French *wh*-in-situ
Questions and Syntactic Optionality:
Evidence from Three Data Types[1]

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Abstract

The aim of this paper is to corroborate the assumption of syntactic optionality for French wh-questions. In terms of a broader basis of evidence three different data types are utilized: Firstly, a qualitative interview approach suggests that wh-in-situ does not show the syntactic restrictions postulated by Bošković (1998) and Cheng & Rooryck (2000), weakening the evidence in favor of the assumption of LF-movement. Secondly, a graded grammaticality judgment test reveals that even in terms of fine nuances an identical level of grammaticality exists between the wh-in-situ form and its counterpart with wh-movement. Given the fact that several crucial judgments in the literature on French wh-in-situ are doubtful, these approaches turn out to be particularly helpful for controlling undesirable interferences in the judgment process and for obtaining more reliable data. Thirdly, a reading time study shows that both variants have the same cognitive complexity in processing. These empirical studies come along with methodological work concerning the development and evaluation of the instruments. From a conceptual point of view the inherent contradiction to which optionality and economy lead within the minimalist framework will be addressed. I will largely follow the suggestion of Haider & Rosengren (2003), who assume optional movement to be exploited at the interface level of syntax. Concerning the latter, I point out that different registers partly correlate with different French wh-questions.

Keywords: wh-in-situ, optionality, linguistic methodology

1.   French *wh*-questions and the problem of optionality

A particular characteristic of French interrogative sentences consists in the number of possible word order variants. (1a,b) and (2a,b) show, for example, four different ways to construct a sentence like "Where do you go?" (cf. Behnstedt 1973: 209 for a more exhaustive list).

(1) a. *Tu vas où?*
    you go where

  b. *Où tu vas?*
    where you go

(2) a. *Où vas- tu?*
    where go   you

  b. *Où est-ce que tu vas?*
    where EST-CE QUE you go

This paper will only deal with two word order variants, namely the in-situ-construction (1a) and the *wh*-extraction (1b), without additional inversion and without the element *est-ce que*. Echo-questions are generally excluded from consideration.

1.1.   The view of Bošković (1998) and Cheng & Rooryck (2000)

A critical discussion of two different theoretical approaches to the phenomenon of word order variants in French *wh*-questions will be presented below. The first one has been proposed by Bošković (1998), the second one by Cheng & Rooryck (2000). Both analyses have in common the assumption of LF-movement, by which licensing is supposed to take place. The presumed LF-movement is based on their assumption that, by contrast to *wh*-extraction, French *wh*-in-situ obeys several syntactic restrictions and shows particular interpretational and intonational characteristics. Both analyses state (i) a restriction of *wh*-in-situ to matrix clauses and (ii) its ungrammaticality in negated structures. Cheng & Rooryck (2000) assume, in addition that (iii) *wh*-in-situ is precluded from sentences with modals, (iv) *wh*-in-situ is precluded from sentences with quantifiers, (v) questions with *wh*-in-situ have a different interpretation from questions with overt *wh*-extraction, and (vi) *wh*-in-situ questions have a special yes/no intonation morpheme in the numeration, which is absent in questions with overt *wh*-extraction.[2]

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2. Cheng & Rooryck (2000: 11) refer to Chang (1997: 17, 19) for the assumptions (ii), (iii), (iv) and (v).

Bošković (1998) argues that the presumed restrictions (i) and (ii) follow from LF-movement, which he assumes to be more local than overt movement. Since he assumes LF- movement of a *wh*-element to be movement to an A'-head position (C), it is blocked by A'-heads C and Neg (even in the contexts in which they do not block overt *wh*-movement). However, it is not blocked by A-heads V and INFL. In his framework, movement is subject to head-movement restriction. It is blocked by intervening A'-heads (such as C and Neg). French *wh*-in-situ does not have to move in overt syntax because C with a strong +*wh*-feature is inserted at LF. This triggers LF-movement in order to check the strong +*wh*-feature. Bošković (1998) tries to account for the fact that *wh*-elements do not move in overt syntax by the late insertion of this C.

Cheng & Rooryck (2000) propose that in situ *wh*-questions have the same intonation as yes/no-questions. They conclude that this intonation is represented by a yes/no intonation morpheme in overt syntax. This intonation Q-morpheme is inserted in the numeration and licenses *wh*-in-situ by checking the Q-feature in C^0. Since the *wh*-element is in situ, it can obviously not check the Q-feature in C^0 (there is no *wh*-particle either, which might have taken this function, as it is assumed for example in Chinese or Japanese, cf. Cheng 1991). According to Cheng & Rooryck (2000) there is no need for movement for feature-checking purposes, given that verification is carried out by the intonation morpheme. However, they suggest that this intonation Q-morpheme is underspecified in French in overt syntax. Within their approach, it can either take the value [Q: *yes/no*] or [Q: *wh*] or [Q:], the latter appears with underspecified interrogatives which they assume to be the case with *wh*-in-situ questions. The underspecified value receives at LF the value [yes/no] as a result of a default operation. However, this would yield an illegitimate interpretation of in situ *wh*-words. Therefore, the authors argue that the underspecification of the intonation Q-morpheme is resolved for *wh*-in-situ by movement of the *wh*-feature to C^0 at LF, where the intonation morpheme Q receives the value [*wh*].

They account for (i), the presumed restriction of *wh*-in-situ to matrix clauses, by postulating that the intonation Q-morpheme is a root morpheme, which can only appear in matrix clauses and only have matrix scope. They also derive the presumed restrictions (ii), (iii) and (iv) concerning negation, modals and quantifiers from the presence of the underspecified Q-morpheme which triggers *wh*-feature movement at LF. This feature movement at LF is supposed to be sensitive to intervention effects from the type assumed, for example, by Beck (1996) in German multiple *wh*-questions.

These assumptions, especially assumption (vi), prompt Cheng & Rooryck (2000: 17) to conclude that in French optionality is only apparent.

The relevant difference is supposed to consist in the presence or absence of the yes/no intonation morpheme in the syntactic representation. I consider this conclusion doubtful from two different points of view: firstly, it can be questioned whether the optionality hypothesis would have had any likelihood in their line of argument in the sense presented under (iii) of section 1.2. Secondly, data obtained in an empirical field study show a different picture regarding the descriptive distribution. On this ground, the presumed restrictions (i) to (vi) will be discussed one by one.

I will illustrate that *wh*-in-situ does not show the differences stated under (i) to (vi). Thus, regardless of the conceptual suggestions to be made in section 1.2, the conclusion Cheng & Rooryck (2000) draw against optionality is weak from an empirical point of view. Given the data, no conclusive evidence for the assumption of LF-movement can be drawn. This analysis supports the intuitive view on *wh*-questions in French as optional variants of the same structure.

1.2.   Some conceptual arguments in favor of syntactic optionality

A first observation important to the scope of the discussion concerns a certain vagueness as to the question how to define syntactic optionality and on which empirical criteria the decision in favor or against optionality should be based.

On the one hand, there are approaches in which the syntactic *representation* is the center of attention. The (often implicit) empirical criterion for syntactic optionality consists in the identity of the syntactic representations. Seen from this point of view, any difference in the syntactic representations, regardless of their type, falsifies the optionality hypothesis. One example for such an approach are to be found in the work of Bošković (1998). He suggests a strong +*wh*-feature in overt syntax for French *wh*-extraction in contrast to French *wh*-in-situ, for which he postulates the insertion of a strong +*wh*-feature at LF.[3] Another example is Cheng & Rooryck's (2000: 17) assumption of an underspecified intonation morpheme Q in the numeration of *wh*-in-situ constructions, which is absent in questions with *wh*-extraction. "In French, *wh*-words can un-

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3. One should bear in mind that Bošković (1998) does not address explicitly the question of optionality. However, his approach has been interpreted as an implicit argument against optionality, as one can read in Etxepare & Uribe-Etxebarria (2000: 6): "Bošković [1998] and Cheng & Rooryck 2000 try to account for the apparent optionality in the movement of *wh*-elements in French within minimalism." This interpretation of Bošković' work may have been favored by a certain consistency with the analysis of Cheng & Rooryck.

dergo *wh*-movement or stay in situ. Given our analysis, optionality is only apparent. That is, it is not the case that *wh*-words optionally stay in situ or optionally undergo movement. Instead, the apparent optionality rests upon whether or not the yes/no intonation morpheme is in the numeration."

On the other hand, there are approaches in which the syntactic representation is *not* an empirical criterion for syntactic optionality. Rather, the *choice* between different word orders, the option to change or not to change the base order, constitutes a phenomenological criterion in favor of optionality. Haider & Rosengren (2003: 250) write in the context of their optionality analysis of scrambling in German: "The surface order is related to the base order by antecedent-trace relations. Consequently, scrambling is allowed where syntax does not forbid it, with the base order as the default option. Viewed from this perspective, scrambling is necessarily optional in syntax."[4]

Certain assumptions, often made by authors who argue against the concept of syntactic optionality, are unsatisfying: (i) The assumption of two or more grammars in mind (e. g. Pollock 1998: 191) would firstly be an inelegant theoretical model with regard to explanatory power, and secondly would imply a fairly uneconomical cognitive architecture.[5] In his approach of *theoretical bilingualism* (TB) Roeper (1999) even explains variation of any kind by the assumption of various grammars: "Under TB, the notion of optionality can be eliminated. [...] Therefore one must postulate two grammars, even if they differ only in a single rule" (Roeper 1999: 170). (ii) The assumption that places optional movement out of syntax excludes important grammatical phenomenology from theoretical attempts. Chomsky (1995: 325) writes about phenomena like extraposition, scrambling and other "rearrangements": "They may not really belong to the system we are discussing here as we keep closely to [...]

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4. Furthermore, Haider & Rosengren (2003: 211) emphasise the advantages of a representational grammar model compared to the derivational view in the minimalist framework: "Scrambling in the representational view is the need to project a gap (that is, a trace) for an XP encountered in the licensing domain of the head in a position not conforming to the base order determined by the head. In the derivational view endorsed by Minimalism, scrambling requires the counterintuitive assumption of multiple mergers of a given argument. In this view, it would therefore be legitimate to ask whether an argument could be merged *more* than twice (viz., iterated scrambling). This question does not arise in the representational view. There is only the distinction between base order and non-base order."

5. Pollock (1998: 191) states concerning the word order variants of French *wh*-questions that "the description of these facts will rely on an idea [...] proposing that the internal language of Francophones is not homogeneous" (translation: A. Adli). He points out that he prefers the assumption of several grammars in mind ($L1_1$, $L1_2$, ..., $L1_x$) to the assumption of syntactic optionality (conversation, Paris, September 2000).

movement driven by feature checking within the N → λ computation." This position does however not prove that these phenomena are out of the scope of the grammar system, but rather that they are beyond the capacity of explanation of the theory. (iii) The assumption that identity between the syntactic representations is a necessary condition does in effect give nearly no likelihood to the hypothesis of optionality. The attempt to reject syntactic optionality on the basis of different syntactic representations becomes fairly trivial when at the same time differences in overt syntax are accounted for in terms of different representations.

In contrast with the preceding positions, I assume that it is useful and reasonable to have a theoretical concept which describes within a single internal language/grammar this phenomenology of word order variants. It would help to understand, on the one hand that we can find a "direct relation" between different word order variants in the sense that a speaker has the possibility to choose, and, on the other hand that these word order variants have different non-syntactic characteristics or functions.

One of the most intricate aspects in the discussion on syntactic optionality is the issue of semantic equivalence or parallelism. It seems intuitively obvious that the concept of structural variants has to come along with some semantic criterion. Haider & Rosengren (2003: 238) analyze German sentences with scrambling and their counterparts with canonical word order as optional variants, emphasizing, however, that differences emerge at the interface between syntax and semantics/pragmatics: An existential reading is not available any more for a DP scrambled out of the minimal (non-extended) V-projection, called by the authors *minimal argument projection complex*. This issue might be better understood by glancing at another linguistic subfield with a comparable problem, namely variationist sociolinguistics. There, any attempt to express in a more precise way the intuitive definition of the linguistic variable (cf. Labov 1963), i.e. "alternative ways to say the same thing" correlating with other (often social) factors, encounters this difficulty. This also has been stated by Winford (1996: 184): "The major problem here seems to be the lack of any clearly articulated set of principles for deciding semantic equivalence in sociolinguistic research". However, it's up to future research to propose more accurate solutions.

The notion of syntactic optionality creates inherent contradictions within the minimalist framework and its principle of Economy of Derivation. This inconsistency does, however, not lessen the whole purpose of the concept of optionality, neither does it constitute an argument against it. Chomsky (1991: 433) himself states: "Notice that this approach tends to eliminate the possibility of optionality in derivation. Choice points will be allowable only if the resulting derivations are all minimal in cost

[…] This may well be too strong a conclusion, raising a problem for the entire approach."

A proposal made by Poole (1996), which I, however, shall not follow below, uses the distinction between *Move α*, which can be applied in an iterative manner, and *Form Chain*, which creates a chain "in a single step" in order to achieve a partial integration of optionality in a syntax model based on Economy of Derivation. He suggests that two types of movement exist: a non-chain-forming and a chain-forming movement, synonymous with optional and obligatory movement. The first is taken to be the result of the sole application of *Move α*, to be cost-free, to be "reconstructed" at LF and to correspond to the operation in work in optional movement. An optional movement, i. e. an application of *Move α* without *Form Chain*, should therefore be as economical as the corresponding derivation with an element in situ. The second type of movement is supposed to be the application of both *Move α* and *Form Chain*, to be costly, to be interpreted at LF and to correspond to the operation at work in obligatory movement.

One weakness of Poole's (1996) idea is that optionality can only exist for those word order variants in which the element in question is interpreted and licensed in its base position, i. e. the in situ variant must not require LF-movement for interpretation or feature-checking purposes. Note that this assumption follows from his attempt to integrate optionality and Economy of Derivation in one theoretical model and not from any inherent property of syntactic optionality itself. It would be a different situation if one no longer considered derivational economy as an absolute requirement. This is the direction adopted by Haider & Rosengren's (2003: 86): "[Optionality] may be a problem for theories which adopt an economy axiom to the extent of counting steps in a derivation. Derivational economy is a viable hypothesis, but it is far from self-evident that human grammars should embody this constraint since there is no limiting resource to plausibly base such an economy notion on."

Given the data to be presented in detail in the following sections, I favor an analysis of French *wh*-in-situ without LF-movement, interpreted by means of choice functions along the lines of Reinhart (1998).

1.3.   The colloquial character of *wh*-in-situ questions

French is a language with relatively pronounced differences between the spoken and the written variety and between numerous speech registers. This aspect also has consequences for the methodology of the survey. *Wh*-in-situ questions in French are restricted to colloquial language.[6]

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6. Coveney (1996: 98) concludes after reviewing traditional grammars that an important property of the *wh*-in-situ variant consists in the feature *familier*. Behnstedt (1973) and Valdman (1968: 5) hold the same view. Söll (1985: 147) differs on this point. He raises

They have a lower value on the diaphasic dimension than the *wh*-variants with overt *wh*-movement. At the same time normative considerations are very pronounced in France coming along with an explicit knowledge about the different registers and the different stylistic values. Armstrong (2001: 133) refers to "[...] still highly normative and formal teaching methods employed in French schools to teach the language; these methods of course promote the standard morpho-syntax of French." Comments like those of Doppagne (1966: 166), who qualifies most interrogative forms without inversion (apart from the *est-ce que*-construction) as "ghastly" (*horreurs*) and "plebeian forms" (*formes plébéiennes*) point up this normative aspect often coming along with social judgments.

Koch & Oesterreicher (1990: 10−11) note the following general properties of the spoken variety: (i) Spoken language has a low degree of general cognitive planning and elaboration, which also affects syntactic complexity (but see Blanche-Benveniste 1997: 58−60 for a different view),[7] (ii) it requires a high degree of contextual support, and (iii), the distinction between spoken and written language is considered as one dimension of variation correlating, in terms of the framework of Coseriu (1969), with the three synchronic dimensions *diatopic, diastratic* and *diaphasic* variation.[8] A variationist perspective points out an important characteristic of *wh*-in-situ questions in French: this construction is marked [low] on the diaphasic dimension. *Wh*-in-situ is a phenomenon restricted to the colloquial *français familier* (or to a lower register like *français populaire*) and is therefore also precluded from written language.

The aim of the present work is to study syntactic optionality using reliable grammaticality judgments (this issue will be further developed in section 3.1.). Given the complexity of the grammatical phenomenon of French *wh*-in-situ, interacting with several pragmatic parameters, I opted for an empirical strategy based on methodological *triangulation* (cf. Flick 2000). This approach consists of the use of different, complementary methods which focus on the same phenomenon or on different aspects of the same phenomenon in order to obtain a more complete understanding of the issue. It includes the possibility of combining qualitative

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the question as to whether this construction "should not already be considered as *parlé* irrespective of its restricted conditions of use" [translation: A. Adli]. However, I do not understand his objection since the "restricted conditions of use" to which the author refers are nothing other than the conditions of use coming along with the low value on the diaphasic axis.

7. Syntactic complexity has to be understood here in a rather pre-theoretic and intuitive way.

8. Roughly speaking, diatopic variation describes regional differences (dialects), diastratic variation describes differences with regard to the social class or group, and diaphasic variation describes different styles or registers used according to the situation.

and quantitative research methods (cf. Kelle & Erzberger 2000). I applied a qualitative interview technique in order to investigate the restrictions for *wh*-in-situ postulated by Bošković (1998) and by Cheng & Rooryck (2000). Furthermore, I applied two quantitative, experimental methods, namely a graded grammaticality judgment test and a reading time study, in order to compare graded grammaticality values as well as the cognitive processing of constructions with *wh*-in-situ and *wh*-movement.

One terminological note needs to be provided: although there may be rare cases (e. g. long sentences with a highly recursive structure of embedding, cf. footnote 11) in which one can reasonably argue in favor of a distinction between grammaticality and acceptability, I use both concepts nearly in a synonymous way. I act on the assumption that grammaticality can be measured and that this measure corresponds, at least for the constructions I deal with in the present work, to acceptability − as long as the judgments are not distorted by interference with such extra-grammatical factors mentioned in section 2.1.

2. French *wh*-in-situ and the issue of LF-movement

In this section I will first introduce the methodology of qualitative interviews and then discuss, one by one, the distributional restrictions claimed by Bošković (1998) and Cheng & Rooryck (2000), cf. (i) to (vi) in section 1.1; a discussion based on new data. I will show a divergent picture with regard to the descriptive distribution. Referring to data from relative clauses and from embedded questions, I will show that this state of affairs remains complex. Nevertheless, far fewer syntactic and semantic differences between *wh*-in-situ and moved *wh* exist than has been suggested so far, thereby weakening the basis of evidence for LF-movement.

2.1.   A linguistic survey based on a qualitative interview

I carried out a qualitative interview, namely the guided interview technique (cf. Flick 1995), with 20 French native speakers, mainly students, at the university of Paris Jussieu. Their age ranged between 18 and 30 years (mean age: 24 years). The interviews lasted between 20 and 45 minutes, depending on the depth of the conversation.

Procedure:

The contact started with an instruction in which the project was presented as a research on colloquial French and the every-day linguistic behavior of people. Its purported aim was to clarify a controversy among grammarians. Subjects were told to rate the grammaticality of each sen-

tence on a 7-point rating scale. They were instructed not to base their judgments on other linguistic or non-linguistic aspects (e. g. the plausibility of the described situation). In addition, they were made aware of echo-interpretations having to be excluded from their consideration. The interviewees were encouraged to give detailed verbal explanations for each choice. These explanations could develop to in-depth and informative conversations. The scale should help them mainly to take into account subtle nuances in their considerations and for their verbal explanations.

The interviewees should try not to draw their judgments on the *bon français,* i. e. they should try not to be influenced by prescriptive rules. Rather, they should tell what they would actually say and what they are accustomed to hearing in terms of colloquial language. In order to help them with the abstract and unusual task of judging the grammaticality of a given construction, they were told to imagine a private meeting with friends of the same age in a relaxed atmosphere without the presence of any person requiring the use of a higher speech register, or particular efforts of politeness. They should then judge if they could imagine producing such a sentence and if they would be surprised to hear it used by others. The interview was guided by the order of the sentences on the questionnaire. Each sentence was read aloud by the interviewer and was embedded in an appropriate context.

Choice of the method:

The following reasons suggest that the qualitative interview is an appropriate methodological approach for investigating the issue of the presumed restrictions on French *wh*-in-situ:

(i) The *wh*-in-situ construction is an exclusively colloquial phenomenon. The interview form allows the establishment of a close relation between the method of survey and the characteristics of the research object. Artifacts due to the interference of spoken and written language could therefore be minimized.

(ii) Since the *wh*-in-situ construction is marked [low] on the diaphasic dimension − for some persons it is also marked [low] on the diastratic dimension − judgments are sensitive to distortions due to *social desirability.* This phenomenon has been amply discussed in empirical methodology (e. g. Edwards 1957). In the linguistic domain, social desirability causes responses oriented on the prescriptive norm. In French, this corresponds to a speech register accepted in written language, for example *français cultivé.* The interview situation enabled the interviewer to point out in a clear and constant manner that the topic focused on spoken

language, more precisely on *français familier.* If the impression was evoked that social desirability was still influencing the responses, additional efforts were made to counteract this.[9]

(iii) Elaborate and complex expressions in French require a higher speech register. On grounds of methodological care, it is reasonable to consider in the planning of the data collection a possible correlation between this general aspect of cognitive complexity and grammatical elements, like quantifiers, embedding, etc. Van Kleeck (1982) concludes that sentence length and complexity have an effect on grammaticality judgments. Schütze (1996: 164) extends this claim assuming that "any other factors that might make a sentence hard to parse" affect the judgment. Such a correlation also seemed to have motivated the following claim of one interviewee concerning the use of quantifiers in interrogatives: "If there are sentences that one is not used to saying, one would rather say them in a better French."[10] Though this hypothesis still requires further empirical verification and more precise formulation, the possibility of disturbing interferences with the norms of the register of *français familier* should be, however, taken into consideration.[11] The adopted qualitative interview approach made it possible for the interviewer to ask subsequent questions at critical or particularly sensitive moments and therefore permitted a higher degree of understanding which judgments of the interviewee were due to purely grammatical aspects and which were due to pragmatic.

(iv) The contextual support is crucial for some constructions under study. One should bear in mind that the context does not only consist of the adjacent sentences but of a whole situation in a broad sense (cf. the arguments in Schütze 1996: 153 in favor of an appropriate context for grammaticality judgments). In a interview situation the context can be built up in a more efficient manner compared to purely written instruc-

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9. To a certain extent, the methodological challenges pointed out in (i) and (ii) can also be dealt with under standardized laboratory conditions using a thorough instruction and training (cf. section 3, cf. also footnote 26).
10. The original quotation reads as follows: "S'il y a des phrases qu'on n'a pas l'habitude de dire, on les dit plutôt dans un meilleur français."
11. Discussing the phenomenon of grammaticality without acceptability, Sternefeld (1998a) points out that complexity is an important aspect of acceptability. He argues that cognitive complexity does not only depend on syntactic complexity, e. g. the number of nested or embedded elements, but also on logical complexity. He points out that probably nobody understands immediately sentence (A) because of the accumulation of words with an (explicit or implicit) negative meaning. The recursive computation of the truth conditions usually reveals the opposite meaning to the first interpretation.
    (A) I by no means wish to deny that I could not disagree with you less.

tions. Furthermore, section 2.3 will bring forward arguments showing that the necessary contextual support cannot be simply attributed to Pesetsky's (1987) notion of D-Linking.

Method of analysis:

In line with the hermeneutical foundation of qualitative methodology, a primary interpretation of the data has been carried out simultaneously with the survey. This enabled a progressive orientation of the data collection process to the emerging core of the theoretical problem (cf. Flick 2000: 258). Issues identified after several interviews as obviously unproblematic, e. g. *wh*-in-situ questions in embedded *que*-sentences, were excluded from subsequent interviews. On the other hand, time and attention increased for those issues supposed to be more complex. Therefore, the number of subjects varies accordingly.

The results were analyzed for each person based on the answer on the 7-point rating scale as well as on verbal explanations stated during the conversation, which had been taken down in form of notes. Both types of material, numerical and verbal, were interpreted with regard to the category "grammaticality" (cf. Flick 1995: 196 ff. for further methodological details). One aspect of the interpretation process consisted in a binary categorization of grammaticality. Given that I consider grammaticality to be a continuous measure (cf. section 3), one aspect of the interpretation process consisted of a categorization in binary terms, in order to be able to express a distinction between well-formed and ill-formed sentences. Such an information is still − for theory-internal reasons − important.[12] Given that the research topic is susceptible to interferences, the verbal interview data could sometimes reveal important artifacts in the first numerical judgment and therefore lead to more appropriate interpretations.

For the overall interpretation of the study, the sample was divided into a *primary selection*, consisting of 7 persons, and a *secondary selection*, consisting of 13 persons (cf. Morse 1994 for more details concerning this sampling aspect in qualitative methodology). Interviewees who showed

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12. The numerical and the verbal material collected from the interviewee is essentially based on a graded notion of grammaticality. An important aspect of this qualitative approach consists of the fact that the binary categorization of grammaticality is carried out by the interviewer (and not by the interviewee) in the scope of a systematic interpretation procedure in which possible interferences by extra-grammatical factors are identified, weighted, and "filtered out" as much as possible. One could also say that the researcher is a super-instance who, in a certain sense, judges the judgments of the informants. Therefore, the interpretation process is not an intuitive application of a mapping function simply projecting the metrical value on a dichotomous scale.

particular capacities in focusing on the grammaticality of sentences, in imagining the appropriate context, and who showed visible efforts to reduce interferences, in order to form subtle judgments were placed in the primary selection. At the same time the interviews with these persons could be carried out in a more intense way. The judgments of the primary selection had a higher weight in the interpretation of the study.[13]

2.2.   *Wh*-in-situ in embedded sentences

Bošković (1998) as well as Cheng & Rooryck (2000) assume that *wh*-in-situ is restricted to matrix clauses.

(3)   **Jean et   Pierre croient que Marie a   vu   qui?*
         Jean   and Pierre believe that Marie has seen whom
                                    (according to Bošković 1998: 46)

(4)   **Marie pense que Jean a   acheté quoi?*
         Marie   thinks that Jean has bought what
                                    (according to Cheng & Rooryck 2000: 12)

However, we already find contrary judgments in Pollock (1998: 189), who considers (5a) and (5b) grammatical. Starke (2001: 51−53) also considers such constructions as felicitous.

(5)   a.   *Tu crois   que Jean a   acheté quel livre?*
               you believe that Jean has bought which book

         b.   *Tu penses que Jean va épouser qui finalement?*
               you think   that Jean will marry   who in the end

In order to obtain a sound empirical basis concerning this visible data mismatch, the first five interviewees were asked to judge (4) and (5a). They also judged (6a) and (6b).[14]

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13. The question to which extent results of qualitative research allow *exemplified generalization* (cf. Wahl, Honig & Gravenhorst 1982: 206 ff.) constitutes a methodological controversy (cf. Bortz & Döring 1995: 310 ff.). Certain phenomena, however, require qualitative methods, especially when in-depth interviews are necessary. In this sense, qualitative and quantitative approaches are considered as complementary.
14. (6a) was added in order to have a construction with a *wh*-adverb.

(6)   a.   *Tu crois   qu' il arrive   comment?*
      you believe that he arrives how

   b.   *Tu crois   que j'achète quoi?*
      you believe that I buy   what

Four out of five persons accepted these sentences and emphasized that
they often use *wh*-in-situ constructions in embedded sentences in collo-
quial language. Two interviewees even claimed that in colloquial lan-
guage they prefer this construction to synonymous constructions with
parenthetical expressions like (7). The person who did not accept *wh*-
in-situ in embedded sentences obviously did not base her judgment on
français familier.[15]

(7)   *D'après   toi, il arrive   comment?*
      according to you he arrives how

The importance of relying on judgments based on *français familier* is
also outlined by Starke (2001: 52), who wonders why *wh*-in-situ in em-
bedded *que*-sentences has been described by various authors as infelici-
tous although such constructions are not only grammatical but also rep-
resent the unmarked way to ask such questions (cf. also section 1.3
and 2.1 (iii)): "My best guess is that the more restrictive judgments cor-
respond to 'classical' written French, as opposed to the spoken French".
And he even adds: "I have however been unable to find a single speaker
of that dialect."

   We can therefore claim that, in contrast to the assumption of Bošković
(1998) and Cheng & Rooryck (2000), *wh*-in-situ in embedded sentences
is felicitous.

2.3.   *Wh*-in-situ and negation

Bošković (1998) and Cheng & Rooryck (2000) assume that *wh*-in-situ is
precluded from structures with negation. Cheng & Rooryck (2000) refer
to the judgments in Chang (1997).

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15. She suggested that she does in general not use *wh*-in-situ questions. She indicated that
    she prefers in general *wh*-questions with inversion. It is possible that one rarely uses
    wh-questions with inversion in spoken language (Koch & Oesterreicher 1990: 160 ex-
    clude this possibility). However, the claim of using mainly this construction in spoken
    language and never using the in-situ-construction suggests that influence from prescrip-
    tive linguistic norms or social desirability resulted in her judgment. Furthermore, this
    person belonged to the secondary selection.

(8)   **Il n' a   pas rencontré qui?*
        he NE has not met   who
        (according to Cheng & Rooryck 2000: 11 based on Chang
        1997: 19)

All the 20 persons were asked about the grammaticality of (8). In order
to give the necessary contextual support, cf. section 1.3 (ii) and 2.1 (iv),
the interviewees were told to imagine the following episode: the non-
linguistic context consists of a conversation about Jean between two
friends, A and B. Jean had lived in Paris before he left for another city
several years ago. He was a member of a soccer-club in Paris. The lin-
guistic context consists of the following utterance: A is telling B that
Jean came to Paris for a weekend in order to meet the players of his
former team. Unfortunately, he did not have enough time to see every-
one. At this point, B asks question (8). In order to take into account the
variation in *français familier* concerning the first negation element *ne*,
(8) was presented with and without *ne* (here reduced to *n'*).

   In addition, 16 interviewees were asked about negated modals. (9a, b)
use *wh*-NPs, (9c, d) *wh*-adverbs. These questions were also presented in
an appropriate context.

(9)   a.   *Il (ne) doit pas toucher qui?*
             he (NE) must not touch   who

        b.   *Il (ne) doit pas toucher quoi?*
             he (NE) must not touch   what

        c.   *Il (ne) peut pas aller où?*
             he (NE) can not go   where

        d.   *Il (ne) doit pas aller où?*
             he (NE) must not go   where

13 interviewees (65 %) considered (8) as acceptable, 7 persons (35 %) re-
jected this construction. (9a), (9b), (9c) and (9d) were accepted by all
asked persons. All the interviewees belonging to the primary selection
(cf. section 2.1) accepted negation in *wh*-in-situ constructions. The per-
sons who rejected sentence (8) all belonged to the secondary selection. I
therefore assume that the rejection of (8) by a minority of persons is not
due to grammatical reasons but due to critical interferences mentioned
in section 2.1. Prescriptive norms might have contributed to this behav-
ior. If NEG caused an intervention effect at LF, it would be difficult to
account for the 100 % acceptance of negated modals. Since all persons
accepted negation in (9a), (9b), (9c) and (9d), a majority accepted (8),

and the results are unambiguous for the primary selection, I conclude that *wh*-in-situ is allowed with negation.

One crucial claim here is that the necessity of an explicit context cannot be attributed to a *syntactic* operation, like the explanation of D-linking phenomena by Pesetsky (1987: 107−108). According to him, D-linked *wh*-elements, which would undergo LF-movement in the absence of D-linking, can, being unselectively binded by a Q-morpheme, "exceptionally" be interpreted in situ (they are assigned scope by coindexation with a c-commanding Q). Contrasting with such a syntactic account of Discourse-linking, I claim that a context is necessary in order to previously introduce the existential implicature of these interrogatives. This implicature draws a distinction between true *wh*-information questions and *wh*-echo-questions. In this regard, Reis (1990: 51) states that in true *wh*-information questions there is at least one element in the search space which closes the proposition with respect to x, i.e. a corresponding existential implicature with respect to x ($\exists xP[x]$). Comorovski (1996: 146) gives a precise account of the semantic/pragmatic condition to be fulfilled by interrogative constructions in order to be well-formed: they have to be *answerable* (cf. section 2.8 for further details on her notion of answerability).[16]

Givón (1978: 95) points out that many negated *wh*-questions are unacceptable when used as true information questions and that relatively complex contexts are required in order to interpret them as true information questions.[17]

(10)   a.   ?Where didn't you leave the keys?
        b.   ?When did John not arrive?
        c.   ?How fast did John not run?
        d.   ?How did he not do it?
        e.   ?With what didn't he cut the meat?

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16. Reinhart (1998: 38) expresses this view as follows: "I believe that D-linking, as well as many of the other instances of what is called 'presupposition' is a purely pragmatic notion which is not directly encoded into the computational system." I also refer to Featherston (2005) who interprets his experimental results in the sense that D-linking is not a syntactic mechanism stricto sensu but a general pragmatic factor improving grammaticality: His study shows that D-linking does not only improve the grammaticality of constructions subject to superiority, but also of multiple questions without superiority violation.
17. Concerning this topic, Coveney (1996: 166) states: "Negative questions are a particularly complex area, especially pragmatically, and their history in French has been the subject of considerable controversy."

In terms of Szabolcsi & Zwarts' (1993) semantic distinction between negative questions and their non-negated counterpart, we need to form the set of objects with which he cuts the meat, in order to answer (11), and we form the complement of this set in order to answer (10e).

(11)   With what did he cut the meat?

Comorovski (1996: 176) points out that in order for a negated constituent question to be answerable, i. e. in order to be able to form the complement of the set, we need to have knowledge of the *entire* set that the *wh*-phrase ranges over which requires an appropriate context.

   The necessity of a context has also been noticed by Meyer (2002: 168) in Czech. He points out that *wh*-in-situ can be used with negation, although only if a context like (12) is chosen in order to previously introduce the existential implicature of the question.

(12)   Marek je strašn roztržitý: Cokoliv mu řekneš, za deset minut si
         to už nepamatuje.
         'Marek is terribly absent-minded: Whatever you tell him, he
         doesn't remember even after ten minutes.'

   a.   *No to vím.   Co si   tentokrát zase*
         so that know-1.SG what REFL-DAT this time again
         nepamatoval?
         not-remembered
         'I know. What hasn't he remembered this time?'

   b.   *No to vím.   A   tentokrát si*
         so that know-1.SG and this time REFL-DAT
         nepamatoval   co?[18]
         not-remembered what

Yet if one still considered the grammaticality of (8) after contextual support as an instance of D-linking, one would owe an explanation to the island effect with relative clauses which persists even with a D-linking context, as will be shown in section 2.8 (see example (29)).

2.4.   *Wh*-in-situ and modals

Referring again to the judgments presented in Chang (1997), Cheng & Rooryck (2000) assume that modals are precluded from *wh*-in-situ constructions:

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18. Meyer (2002) rates the *wh*-in-situ construction as slightly suboptimal on his previously established five-point scale, i. e. he assigns it to the second-highest category.

(13)   *Il peut rencontrer qui?*
        he can meet   who
        (according to Cheng & Rooryck 2000: 11 based on Chang 1997)

16 interviewees were asked about *wh*-in-situ constructions with modals. In addition to (13), (14a) and (14b) were presented. (14a, b) focus on *wh*-adverbs with modals.

(14)   a.   *Il peut aller où?*
              he can go   where

        b.   *Il doit aller où?*
              he must go   where

All the interviewees accepted *wh*-in-situ with modals, whether with *wh*-adverbs or with *wh*-NPs. This is in line with the results of (9a−d) concerning negated modals. We can therefore conclude that modals are acceptable in *wh*-in-situ constructions.

2.5.   *Wh*-in-situ and quantifiers

Cheng & Rooryck (2000) assume that quantifiers are not acceptable in *wh*-in-situ constructions because they cause intervention effects on LF.[19] The sentences (15), (16a) and (16b) were presented to 13 interviewees.

(15)   *Plusieurs personnes ont   reconnu   qui?*
        several   persons   have recognized who

(16)   a.   *Plusieurs chênes ont été   coupés où?*
              several   oaks   have been cut   where

        b.   *Plusieurs chênes ont été   coupés quand?*
              several   oaks   have been cut   when

Necessary contextual support was given for each sentence. The context for (15) is detailed as an example. The interviewees were asked to imagine the following conversation between two friends, A and B: A is telling B about a trial where six persons were accused of a kidnapping.

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19. One of the examples in Cheng & Rooryck (2000: 11) based on Chang (1997), namely "Il admire toujours qui", is not a good example for a quantifier. *Toujours* is, firstly, a quantificational adverb ('always') and, secondly, often used in the sense of 'still', which is also the preferred reading for this sentence. It is interpreted as 'Whom does he still admire?' and not 'Whom does he always admire?'. This sentence, by the way, has been accepted by the interviewees.

Since all of them deny it, the burden of proof must rely heavily on the number of witnesses. During the trial five of the accused were recognized by only one witness, but one of the accused was recognized by several witnesses. At this point person B asks (15).

Eleven persons (85%) accepted *wh*-in-situ constructions with quantifiers; two persons (15%) did not accept it. Among the thirteen persons asked, four belonged to the primary selection. All of those accepted the *wh*-in-situ construction. I attribute the rejection by two persons to the sources of critical interference mentioned in section 2.1. I therefore conclude that quantifiers are allowed in *wh*-in-situ constructions.[20]

2.6.   The intonation of *wh*-in-situ questions

The main point in the argumentation of Cheng & Rooryck (2000) against syntactic optionality consists in the assumption of a special yes/no intonation morpheme in the numeration, which they suppose to be absent in sentences with overt *wh*-movement. Yes/no questions in French are marked by a rising intonation, which distinguishes them from the declarative structure having the same word order, cf. (18) vs. (19). Cheng & Rooryck (2000: 4) suppose that both *wh*-in-situ questions and yes/no questions have the same rising intonation contour, which they call *yes/ no intonation*, in contrast to the "nonrising intonation" of questions with *wh*-movement, which they call *wh-intonation*. They claim that *wh*-in-situ constructions without a rising intonation like (17) are ungrammatical.

(17)   *Jean a   acheté quoi?*
        Jean   has bought what − "nonrising intonation"
                        (according to Cheng & Rooryck 2000: 4)

They further suggest that the *yes/no intonation* is represented in overt syntax as an underspecified yes/no question morpheme in C which will be specified at LF by movement of the *wh*-feature in the way described in section 1.1.

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20. An open question for future empirical research remains the grammaticality status of *universal* quantifiers. According to Cheng & Rooryck (2000: 11) based on Chang (1997: 17) they are ungrammatical.

(i)   *Tous les étudiants ont   rencontré qui?*
       all   the students have met   who
            (according to Cheng & Rooryck 2000: 11 and according to Chang 1997: 17)

According to Baunaz (2005: 15), *wh*-in-situ with ∀QPs are felicitous if the *wh*-element comes along with a specific presupposition which she correlates with a fall-rise intonation. In her discussion French *wh*-in-situ can be either specific, range-based or non-presuppositional, depending on the intonational pattern.

However, the intonation contour of *wh*-in-situ questions is not identical with the contour of yes/no questions. *Wh*-in-situ questions are also perfectly acceptable without a rising intonation at the end. Indeed, the description of Cheng & Rooryck (2000) is not consistent with various studies on the intonation of French interrogatives − for instance Delattre (1966), Autesserre & Di Cristo (1972), Fónagy & Bérard (1973), Grundstrom (1973), Boë & Contini (1975), Rossi et al. (1981), Wunderli & Braselmann (1980), and Wunderli (1982, 1983, 1984). French declaratives, e. g. (18), show a final falling intonation, suggested by the symbol "\", contrasting with the rising intonation at the end of yes/no-questions, e. g. (19), suggested by the symbol "/".

(18)   *Jean a   acheté ce   vase\.*
       Jean has bought this vase

(19)   *Jean a   acheté ce   vase/?*

The *wh*-in-situ question (17), repeated as (20), shows in contrast to the assumption of Cheng & Rooryck (2000) two different possible intonation contours at the end of the sentence. The first one (contour 1) shows a rising intonation on the last syllable, the second one (contour 2) a falling intonation.[21]

(20)   *Jean a   acheté quoi?*
       Jean has bought what
       contour 1:   /
       contour 2:   \

The crucial point is that the intonation contour does usually not fall at the end of yes/no-questions (for a contrary point of view, see Grundstrom 1973), whereas this is possible at the end of *wh*-in-situ questions. The rising intonation is the distinctive feature of yes/no questions. This contrasts with *wh*-in-situ constructions which have a lexically realized cue for marking the question, i. e. the *wh*-element. Note that echo-questions are limited to contour 1. This property distinguishes them from true information questions which are well-formed with both contours, as is

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21. Even a distinction between two intonational patterns is a simplification of the intonational aspect of French *wh*-in-situ questions. However, this description is sufficient for the discussion and helps to concentrate on the core of the issue.

also pointed out by Di Cristo (1998: 205): "EPQs [= echo partial questions] are usually characterized by an overall high pitch and by a final rise similar to that of Yes/No questions for information."

The issue of the intonation has been studied in the scope of the qualitative interviews. Three interviewees were asked to produce the yes/no question (19) as well as the *wh*-in-situ question (20), and to describe the intonation contour. The intonation contours were sketched on a paper during the interview, in order to help subjects to give more accurate verbal descriptions. They were explicitly asked about the intonation at the end of the sentence. All three interviewees confirmed that yes/no questions have to be pronounced with a rising intonation on the last syllable, whereas *wh*-in-situ questions can end with a rising as well as with a falling intonation.

In addition, the intonation of *wh*-in-situ constructions with bisyllabic *wh*-elements of the '*quel* x' ('which x') type has been investigated. Five different interviewees were asked about the intonation of the yes/no question (19) and the *wh*-in-situ question (21a/b).

(21)   a.   *Jean a   acheté quel/   vase\?*
              Jean has bought which   vase

        b.   *Jean a   acheté quel(/) vase/?*

These results confirm the analysis of (20). All five persons asked pointed out that (19) obligatorily ends with a rising intonation, whereas the *wh*-in-situ question can either be produced with the falling contour (21a) or with the rising contour (21b). Note that echo questions cannot show the falling intonation, i. e. they are not felicitous with (21a).

These findings are in line with the results of Wunderli & Braselmann (1980), and Wunderli (1982, 1983) who showed by means of recordings that *wh*-in-situ questions occur with different intonation contours and that the form with rising intonation at the end is relatively rare. The assumption of an intonation morpheme in the syntactic representation of French *wh*-in-situ questions is discussed in Adli (2004b) in more detail: From the perspective of intonation phonology this idea is in principle compatible with the approach developed by Rossi (1999); however, I abandon the concrete proposal of Cheng & Rooryck (2000), partly due to the mentioned data.

I conclude that (true) *wh*-in-situ questions and yes/no questions have different intonation contours and that the assumption of a yes/no intonation morpheme made by Cheng & Rooryck (2000) is not consistent with the data.

2.7.   *Wh*-in-situ, interpretation and context

Referring to Chang (1997), Cheng & Rooryck (2000) assume that *wh*-in-situ questions have a significant property contrasting with *wh*-movement: the "strongly presupposed context". According to Chang (1997) this notion refers to an interpretation, in which "details on an already established (or presupposed) situation" are elicited. It is supposed to refer to a whole presupposed 'event' and not to be reducible to the notion of D-linking (Pesetsky 1987). Discussing the conversational fragment (22), Chang (1997) claims that the utterance of person A contains no salient element which could "fill in" the *wh*-element in the in situ question of person B. Rather, the situation of a birthday presupposes the intention of buying presents.

(22)   a.   C'est l'anniversaire de Pierre la semaine prochaine.
              'It's Pierre's birthday next week.'

       b.   *Et   tu   vas   lui   acheter* quoi*?*
              and you will for-him buy   what

Having pointed out in section 1.3 the characteristics of spoken language, it appears obvious that the "strongly presupposed context" is nothing specific to *wh*-in-situ. Rather, it can be concluded from the fact that *wh*-in-situ belongs to spoken language requiring a high degree of contextual support. Chang's (1997) notion of "strongly presupposed context" does not refer to elements which are beyond the scope of general contextualization of spoken language. French *wh*-in-situ questions can also be used at the very beginning of a conversation. In an informal situation of a spontaneous question asked in the street it is, for example, possible to ask a question like (23) to an unknown person. This example shows a situation in which no "strongly presupposed context" could have been built up.

(23)   *Pardon, il est quelle heure?*
         sorry   it is   which hour
         'Sorry, what's the time?'

In addition, questions with *wh*-movement produced in a context of spoken, colloquial language show the same characteristics described by the above mentioned notion of "strongly presupposed context". Furthermore, in this connection, *wh*-in-situ questions are not more or less neutral than questions with *wh*-movement. This misinterpretation underlines the necessity of considering the characteristics of spoken language in a

syntactic analysis of French *wh*-in-situ, in order not to confound pragmatic and syntactic elements. As Baunaz (2005: 12−14) points out, only those *wh*-in-situ questions produced with an intonation other than neutral come along with a particular semantics. I also claim that questions with *wh*-movement, which are uttered with a somehow special intonation (e. g. with accented downfall on the fronted *wh*-element), carry a particular presupposition, so that even in these cases there is no difference between the here discussed *wh*-variants.

2.8.   *Wh*-in-situ without LF-movement?

I have presented counterarguments for each of the six assumptions made by Bošković (1998) and Cheng & Rooryck (2000) and have concluded that the data do not support their views: *wh*-in-situ does not show syntactic restrictions with embedded *que*-sentences, negation, modals and quantifiers. Without these restrictions, available evidence in favor of the assumption of LF-movement has substantially shrunk. In addition, the assumption of an intonation Q-morpheme in the numeration of *wh*-in-situ constructions, constituting a core argument of Cheng & Rooryck (2000) against optionality, does not seem convincing. Finally, we could not find a basic a priori difference of interpretation between *wh*-in-situ and *wh*-movement in French with respect to context presupposition.

This analysis is consistent with the approach of Reinhart (1998), claiming that *wh*-in-situ is not moved at LF but interpreted in situ using choice functions. The interpretation of questions based on choice functions goes back to Engdahl (1980). This approach has been further developed by Reinhart (1998), and is particularly attractive for languages with *wh*-in-situ questions. Reinhart (1998: 34) assumes that an analysis without LF-movement is more consistent with the minimalist framework and accounts better for certain data: "It is clear that, conceptually, the analysis of *wh*-in-situ in the minimalist program is superior to previous analyses. Specifically, the syntactic evidence *against* LF-movement of *wh*-in-situ is much more compelling than the evidence for such movement." However, one should bear in mind that within an approach not relying on derivational economy one would not pay the same attention to this point. Reinhart (1998: 33) observes that subjacency violations at LF are as bad as subjacency violations in overt syntax. She further points out that *wh*-in-situ does not obey subjacency as is shown in (24a), in contrast with the syntactic movement in (24b). She rejects an explanation of this finding based on properties of LF movement, and assumes that *wh*-in-situ does not move.

(24)   a.   Who reads the books that who writes?
       b.   *Who do you read books that e writes?

According to her, a non-movement approach has to face − in addition to the issues of the interpretation of the *wh*-in-situ and the economy concept − the analysis of adverbial adjuncts. The restrictions with *wh*-adjuncts cannot be accounted for with the ECP in a non-movement analysis. Reinhart shows that the ECP cannot be responsible for the restrictions anyway since they do not concern *wh*-adjuncts in general but only adverbial adjuncts, as is shown by the difference between (25a) and (25b).

(25)   a.   *Who fainted when you behaved how?
       b.   Who fainted when you behaved what way?

She accounts for the restrictions for adverbial adjuncts by the mechanism of interpretation of choice functions. According to her approach, choice functions have to select an individual from a set. She points out that *wh*-adverbials, in contrast to *wh*-NPs, do not have an N-set and, furthermore, they denote functions ranging over higher-order entities. "This entails that they cannot be interpreted via choice functions selecting an individual from a set (since there is neither a variable that can be bound by forming a set nor a set of individuals that the choice function could apply to)" (Reinhart 1998: 45). This analysis, however, is not consistent with data from French *wh*-in-situ questions. *Wh*-adverbs are also allowed, as (6a), (9c), (9d), (14a), (14b), (16a) and (16b) show.[22] It is beyond the scope of this work to resolve this problem. I suggest, however, that choice functions do apply to *wh*-adverbials and that other mechanisms are responsible for the difference between (25a) and (25b).[23]

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22. Furthermore, it is not understandable why *how* should not be considered equivalent in meaning to *what way* if *who* is at the same time considered equivalent in meaning to *which person* (I owe this argument to a comment of Wolfgang Sternefeld).

23. One difference between the French data discussed in the present work and the English data presented by Reinhart (1998) is the opposition of simple vs. multiple questions. Comorovski (1996) shows that the semantics of multiple questions differs from the semantics of simple questions in one respect which is important to this discussion: there is a functional dependency between the *wh*-phrases of a multiple *wh*-question such that the common noun (CN) in the leftmost interrogative phrase provides the domain of the function denoted by the rightmost *wh*-phrase. The answer will specify the function "by scanning the *entire* set denoted by the CN in the sentence-initial interrogative phrase" (Comorovski 1996: 53). The wide-scope *wh*-phrase thus receives universal quantification. The sentence is then only answerable if the wide-scope *wh*-phrase is Discourse-linked.

In line with Reinhart (1998), Comorovski (1996) challenges the view that the *wh*-in-situ (or an empty operator associated with it as suggested by Watanabe 1992) has to move at LF for interpretation purposes. She firstly refers to Rudin (1988) who has pointed out that Romanian and Bulgarian, languages allowing long-distance multiple *wh*-movement, show restrictions on the order of *wh*-phrases which are strikingly similar to those observed in English superiority effects. As the following Bulgarian examples show, the subject *wh*-phrase has to come first. Any attempt to account for the superiority effect in the English example (27b) in terms of LF-movement restrictions could not apply to the Bulgarian example (26b) in which all *wh*-phrases are moved overtly.

(26)   a.   *Koj kogo   e vidjal?*
             who whom is seen
             'Who saw whom?'

        b.   **Kogo koj   e vidjal?*
             whom who is seen

(27)   a.   John knows who saw what.
        b.   *John knows what who saw.

Secondly, reporting her own surveys of grammaticality judgments with native speakers of Chinese and Korean, she challenges the widely accepted view according to which languages having the typological property of being "pure" *wh*-in-situ languages show LF intervention effects (mostly East-Asian languages have been quoted in the literature with respect to this discussion): "If conditions on movement do not constrain the scope of wh-in-situ even in languages that do not allow wh-movement, there isn't much motivation left for Watanabe's empty operator. Wh-phrases can always be interpreted in the position in which they actually occur, without the need of any extra machinery. But then, of course, there is not much difference between LF and surface structure representations of constituent questions" (Comorovski 1996: 90−91).

Comorovski's generalization of these findings consists in a simple semantic/pragmatic felicity condition according to which questions have to be answerable. Superiority violations and the "repair effect" of Discourse-linking can be derived from this condition without resorting to a LF-based mechanism: assuming that wide-scope *wh*-phrases in multiple constituent questions receive universal quantification (cf. also footnote 23), they are answerable if, and only if, the wide-scope *wh*-phrase ranges over a set of known membership. This makes it possible for the answerer to pair *every* individual in the set over which the wide-scope *wh*-element ranges with some individual in the set over which the narrow scope *wh*-

element ranges. The wide-scope *wh*-phrase has to be Discourse-linked with respect to this requirement.

In the scope of the discussion of *wh*-in-situ without LF-movement, there is one case in French that can appear problematic at first sight: the ungrammaticality of *wh*-in-situ in indirect questions introduced by *si* as in (28).[24]

(28)   *Je me   demande si Jean a   acheté quoi?*
        I   myself ask   if Jean has bought what

Even if it might seem that the ungrammaticality is simply due to the fact that the complementizer *si* does not select constituent questions but yes/no questions (cf. Pollock 1998: 42 on the selection of declaratives and interrogatives by the complementizer in French), one has to ask why the *wh*-in-situ element cannot take scope over the whole sentence. However, Comorovski's (1996: 160−174) account for the *wh*-island effect − the ungrammaticality resulting from the extraction of a (non-Discourse-linked) interrogative phrase out of an indirect *wh*-question − provides also an interesting insight into *wh*-in-situ in indirect yes/no questions in French. She essentially shows that the answerability condition on constituent questions also explains *wh*-island effects if this condition is extended by one requirement: the truth of the presuppositions of a constituent question has to be able to be checked. Applied to indirect yes/no questions in French, this assumption reveals that the existential presupposition of the *wh*-in-situ question in (28) cannot be checked for the simple fact that the *wh*-phrase is embedded in a yes/no question which precisely carries on the truth of the presupposition itself. Therefore, the very form of the structure makes it impossible for the hearer to check the truth of the existential presupposition − the question is not answerable.

However, one phenomenon remains for which I cannot propose yet a satisfying explanation in a non-LF-movement approach: the ungrammaticality of *wh*-in-situ in relative clauses as in (29) and (30).

(29)   *Jean aime le livre que qui a   écrit?*
        Jean   likes the book that who has written

(30)   *Jean aime le livre que Balzac a   écrit   où?*
        Jean   likes the book que Balzac has written where

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24. Note that there seems to exist a certain disagreement with respect to the grammaticality status of these structures in the literature. Baunaz (2005: 11) considers them as grammatical, however only if the *wh*-in-situ comes along with what she describes as a fall-rise intonation (see also footnote 20).

A more thorough look reveals that *wh*-questions are generally not felicitous in non-complement-clause in which only the echo-reading is admitted. *Wh*-questions thus are also ungrammatical in the adverbial sentences (31a) und (31b).

(31)   a.   **Jean est arrivé   quand Pierre a   rencontré qui?*
            Jean   is   arrived when Pierre has met   who

       b.   **Jean est arrivé   quand Pierre a   sonné où?*
            Jean   is   arrived when Pierre has rung where

This island phenomenon with adjunct clauses is already known from simple *wh*-questions in Chinese (cf. Huang 1982, 1995).

(32)   **ni zui   xihuan [weishenme mai shu   de   ren]?*
       you most like   why   buy book COMP person
       (cf. Huang 1995: 154)
       *'Why$_i$ do you like [the man who bought the books t_i]?'

If these data were interpreted as evidence in favor of LF-movement of *wh*-in-situ, it would be problematic to explain why (29) is ungrammatical in French whereas the English construction (24a) is grammatical. One possible − although not entirely satisfying − solution would be to assume that in French constructions like (29) the *wh*-element cannot be interpreted in situ, whereas it is possible in English constructions like (24a). Reinhart (1998: 44 ff.) has already claimed as concerns the contrast between adverbial and non-adverbial *wh*-adjuncts (see above) that choice-functions could not interpret all kind of in situ *wh*-elements.

Summing up, the consideration of this whole range of data shows that an analysis of French *wh*-in-situ without LF-movement is at present backed by a much broader ground of evidence than an analysis with LF-movement. I therefore consider *wh*-in-situ without LF-movement as the more plausible option.

3.   Experimental evidence

In order to understand the phenomenon of syntactic optionality more completely and to draw the conclusions on a broader empirical basis, this work also uses two experimental methods. The strategy of this work consists in the use of various data types with their respective theoretical meaning. Thus, the results from the qualitative interviews are complemented by graded grammaticality judgments as well as psycholinguistic reading time measurements.

Assuming that grammaticality is not a binary category but also shows numerous nuances within the range of licensed derivations, both variants should have an identical level of grammaticality measured on a *graded* scale. In other words, if we do not find different nuances between the *wh*-in-situ construction and the *wh*-movement construction, the assumption of a "fair" choice (or competition) between optional variants is corroborated. The same applies to the processing aspect. If the *wh*-in-situ construction and the *wh*-movement construction require identical reading times, both constructions are perfectly comparable in terms of complexity in processing.

3.1. Experiment 1: graded grammaticality judgment test

In section 2.1 I have already pointed out the importance of collecting reliable and valid judgment data; I also mentioned different possible sources of error. The answer to this challenge was a qualitative interview technique. In this section I present the results of a second method, a graded grammaticality judgment test which also allows the obtaining of data of higher quality.

The unreliability of certain, sometimes crucial, data is generally underestimated in grammar research (cf. Adli 2004a: 35−41). Levelt (1974, vol. 2: 6) has already pointed out this problem: "It is becoming more and more apparent that decisions on very important areas of theory are dependent on very unreliable observations." The results of section 2 can be taken as a clear example of this phenomenon. Some cases, for example the stipulated ungrammaticality of French *wh*-in-situ with modals (cf. section 2.4), are so inconsistent with every-day language that it is hardly understandable how such judgments can even be considered. Concerning this, Sternefeld (1998b: 156) writes: "I think that generative theorizing has come in a situation, where it can no longer afford to argue for hard principles with soft data." Bringing forward several remarkable examples from the literature on German, he points out the problem that questionable judgments are quoted by authors which are not speakers of the respective language thus leading to the constitution of myths in international literature (cf. Schütze 1996, for examples from the literature on English; cf. Adli 2005, for an example concerning French). Moreover, assumptions such as the one made by Chomsky (1965: 19) are not helpful in this context and could be characterized as a "no will, no way" attitude: "Allusions to presumably well-known 'procedures of elicitation' or 'objective methods' simply obscure the actual situation in which linguistic work must, for the present, proceed. Furthermore, there is no reason to expect that reliable operational criteria for the deeper and more important theoretical notions of linguistics (such as 'grammaticalness' and 'paraphrase') will ever be forthcoming."

Contradicting this position this study applied a test with which even fine nuances of grammaticality can be measured. It is conducted with thorough instruction and training and ensures a high level of variable control. The graded character of judgments is a matter of fact in the literature (often represented by signs like "?", "??", etc.) although it is in general not explicitly put in the center of attention. A retrospect reveals that Chomsky (1964) had still claimed that grammaticality judgments can be mapped on a graded scale, but he gave up this concept in Chomsky (1965) in favor of a distinction between grammaticality and acceptability − intermediate levels and uncertainties were thus attributed to performance factors (see also Lakoff 1973). The applied method centers the graded nature of judgments and aims to draw a more detailed picture of the differences between French *wh*-questions with and without overt movement.

Another important methodological aspect concerns the generalization of the results. It is indeed a legitimate question to ask why experimentally working scientists generally draw their conclusions after statistical inference from the sample to the population, whereas the judgment data of one individual shall be considered as a reflect of the population in grammar research. This is not due to the nature of the respective data types but rather to non-scrutinized methodological traditions. The present sample-based study allows the taking into account of the deviation and the distribution of the values to draw statistical conclusions. In what follows, I first give a concise summary of the applied methodology, referring in this context to Adli (2004a: 81−97) for full details.

78 subjects, students of the University of Toulouse II, participated in the grammaticality judgment test, of which 65 fulfilled the validity criteria.[25] All subjects were French native speakers and did not suffer from any speech impediment or serious eye defect. Linguists or students of linguistics were excluded. Each of the structures (33a) and (33b), i. e. overt *wh*-movement and *wh*-in-situ, was presented in 4 lexical variants (cf. Adli 2004a: 378−379).[26]

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25. Two quantitative indexes (called *violation of trivial judgments*) indicate to what extent the subjects are able to carry out the test correctly. These indexes measure the amount of obviously incoherent judgments. 10 subjects showing values beyond the respective outlier limits in a stem and leaf analysis were excluded (cf. Adli 2004a: 89−91). In addition, two persons were excluded after having assigned an extreme value to the reference sentence, in order to avoid ceiling- and floor-effects respectively. Finally, one subject was apparently, in spite of the greatest efforts of the experimenter, not able (or willing) to understand the instructions correctly and was also excluded.
26. In the experiment the *wh*-questions (33a) and (33b) were preceded by the introductory expression *Dites-moi* (= Tell me) due to methodological reasons: This expression should evoke a colloquial situation and thereby reduce interferences between the written stimuli and the colloquial register to which especially (33b) belongs (cf. section 1.3).

(33)   a.   *A qui   elle prête sa   carte bancaire?*
            to whom she lends her credit card

       b.   *Elle prête sa   carte bancaire à   qui?*
            she lends her credit card   to whom

The independent variable consisted of the mean value of the judgments
of the 4 lexical variants. There were as many experimental sentences
as filler sentences. Each *wh*-question was presented together with one
appropriate context sentence. Subjects were told not to judge the context
sentence but the *wh*-question. In order to measure *graded* grammaticality
judgments, an instrument based on graphic rating was applied (cf. Guil-
ford 1954: 270; Taylor & Parker 1964).[27] Judgments are not expressed
by marking one of several boxes with a cross but by drawing a line on a
bipolar scale. A theoretically infinite number of gradations are therefore
possible, which, in practice, is limited by the person's differential capac-
ity for judgment. The judgments were given relative to a reference sen-
tence judged in the beginning by the subject himself. A suboptimal, but
not extremely ungrammatical French sentence, was used as reference
sentence. Both endpoints (obviously well-formed and obviously ungram-
matical) were therefore given by the design to which the subject added a
scale anchor, i. e. the judgment of the reference sentence. The dependent
variable was the difference between the judgment of a particular sentence
and the judgment of the reference sentence.

The test was presented in a A4 ring binder containing two horizontally
turned A5 sheets. The reference sentence was printed on the upper, the
experimental sentence on the lower A5 sheet. On each sheet, the sentence
with the graphic rating scale under it was printed in the middle (cf. Adli
2005). Having rated the experimental sentence on the lower sheet, the
subject turned this page to go on with the next sentence. The upper sheet
with the reference sentence was not turned and remained visible during
the whole test. A reliability analysis revealed that the test has a satisfac-
tory precision of measurement.[28]

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27. Bard, Robertson & Sorace (1996) propose the magnitude estimation approach in order
    to measure graded grammaticality. Magnitude estimation is usually applied when psy-
    chophysical functions are measured. These functions represent a special case in so far
    the distances on the scale are physically not equidistant. The comparison between psy-
    chophysical judgments and grammaticality judgments relies on analogy and has not yet
    been empirically verified. The "cross-modality matching" that Bard et al. (1996: 52 ff.)
    carried out for validation purposes cannot provide the necessary evidence (see also Adli
    2004a: 83).

28. The reliability of this graded grammaticality judgment test was measured on the basis
    of 11 different syntactic structures (each of which in 4 lexical variants), including mar-
    ginal and ungrammatical constructions. Therefore, 11 single reliability values were cal-
    culated of which, after the necessary transformation into Fisher's Z values, the mean
    value was calculated and then retransformed into a r-value. The analysis revealed an

The test started with an interactive instruction and training phase of about 10 minutes. Besides a description of the method of graphic rating with self-placed anchor, two main concepts were introduced in a 9-step procedure: firstly, the concept of *isolated grammaticality*, necessary to reduce interferences with semantic and pragmatic effects, needed to be imparted (cf. section 2.1 for a discussion of sources of interference). Since (33a) and (33b) represent acceptable and common constructions, often used in every-day communication, their investigation does not obligatorily require a qualitative interview approach, but can also be measured under standardized laboratory conditions (cf. also footnote 9). Secondly, the concept of *gradedness* was mediated. Subjects had to replace the common distinction between grammatical and ungrammatical, or "good" and "bad", sentences by a graded notion of grammaticality. They were introduced to these two main concepts, among other things, by rating different training sentences and by explaining their reasons for the rating to the experimenter, who could therefore adapt the instructions to the level of understanding of each subject. After instruction and training the experimenter left the room. A pre-test revealed the importance of such a training, given that the task of making graded grammaticality judgments is usually not part of the behavior repertory.

The hypothesis was tested at $\alpha = \beta$. This is vital because in this concrete theoretical question I consider α and β equally important, in other words, the conclusion that the grammaticality of two constructions is identical (i. e. a non-significant result) and the conclusion that the grammaticality of certain constructions are different (i. e. a significant result) has the same practical impact for the purposes of grammar research and should come along with the same error probability (cf. Adli 2004a: 115–121).[29] Unfortunately, careful consideration on statistical parameters with the objective of finding reasonable values is not prevailing in quan-

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overall *Cronbach's* α of 0.85 (cf. Cronbach 1951), an overall *Average Measure ICC* (i. e. Intra-Class Correlation) of the absolute agreement type of 0.84, and an overall *Single Measure ICC* of the absolute agreement type of 0.59 (cf. McGraw & Wong 1996; see also Shrout & Fleiss 1979). These reliability values show the degree of internal consistency between different lexicalizations and indicate how precisely the test can measure the dependent variable. The satisfactory *Cronbach's* α value of 0.85 indicates that the test has a good capacity to precisely measure differences and nuances. The *Average Measure ICC* of the absolute agreement type is generally a more conservative measure than *Cronbach's* α The *Single Measure ICC* estimates the reliability which would have been expected if only one single lexical variant had been used. The difference between the *Average Measure ICC* and the *Single Measure ICC* confirms the importance of the use of various lexical variants. The mean value of the 4 lexical variants is supposed to be closer to the "true" value.

29. Cf. also Bortz (1999: 160), Ostmann & Wutke (1994: 705–706) and Buchner, Erdfelder & Faul (1996: 124) for further details.

titative linguistics. One of the consequences is the persistent myth in psycholinguistics that there is such thing like a null-experiment, usually associated with an unrejected H_0.

The hypothesis was tested with a t-test for two paired samples (N_{pairs} = 65, two-tailed) with $\alpha = \beta = 3,5\%$ and a medium effect size ($\varepsilon = 0,5s$).[30] The results reveal the same grammaticality judgments for (33a) and (33b) ($t_{(64)} = 1.213$; $p < 0.230$), i. e. both word order variants have an identical grammaticality value on a graded scale. Given that this methodology allows the distinguishing of fine nuances within the range of felicitous constructions − in statistical terms: differences of medium effect size (see Cohen 1988: 25−27 for illustrative examples of this convention) − we can interpret this result as a further empirical indication corroborating the optionality assumption. Even at a level of subtle differences there is no preference, that is, in a certain sense the choice (or say competition) between both variants is perfectly "fair".

3.2.   Experiment 2: reading time measurement

In addition to the analysis of grammaticality the study of the processing aspect provides complementary empirical information. Studies taking into consideration judgments as well as processing data are comparatively rare (see Pechmann et al. 1994 and Bard et al. 1999 for two examples). The combination of both data types raises the question about the relationship between grammar and parser in general and about the possible evidence each data type can provide for the optionality debate in particular. In the psycholinguistic literature the question if, how, and to what extent grammatical rules and processing strategies interact has been extensively discussed (cf. Farke & Felix 1994). However, this issue is not our focus here. Rather, the focus relies on the question as to the extent of general processing complexity of a given structure. Thus, I examine if one structural variant comes along with higher processing cost than another one. To this end, the *overall* reading times of sentences are compared. Local events in processing, e. g. possible preferences of the parser for a certain element at a particular sentence position, are therefore not included in this study. Or, to put it differently, local differences in processing not being reflected in the overall reading time (i. e. compensated across the whole sentence) are not relevant.

The issue of syntactic optionality also implies a processing aspect. It is corroborated if two variants show comparable levels of cognitive complexity in processing. One could also say that no one comes along with an advantage in processing.

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30. The standard deviation of the difference *s* is assumed to be 1.

The hypothesis of identical complexity in processing is not trivial at all. According to one of the classic psycholinguistic assumptions from the pre-minimalist derivational grammar model, the *derivational theory of complexity* (cf. Brown & Hanlon 1970), this should not even exist: the complexity of the parsing process is supposed to correspond to the number of syntactic transformations necessary for generating the surface structure. However, this theory in which the parser is basically conceived as a grammar "in reverse gear" can be considered as outdated since the middle of the 1970s (cf. Farke & Felix 1994: 76). The issue in focus here is more basic and relies less on presuppositions concerning the relationship between grammar and parser: do syntactic movement operations come along with cognitive processing cost at all? In particular within the minimalist grammar model the question arises as to whether the economy principle has a cognitively measurable correlate. Under the assumption that overt movement operations correlate with cognitive processing cost, the question with moved *wh*-element (33a) should have a higher cost than the *wh*-in-situ form (33b).[31]

117 subjects, divided in two groups, participated in the reading time study. All subjects were students of the University of Toulouse II, French native speakers, and did not suffer from any speech impediment or serious eye defect. Each of the structures (33a) and (33b) was presented in 8 different lexical variants. There were twice as many filler sentences than experimental sentences. 20% of the filler sentences contained nonwords. In addition, 10 warm-up sentences were presented at the initial training phase. Each (interrogative) experimental sentence was preceded by a (declarative) context sentence. The experimental sentence was presented on a computer screen segment by segment with the *self-paced-reading* technique. The subjects controlled the presentation with two buttons of different color: the first one was used to display the next segment, the second one had to be obligatorily pressed when a nonword appeared. This procedure should ensure the cognitive processing of each segment. Having read the experimental sentence, three possible answers to the question appeared, of which the correct one had to be chosen. Relevant for the analysis was only the reading time of the (correctly answered) experimental sentence. Subjects were instructed to read quickly but accu-

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31. This assumption would however be problematic if one hypothesized that both variants undergo in equal measure overt movement operations, as it would be the case under the assumption of *covert overt movement* of Uribe-Etxebarria (2003). She assumes movement of *wh*-"in-situ" in overt syntax which does not become manifest in a change of the linear word sequence. This side-comment refers to the complex relationship between theory and data in grammar research. Without a restriction to certain theoretical models such experimental studies would often not been conceivable.

rately and to try to avoid any mistakes. The training session took place in the presence of the experimenter, who could answer any remaining questions. The person was alone in the laboratory during the experimental phase.

Participants with extremely high error rates in the distinction between words and nonwords, extremely high error rates in the answer of the question, or extremely slow reading times ($x + 3$ standard deviations, cf. Ratcliff 1993, for a discussion) were excluded. On account of these exclusion criteria 10 subjects were not considered in the analysis.

For the same reasons as already mentioned in the context of the grammaticality judgment test the methodology of $\alpha = \beta$ was applied. Furthermore, the test should be able to detect a medium effect size ($\varepsilon = 0,5s$). Given a sample size of $n_1 = 56$ and $n_2 = 51$ fair hypothesis testing at $\alpha = \beta = 14\%$ was realized. Concerning these statistical parameters it should be mentioned that the great majority of the sentence processing studies I know were analyzed with greater effect size values, sometimes with extremely big effect sizes (and/or extremely small statistical power $1-\beta$). In these works real differences of medium effect size remained undetected. This is not a reasonable strategy because there is no reason to assume that in language processing relevant phenomena do *not* have the size of medium effects. In addition, in these studies the α-value is usually set to 5% which is the wrong strategy to adopt with small samples since it only aggravates the problem of effect size and/or statistical power.[32]

The analysis was carried out with a t-test for two independent samples. The results reveal identical reading times for (33a) and (33b) ($t_{(105)} = 0.583$; $p < 0.561$). The *wh*-in-situ construction and the *wh*-movement construction require the same amount of processing cost. From a processing perspective, no word order variant is at disadvantage, which corroborates the optionality hypothesis. At a more general level this result also indicates that syntactic movement does not correlate *per se* with cognitive cost in processing. One can hazard the conclusion that the economy principle of the minimalist grammar model cannot be legitimated with general cognitive principles (which does not mean that it is not legitimate as a *theory-internal* concept[33]).

One might however object that the results interfere with another source of complexity: during the reading of a *wh*-in-situ construction there is a temporal ambiguity between a yes/no-question and a *wh*-question which is only solved when the *wh*-word is encountered, whereas the concrete interrogative type of the variant with overt *wh*-movement is

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32. See also the law of small numbers described by Tversky & Kahnemann (1971).

33. Nevertheless, I summarize my objection to derivational economy as absolute requirement in the conclusion below.

manifest from the beginning. In other words, one could object that the identity of reading times has to be attributed to the fact that the temporary ambiguity with respect to the interrogative type makes the processing of the *wh*-in-situ structure more complex (e. g. for the need to prepare in parallel to possible interpretations) and that, therefore, a really existing complexity effect due to *wh*-movement cannot come to the fore. However, the results presented in Adli (2004a: 149−152) rebut such an objection by virtue of a reading time experiment on French object questions, with and without stylistic inversion, which exhibit identical reading times, too.

(34) a. *quelle est l' armoire que **refont** les employés de la*
          which is   the cabinet that restore   the employees of the
          scierie?
          workshop
          'which cabinet do the workshop's employees restore?'

      b. *quelle est l' armoire que les employés de la scierie*
          which is   the cabinet that the employees of the workshop
          ***refont**?*
          restore

In (34a) stylistic inversion changed the order of the lexical subject-DP and the verb contrasting with the canonical S-V sequence in (34b) (cf. Kayne 1972). The point is that *both* sentences start with the presentation of the *wh*-element. In other words, at no moment is there an ambiguity between *wh*-question and yes/no-question. This result confirms that overt syntactic movement does actually not have an effect on cognitive complexity in processing.

  Assuming that syntactic optionality also has a cognitive aspect, this finding of a (cognitively) cost-free movement constitutes an argument in favor of the comparability of both variants in terms of complexity and thus constitutes a further piece of empirical evidence in favor of the concept of optionality.[34]

4. Conclusion

In the first section I addressed the problem of the inherent contradiction to which the concept of optional syntactic movement leads in the economy-based minimalist model. Even if one tries to invent some sort of

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34. If one agreed with Poole (1996), one might also extend this interpretation and draw a parallel to his assumption of cost-free optional movement.

theoretical loophole to partially reconcile both concepts (like the attempt of Poole 1996), I cannot see how the issue of the trigger could be ultimately resolved. Another loophole, the assumption of various parallel grammars in the cognitive system is, in my opinion, an ostensible alternative which only displaces and camouflages the problem; we then would need to confront the (certainly not less if not more complicated) issue of the choice between "optional grammars" instead of the choice between optional syntactic variants. Considering these facts, do we really gain greater explanatory power assuming derivational economy as an absolute requirement? I subscribe to the view of Haider & Rosengren (2003: 241) which I generalize to other phenomena of optional movement. Essentially, they do not consider a syntactic trigger necessary in their optionality analysis for scrambling in German: "Scrambling is not syntactically triggered, as, for instance, NP-movement in the English passive is. There is no context in which a phrase *must* be scrambled. We do not contest, however, that scrambling does have effects at the semantics/pragmatics interface; we simply deny the need and justification to elevate these properties to the status of a *syntactic triggering* feature. We take the interpretation effects to be *epiphenomena* of scrambling, and not the cause. If there is optionality at the level of the syntax module, this does not mean that the resulting variants are in free variation for all other modules of grammar".

The first section also addressed the differences in register between various French *wh*-questions. In order to accurately characterize the speech register, I regard it as useful to conceive the diaphasic axis as a continuous, bipolar scale, i.e. a particular register can be mapped somewhere on this continuum between the two poles [- diaphasic] and [+diaphasic]. The very colloquial *wh*-in-situ construction (33b) has a lower value on this axis than the form (33a).[35] These grammatical variants are also stylistic variants. The stylistic shift resulting from optional movement in French *wh*-questions constitutes the non-syntactic function exploited at the interface levels of syntax, namely at a pragmatic level.[36] These stylistic differences also correlate with social differences. Coveney (1996: 234) analyzes a corpus of spontaneous speech data and finds effects of age and social class on the frequency of *wh*-constructions like (33a) and (33b). Adli (2004a, part III) shows statistically significant social effects

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35. By means of such a description, the stylistic richness of French interrogative syntax can be more accurately expressed. Contrasting with (33b), the form with *est-ce que* (2b) or with inversion (2a) would have a higher value than (33a).

36. *Wh*-questions do not constitute the only phenomenon in French with stylistically distinct word order variants. The same is true for stylistic inversion: the inverted word order is stylistically more elevated than the canonical word order, cf. (34a) vs. (34b).

on graded grammaticality judgments for these *wh*-questions. In addition, these effects are particularly salient in the case of *wh*-questions, compared to several other structures.

We can summarize that the empirical results from three different data types support the concept of syntactic optionality for French *wh*-questions: firstly, the qualitative interviews uncovered considerably weaker evidence in favor of the assumption of LF-movement than has been claimed in some previous contributions. Secondly, a graded grammaticality judgment test revealed even in terms of fine nuances an identical level of grammaticality. Thirdly, a reading-time experiment showed that both variants have the same cognitive complexity in processing. Even though there is no *experimentum crucis*, each of these results adds one piece of evidence to the optionality assumption. A rehabilitation of this concept would allow better accounting for an important phenomenology in French *wh*-syntax for which the grammar model would otherwise remain blind.

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