

Accents and Information

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1. Optimal Accentuation

(H) Accents appear in speech signals as relative raising of the pitch, intensity and/or duration. I make two claims concerning accentuation:

(H.1) Accents are used to emphasize expressions in spoken language. Due to acoustic disturbances and variations in attention, the recipient of a spoken utterance may perceive only parts of the utterance. Nevertheless, perceiving parts can be sufficient for understanding the whole. Emphasizing an expression raises the probability of its being perceived. The less constituents of a sentence are emphasized the higher the probability that the recipient will perceive all emphasized constituents. Ideally, a speaker has to utter a sentence in a way that makes the recipient perceive at least those constituents which are necessary and sufficient for understanding the entire sentence. In spoken language the speaker can do so by accentuating. Optimal accentuation involves accentuating the minimal set of constituents needed for comprehension. The set is determined by the context of the utterance, especially the issue (or, following Ginzburg [1], the *question under discussion*).

(H.2) Although a speaker does not always accentuate optimally, it is commonly taken for granted that he does. Even if the recipient perceives only some constituents of an utterance, he usually does not have to ask the speaker to repeat. He can rely on having perceived the *right* constituents which lead him to proper understanding. If a recipient fully perceives an utterance, he can then conclude what the speaker takes as being the context of his utterance and – in case the context determines the meaning – what the speaker means by his utterance.

(E.1) The example below is optimally uttered with an accent on *“Peter”*, if the question concerns who is watching football. A recipient who knows the issue understands the entire utterance just by perceiving *“Peter”*. The sentence can be reduced to this constituent. A recipient who is not acquainted with the issue can accommodate the issue by perceiving the whole utterance. If the issue is what Peter is watching, then example (E.1) has to be uttered with an accent on *“football”*. If, in this case, the example is non-optimally uttered with an accent on *“Peter”*, then misunderstanding is highly probable.

Example (E.1): *“Peter is watching football.”*

2. The Disambiguating Force of Accents

(E.2) Out of context, the next example is ambiguous. There are three possible meanings:

- (i) Peter watches football and from a set of alternatives to football he does not watch anything else, e.g. tennis.
- (ii) Peter watches football and he does not stand in any alternative relation to football, e.g. he does not play football.
- (iii) Peter watches football and, from a set of alternative properties, he does not have any other property, e.g. doing the laundry.

A speaker who accentuates optimally and who utters the sentence with accents on *“only”* and *“football”* takes the recipient to understand his utterance just by perceiving *“only”* and *“football”*. The recipient understands the sentence on the basis of this perception if he knows that the issue is what Peter watches. If the recipient perceives the complete sentence, then he can conclude from the choice of accents that the speaker believes that the recipient believes that the issue is what Peter watches. If the recipient also believes that the speaker gives relevant information – obeys Grice’s *principle of cooperation* –, then he concludes that the speaker means (i).

Example (E.2): *“Peter only watches football.”*

(E.3) The following dialogues show that accentuation does not always disambiguate a sentence. In both answers the same constituents – *“only”* and *“Sam”* – have to be accentuated. Nevertheless, the answers have different meanings.

Example (E.3):

“Which mothers did Paul talk to?” – “Paul only talked to Sam’s mother.”

“Which pupils’ mothers did Paul talk to?” – “Paul only talked to Sam’s mother.”

3. Modelling Contexts

(Context) A hearer is able to grasp a proposition on the basis of the incomplete perception of an utterance and the knowledge of the issue/ the *question under discussion*. The proposition he grasps is informative, but the perceived expressions themselves are not. Issues are not always explicitly raised. They are then not antecedents for the construction of a proposition, but are nevertheless part of the context. The context contains the common ground, which is a set of worlds (i.e. a proposition). The common ground reflects the mutual knowledge of all communicators. An assertion filters the common ground, it deletes all those worlds that are not in the meaning of the assertion. Following Groenendijk/Stokhof [3], a question partitions the common ground. Raising an issue (like asking a question) involves dividing the common ground into mutually exclusive subsets of worlds. A relevant assertion (an answer) selects one of the subsets. If the answer is exclusive, then all other subsets are deleted from the common ground. If the answer is not exclusive, then those subsets which are incompatible with the chosen one are deleted from the common ground. Given a partition of the common ground, the hearer must perceive those constituents of an assertion that enable him to choose one of the subsets.

(Updating the common ground)

Peter watches football.		Michael talked to Prof. Meijer.
Peter watches tennis.	What does Peter watch?	Michael talked to Prof. Jaakson.
Peter watches football and tennis.	Peter watches football.	Michael talked to Prof. Meijer and to Prof. Jaakson.
Peter watches neither football nor tennis.	Peter only watches football.	Michael talked neither to Prof. Meijer nor to Prof. Jaakson.

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4. Theories on Focus

(Focus.1) Focus theories, like Alternative Semantics (e.g. [8]) and Structured Meaning Theory (e.g. [7]), explain disambiguation by accents as follows: An accent marks a focus. The same accent can mark different focusses. An accent on *“watches”* marks *“watches”* uniquely (E.1/E.2). An accent on *“football”* marks *“football”* or *“watches football”*. A focus is some constituent. (Focus is a theoretical term.) *“Only”* is an operator that is associated with at least one focus in its scope. Focus theories take the associated focusses to construct an alternative set. The domain of the focus operator is a subset of the alternative set. If such a subset is contextually given, then it is the domain of the focus operator. If several subsets are contextually given, then one of them is the domain of the focus operator. If no subset is contextually given, then the domain is identical to the alternative set.

(Focus.2) Focus theories distinguish two kinds of focusses: *semantic focusses* and *pragmatic focusses*. In the example above, the constituent associated with *“only”* is a semantic focus. The choice of a semantic focus disambiguates a sentence. A pragmatic focus is a constituent that is conversationally especially relevant. If we distinguish *given* and *new* constituents, then a pragmatic focus is a *new* constituent. Every utterance has a pragmatic focus, but not necessarily a semantic focus. Krifka [6] shows that the same semantic focus can be associated with different focus operators and that a focus operator can be associated with different semantic focusses. In an utterance, a constituent can be a semantic focus and a pragmatic focus at the same time.

(Acc) A description of accentuation based on focus theories differs from a description based on the hypotheses of optimal accentuation:

(Acc.1) Focus theories claim that a focus can be projected to a higher constituent. Therefore the same accent can mark different focusses. To utter example (E.2) with meaning (i) or (iii), *“football”* and no other constituent has to be accentuated. The hypotheses of optimal accentuation demand that for meaning (ii) also *“watches”* is accentuated (for the accentuation of *“only”* see (Acc.2.2) below). Focus accentuation only partially disambiguates the sentence, optimal accentuation fully disambiguates it.

(Exp.1) Experimental data by Schmitz/Schröder/Wagner [not yet published] show a slight tendency toward optimal accentuation. Consider the dialogues below. Following focus theories, in both answers accents on *“nur”* and *“Professor”* mark the pragmatic focusses. These constituents have to be accentuated. Following the hypotheses of optimal accentuation, in the first answer also *“holländischen”* has to be accentuated. In the second answer, it is sufficient to accentuate *“nur”* and *“Professor”*. Recordings of the dialogues with different accentuations of the answers were made. The recordings were presented to 14 test persons. The test persons rated naturalness and understandability of the recorded answers on a scale from 1 (best) to 6 (worst). Answers with an accent outside the focusses (e.g. on *“Michael”*) were generally rated worst. The first dialogue with accents on *“nur”*, *“holländischen”* and *“Professor”* was rated best (average: 1.71). The first dialogue with accents on *“nur”* and *“Professor”* got an average rating of 2.14. This was predicted by the hypotheses of optimal accentuation, but not by focus theories. Recordings of the first dialogue were generally rated better than recordings of the third. The third dialogue with accents on *“nur”*, *“holländischen”* and *“Professor”* got an average rating of 2.64. The third dialogue with accents on *“nur”* and *“Professor”* got the rating of 3.07. This was neither predicted by focus theories nor by the hypotheses of optimal accentuation.

Experiment 1

A: *“Mit wem hat sich Michael unterhalten?”*

(Whom did Michael talk to?)

“Michael hat sich [nur]_{PF} mit [dem holländischen Professor]_{PF} unterhalten.”

(Michael only talked to the Dutch professor.)

B: *“Mit welchem holländischen Gast hat sich Michael unterhalten?”*

(Which Dutch guest did Michael talk to?)

“Michael hat sich [nur]_{PF} mit dem holländischen [Professor]_{PF} unterhalten.”

(Michael only talked to the Dutch professor.)

(Acc.2.1) Focus theories claim that semantic focusses are not accidentally accentuated. A semantic focus can be accentuated because it is a *semantic focus*. An accent disambiguates a sentence because it marks some constituent as a semantic focus and not because it marks that constituent as something else. In fact, if example (E.2) follows the question *“Who only watches football?”*, then *“Peter”* is accentuated, no matter which meaning the speaker wants to communicate. A semantic focus is not an accent trigger. A focus is only accentuated if it is (also) a pragmatic focus.

(Exp.2) Schmitz/Schröder/Wagner [9] present experimental data that support this view. Recordings of five different dialogues like the one below were made. The dialogues consist of two questions and two answers each. All second answers have the same semantic focus (*“Mimmi”*), but different pragmatic focusses (in the dialogue below: *“Anne”*). Four recordings were made of each dialogue with different accentuations of the second answer. The recordings were presented to 12 test persons who rated naturalness and understandability of each second answer on a scale from 1 to 6. Answers with accents on non-focussed constituents were generally rated worst. Answers with accents on pragmatic focusses and without accents on semantic focusses were generally rated as well as or better than answers with accents (also) on semantic focusses. The number of test persons that rated an answer without accentuation of the semantic focus as being strictly better than the answer with accentuation of the semantic focus is – depending on the sentence – between 83% and 42%.

Experiment 2

Wen hat Peter heute gefüttert? (Who did Peter feed today?)

Peter hat heute [nur [Mimmi]_{PF}]_{PF} gefüttert. (Today Peter has fed [only [Mimmi]_{PF}]_{PF} .)

Wer hat sonst noch nur [Mimmi]_{PF} gefüttert? (Who else did feed only [Mimmi]_{PF} ?)

[Anne]_{PF} hat nur [Mimmi]_{PF} gefüttert. ([Ann]_{PF} has fed only [Mimmi]_{PF} .)

(Acc.2.2) Focus theories do not demand the accentuation of the focus operator *“only”* in example (E.2). It is claimed that an accent on *“football”* alone is incompatible with meaning (2). Consider the following dialogue (E.4). My intuition is that, if in the last answer – which is example (E.2) – *“football”* and no other constituent is accentuated, then the sentence has meaning (ii), i.e. the sentence can be true, although Peter watches also tennis. If otherwise *“only”* and *“football”* are accentuated, then the sentence has meaning (i), i.e. the sentence is false, if Peter watches also tennis. The intuition is related to the observation under (Acc.2.1). If a semantic focus were a prime accent trigger, then the accent on *“football”* alone would be incompatible with meaning (ii). The claim is yet to be empirically tested.

Example (E.4):

“Is Peter an athlete?”

“No, he only watches sports.”

“What sports does he only watch?”

“Peter only watches football.”

References

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