modality which combines the detailed empirical coverage of monolingual analyses with the cross-linguistic validity of broader studies.

The research reported on in this paper adopts this contrastive strategy for modals in English and German. The plan is as follows:

1. Take the most promising studies of English modals, and try to apply the analyses to German translation equivalents.

2. Take the most promising studies of German modals and try to apply the analyses to English translation equivalents.
3. Compare the two sets of translation equivalents, and the various studies of modals, with untranslated examples of modals in the target languages.

This paper limits itself to the first of these steps, using the INTERSECT translation corpus described in Salkie & Oates (1999). Only the modals of necessity – SHOULD and MUST – will be considered in any detail.

2. Two studies of English modals

One of the strongest analyses of English modals is Groefsema (1995). In relation to our first key issue above, Groefsema argues at length that the four modals MAY, CAN, MUST and SHOULD each has a single basic meaning. On the second issue she ascribes great importance to pragmatics, drawing on an explicit theory – Relevance Theory – within which her analyses are situated. She does not address the third issue, a weakness that we hope to remedy within the research reported on here.

Groefsema assigns these modals the meanings indicated informally in the following table, where P is the proposition minus the modal:

	Basic Meaning
MAY	P is compatible with some of the relevant evidence.
CAN	P is compatible with all the relevant evidence.
SHOULD	P is entailed by some of the relevant evidence.
MUST	P is entailed by all the relevant evidence.

The “evidence” can be textual or taken from the non-linguistic context. Although the term “evidence” may make it appear that the analysis is tailor-made to handle epistemic uses of modals, it is intended to cover all the uses of each modal, including deontic ones. Take an example like (1), uttered by a mother to her son who is going to a party (Groefsema 1995: 70):

- (1) You must be home by eleven.

The most relevant evidence for P (“The son be home by eleven”) in this situation is the son’s assumption that his mother has authority over him. The deontic interpretation is therefore likely to be the preferred one for this utterance. Groefsema argues that the equivalent sentence with SHOULD would be “less imperative”, because the mother would merely be saying that there is some evidence which entails P, rather than that all the evidence entails P.

Another framework for analysing English modals is proposed in Larreya & Rivière (1999) (see also Larreya 1999). The authors assume that each modal has a single basic meaning;²

and like Groefsema they give a major role to pragmatics, though not within an explicit theory. Their analysis is summarised, again informally, in the following table (my translation):

	Basic Meaning
MAY	Subjective possibility, proceeding from the <i>énonciateur</i> (speaker).
CAN	Neutral possibility, independent of the <i>énonciateur</i> (speaker).
SHOULD	[SHALL] Necessary consequence, presented as subjective. [PAST TENSE] Implicit non-reality.
MUST	Quasi-absolute necessity, presented as subjective.

The term *énonciateur* has been rendered as “speaker” here: strictly speaking the term has a wider and more abstract sense, but these complications are not relevant to the issues discussed in this paper. The terms “subjective” and “neutral” are said by Larreya & Rivière to cut across the entire system of modals and semi-modals in English:

There is, in the modal system, a key opposition “neutral” / “subjective”. Modality is always the expression of a judgement (an opinion, a feeling, etc.) about an event. This judgement, however, can cover two different aspects. It can be (or be presented as) neutral, that is as the possible judgement of any observer: that is the case in *Mary can swim*, where the modal judgement expressed by CAN is normally the result of a simple observation of the world. Or, in contrast, the modal judgement can be presented as the expression of the PERSONAL OPINION of the speaker (or his/her WILL, or his/her WISH), and as a result may have what we call a subjective character: thus *You may smoke* expresses the will of the speaker. (Larreya & Rivière 1999: 80; my translation, emphasis in original)

The claim in the table above is that CAN is always neutral, while the other three modals are always subjective. A further key feature of this system is that (as is common in French analyses of English), SHOULD is treated as a combination of SHALL and the past tense morpheme, whereas Groefsema does not refer to SHALL and treats SHOULD as a single item.

The specific analysis of SHALL proposed by Larreya & Rivière is motivated in part by contrasts between SHALL and WILL: for WILL, they propose the same notion of “necessary consequence”, but this time presented as neutral. The claim is that a sentence containing WILL always involves an implication from something else. Consider these examples:

- (2) Fred won't answer any questions.
- (3) He'll be at home at this time of day.
- (4) This sofa will seat five people without any problem.
- (5) I think it'll rain tomorrow.

In (2) the implication is from Fred's will; in (3) from a set of known facts; in (4) from other properties of the sofa; and in (5), the straightforward future time use of WILL, we have a

prediction which may be an implication from a set of known facts.³ With SHALL, on the other hand, Larreya & Rivière claim that the implication is always from a personal opinion, willingness or wish. Thus we get the contrast between (6) and (7):

- (6) What shall I do?
- (7) What will I do?

In (6) the question asks about the will of the hearer, whereas (7) is neutral about the source of the prediction.

For SHOULD, Larreya & Rivière distinguish the following main uses:

- (8) I should deplore it enormously if you left.
- (9) Should you need to make a claim, ring our 24-hour hotline.
- (10) I should give up smoking.
- (11) Fred should be home by now
- (12) She suggested that he should go.
- (13) It's surprising that he should be at home.

In all these cases the past tense morpheme –ED does not express past-time but is a “modal preterite”, expressing “implicit non-reality” of the event in question. For (10), in the straightforward deontic interpretation, the effect of the past tense is to weaken the obligation (“le prétérit affaiblit l’obligation” – Larreya & Rivière (1999: 110)). Similarly, in cases like (11), Larreya & Rivière say that the logical necessity is weakened (“nécessité logique affaiblie” – 1999: 110). Notice a clear difference here from Groefsema’s analysis: she argues that with SHOULD the relation between evidence and the proposition is still the strong one of entailment – the weakening (when compared with MUST) is said to be in the amount of relevant evidence, not in the entailment relationship. Larreya & Rivière, on the other hand, claim that the relation itself is weaker.

3. SHOULD and MUST – Rivière’s problem

To examine the differences between SHOULD and MUST more carefully, it is useful to consider some data discussed in Rivière (1981), which concentrates on the probability / logical inference uses exemplified here:

- (14) You live in Oxford, you must know Professor Fen then.
- (15) You live in Oxford, you should know Professor Fen then.
- (16) You know Professor Fen, you must live in Oxford then.
- (17) *You know Professor Fen, you should live in Oxford then. [*OK in deontic sense*].
- (18) *John is a brilliant student, he must pass his exam easily.
- (19) John is a brilliant student, he should pass his exam easily.

Rivière argues that the inference from the first clause to the second in these examples can be strengthened or weakened in two ways, as shown in the table below. The term “cause”

is to be understood in the looser sense of “enabling element”: thus in (14-17), living in Oxford enables the hearer to know Professor Fen, and in (18/19) John’s being brilliant makes it possible for him to pass his exam.

Factors that STRENGTHEN an inference	Factors that WEAKEN an inference
1. Speaker asserts the consequence and infers the cause. (16/17) 2. The inferred event takes place in the past or the present. (14/15 & 16/17)	1. Speaker asserts the cause and infers the consequence (14/15 & 18/19) 2. The inferred event takes place in the future (18/19)

Rivière claims that if both strengthening factors operate, as in (16/17), only **MUST** is possible. If neither strengthening factor operates, as in (18/19), only **SHOULD** is possible. If one strengthening factor operates, as in (14-15), then either modal is possible. This ties in with the analysis in Larreya & Rivière (1999), where **MUST** is characterised as quasi-absolute necessity, falling just short of clear certainty, whereas **SHOULD** involves a weakened form of necessity because of the past tense morpheme that it contains.

In Salkie (1996) I argued that Rivière’s explanation in terms of strengthening and weakening factors is inadequate. The underlying principle in his account is that **SHOULD** is too “weak” to occur in certain contexts, while **MUST** is too “strong” to occur in others. Notice, however, that **MAY** is perfectly acceptable in all of (14-19): the meaning changes from necessity to possibility, of course, but that is not the point. If probability / logical inference **SHOULD** is not possible in (17) because it is too weak, then *a fortiori* **MAY**, which is “weaker” on a scale of certainty, should be impossible too. This suggests that it is some other aspect of the meaning of **SHOULD** which determines its behaviour in (17).

A further problem for Rivière is that his combinations of strengthening factors are incomplete. He gives three pairs of examples: (16-17) with both strengthening factors, (18-19) with neither, and (14-15) with just one. The strengthening factor in (14-15) is the second one (the inferred event takes place in the past or the present). That leaves out a fourth case, however, in which the single strengthening factor is the first one (the speaker asserts the consequence and infers the cause): we need to put the inferred event in the future in order to eliminate the second strengthening factor. Examples like (20-21) meet these conditions:

- (20) You know Professor Fen, you should recognise him when he arrives then.
- (21) *You know Professor Fen, you must recognise him when he arrives then.

Rivière’s analysis predicts that both of these are fine, but in fact probability / logical inference **MUST** is not possible in (21). This suggests that the inability of **MUST** to refer to the future is not because future events are too uncertain, but is due to some other aspect of the meaning of **MUST**.

To summarise, the basic fact which any account of **SHOULD** and **MUST** has to capture is that in contexts where both modals are possible, **MUST** expresses a stronger degree of

probability or necessity. In some contexts, however, only one modal is possible. These are as follows:

- A. **MUST** is not normally used to make an inference about a future event, whereas **SHOULD** can be used to predict the future consequences of a present state of affairs. (18-19).
- B. **SHOULD** is not used to infer a cause from a consequence (17).
- C. Only **SHOULD** can be used as a more formal counterpart of **WOULD** (cf. (8)).
- D. **SHOULD** can be used “directively” in subordinate clauses with verbs that impose an obligation (e.g. 12), or verbs which express an attitude to the situation which is stated in the subordinate clause and presupposed as true (“appreciatively”) (13).
- E. In formal register, **SHOULD** can be used in the protasis of certain types of unreal conditional (cf. (9)).

Before we assess the two frameworks on their success in capturing these facts, let us turn to data from the translation corpus.

4. Equivalents of **MUST** and **SHOULD** in German

The INTERSECT corpus contains 440 examples of **MUST** and 355 of **SHOULD**. To make comparison easier a random sample of 100 examples for each word was produced, and the equivalents analysed.⁴ Here are some examples of different equivalents; the number in brackets after each heading is the number of instances in the sample, and the code after each pair of examples is explained at the end of this paper:

a. **MUST** ≡ *müssen* (70)

- 22. The boy [[must]] have read them out, as he and the Spirit crossed the threshold.
- 23. Der Knabe mußte sie gelesen haben, als er und der Geist über die Schwelle traten.
[FICTION\DICKENS]

- 24. Europe [[must]] therefore assume a positive role to be master of its future.
- 25. Europa muß daher eine positive Rolle übernehmen, um Herr seiner Zukunft zu bleiben.
[INTORGS\ESPRIT]

b. **MUST** ≡ *dürfen* + **NEG** (12)

- 26. Ms. Fugmann-Liesing stated, "The balancing of the budget [[must]] not be achieved on the backs of the provinces and towns."
- 27. Fugmann-Liesing wörtlich: "Die Sanierung des Haushalts darf nicht zu Lasten der Länder und Kommunen gehen." [NEWS\NEWAP96]

c. **MUST** ≡ *ist ... zu* (11)

- 28. Various factors [[must]] be considered when performing corrections.
- 29. Bei der Durchführung von Korrekturen sind verschiedene Punkte zu beachten.
[MISC\SAPMAN]

d. MUST ≡ Other (7)

30. "What's been happening?" were his first words; Grete's face [[must]] have told him everything.
31. "Was ist geschehen?" waren seine ersten Worte; Gretes Aussehen hatte ihm wohl alles verraten. [FICTION\GERFICT]
32. The tasks ahead [[must]] engage the energy and attention of all components of the United Nations system - the General Assembly and other principal organs, the agencies and programmes.
33. Die vor uns liegenden Aufgaben erfordern die Kräfte und die Zuwendung aller Teile des Systems der Vereinten Nationen, der Generalversammlung und der anderen Hauptorgane, der Organisationen und Programme. [INTORGS\UN]

a. SHOULD ≡ *sollte* and other past tense (31)

34. While such action [[should]] only be taken when all peaceful means have failed, the option of taking it is essential to the credibility of the United Nations as a guarantor of international security.
35. Obwohl diese Maßnahmen erst durchgeführt werden sollten, wenn alle friedlichen Mittel versagt haben, so ist die Möglichkeit ihrer Inanspruchnahme doch unabdingbar für die Glaubwürdigkeit der Vereinten Nationen als Garant der internationalen Sicherheit. [INTORGS\UN]
36. The lesson in humility which Bosnia has taught the Europeans [[should]] suffice to produce three conclusions which might facilitate agreement on the procedures for conducting the common foreign and security policy:
37. Die Lektion der Bescheidenheit, die Bosnien uns Europäern erteilt hat, sollte genügen, um uns drei Einsichten zu vermitteln, die die Einigung über das Verfahren der gemeinsamen Außen- und Sicherheitspolitik fördern könnten: [POLITICS\HERZOG]

b. SHOULD ≡ *soll* and other present tense (25)

38. The list of objects to be changed [[should]] be completed if possible before the start of implementation to minimize network problems.
39. Die Liste der zu ändernden Objekte soll möglichst vor Beginn der Implementierung vollständig sein, um Vernetzungsprobleme zu minimieren. [MISC\SAPMAN]
40. State Premier Erwin Teufel announced today in Stuttgart that the coalition agreement between CDU and FDP in Baden-Württemberg [[should]] be finalized by next Thursday.
41. Die Koalitionsvereinbarung von CDU und FDP in Baden-Württemberg soll am kommenden Donnerstag stehen. Das kündigte Ministerpräsident Teufel am Mittag in Stuttgart an. [NEWS\NEWAP96]

c. SHOULD ≡ conditional construction (12)

42. [[Should]] any of them be before the courts for money matters, only residents of the region may be called as witnesses.
43. Wenn einer von ihnen jemanden wegen einer Geldsache gerichtlich belangen will, soll er vor dem Richter nur solche Personen als Zeugen benennen können, die in ihrem Gebiet ansässig sind. [MISC\SIEBS]

44. [[Should]] in the circumstances of Article 68 the Bundestag not be dissolved, the Federal President may, at the request of the Federal Government and with the consent of the Bundesrat, declare a state of legislative emergency ...
45. Wird im Falle des Artikels 68 der Bundestag nicht aufgelöst, so kann der Bundespräsident auf Antrag der Bundesregierung mit Zustimmung des Bundesrates für eine Gesetzesvorlage den Gesetzgebungsnotstand erklären ... [POLITICS\CONSTS]

46. [[Should]] the necessary majority not be reached in the referendum tomorrow, he said that this has meaning for the entire Federal Republic.
47. Sollten bei dem Referendum morgen die notwendigen Mehrheiten nicht zustandekommen, habe dies auch Bedeutung für das gesamte Bundesgebiet. [NEWS\NEWAP96]

d. SHOULD ≡ müssen (9)

48. The association's vice president, Mr. Lau, said in an interview that the government had spent too much and [[should]] have started saving much earlier.
49. Vizepräsident Lau sagte in einem Interview, der Staat habe zuviel ausgegeben und hätte viel früher sparen müssen. [NEWS\NEWAP96]

e. SHOULD ≡ dürfen + NEG (2)

50. Mr Beck, State Premier of Rhineland-Palatinate, said when interviewed by the magazine FOCUS that the ability to form a coalition between SPD and FDP [[should]] not be lost.
51. Der rheinland-pfälzische Ministerpräsident Beck sagte in einem Interview mit dem Nachrichtenmagazin FOCUS, die Koalitionsfähigkeit zwischen der Sozialdemokratie und den Liberalen dürfe nicht verloren gehen. [NEWS\NEWAP96G]

f. SHOULD ≡ directive (6)

52. In requiring the proletariat to carry out such a system, and thereby to march straightaway into the social New Jerusalem, it but requires in reality that the proletariat [[should]] remain within the bounds of existing society, ...
53. Wenn er das Proletariat auffordert, seine Systeme zu verwirklichen und in das neue Jerusalem einzugehen, so verlangt er im Grunde nur, daß es in der jetzigen Gesellschaft stehenbleibe ... [POLITICS\MANIFESTO]

g. SHOULD ≡ Appreciative (5)

54. I was vexed that the boor [[should]] have waked me, and I started up and cried, "Hold your tongue!
55. Mich ärgerte es nur, daß mich der Grobian aufgeweckt hatte. Ich sprang ganz erbost auf und versetzte geschwind: "Was, Er will mich hier ausschimpfen? [FICTION\TAUGEN]

h. SHOULD ≡ Other (10)

56. The specific problems of countries with economies in transition with respect to their twofold transition to democracy and a market economy [[should]] also be recognized.
57. Ebenso gilt es, die spezifischen Probleme der Umbruchländer in bezug auf ihren zweifachen Übergang zur Demokratie und zur Marktwirtschaft anzuerkennen. [INTORGS\UN]
58. Who among us could really have said before the controversy about Annemarie Schimmel what sufism is or - even more importantly - by what criteria a fatwa [[should]] be judged?
59. Wer von uns hätte vor dem Streit um Annemarie Schimmel wirklich sagen können, was Sufismus ist oder - noch wichtiger - nach welchen Gesichtspunkten man eine Fatwa zu beurteilen hat. [POLITICS\HERZOG]
60. Demand in Germany [[should]] also pick up once the improvement in export business has been realised.
61. Selbst in Deutschland dürfte nach dem Anziehen der Exporte dann auch die Inlandsnachfrage an Schwung gewinnen. [COMPS\HOECHST]

5. Discussion

The distribution of equivalents of MUST suggests that MUST and MÜSSEN are basically equivalent. The examples using IST...ZU are no surprise as this construction is commonly used in German for instructions, and out of a hundred examples we would expect to find a handful where German for one reason or another does not use a modal verb, as in (30-3). Examples like (27) with DÜRFEN and a negative expression, however, should make us pause: they reflect the fact that when MÜSSEN is used in the negative, it is the modality which is negated, whereas with MUST it is the proposition. This is a problem if we want to transfer Groefsema's analysis of MUST to German, since she argues that the scope of negation with MUST follows automatically from her semantic analysis (1995: 74-6). In this case, then, a contrastive approach has produced an outcome that would not be possible in a monolingual analysis: although we might want to say that MUST and MÜSSEN have the same semantics, Groefsema's proposal does not seem to work for MÜSSEN.

The correspondences between English and German are less clear with SHOULD than with MUST. Although forms of the modal verb SOLLEN predominate, they only account for 56% of our sample. In the obligation sense, as in examples (35) and (39), it is hard to see

any reason for the choice of a present or past tense form. In the sample, all the instances of obligation SOLLEN from the SAP manual (SAPMAN) use the present tense, while all those in the United Nations reports (UN) use the past tense. The other texts mostly use a past tense, though we find a few examples like this one from the news text:⁵

62. According to the head of the foundation, Graf Lambsdorff, the parliaments in all democratic countries [[should]] be included in the human rights work for Tibet.
63. Nach Angaben des Stiftungsvorsitzenden Graf Lambsdorff sollen die Parlamente in allen demokratischen Staaten in die Menschenrechtsarbeit für Tibet einbezogen werden. [NEWS\NEWAP96]

For the probability / logical inference sense of SHOULD, which is less common in the sample, the present tense of SOLLEN is used almost exclusively: example (37) is the only one where SOLLTE is used, and even here the sense is not definitely probability / logical inference. The contrasts between English and German here are perhaps easier to handle in a framework like Groefsema's, where SHOULD is not analysed as SHALL + past tense. In the analysis of Larreya & Rivière, on the other hand, it is natural to try to capture the parallel between English SHALL + past tense and German SOLLEN + past tense. The parallel seems to break down, however, since German can use SOLLEN in many cases without a past tense to correspond to SHOULD. In addition, it is hardly plausible to propose that SOLLEN and SHALL have the same basic meaning: out of 100 instances of SHALL in the corpus, only 10 were translated using a form of SOLLEN, and these were restricted to archaic and legalistic uses such as this one:

64. They [[shall]] elect their priests (sacerdotes) freely and introduce the elected (to the bishop).
65. Sie sollen ihre Pfarrer (sacerdotes) frei wählen und die Gewählten (dem Bischof) vorstellen. [MISC\SIEBS]

The fact that only just over half of the instances of SHOULD correspond to SOLLEN also argues against assigning them a parallel analysis. It appears, then, that the meaning of SOLLEN overlaps to some extent with that of SHOULD, but not to such an extent that we can transfer Larreya & Rivière's framework to German. Before concluding in favour of Groefsema, however, we should note that a partial overlap of meaning is hard to formulate within her framework, which analyses SHOULD as "P is entailed by some of the relevant evidence". It is unclear which parts of this analysis can be applied to SOLLEN.

Further problems for both frameworks arise if we look at the other German equivalents of SHOULD in (42-61). We would perhaps expect a wider range of miscellaneous equivalents for SHOULD than for MUST, since with SHOULD the certainty or the obligation is less strong than with MUST, and a language will probably have a range of ways of signalling this weakening, as we see in (51), (57), (59) and (61). We should note, however, that the use of the Konjunktiv II form *dürfte* for probability / logical inference in (61) is quite typical of German. An analysis of DÜRFEN in a framework based on Groefsema's does not look promising, since in other cases it corresponds to MUST, as we saw with example (27), and in others to MAY, as here:

66. These rights [[may]] only be encroached upon pursuant to a law.
 67. In diese Rechte darf nur auf Grund eines Gesetzes eingegriffen werden.
 [POLITICS/CONSTS]

As for the other uses of SHOULD illustrated in (42-61), these appear somewhat intractable for Groefsema, since they have no apparent connection with the notion of “entailment by some of the relevant evidence” that she proposes. Since SHOULD is not translated by SOLLEN in these other uses, it would appear that SOLLEN has a more precise and limited sense than SHOULD, with its range of different uses. Thus an analysis like Groefsema’s which proposes a very specific sense for SHOULD looks less plausible when faced with contrastive evidence. As for Larreya & Rivière, they discuss some of these other uses in their discussion of SHOULD (1999: 107-12) but do not show how they follow from the basic sense that they propose. To take one of these uses, we can see from (53) that a cross-linguistic account of “directives” needs to involve an analysis of the Konjunktiv (subjunctive) in German. Nobody, though, has ever proposed that the subjunctive should be analysed as “necessary consequence, presented as subjective” plus “implicit non-reality”: though the latter formulation is perhaps relevant to an account of the German subjunctive, recall that this is supposed to be expressed by the past tense in English, not by SHOULD.

Let us now return to the other facts about SHOULD and MUST listed in section 2 above, in the light of contrastive data where possible. The fact that epistemic MUST cannot refer to the future is analysed by Groefsema as following automatically from its meaning: she argues that MUST involves all the relevant evidence, and that one can never have all the evidence to entail an event in the future (1995: 72). As we have seen in (23), German MÜSSEN can be used epistemically in a similar way to MUST, but MÜSSEN can refer to the future, as in this example:

68. Aber Bester, schnaufen Sie nicht so stark, oder die Bienen und Schmetterlinge
 [[müssen]] verhungern über den ungeheuren Prisen, die Sie aus den Blumen ziehen.
 69. But, my dear fellow, do not snort so. Your monstrous sniffing will empty the flowers,
 and the bees and the butterflies will starve. [FICTION\GERFICT]

Notice that the English translator avoids using MUST here, perhaps because of the restriction on using epistemic MUST for the future. Again, this casts doubt on the ability of Groefsema’s framework to be extended beyond English.

Groefsema also argues (1995: 68) that the subjective part of deontic MUST also derives from the fact that it refers to all the evidence – including the will of the speaker. She contrasts this with HAVE TO, which does not have this subjective element. Apart from the fact that she does not indicate what the basic sense of HAVE TO might be, this leaves Groefsema no way to account for the subjective element in the meaning of SHOULD, which Larreya & Rivière rightly allude to (in contrast with OUGHT TO). A general conclusion about Groefsema, then, is that her analysis of MUST in terms of “all the relevant evidence” tries to make too much of the behaviour of MUST follow from the word “all”.

The main problem with Larreya & Rivière, on the other hand, is the way they treat certain modals as always subjective and others as always neutral. Although this distinction is surely needed somewhere within a framework for analysing modality, it cannot be transferred directly to German: the simple fact that we have found just about every German modal just in translation equivalents of SHOULD and MUST argues against simply saying that certain German modals are always subjective and others always neutral. This in turn casts doubt on the way they use the distinction for English.

Let us return finally to Rivière's problem, the key sentence in which is (17), repeated here:

(17) *You know Professor Fen, you should live in Oxford then. [*OK in deontic sense*].

Rivière notes that in this example, the speaker asserts the consequence and infers the cause, a stronger inference than one from cause to consequence. Both the frameworks discussed here capture the way in which SHOULD is "weaker" than MUST, but neither of them can explain why the inference in (17) is too strong to allow probability / logical inference SHOULD – especially as MAY is perfectly possible here. The conclusion, it seems, is that any attempt to treat SHOULD and MUST in a similar way is misconceived, since SHOULD does not have straightforward epistemic uses in the way that MUST and MAY do. Instead, SHOULD has to be treated as standing outside the core modal system. This conclusion is more in the spirit of Larreya & Rivière than of Groefsema, who tries to find a place for SHOULD in a neat system. The framework of Larreya & Rivière is less systematic, but if we are right then that is an advantage in dealing with the English facts, and probably for cross-linguistic purposes too.

6. Conclusions

We have found that a contrastive approach poses a severe test for monolingual analyses of English modals. By taking two frameworks proposed for English, and then trying to apply them to German data, we have highlighted strengths and weaknesses of each framework in new ways. We tentatively concluded that the analysis of Larreya & Rivière had fewer disadvantages than that of Groefsema, though both have problems in handling some of the German equivalents of SHOULD, and neither framework solved what we have called "Rivière's problem".

In future work we shall apply the contrastive approach in the opposite direction, and look at other modals and other theoretical frameworks. Although the goal of a rigorous, cross-linguistically valid framework for modality remains elusive, we hope that the value of a contrastive approach has been demonstrated.

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Corpus texts

Each text has an indication of its genre, followed by its specific name.

Genre	Text
COMPS – company reports FICTION INTORGS – international organisations MISC – miscellaneous NEWS POLITICS	CONSTS – Constitutions of Germany, Switzerland and Austria DICKENS – <i>A Christmas Carol</i> ESPRIT – EU document GERFICT – Extracts from Büchner & Kafka HERZOG – speeches by the former president of the BRD HOECHST – report from the Hoechst web site MANIFESTO – Marx-Engels, <i>Communist Manifesto</i> NEWAP96 – Short German news items from the WWW SAPMAN – Manual for employees of software company SIEBS – History of the Siebenbürger Sachsen TAUGEN – Eichendorff, <i>Aus dem Leben eines Taugenichts</i> UN – reports from the United Nations

¹ The German version of this recommendation reads as follows:

"Soll" wird im Deutschen nicht eindeutig ausgelegt (eher "muß" oder eher "sollte" oder irgendwo dazwischen?). Damit keine Mißverständnisse entstehen, ist "soll" deshalb in Normen zu vermeiden. "Should" ist immer mit "sollte" zu übersetzen und "shall" mit "muß".

Notice that the German equivalent here of *should be avoided* is "ist ... zu vermeiden", despite the advice that "*should* must always be translated by *sollte*"; and *must ... be translated* corresponds likewise to "ist ... zu übersetzen", thus using the same equivalent for MUST as for SHOULD.

² The assumption that most grammatical items have a single meaning or "sens de base" is a common one in French studies of English grammar. Cf. Salkie (to appear) for discussion.

Although Larreya & Rivière (1999) is a textbook, as the title suggests it enters into extensive theoretical discussion at various points. The analysis of modals in the book is typical of many by French linguists, and it is presented with admirable clarity and at some length, combining descriptive detail with theoretical argument, so comparing it with a research paper such as Groefsema (1995) is not unreasonable.

³ Many grammarians now agree with Larreya & Rivière in taking the future time use of WILL as just one of a number of uses of this word, which is treated as basically modal. Huddleston (1995) gives extensive arguments for this position; compare, however, Declerck (1991: 10-13) for contrary arguments.

⁴ The examples were sorted alphabetically by the first word to the left, and the first 100 examples were then selected. This produced a more varied list than a sort by first word to the right, where all the examples of *must be* or *must have* appear together. Only one cluster of examples where the word before *should* was *government* appeared. The sample was thus not entirely random, though nearly so.

⁵ The choice of present or past tense in German is complicated in cases like (63) which includes indirect reported speech: in this example, *sollen* is perhaps a Konjunktiv I, chosen in order not to distance the reporter too radically from the content of what is reported (compare example (51) in this respect).