

Pragma-syntactic annotation

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1. Introduction

The pragma-syntactic annotation, adapted from the “period grammar” approach (Groupe de Fribourg 2012), offers a segmentation of units beyond the syntactic level, for transcripts of spoken language.

We will first present a summary of the theoretic approach this annotation adapts, and a presentation of an annotation tool before detailing the protocol on three different annotation levels. Finally, we will review some problematic cases and how they should be treated.

The objective of this annotation is a segmentation of transcripts into those units, without a focus on tagging. As such, it would prove of limited use for analysis. The protocol is also aimed at non-expert annotators, with a focus on simplicity, reliability and systematicity.

1.1. *The “period grammar” approach*

First, we assume that the language is articulated, with a prosodic and a syntactic level, where maximal prosodic units (usually syllables) are used to build minimal syntactic units (morphemes). The “period grammar” assumes a third level, called “pragma-syntax”, where maxima syntactic units (that we will call “clauses”) serve to build minimal pragma-syntactic units (that we will call “utterances” (“énonciations” in French)).

Each articulation has a minimal and a maximal unit. For prosody they are respectively “phonemes” and “syllables”; for syntax the minimal unit is the “morpheme”. As such, we will now define three new units:

- 1) “clause”: maximal syntactic unit
- 2) “utterance”: minimal pragma-syntactic unit
- 3) “period”: maximal pragma-syntactic unit

There are three remarks to make here. One is that there is no strict equivalence between the maximal unit of one articulation and the minimal unit it serves to build: syllables don’t correspond one for one with morphemes. Another remark is the assumption that units from a

previous articulation shouldn't be larger than those of the next articulation: there shouldn't be syllables containing two lexical items. A third remark is that we open the way for and actually assume more articulations past pragma-syntax, notably interaction.

prosody > syntax > pragma-syntax > interaction

A "clause" is a maximal syntactic unit, that is, a unit that exhausts all government relations, a unit that isn't syntactically governed by any other unit. In this approach, the definition of government is broad, as any bi- or unidirectional implication between units. Whereas other approaches will attach government to a verb or rely on syntactic tests, our approach focuses primarily on the autonomy of a unit.

An "utterance" is a minimal pragma-syntactic unit, that is, the first unit to produce a communicative action. Our approach assumes a discourse memory containing all information made accessible by the discourse, and that is revised by actions, such that each action creates a new memory state by adding or revising available information.

A "period" is a maximal pragma-syntactic unit, that is, a unit that corresponds to a full communicative program. We assume that the discourse memory can have unstable states requiring further actions, in which case a period starts and ends at two stable states. However, production constraints (from vocal, computational or memorial abilities) can lead into considering this unit as steps to complete that program, segmented by rests.

All units rely on prosodic, syntactic and pragmatic clues for their segmentation. Clauses and utterances, assumed to be somewhat comparable, would correspond to prosodic groups (with an intonative contour) while a period would be characterized by a conclusive intonation. Syntactic clues are paramount for the clause, and a period cannot end within a clause. Utterances and periods are pragmatically defined through the discourse memory. Finally, periods take into account the interaction, such that a period should end at a turn switch.

1.2. The annotation tool – Exmaralda

We assume annotation tools using « tiers » (separate « lines » of text) and as a convention one tier per speaker. In such a structure, the annotations are realized as additional tiers per speaker.

In our case we will use EXMARaLDA¹ for illustration, with a short introduction to using this tool for annotation.

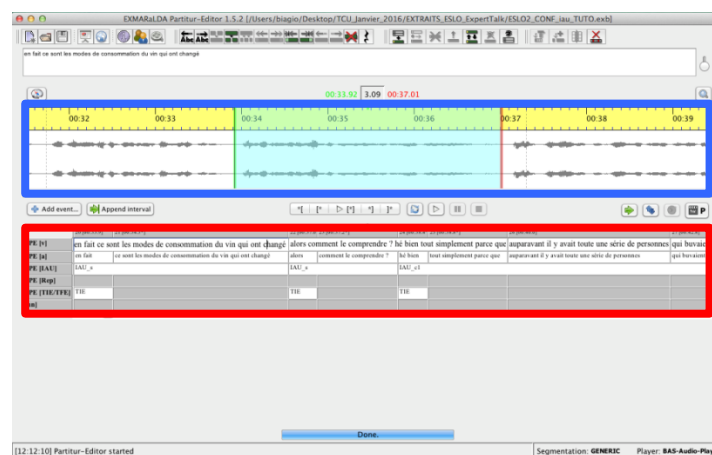


Fig.1: EXMARaLDA, Partitur-editor interface

¹ This software is developed by Thomas Schmidt (IDS Mannheim) and is available online at <http://exmaralda.org>, support materials, video and (detailed) pdf tutorials are also available.

Once EXMARaLDA is downloaded and installed, load the annotation file (File > Open). If no sound is attached, load the sound file (Transcription > Recordings... > Add). If there is no prior annotation file, create a new one (File > New) and add speaker tiers (Transcription > Locutors table, then Track > Add track). Each speaker should have one tier with the « transcription » attribute and all others the « annotation » attribute, including a copy of the transcription tier for that speaker.

In the figure above, the sound (oscillogram) is displayed in the blue box, and the annotations (tiers) in the red box.

With a new annotation file, create segments by selecting a sound interval and clicking on « Add Event ». You can split a segment by using « Event > Split ». You can fuse segments by using « Event > Merge ».

Conventional instructions for the annotation of large oral corpora are to define a window of around three seconds and listen to it one or twice before annotating that window of time according to the guidelines, then moving to the next window of time. Manual annotation or manual correction of an automatic annotation should always be revised by another annotator.

2. Annotation protocol

From a transcript (with one tier per speaker), for each speaker the annotator is to create two annotation tiers: one for “clauses” and one for “periods”. We will use the convention “speaker[annotation level]” such that for example the clause tier for speaker one would be summed up as “spk1[cla]”.

The third annotation tier, for “particles”, will be presented but isn’t necessary.

As mentioned earlier, this protocol adapts the “period grammar” approach. For the period, the adaptation is minimal. For the “clause”, however, it is important in that we will actually annotate “utterances”, rely on their relation with the discourse memory and work on the notion of autonomy. The resulting units, while named clauses, must hence be considered as corresponding neither to theoretical clause nor to the theoretical utterance, but as a pragmatic compromise for annotation purposes, aimed at simplicity, reliability and systematicity.

2.1. “clauses”

A clause can have two tags:

cl_s	simple clause
cl_u	unfinished clause

Fig.2: tags for the clause level

The only difference will be whether the unit is complete or incomplete, syntactically.

What we call “clause” here, again, corresponds more to an utterance. As such, it begins when a new action starts, at which point the action is effective whether it is completed or not, and it ends when another action starts (or when either the speaker gives up his turn or the discourse ends). To define the start and end of an action, we will look at the segment’s autonomy in context.

To test the autonomy, the annotator should:

- a) Expand a given segment until, ignoring what follows that segment and within the local context (previous actions) this segment is autonomous.
- b) Revise the autonomy of the previous segment with the new one using
 - b1) prosodic and
 - b2) syntactic cues.
- c) The previous segment is a unit if still autonomous, otherwise attach it to the new segment.

Prosodic cues are:

- 1) Pauses, such that any pause past 0.8s constitutes the end of an action and
- 2) Prominences, such that a prominence (salient syllable) suggests the end of an action.

Prosodic cues depend on their environment: a speaker can produce longer pauses by default, making the mark move (between 0.6s and 1s). Prominences can also mark emphasis and depend on the speaker and language. In case of doubt, by default the autonomy is maintained.

Syntactic cues are governing relations. We assume that utterances shouldn't be smaller than a clause, that is, there shouldn't be governing relations remaining. Only clear relations, without recourse to tests, should be taken as cues. In case of doubt, by default the autonomy is maintained.

To understand what autonomy is and how it is tested, we will use a german example (for each example we give the corpus (here FOLK), the transcription name then in parenthesis the temporal boundaries in seconds):

HF: weil das (0.32) in england (0.2) mehr vorkommt oder mh
(because that in england is to be found more often or mh)

AJ: ja ich glaub da spielt einiges da muss man auch die biographie von dem herrn nochmal berücksichtigen aber so das war so dieses ähm es fing auch mit ner rockabilly band an
(well I think a lot plays you have to consider the biography of the guy as well again but like that was like that uhm it also started with a rockabilly band)

Ex.1: Folk_Interview (99-118)

Starting at AJ, if we test "ja", we get an autonomous segment: AJ could stop there, it is autonomous. The next segment "ich" isn't autonomous, but "ich glaub" is. "ich glaub" has no syntactic relation with "ja" and prosodic cues aren't accurate enough to allow for a revision (in fact there is a small lengthening on "ja", hinting at a prominence), so "ja" is confirmed as a unit, a clause.

Then we test "da", until "da spielt einiges" which is autonomous. There we can revise "ich glaub" as it can be a modality of "da spielt einiges" and has a continuous intonative contour. While without those cues "ich glaub" could be autonomous or attached, those cues make us attach it to our current segment. The next segment will then revise "ich glaub da spielt einiges" to see if it is indeed an autonomous segment, a unit.

A last observation in our example is "so das war so dieses ähm" where we would have four different autonomous segments: "so", "das war so", "dieses" and "ähm". The prosody alone doesn't justify attaching them together as next follows "es ging auch..." which has roughly the same prosodic cues. Instead, we can observe that syntactically, those are hesitations,

reformulations on a same structure (eventually incomplete, so “cl_u”). That structure is nowhere to be found with “es ging auch...”, making it a brand new action.

To be clear, “autonomy in context” means that the segment tested is autonomous relative to what precedes it, including the previous segment it will revise. Otherwise, it would be arguing that “it can’t bark” in “I have a rock and it can’t bark” isn’t autonomous because we haven’t introduced the rock. When testing the autonomy at step (a) the annotator is not to dismiss the segment that will be tested on step (b).

For the many problematic cases, we report the annotator to section 3.

2.2. “Period”

A period can have two tags:

p_s	simple period
p_u	unfinished period

Fig.3: tags for the period level

An unfinished period is a period that ends without a conclusive intonation and on an unfinished clause. A period can only end if there is a conclusive intonation at its end, or if the speaker gives up its turn, or if the discourse ends. In those two last cases, even without a conclusive intonation we will consider the period complete.

As for what constitutes a conclusive intonation, it will, like prosodic cues for clauses, depend on the environment, that is, the speaker’s production.

Instead of relying absolute conclusive intonations, the annotator is to find spots within the transcription where the speaker intends to conclude, contrast those with spots where the speaker intends to continue and use those as reference. Even then, the annotator will meet situations where the intonation is ambiguous, or the context (pragmatically) heavily suggests a conclusion but the contour isn’t so clear. In case of doubt, the annotator must consider that intonation continuative by default. The same way, the annotator must ignore pauses, no matter their length.

A period always ends when a speaker gives up his turn: this is tricky, as it doesn’t just mean another speaker starts speaking. The current speaker must stop speaking (or produce a conclusive intonation); otherwise, per our protocol, even if he answers the new intervention it would still be part of his communicative program, not a new program starting. The same way, a speaker who tries to start a turn numerous times in succession will have technically given up his turn just as many times, unless those starts are considered as one single clause (as defined under 2.1, not 1.1).

Under this protocol, there should be no problematic case for period annotation.

2.3. “Particles”

We use “discursive particles” as a generic term for conjunctions (but, because, ...) when they link clauses, for discourse markers (well, finally, otherwise...) and for meta-enunciative comments (I think, you see, ...). We will define discursive particles as “any segment that isn’t syntactically governed but isn’t autonomous either”.

The only tag is “part”.

This annotation tier is accessory but useful in two respects: one is that while discursive particles are relevant to the pragma-syntax, they are hidden within clauses, the other is that there can be a tendency to annotate particles as clauses (like “ja” and “ich glaub” in example 1, section 1.1), and a separate annotation of particles can ease that need (more on that in problematic cases, section 3). Still, it is not required to have a complete annotation of pragma-syntax.

The protocol is trivial, if clauses have already been annotated. Particles are:

- a) All conjunctions at the start of a clause
- b) All discourse markers in a clause
- c) All meta-enunciative comments in a clause

Since defining a discourse marker or a meta-enunciative comment can be tricky, in case of doubt the annotator should consider the segments as discourse particles.

As for the segmentation, a “part” (for “particle”) segment must coalesce all adjacent particles. That means that if a conjunction is followed by a discourse marker and so on, like “but still uh I mean”, all of this must constitute a single segment.

Also, discursive particles that constitute the whole clause, whether because the clause is incomplete or because they are in isolation, are considered autonomous and as such are not annotated.

Discursive particles being a problematic case for clauses, for detail we report the annotator to section 3.

3. Treatment of problematic cases

Only clauses should prove difficult: periods depend on the perception of conclusive intonations, as they vary and lack objective measurements; and particles rely on a clause segmentation to be properly annotated.

This is where we must insist: clauses are continuous

By continuous we mean that any new action necessarily ends the previous one: a unit cannot appear as multiple segments: this is due to actions changing the memory’s state. By modality we mean assertions, questions, etc... but also evaluations like “maybe” or “I think”.

3.1. Hesitations / reformulations

We already showed such a case at the end of section 1. When a speaker hesitates, it can either be considered a (micro-)syntactic phenomenon, or a pragma-syntactic one. In the latter case the speaker revised his communicative program, abandoning the current action (and syntactic structure) for a new one in the process.

Such cases don’t necessarily implicate only incomplete segments, but the problem remains the same, that is, knowing if it’s one or multiple clauses:

spk4: voilà oui non trente-deux voilà je change vingt-trois ans
(right yes no thirty-two right I’ll change it twenty-three years)

Example 2: ESLO_Media (1252-1254)

Prosodic cues can indicate multiples units, but are usually unreliable, unless there is a conclusive intonation.

Syntactic cues are the most important in these cases, as only a new structure will be treated as pragma-syntactic. The trap is that an old structure can be amended with added elements at the front, delaying the copied part. As long as these elements aren't autonomous, this is still considered a (micro-)syntactic phenomenon. So even if, in reformulations, we see multiple unfinished structures, without the certitude that they wouldn't eventually repeat each other we will consider they would and count them as (micro-)syntactic.

In example (2), the prosody can't help us, not only because there is no prominence but also because the segment is partly overlapped by another speaker (as they compete for the turn, hence the repetitions). One question could be if "thirty-two right" could be a single unit, as "right" could be a modality. This could be expanded to "right yes no thirty-two right" as, again, those could simply be modalities to "thirty-two". If the protocol has been followed, though, those should be separated: they are distinct structures and we clearly see in this context, explicitly, that "right" can be autonomous.

3.2. Repetitions / lists

Another case where an annotator can hesitate between (micro-) and pragma-syntax is when a same structure repeats itself. It is considered syntactic when governed, "with the dog, with the cat..." or "he ate, slept..." and pragma-syntactic when autonomous, "he ate, he slept...". One particular case in that regard is when a clause is repeated identically:

Lea: ouais on blague on blague on blague y a pas de souci
(yeah we're joking we're joking we're joking it's alright)

Example 3: CLAPI_SocialMeeting (136-139)

We choose in that particular case to still count them as separate clauses, that is, three clauses here, one per each "on blague".

But the actual problem arises when the list isn't composed of verbal segments:

Lea: euh comment on s'organise pour ce pot (0.3) euh et puis euh (0.2) l-
 l'installation un petit peu de matériel euh donc qui sera là
*(uh how do we organize ourselves for the collect (0.3) uh and uh (0.2) th-
 the installation a bit of equipment uh so who will be there)*

Example 4: CLAPI_SocialMeeting (22-29)

Here "the installation" and "a bit of equipment" could be either autonomous clauses or governed by the same element, as it is intended as a list. The prosody suggests separate units, but those boundaries would be there syntactically too. Later on the same speaker will utter "installation (0.1) installation" while writing: should those be considered as two units?

By default, and following the protocol, in those cases they will be considered as separate units. "the installation" and "a bit of equipment", while in a list, can each work autonomously in context, and "installation" in the later case, while clearly a simple repetition, means the isolated word is a whole clause, hence falling into the case of example 3.

3.3. Relatives

By "relatives" we mean broadly all segments starting with a conjunction. While subordinates usually offer no problem, we still encounter cases where such a subordinate turns out to be on or multiple clauses after a "that".

ELI: cette semaine elle nous a appelés (0.3) pour nous dire tu sais que normalement quand tu fais une formation comme ça tu es prise automatiquement [...] et du coup (0.6) là (0.6) ils vont pas en garder
(this week she called us (0.3) to tell us you know that normally when you follow a formation like that you're taken automatically [...] and now (0.6) here (0.6) they won't keep them

Example 5: CLAPI_TableTalk (497-516)

The actual reported speech is “they won’t keep them”, but there are several clauses introducing it after the conjunction. So we have a clearly subordinate structure but we cannot subordinate clauses. The answer is to consider “... to tell us you know that” as an unfinished clause.

Still, such subordinate cases are rare. Relatives are another problem: segments introduced by “when”, “because”, “if” and so on. They cause little difficulty when preceding the syntactic element that governs them but are otherwise difficult to solve:

ELI: et qu'elle refasse son truc elle-même (0.8) c'est-à-dire sans le formateur avec elle au cas où elle a pas compris
(and that she redoes her thing herself (0.8) that is without the teacher in case she didn't understand)

Example 6: CLAPI_TableTalk (474-478)

We chose here an example (6) where the prosody clearly indicates not only two separate clauses (prominence and pause) but also two separate periods, as there is a conclusive intonation on “elle-même”. Still, without those clues do we consider the segment introduced by “that is” as governed or autonomous?

Without prosodic cues, in this particular case it would be governed, as “without the teacher” is governed by “she redoes her thing”. But if the syntactic structure didn’t have that clear of a relation, and the segment was still autonomous in context, even without prosodic cues the segment would be considered a separate unit.

ELI: donc euh du coup je reste et puis euh (0.4) je la ramène parce que on sait jamais tu sais
(so uh due to that I stay there and uh (0.4) I take her back because you never know you know)

Example 7: CLAPI_TableTalk (262-266)

That is the case in example (7) where “because you never know you know” would be autonomous in context, whether “I take her back” was there or not actually, or in most contexts in fact. Syntactic relations would be “I take her back because of the wind”, akin to example 6, or “I take her back whenever she wants” where “she wants” cannot be autonomous. In French, “je la ramène parce qu'elle veut” (*I take her back because she wants*) would be non-autonomous, (micro-)syntactic, but “je la ramène parce qu'elle le veut” (*I take her back because she wants it*) is already syntactically autonomous, even though we could still say it is attached, not on syntactic grounds but on pragmatic ones, because of the context (hence “autonomy in context”).

In this case, pragmatically the context shows us that “I stay here” is autonomous, so “I take her back”, at the same level, doesn’t need a complementation. The annotator is to handle the context carefully and not make inferences or guess intents as a conjunction is still a syntactic cue in itself. Only, not enough of a cue alone.

3.4. *Reported speech / parentheses*

We already saw in section 3.3 a case of indirect speech introduction interrupted by a series of clauses which, while not a parenthesis, caused an unfinished clause (per our protocol).

Parentheses will globally be treated the same way: that is, any clause or series of clauses that interrupts another will be either a reprogramming or a parenthesis, and for annotation purposes will lead to a simple or unfinished clause (depending on syntactic completion) where the phenomenon starts:

spk2: et puis un prof d'espagnol c'est marrant c'est les profs de langues
(*and a Spanish teacher it's funny it's languages teachers*)

Example 8: ESLO_Ent (289-292)

Here we could assume “and a Spanish teacher” is an unfinished clause (it is actually complete in context) and then we have two clauses who are parentheses and will simply be annotated as simple clauses, making three clauses in total. It doesn't matter if the unfinished clause is completed later: that completion is considered as a separate action altogether, a clause in itself.

Reported speech works roughly the same way too. While indirect speech would be considered governed by the introductory segment (for example “to tell us that”) until such government ceases (even if the reported speech hasn't), direct speech and variations will be considered autonomous. The only caveat (and breach of protocol) is that the introductory segment will be considered complete, even though it cannot be autonomous and only if direct speech is effectively realized afterwards.

spk2: il avait dit les gars euh parce que j'ai un f- un frère hein (1.0) qui pareil [...] mon père nous avait dit les gars (0.3) comme vous voulez (0.3) mais (0.5) si vous faites pas attention vous vous retrouverez à l'usine
(*he said guys uh because I had a b- a brother see (1.0) who like me [...] my father had told us guys (0.3) do as you want (0.3) but (0.5) if you're not careful you'll end up at the factory*)

Example 9: ESLO_Ent (410-432)

In example (9) both “he said” and “my father had told us” will be complete clauses. Then the reported speech itself is treated like any other segment. Example (9) also provides another case of parenthesis and case of an autonomous “because”.

Clauses are continuous. Except for the introductory segment in case, the protocol should be followed systematically.

3.5. *Left and right dislocations*

We use here a precise term for, again, a broad range of situations, including, in example (9), the case of “guys (0.3) do as you want”. The question is if “guys” is attached to the rest of the segment, or autonomous.

A syntactic relation isn't really clear, but if “guys” was autonomous it would be considered incomplete. Our protocol should solve such questions. Same for:

ELI: bon ben je vous laisse vous installer les filles
(*okay well I'll let you take place girls*)

Example 10: CLAPI_TableTalk (18-20)

Autonomy here, more than syntax is what decides.

spk1: mais enfin (0.3) depuis hier y a y a des députés PS par exemple qui disent
 [...] euh c'était jusque-là du jamais vu au sein du parti socialiste Jean-Louis
 Bernard
*(but still (0.3) since yesterday there there are PS elected for example who
 are saying [...] uh it was thus far never seen within the socialist party Jean-
 Louis Bernard)*

Example 11: ESLO_Media (218-229)

Dislocated aren't always named persons, but we'll focus on that to show that there are cases where it actually is a separate clause. When the speaker gives the turn to someone else, by naming him, it can be part of a larger unit, for example a question, but in example (11) the speaker was stating a situation to everyone and only then selecting the next speaker. In that specific case the conclusive intonation starts on "socialist party" and then levels on the name, so it is of little help. There is no syntactic relation like could be argued for examples (9-10) and indeed "Jean-Louis Bernard" could be autonomous. If introduced earlier it would have been integrated to the larger unit, "but still Jean-Louis Bernard since yesterday...". It hasn't, though, and as such the protocol makes it a separate clause.

3.6. Discursive particles

Discursive particles, as presented in section 1.3, contain discourse markers and meta-enunciative comments, and can contain certain conjunctions. We have already covered those conjunctions in section 3.3, and won't define "discourse marker" or "meta-enunciative comment" further.

We'll, for annotation purposes, distinguish two kinds of particles: those who can be autonomous and those who can't. For example, "yes/no" can be autonomous, while "but" or "still", would be considered incomplete. In French, examples of autonomous particles would be "voilà" or "bon", while examples of non-autonomous particles would be "ben" or "alors".

For non-autonomous particles, the treatment should be automatic: unfinished clauses if isolated (see prosodic cues, section 1.1), attached to the larger unit otherwise. For autonomous particles, the annotator should rely on prosodic cues as much as possible, but they tend to be unreliable and only a concertation between annotators can prevent disagreement on the results. By default though, our protocol would lead those particles to be annotated as separate clauses, and if a concertation isn't possible, that default position should be followed.

A particular case to pay attention to is when particles are repeated, for example "oui oui" (yes yes). Prosodic cues will tell whether they must be regrouped or separated: "oui oui oui oui" can actually be two separate clauses because of a prominence on the second "oui".

In French, other particular cases deserve mention. "Bon ben" (*alright*) has a particular prosodic contour, with a raise on "bon" contrasting with its normal use among other cues to group those two particles together. "Oui mais" (*yes but*) tends to be two separate units, as the prosody can be really unreliable, but "non mais" (*no but*) tends to be regrouped as it's easier to discern if there is a perceived prominence or not. Finally "oui non" (*yes no*) or "ouais non" (*yeah no*) tend to be regrouped, again, due to prosodic cues, as there is usually a complete lack of prominence on "ouais". Hesitation markers like "uh" are never autonomous.

When attaching particles to a larger unit, a problem remains, namely to what segment to attach the particle.

spk1: je vais essayer de euh de faire pour le mieux (0.1) voilà (0.3) donc vous
 m'excuserez si euh je vais assez vite
 (*I'll try to uh to do my best (0.1) alright (0.3) So you'll excuse me if uh I go
 really fast*)

Example 12: ESLO_Conf (32-38)

Discursive particles tend to be at the border between two clauses, so assuming we wanted to attach “voilà” to any of them (we don't, it's considered autonomous per our protocol, conclusive intonation before it) we could treat it as the conclusion of the previous segment, “I'll try to uh to do my best alright”, or as the introduction of the next segment, “alright so you'll excuse me if...”.

The annotator is not to make assumptions on how the particle works (beyond if it can be autonomous or not), and only rely on prosodic cues to decide.

As for meta-enunciative comments, their marking is tricky as they can quickly change into a parenthesis: “je passe” (*moving on*) and “je passe les details” (*I'll spare you the details*). Typically, “you see” can be an actual question or a comment (like “you know” in example (7)) non-autonomous in context. Instead of establishing a list of expressions, we choose to apply the protocol firmly: “je passe” or “pardon” (*sorry*) would be autonomous and form their own clause in a given context, and so on. Defining when such a segment is a “modality” (as presented in section 2.1) or a comment should be like defining when a particle is non-autonomous. If, when alone, they would be considered incomplete, they are to be attached.