This article is published in:
Romance Languages and Linguistic Theory 2007
current issues in Linguistic Theory
Sergio Baauw et Frank Drijkoningen
John Benjamins Publishing Company, Amsterdam/Philadelphia.



# LISTEN TO THE SOUND OF SALIENCE
## MULTICHANNEL SYNTAX OF Q PARTICLES*

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I claim that the linguistic message that realizes syntax is multichannel. The syntax-PF interface is the interface of syntax with all the sensorimotor systems available to humans, including, for oral languages, minimal vocalic productions, intonation, hand movement and body gestures. I show that the realization of syntactic structure consists of (i) segmental oral morphemes, (ii) non-segmental oral morphemes (intonation), and (iii) non-oral morphemes (segmental or not; hand movements, upper body gestures and face movements). In particular, the latter predicts the use of non-oral morphemes in *oral* languages, since the speakers of oral languages have it available in their sensorimotor system. I focus on the CP domain of oral languages, and show that its functional projections can be realized by either (i), (ii) and (iii). The empirical body of this article concentrates on the multichannel Q particles in French, Atlantic French and British English.

### *Introduction*

Chomsky (1995:131) defines PF as "the interface with the sensorimotor systems". The very existence of sign languages demonstrates that sensorimotor systems available to humans are not *stricto sensu* restricted to the production of phonological material. A terminological problem therefore arises: the Phonological Form in the Minimalist Program is broader than its label assumes (φωνή; voice, noise, sound) and it is common to refer to the *phonology* of signed languages (Brentari 1998). The minimalist notion of PF has to be understood in such a way as to account for all possible realizations of syntactic structure: oral morphemes, intonation, gestures (hand movements, upper body gestures and face movements), whatever the selected sensorimotor subsystems of realization (henceforth channels). A standard assumption is that a given language selects one channel and keeps to it (henceforth mono-channel hypothesis). The mono-channel hypothesis is seldom formally defined, hardly motivated, and empirically incorrect[1]. Since the 1990's, the field of signed

* Thanks are due to Johan Rooryck, Milan Rezac and to an anonymous reviewer for useful comments and suggestions. The usual disclaimers apply.

[1] The recurrent presupposition seems to be, for the syntax of oral languages, that intonation is not part of PF, despite the contradictions this triggers. As it is difficult to point out unspecified

languages has extensively studied the multichannality of the linguistic message (see Aarons 1994:chap.3 and references therein, Bahan 1996, Sutton-Spence & Bencie Woll 1999, Neidle & al. 2000, among others). A bi-channel hypothesis emerges from this field: Sandler (1999), Wilbur (2000), Pfau (2002, under press) and Pfau & Zeshan (2004) propose that in signed languages, non-manual marking is to manual marking what intonation is to the oral segmental message in oral languages. I strengthen the claim in (1), which states that the marked case is indeed not multichannality, but the suppression of a given sensorimotor subsystem in a given language.

(1) Full use of available sensorimotor systems is the unmarked case for the human language faculty.

The case of deaf-mute speakers illustrates (1) rather clearly in that they make full use of the available sensorimotor systems -manual and non-manual marking- giving rise to so-called sign languages (see Kegl and al. 1999). Full use of available sensorimotor systems is less clear for oral languages; the standard assumption being that they resort *exclusively* to oral morphemes. In contrast to this assumption, I pursue the hypothesis that (1) is empirically correct. In particular, I assume that the visual-gestural system can realize functional projections in oral languages. In previous work, I have shown that the lexicon of Atlantic French[2] contains morphemes realized by gestural morphology Jouitteau (2004, 2005:chap 6). The C head in (2) is imposed as an expletive strategy in subject-drop environments and can be realized by any ostensible sound or gesture in the preverbal area. The Q particle in (3) can be realized by a closed set of ostensible gestures (raising of the head, raising of one or both eyebrows, opening movement of the hand). In (2) and (3), the crucial

assumptions without illustration, I will take a concrete example (chosen only to illustrate the usage of an entire field; let the following authors be assured of the reader's empathy and forgive me for their appearance as the bad example). Roberts and Roussou (1999:11) present a standard typology of the realisations of Q particles. For Colloquial French, they note that in the yes/no question *Il a vu Marie? (-he has seen Marie?-)*, "Q is silent" and "has no PF-realisation". Furthermore, they propose that the "interrogative clause-typing is not grammaticalized and is marked purely by intonation." The contradictions are numerous. In my perspective, Q in this example indeed has a PF-realisation, precisely because it is marked by intonation. I also consider that a rising intonation contour, if it can be shown to realise functional material, is fully grammaticalized. Notice further that my analysis allows for 'really silent' Q particles that do have a PF-realisation: Q particles realised by gestures are certainly silent, but they have a PF realization. Again, the realization of a Q particle by a given gesture shows that it is fully grammaticalized.

[2] The paradigm characteristic of Atlantic French is productive along the Atlantic coast, excluding the Breton speaking area.

observation is that if no other ostensible gesture or sound is inserted in the preverbal area, the sentence becomes *strongly ungrammatical* [3].

(2) (Atlantic French)
*** (***SHOULDER RAISING***)** *pars* *en février* *de toute façon*.
C Ø leave in February anyway.
"I leave in February anyway."

(3) _____*EYEBROW RAISING*__(_____)
*pars* *en février* *de toute façon*
Q Ø leave in February anyway
"Do you leave in February anyway?" / * assertive / * imperative

The preverbal gestured morpheme is thus fully a part of grammar. It is also restricted to the preverbal position of matrix sentences, and permits otherwise ungrammatical subject-drop (see Jouitteau 2004, 2005). In this article, I concentrate on clause typing realized by intonation or gestures in oral languages, as in (3). The article is organized into four sections. In section 1, I present a brief typology of question marking strategies, and the principal syntactic analyses proposed. I show, following Cheng and Rooryck (2000), that Q particles can be realised by intonational markers. In section 2, I show that gestures can also realise Q particles, and consequently that gestures can realise syntactic functional projections. In section 3, I discuss the implications of my proposal, and sketch the lines of a research program on multichannality. Section 4 concludes.

## *1. The least it takes to be a question*

I illustrate below the different PF alternatives for the formation of questions across languages. The first alternative is the *wh* movement of an XP into the CP area, as illustrated in (4). The second alternative is to generate a phrasal *wh* XP in the CP area. This is illustrated for German in (5), where the generated *wh* XP *was* is a scope marker, and the questioned element *wen* raises to the *wh* specifier of the embedded sentence.

(4) **Who** did you say would come early? (English)

(5) **Was** glaubt Uta [$_{CP}$ **wen** Karl gesehen hat ? (German)
*wh* scope marker believes Uta who Karl seen has
"Who does Uta believe that Karl saw?"

[3] The dropped subject is identified by a null topic. In 'out of the blue' contexts, the gesture obligatorily steps in for the lack of features in the null topic: the required gesture is thus a pointing gesture and provides the features required for subject identification. See Jouitteau (2004a, 2005).

(6) **Hast**-du gegessen ? (German)
**As**-tu mangé ? (French)
**Have**-you eaten ? (English)

The third alternative is a special realization of the C head. In the well-known subject inversion paradigms illustrated in (6), a verbal head raises to C from the IP projection and provides phonological material for the realization of the C head. The interrogative head can also be merged directly in the CP area. This happens in (7) in a Breton yes/no question. This is a crosslinguistic common strategy, i.e. the particle *czy* in Polish, *kö* in Finnish, *ma* in Mandarin Chinese, *li* in Slavic languages, *ki* in Bengali, *ci* in Yiddish, etc. Merge of a Q particle is also the strategy to license *in situ* questions (Cheng 1991)[4, 5]. In the Chinese example in (8), the *wh* object is in its canonical (non *wh*) position and the morphosyntactic identification of the sentence as a question is ensured by the segmental realization of the Q particle *ne*.

(7) ***Hag*** *eo gwir an dra-se?* (Breton)
Q is true the thing-here
"Is it true?"

(Chinese, Cheng 1991)

(8) *Hufei mai-le na-yi-ben-shu* ***ne***.
Hufei buy-ASP which-one-CL-book **$Q_{wh}$**
"Which book did Hufei buy ?"

Minimal vocalic productions can also realize Merged clause typing particles, as in Child Dutch or English. In the first acquisition stages of *wh* questions in Dutch, a preverbal /schwa/ identifies the sentence as a question (van Kampen 1997:80 and references therein).

(Child Dutch, van Kampen 1997)

(9) ***/schwa/*** *is de badkamer nou bleven?*
schwa is the bathroom then gone
"(dropped-where) is the bathroom then gone?"

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[4] Cheng (1991/1997) proposes the generalization that all languages which show *wh in situ* also have interrogative particles. See Bruening (2004:14) for a contrasting hypothesis that most languages, if not all, have Q particles. In this article, I concentrate on the *minimal* PF material necessary for a question to be well-formed.

[5] Merge of a *wh* marker also serves as scope marking in the split-DP constructions of French

(i) **Combien** (de livres) as-tu lu (de livres) (Butler and Mathieu 2005)
how.many (of books) have-you read (of books)
'How many books have you read?'

To sum up, the range of possible morphological manifestations of the interrogative element is rather varied; the valid generalization for the formation of questions seems to be that a morphosyntactic interrogative element must be realized at least in the CP area. This element is a head X or a phrasal XP. It is generated *in situ* or derived from the IP domain.

*1.1. Implementations*

Cheng (1991, 1997 :22) proposes that the morphosyntactic identification of a given sentence as an assertion or as a question is obligatory (see also Chomsky and Lasnik 1977, May 1985). She develops the *Clause Typing Hypothesis*: for a question to be well-formed, either a *wh* complementizer appears in the high periphery, or a *wh* phrase raises to the specifier of the same projection. This accounts for the complementarity of *wh* + movement strategy *vs*. the Q + *in situ* strategy, and obtains the generalization that the languages with *wh in situ* also have interrogative particles. The same intuition is embodied by proposals like Rizzi's (1991/1996) *wh* criterion illustrated in (10).

(10)a. A *wh* operator must be in a specifier-head relation with a *wh* head.
b. A *wh* head must be in a specifier-head relation with a *wh* operator .

The *wh* criterion differs from the Clause Typing Hypothesis in generalizing *wh* movement in that said movement also applies in *wh in situ* languages, but at LF. Is there a minimal material required at PF to identify a question? Platzack (1998) adds to (10) the Visibility Condition, which states that each CP projection of the CP area must have at least either its specifier or its head phonologically realized, and thus he obtains the generalization of Cheng (1991/1997) that a clause must be typed by the morphosyntactic realization of either a CP specifier or a C head. However, with the proliferation of the CP domain functional projections (Rizzi 1997), the Visibility Condition would inaccurately predict a proportional proliferation of realized elements in the CP domain. Vangsnes (1999, 2004) proposes the weaker Identification Condition: adequate material must be realized in the projection of a head for this head to be identified and its properties activated (only identified heads can be interpreted). Under the Identification Condition, the minimum amount of initial sentence material needed for a question to be well formed is a realized element α in the CP area. This α element can be either a head X or a phrasal XP, it can be generated in the CP zone or derived from lower in the structure; the only requirement being that it must be realized in the CP area.

In minimalist developments, a feature-checking relation easily yields the lack of sensitivity to the syntactic X/XP status of the required element. A head, as well as an XP, is a potential satisfier for a feature-checking relation. For example, Miyagawa (2001) postulates an EPP feature on C that has to be erased

by either an adjoined Q-head (in *wh in situ* languages) or a merged specifier (in *wh* movement languages)[6]. For the purposes of this article, I will adopt the Identification Condition as it elegantly accounts for the minimum material required in the data from (4) to (8). The Identification Condition is falsifiable in questions where no marker at all is realized in the CP area. I will now illustrate cases where only a rising intonation or a rising gesture realizes the question marker in the absence of a segmental morpheme realized by the vocal channel.

*1.2. Counter-examples (?)*

The question marker in (11) is realized by an oral Q morpheme that seems at first sight optional[7]. I will argue that (11) is no counter-example to the Identification Condition: the optionality vanishes once we take into account the missing dimensions of the data. When the particle *Esk* or *Do* does not appear, the sentence is more accurately represented as in (12), where '⬆' represents the direction of intonation in the entire sentence[8].

(11)a. [$_{CP}$ ( *Esk* ) [$_{IP}$ *tu veux passer en premier* ? (French)
b. [$_{CP}$ ( Do ) [$_{IP}$ you wanna go first ? (English)

(12)a. [CP ⬆ [$_{IP}$ Tu veux passer en premier ? (French)
b. [CP ⬆ [$_{IP}$ You wanna go first ? (English)

Two analyses are available for the examples in (12). The first one which I will adopt is to suppose that the clause typing information is here provided by intonation because the acceptability of sentences depends on it[9]. The fact that '⬆' extends over the entire sentence suggests that it realizes a syntactic element at the edge of the sentence.

The second option is to maintain the mono-channel hypothesis: it is exclusively the segmental oral channel that can realize morphosyntactic *wh* features. I outline the cost of such an option before I develop the syntactic implementation of my hypothesis in the coming section. The first challenge for the mono-channel hypothesis is to account for the grammaticality of the sentences in (12) in spite of the Identification Condition. This calls for a complete reanalysis of the proposals and generalizations made by the literature

[6] See also Roberts & Roussou (1999:9) who propose to mark F* the functional projections whose PF-realization is forced for interface interpretability.
[7] The French lexicon contains a morphemic particle '*Esk*' formed on '*Est-ce que*' (*Is-this that*…), reanalyzed as a simplex interrogative morpheme.
[8] Both *Esk* and '⬆' can occur in the same sentence, as discussed later, see example (16).
[9] See also Deguchi and Kitagawa (2002) and Kitagawa and Fodor (2003) for similar arguments on different data. Their conclusion is that "syntactic theory can not escape prosody, […] because the acceptability of sentences can depend on them".

on question formation since the generalization of Cheng (1991). Moreover, sentences as in (12) are far from being exceptional. According to the typological estimations of Ultan (1978), the morphosyntactic marking of yes/no questions by a (rising) intonation is the strategy represented by 95% of the languages of the world. If we maintain that intonation cannot achieve the realization of morphosyntactic *wh* features, the typologically over-represented rising intonation strategy needs an explanation. The second challenge is to motivate the restriction to a given linguistic channel. As seen in the introduction, the linguistic message is multichannel in sign languages. What could thus motivate the assumption that multichannality is not an available option in oral languages? The third challenge lies in the lack of motivation for the specific election of the segmental oral system.

In contrast, I propose that intonation realizes the same morphosyntactic *wh* features an oral segmental particle does, and that the Identification Condition accurately predicts that (12) illustrates well-formed yes/no questions. I leave the typological over-representation of intonational Q heads unexplained, but the Identification Condition together with (1) accurately predicts this strategy to be available. Intonation can be the unique morphosyntactic trigger for a yes/no question reading. The sentence in (13)a. is obligatorily typed as a question, and the assertion reading is ungrammatical. Consistently, modification of the rising intonation contour leads to the obligatory interpretation of the sentence as an assertion or command, as in (13)b., reinforcing the conclusion that rising intonation was a clause-typing morpheme in (13)a. [10].

(13)a. Ø *Tu prends du café sans lait* ⬆ (French)
you take DET coffee without milk
*"You take coffee without milk."/ √ "Do you take coffee without milk?"

b. Ø *Tu prends du café sans lait* ➥ / ⬇
you take DET coffee without milk
√ "You take coffee without milk." / √ "Take coffee without milk."
* "Do you take coffee without milk?"

Intonation can realize a Q particle even when there is segmental material that could seem to provide clause typing information. The yes/no colloquial French construction in (14) is characterized by the tag *ou bien* (presumably ellipsis), and a rising contour. Clause typing cannot arise from the tag alone: non-rising intonation is rescued in (14)c. by the merge of a segmental Q particle. I conclude that in (14)a.,'⬆' realizes a Q particle licensing the tag.

[10] The same phenomena arise in many languages: see Haspelmath (2001:1013) for Italian, or Jouitteau (2005) for Breton, among many others.

(14)a. *Tu prends du café sans lait,* ***ou bien*** ⬆ ? *French*
you take DET coffee without milk or ADV
"You take coffee without milk, don't you ?"

b.*/? *Tu prends du café sans lait,* ***ou bien*** ➥ / ⬇ ?
c. √ *Esk tu prends du café sans lait,* ***ou bien*** ➥ / ⬇ ?

Cheng and Rooryck (2000) also note that rising intonation is obligatory in *in situ* questions in French (15) [11]. Ishihara (2003) discusses on the scope marking realized by intonation patterns in Japanese.

(15) *(⬆) *Manaly a dessiné quoi?* (French)
Manaly has drawn what
"What did Manaly draw?"

I follow Cheng and Rooryck (2000) in analyzing rising intonation as the realization of a Q particle. Under this hypothesis, the left periphery of the above grammatical questions in French is never empty at the relevant syntactic level. Satisfaction of the Identification Condition is achieved via Merge or Move of either a head or a phrasal XP. The particular choice for the realization of the morphosyntactic *wh* element depends on the lexical inventory of a given language. I assume that the French has two Q particles (i) a Q morpheme '⬆' licensing *wh in situ* as in (15) and (ii), a yes/no Q particle with two allomorphs: *esk* and rising intonation '⬆'[12].
The hypothesis that *esk* and '⬆' are allomorphs of the yes/no Q morpheme is supported by their mutual exclusivity. In (16), non-rising intonation is obligatorily sent to the pragmatic module.

(16) a. ⬆ / ➥ / ⬇ *Esk* [$_{IP}$ *tu veux passer en premier?* (French)
b. ⬆ / ➥ / ⬇ Do [$_{IP}$ you wanna go first ?

[11] Atlantic French has *in situ* questions without an obligatory presuppositional context (contra Chang 1997:42 ). For a similar argument for standard French, and further discussion on the contexts licensing *wh in situ*, see Butler and Mathieu (2005). Atlantic French contrasts with the variety of French studied by Boeckx (1999b) and Vergnaud and Zubizarreta (2001). Cheng and Rooryck (2000) draw a parallel between *in situ* questions and yes/no questions in French, both having a Q clause-typing particle realized by intonation, and both being restricted by presuppositional contexts. Atlantic French shows the same parallel: yes/no questions also have no obligatory presuppositional context.

[12] In Japanese, existence of a segmental Q head has no bearing on the distribution of a non-segmental one: the '⬆' Q particle is banned from embedded sentences, whereas the segmental *ka* is not (Yoshida and Yoshida 1996, Hoshi 2004).

The intonational morpheme, whether rising or not, does not rule the sentence out in imposing competition for the same Q site because there is another interpretation available pertaining to pragmatics (aggressiveness or impatience is marked by a falling intonation '⬇', depending on factors such as the degree of politeness). In (16), the '⬆' Q allomorph is banned and '⬆' has to be interpreted as a non-syntactic element for the sentence to be fine. I predict that if '⬆' had no pragmatic import, the sentence would be out because two Q particles would compete for the same site. I also predict that the sentence is obligatorily interpreted as a yes/no question because *esk* has no other interpretation available. I will now turn to the third allomorph: the Q particle realized by the visual-gestural channel.

## *2. Q particles realized by the gestural channel*

The gestural channel also can realize Q particles satisfying the Identification Condition. Jouitteau and Ferre (2004) present two cases of grammatical yes/no questions with an intonation typical of assertions and no oral segmental Q particle. These two cases take from a multichannel transcription of a corpus in spontaneous British English (Ferre 2004). In (17), Zoe asks her partner what were her advantages of working at *Mark & Spencer's*. Rising head movement extends over the entire sentence, pleading for its syntactic realization in sentence (edge/) initial position.

(17) *Zoe* : _____[ RISING HEAD MOVEMENT] (British English, Ferre 2004)
You get big bonuses at Christmas ⬇.
'Do you get big bonuses at Christmas ?'

Ben got like loads of money at Christmas.
*Michelle* : No cause they got rid of me before I had any rights.

The sentence is interpreted as a question and receives an answer from Michelle despite the typically assertive intonation. However, the Identification Condition is not violated since the gestural channel realizes a Q particle in the preverbal position (Zoe's rising head movement). On the opposite hypothesis, where the gestural channel does not provide morphology spelling out functional projections, example (17) is a serious counterexample to the Identification Condition. In (18), Zoe and Michelle converse about Michelle's mother having an accent from the north, which Zoe has doubts about. There is neither an oral segmental Q particle nor a rising intonation. Yet the sentence receives an answer.

(18) *Zoe*: _____[ RAISED EYEBROWS]
Really ? But she used to have an accent ↓.
'Really ? But did she use to have an accent ?'
*Michelle* : Yeah and she still says things now like 'All right pet'.

Zoe raises eyebrows on *really* and keeps them high during the entire following sentence. The eyebrows fall after the end of the interrogative sentence. I claim that a Q head is realized by the raising eyebrow and satisfies the Identification Condition. On the opposite hypothesis, again, the sentence in (18) is a counterexample to the Identification Condition. I conclude, therefore, that the lexicon of British English contains a Q particle whose realization is gestural in nature.

The lexicon of French also contains Q particles realized by the gestural channel[13]. This is clearly the case in Atlantic French, where a Q particle licenses exceptional subject-drop (Jouitteau 2004, 2005). In the grammatical (19)b, (19)c and (19)d, no oral *wh* morpheme is present, but the linguistic message contains ostensible facial movements. The sentence can only be interpreted as a question. In (19)e, no ostensible facial movement is produced, and consequently, the sentence cannot be interpreted as a question.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| (19) | a. | | [$_{CP}$ | ↪ / ↓ | *Esk* | [$_{IP}$ | Ø | peux finir | mon thé | ? |
| | b. | | [$_{CP}$ | ↪ / ↓ | raised head | [$_{IP}$ | Ø | peux finir | mon thé | ? |
| | c. | | [$_{CP}$ | ↪ / ↓ | raised eyebrow | [$_{IP}$ | Ø | peux finir | mon thé | ? |
| | d. | | [$_{CP}$ | ↪ / ↓ | raised eyebrows | [$_{IP}$ | Ø | peux finir | mon thé | ? |
| | e. | * | [$_{CP}$ | ↪ / ↓ | | [$_{IP}$ | Ø | peux finir | mon thé | ? |
| | | | | | | | (I) | can | finish my | tea |

The Identification Condition rules out (19)e.; reinforcing the conclusion that the gestural channel realizes a Q particle in (19)b, (19)c and (19)d. If I am wrong in this conclusion and if the gestural channel is not able to realize functional heads in oral languages, two major problems arise. First, we have to account for the fact that (19)b., (19)c. and (19)d. violate the Identification Condition (see problems developed on in section 1.2). Again, we would have to account for the surprising restriction that oral languages limit their morphology to the oral channel since we know from the study of sign languages that gestural morphology is part of the human language faculty. What could prevent oral languages from making use of a realization that (i), we know is available to the speakers and (ii), that we know is available in UG (sign languages)? In (20), I

[13] Oiry (2004) and Butler & Mathieu (2005) independently note occasional non-rising intonation in French *in situ* questions. Multichannel data is not available in these works, but my hypothesis would be that a gestured Q head has satisfied the Identification Condition.

show that the gestural Q particle triggers obligatory yes/no question reading, particular intonation variations being send to pragmatics.

(Atlantic French)

(20) [$_{CP}$⬆/➥/⬇ RAISED EYEBROW [$_{IP}$ *Tu prends du café sans lait ?*
you take DET coffee without milk
"Do you take coffee without milk?"/ * "You take coffee without milk."

I conclude that the lexicon of French contains a Q morpheme, coming in three allomorphic varieties: (i) a segmental oral allomorph *Esk*, (ii) a non-segmental oral allomorph (rising intonation contour), and (iii) a non-oral allomorph (rising facial or body movement).

### *3. Multichannel Syntax*

I have shown that oral languages can select different channels of the available sensorimotor systems to realize Q particles required by the Identification Condition. However, if (1) is on the right track, extension of the hypothesis to all functional projections is probably in order. In the CP domain, at least, it is likely that multichannel signs can realize any head. In German for example, the rise-fall contour on a constituent internal to IP is equivalent, in terms of interpretation, to the topicalization of the same constituent (see Krifka (1998) and references therein). As for FocP, the focus interpretation is crosslinguistically obtained via different channels, morphemic or intonational. The morphemic message can show Merge of a dedicated segmental morphemic marker (Wolof, Swahili) or the Movement of an XP (Celtic languages, German, Hungarian or Basque). Intonation can also realize Focus by either stress (German and most Romance languages) or phrasing (determined by segmental alternations in French, tones in Chinese, and lengthening or absence of shortening in Kimatuumbi, see Féry 2001 and references therein). Each strategy is a PF variant that realizes Foc or SpecFocP in the syntactic structure for interpretability purposes. Independently, we know from everyday experience that this typology has to be extended as to account for the fact that focus on an DP can be achieved via the body-gesture channel: a pointing gesture triggers salience in context. As illustrated in (21), a postverbal object pronoun is illicit except if it is made ostensible (Cardinaletti and Starke 1999:152). Ostension can be realized by (i) contrastive stress intonation or (ii) flat intonation and a pointing gesture.

(21) *J'ai vu Marie puis j'ai vu *elle / ELLE / ☞ + elle.* (French)
I have seen Mary then I have seen her.
"I saw Mary then I saw her."

(22) *la fille là* = *cette fille* = *la fille* + ☞ (French)
*ar plac'h-mañ* = _ _ = *ar plac'h* + ☞ (Breton)
the girl here = this girl = the girl +☞ (English)

Pointing gestures also typically realize deictic adverbs. In (22), I illustrate the analytic [det-noun-deictic adverb] order, with the adverb realized by a pointing gesture (☞). From (21) to (22), the pointing gesture can be realized with a wide array of face and body gestures (finger, hand, head, eye, etc.) which, however, is not without restrictions (*lips). This restriction depends on the lexicon of each given language: lip pointing realizes deictics in Thai (Anne Kelleher, p.c.)). If the part of PF that realizes syntactic elements by either prosody or gestures becomes visible for syntactic theorizing (as it is for speakers), we will be able to isolate the environments where truly null elements have to be postulated, and consequently be able to measure the crosslinguistic obligatoriness of a PF realization for Focus, Topic, Q particles, *wh* scope markers, deictics, etc.

## *4. Conclusion*

If any sensorimotor system available can realize syntactic structure, a new set of fruitful questions arises. In oral languages, is the part of the lexicon realized by gestures more widely shared across oral languages than the part realized by the oral channel (i.e., rising movements for questions)? And if so on what grounds? Is there a difference in modality between functional heads realized by gestures in oral languages and the same functional heads realized by the same signs in sign languages? How come human languages show a global bias toward the oral modality, unless it is excluded by physical impairment? Why do we not find mixed systems, for example oral languages whose verbal lexical inventory or quantifier scope marking would be gestured?

I propose to represent the multichannel dimensions of languages as illustrated in table (23) where multichannel productions are the unmarked case. Suppression of a given channel is the byproduct of physical impairment (i.e. deafness, ton-deafness, blindness, facial paralysis) or of voluntary restriction (mono-channel-writing system, whistled languages).

(23)

<table>
<tr><th></th><th>Sign languages</th><th>Oral languages</th></tr>
<tr><td>oral timing units</td><td># ?</td><td>Channel 1</td></tr>
<tr><td>hand movements</td><td>Channel 1</td><td rowspan="3">Channel 2</td></tr>
<tr><td>Facial expressions</td><td rowspan="2">Channel 2</td></tr>
<tr><td>upper body movements</td></tr>
</table>

The global image is that human languages are bi-channel. Following Bouchard (2002:38), two different strategies realize semantic relations in an oral language: *Juxtaposition* (A and B are ordered temporally next to one another) and *Superimposition* (B is a modulation superimposed on A). In this sense, intonation in oral languages is thus an effect of superimposition unto the oral Channel 1. I predict that Channel 1 in sign languages also expresses linguistic differentiations by superimposition (according to its availability). Very importantly, the multichannel dimension of the linguistic message calls into question the linearization process: for the moment, our models of linearization are designed as to obtain a mono-linear output which is simply inappropriate to account for the multichannality of the data. Given that two syntactic elements can occur at the same time in two different channels, linearization must be thought of as creating different lines and not just one. What are the rules of *multilinearization* and are there universals? How to represent the relations between the different syntax realization channels? Can a gestural marker, for example, cliticize on an oral one? Are there syntactic elements that have to be realised in the same line? Why? The fact that multichannality is not the key for the differences between oral and sign languages opens new insights to the inquiry.

### *References*

Aarons, D. 1994. *Aspects of the Syntax of American Signed Languages*, PhD ms., Boston University, Massachusetts.

Bahan, B. 1996. *Nonmanual realization of agreement in American Sign Language*. PhD ms., Boston University, Massachusetts.

Bouchard, D. 2002. *Adjectives, number and interfaces, why languages vary*, Rooryck and Pica (eds.), North-Holland Linguistic Series: Linguistic variations volume **61**.

Brentari, D. 1998. *A Prosodic Model of Sign Language Phonology*, Cambridge, MA:MIT.

Bruening, B. 2004. "Wh indefinites, Question Particles and Wh-in-situ: There is no relation", ms august 2004, U. Delaware.

Butler, A. & E. Mathieu. 2005. "Split-DPs, generalized EPP and visibility", *MIT Working papers on Linguistics*, Martha McGinnis and Norvin Richard (eds.), 49-57.

Cardinaletti, A. & Starke, M. 1999. "The typology of structural deficiency", *Clitics in the languages of Europe*, 143-233, Walter de Gruyter, Berlin. New-York.

Cheng, L. 1991. *On the Typology of wh Questions*. PhD. ms.

Cheng, L. 1997. *On the Typology of wh Questions*. Garland Publishing.

Cheng, L. & J. Rooryck. 2000. "Licensing Wh-in-situ", *Syntax* 3.1, 1-19.

Chomsky, N. 1995. *The Minimalist program*, MIT Press, Cambridge, MA., (edition 1996).
Chomsky, N. & H. Lasnik. 1977. "Filters and Control", *Linguistic Inquiry* 8: 425-504.
Deguchi, M. and Y. Kitagawa 2002. "Prosody and Wh questions", M. Hirotani (ed.), *NELS 32*, GLSA, University of Massachusetts at Amherst, 73-92.
Ferre, G. 2004. *Relations entre discours, intonation et gestualité en anglais britannique*. Ph.D. ms., Université de la Sorbonne Nouvelle, Paris.
Féry, C. 2001. "Focus and Phrasing in French", *Audiatur Vox Sapientiae, A festschrift vor Arnim von Stechow*, Caroline Féry and Wolfgang Sternefeld (eds.), 153-181, Berlin, Akademie-Verlag.
Hoshi, H. 2004. "*Wh*-Movement: EPP or Uninterpretable Q-feature?", presentation at *WCCFL 23*, University of Davis, California, 23 april 2004.
Ishihara, S. 2003. *Intonation and Interface Conditions*, PhD. ms., MIT.
Jouitteau, M. 2005. *La syntaxe comparée du Breton*, PhD ms. University of Nantes/Naoned.
Jouitteau, M. 2004. "Gestures as Expletives, Multichannel Syntax", *Proceedings of WCCFL* 23*,* B. Schmeiser, V. Chand, A. Kelleher and A. Rodriguez (eds.), 422-435, Cascadilla Press*.*
Jouitteau, M. & G. Ferre. 2004. "Visibility doesn't mean Hearability", (poster) presentation at *NELS 2004*, U. Connecticut.
van Kampen, J. 1997. *First Steps in Wh movement*, Eburon, Netherland. distributed by Eburon, Ponsen & Looijen, Wageningen.
Kegl, Judith A., Annie Senghas, and M. Coppola. 1999. "Creation through contact: Sign language emergence in sign language change in Nicaragua", *Language Creation and Change: Creolization, Diachrony and Development*, Michel DeGraff (ed.), Cambridge, Mass.: MIT Press.
Kitagawa, Y. and Fodor 2003. "Default Prosody explains Neglected Syntax analysis", *Japanese/Korean Linguistics* 12, William McClure (ed.), 267-279, CSLI Publications.
Krifka, M. 1998. "Scope inversion under the rise fall contour in German", *Linguistic Inquiry* 29:1, 75-112.
May, R. 1985. *Logical Form: Its structure and Derivation*, MIT Press, Cambridge, Massachusetts.
Miyagawa, S. 2001. "The EPP, scrambling, and wh-in-situ", In *Ken Hale: A Life in Language*, M. Kenstowicz. (ed.), 293-388, Cambridge, Mass.: MIT Press.
Neidle C., Kegl J., MacLaughlin D., Bahan B. and Lee R. G. 2000. *The Syntax of American Sign Language*. MIT Press, Cambridge, Massachusetts / London, England.
Oiry, M. 2004. "Les questions exceptionnelles en français ou <tu penses quoi qui est caché dans l'sac?> ", presentation at the *Colloque international*

*en sciences du langage : Acquisition, pratiques langagières, interactions et contacts* (APLIC).
Pesetsky, D. and Torrego, E. 2000. "T to C movement", In *A Life in Language*. MIT, Cambridge, Massachusets.
Pfau, R. 2002. "Applying morphosyntactic and phonological readjustment rules in natural language negation", *Modality and structure in signed and oral languages*., Meier, R.P., K.A. Cormier & D.G. Quinto-Pozos (eds.), 263-295, Cambridge: Cambridge University Press.
Pfau, R. under press. "De grammatica van het hoofdschudden: zinsontkenning in de Duitse Gebarentaal", *Gramma TTT* [English version available]
Pfau, R. & U. Zeshan 2004. "Doing it the right way: Wh-movement in Indo-Pakistani Sign Language", ms.
Platzack, C. 1998. "A Visibility Condition for the C domain", *Working Papers in Scandinavian Syntax*, 61: 53-99.
Rizzi, L. 1997. "The Fine Structure of the Left Periphery", *Elements of Grammar: Handbook of Generative Syntax*, Liliane Haegeman (ed.), 281-337, Dordrecht: Kluwer.
Rizzi, L. 1996. "Residual Verb Second and the Wh-Criterion", *Parameters and Functional Heads*, A. Beletti and L. Rizzi (eds), Oxford University Press, New York.
Rizzi, L. 1991. "Residual V2 and the *wh* Criterion", ms. Université de Genève.
Roberts, I. and A. Roussou 1999. "A formal approach to grammaticalization", ms.
Sandler, W. 1999. "The medium and the message: Prosodic interpretation of linguistic content in Israeli Sign Language", *Sign Language and Linguistics* 2 (2), 187-215.
Sutton-Spence & Bencie Woll. 1999. *The Linguistics of British Sign Language, An Introduction*. Cambridge University Press, Cambridge.
Ultan, R. 1978. "Some general characteristics of interrogative systems", *Universals of Human language vol.4; Syntax*, Joseph H. Greenberg (ed), 211-248. Stanford, Stanford University Press.
Vangsnes, Ø. 2004. "On *wh*-Questions and V2 across Norwegian Dialects: a survey and some speculations", *Working Papers in Scandinavian Syntax* 73, 1-59.
Vangsnes, Ø. 1999. *The identification of Functional Structures*, ms diss.
Wilbur, R.B. 2000. "Phonological and prosodic layering of nonmanuals in American Sign Language", *The signs of language revisited: Festschrift for Ursula Bellugi and Edward Klima*, Emmorey, K. & H. Lane (eds.), 213-244, Mahwah, NJ: Lawrence Erlbaum.
Yoshida K. and T. Yoshida. 1996. "Question Marker Drop in Japanese", *International Christian University language Research Bulletin* 11:37-54.