

**On the Meaning and Intonation of Polar Questions**

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- Ongoing work with Juan Sosa and Lorna Fadden.
- This project is part of program of research on the prosody of sentence types and information structure in English and Spanish.
- Previous work on the prosody of questions in English: Hedberg and Sosa (2002), Hedberg, Sosa and Fadden (2004).
- Also previous work on negative sentences (Hedberg and Sosa 2003), contradictions (Hedberg, Sosa and Fadden 2003), and information structure (Hedberg and Sosa 2001, Hedberg 2002).

I. INTRODUCTION

(1) **Question forms**

a.	Does he have a BMW?	Positive Interrogative
b.	Doesn't he have a BMW?	Negative Interrogative
c.	He has a BMW, doesn't he?	Positive Tag
d.	He has a BMW?	Positive Declarative
e.	He has a BMW, does he?	Double Positive Tag
f.	He doesn't have a BMW, does he?	Negative Tag
g.	He doesn't have a BMW?	Negative Declarative

**Hamblin (1973)**

“We shall need to regard ‘who walks’ as itself denoting a set, namely, the set whose members are the propositions denoted by ‘Mary walks’, ‘John walks’, ... and so on for all individuals. Pragmatically speaking a question sets up a choice-situation between a set of propositions, namely, those propositions that count as answers to it.” (p. 254)

- On this account, the questions in (1) all denote {that R.M. has a BMW, that R.M. doesn't have a BMW} because they can all be answered ‘yes’ or ‘no’.
- They thus would be truth-conditionally identical. However, they differ from each other in their appropriate discourse context, and thus differ in meaning in a broader sense:
  - Neutral or biased in favor of a particular answer.
  - Direction of the bias:  $p$  or  $\neg p$ .
  - Source of the bias: Speaker or Addressee

**Ladd's (1981) ambiguity concerning negative interrogatives**

Outer Negation

- (2) [Situation: Kathleen and Jeff have just come from Chicago on the Greyhound bus to visit Bob in Ithaca]
- Bob: You guys must be starving. You want to go get something to eat?
- Kathleen: Yeah, isn't there a vegetarian restaurant around here—Moosewood, or something like that?

Bob: Gee, you've heard of Moosewood all the way out in Chicago, huh? OK, let's go there.

“Kathleen uses the negative question *isn't there a vegetarian restaurant around here* to ask for confirmation of something she believes to be true.”

### Inner Negation

- (3) [Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS]  
 Bob: I'd like to take you guys out to dinner while I'm here—we'd have to go somewhere around here before the evening session tonight, don't you think?  
 Kathleen: I guess, but there's not really any place to go in Hyde Park.  
 Bob: Oh, really, isn't there a vegetarian restaurant around here?  
 Kathleen: No, about all we can get is hamburgers and souvlaki.

“[Bob] had previously assumed the truth of the proposition *there is a vegetarian restaurant around here*, but has now inferred from what Kathleen says that this proposition is actually false, and is using the NQ to check this new inference.”

- Positive polarity items occur in Outer Negation Interrogatives:
  - Isn't Jane coming too?
- Negative polarity items occur in Inner Negation Interrogatives:
  - Isn't Jane coming either?
  - Aren't you going to lift a finger to help?

### **Summary of meaning differences that we will propose:**

Basically assume a semantic model along the lines of Stalnaker's (1978) treatment of the common ground with articulated contributions by speaker and addressee, although we don't formalize to the extent that Bartels 1999, Gunlogson 2001, and Steedman 2000 do (who also assume a model of the common ground with partitions for speaker and addressee).

- |     |    |                                       |                       |
|-----|----|---------------------------------------|-----------------------|
| (4) | a. | Does he have a BMW?                   | Neutral               |
|     | b. | Doesn't he have a BMW? Outer Negation | pS                    |
|     | c. | He has a BMW, doesn't he?             | pS                    |
|     | d. | He has a BMW?                         | pA                    |
|     | e. | He has a BMW, does he?                | pA                    |
|     | f. | He doesn't have a BMW, does he?       | $\neg$ pS             |
|     | g. | He doesn't have a BMW?                | $\neg$ pA             |
|     | h. | Doesn't he have a BMW? Inner Negation | pS $\wedge$ $\neg$ pA |

### **Strategy**

Examine actually occurring polar questions in context to determine their contextual meanings, evaluating the semantics literature, which is based on linguistic intuitions, against corpus data. Begin to evaluate the effects of intonation on question meaning.

**Method:**

CallHome American English Corpus (LDC)

5 or 10 minute transcriptions of 120 half-hour telephone calls

18.3 hours of transcribed spontaneous speech, almost 230,000 words

Mostly between family members or close friends.

Lorna searched the corpus for questions of different types

Lorna edited the speech files with Goldwave to obtain wav files for each question

Lorna and Juan are transcribing the questions for intonation, using the ToBI transcription system (Beckman and Ayers-Elam 1997)

Lorna and Nancy are examining the questions for meaning.

(5)	Distribution of question types	
a.	Positive Interrogative	100 (more in data)
b.	Negative Interrogative	25
c.	Positive Tag	18
d.	Positive Declarative	60
e.	Double Positive Tag	0
f.	Negative Tag	9
g.	Negative Declarative	24

## II. DECLARATIVE QUESTIONS

### Gunlogson (2001)

- Declarative form contributes commitment to p.
    - Falling Declarative
      - Express speaker commitment to p
        - *It's raining.*
    - Rising Declarative
      - Express addressee commitment to p
        - *It's raining?*
      - “In addition to their familiar ‘echoing’ function, rising declaratives may be used to question presuppositions and inferences taken to be logical consequences of the Addressee’s public position, whether or not such inference finds its basis in a preceding utterance.” (p. 6)
  - Gunlogson gets more technical than we do; we are interested mostly in her descriptive generalizations.
    - Declaratives express a bias that is absent with the use of interrogatives, they cannot be used as neutral questions.
- (6) [on a tax form]
- a. During the tax year, did you receive a distribution from a foreign trust?
  - b. #During the tax year, you received a distribution from a foreign trust?
  - c. #During the tax year, you received a distribution from a foreign trust.

- Rising declaratives, like interrogatives, fail to commit the Speaker to their content.

(7) A: The king of France is bald.

B's response

- Is France a monarchy?
- France is a monarchy?
- #France is a monarchy.

- The Contextual Bias Condition: Rising declaratives can only be used as questions in contexts where the Addressee is already publicly committed to the proposition expressed.

(8) [to passerby walking a dog]

Pardon me, but...

- Is that a Weimaraner?
- #That's a Weimaraner?
- #That's a Weimaraner..

## Our findings

- We agree with Gunlogson's treatment of declarative questions.

### Echo

- (9) EN\_5712  
 773.57 775.13 B: th- oh well the other one, &Hindi  
 775.84 776.25 A: No  
 775.84 777.27 B: Or +Urdu+, Urdu  
 777.14 778.21 A: it's Urdu  
 779.04 781.11 B: Urdu is is an Indian language.  
 782.17 784.22 A: **Urdu is an Indian language?**  
 784.79 785.30 B: uh-huh  
 785.53 785.97 A: oh

### Entailment

- (10) EN\_4807  
 369.87 373.65 B: well I'm a &Finnish T V star.  
 374.10 374.55 A: are you?  
 375.13 376.05 B: yeah, {breath}  
 375.85 376.81 A: **you were on T V?**  
 377.27 378.49 B: well, I'm going to be.  
 378.39 379.07 A: oh you are  
 379.43 385.12 B: I did the filming on, last Thursday.

### Presupposition

- (11) EN\_4838  
 462.36 463.48 B: &Rich &Munsen

463.69 464.36 A: {laugh}  
 464.33 466.42 B: I saw him {laugh} I was --  
 466.03 466.74 A: you saw him?  
 466.42 469.94 B: -- getting gas and like he drove by in his &B &M &W and  
 he's like  
 469.81 470.86 A: **he has a &B &M &W?**  
 470.41 476.76 B: he like, well, it's old. and he's and he like pulled up next to  
 me and he's like hey [[drawn out]] and I'm like hi.

### Implicature

(12) EN\_4838

543.86 547.96 A: its hard to make i- it's hard to make friends here to, even  
 though like I live here, because like  
 549.21 552.79 B: I think it's harder because we're old. like when you're little,  
 you don't care about like  
 552.55 552.99 A: yeah  
 553.22 557.42 B: like, oh, my god, that person smokes, or, oh my god, you  
 know  
 557.70 560.54 A: I can't, I can't be put off by that here {laugh}  
 561.19 562.08 B: **oh, everyone smokes?**  
 562.30 564.12 A: yeah, a lot of people smoke ((I mean))  
 563.91 564.78 B: do your roommates smoke?  
 564.92 565.22 A: no  
 565.80 568.67 B: that's good. oh yeah, you said that was first priority

### Other Inference

(13) EN\_6161

530.58 534.26 A: Now when you take off for two weeks that'll be school will  
 be going on right?  
 534.57 538.04 B: %mm. Th- no they have carnival here too but it's just not --  
 536.62 536.91 A: Are th-  
 537.45 537.91 A: oh I see.  
 538.43 540.02 A: **So everything just kind of stops?**  
 538.50 538.93 B: -- not as  
 540.19 541.59 B: {laugh} %mm {breath}  
 541.76 544.60 B: yeah. But I'm going to be gone a little bit longer than than  
 what --  
 543.91 544.16 A: yeah.  
 544.87 545.23 A: yeah.  
 545.41 547.22 B: -- what it is. But b- yeah. Everything stops.

- Quite often declarative questions start with discourse particles “so” or “oh”.
- Most of the time in this corpus the declarative question can be replaced with a question beginning with “You mean...?” or “You’re saying...?”
  - You mean you were on TV?
  - You’re saying he has a BMW?
  - You’re saying everyone smokes?
  - You mean everything just kind of stops?

- One example doesn't pass this test; the speaker opens up a new discourse topic with a declarative question:

(14) EN\_4623  
 477.48 483.26 B: So I she was born last <Hebrew Shavuot> %eh %mm you know %uh the year and some ago and I never saw her  
 483.59 484.01 A: uh-huh  
 485.74 486.87 B: So anyway  
 487.79 489.73 A: **Your brothers are working hard in day camp?**  
 488.49 488.72 B: oh  
 490.48 492.29 B: oh yeah but then they're also enjoying it. [clang]  
 492.37 492.86 A: oh good  
 492.65 494.29 B: That's what they said anyway. You could ask them.  
 494.60 495.17 A: okay

- Gunlogson suggests that examples of this nature can satisfy the Contextual Bias Condition through accommodation (Lewis 1979):

(15) a. B is mutually understood to be possessed of facts about some particular domain.  
 b. A has reason to believe that some proposition p is a fact and that B knows it by virtue of (15a).  
 c. Therefore, when A presents p to B declaratively, it can be taken to follow from *mutual* assumptions that B already knows, or is in a position to confirm, p — therefore providing the contextual adjustment necessary to satisfy the Contextual Bias Condition. (p. 93)

- Some of the examples that we classified as positive declarative questions might be positive interrogative questions with elided preposed auxiliaries. Once we have explicated the meaning of different question types, we should be able to disambiguate these.

(16) EN\_4247  
 141.81 143.99 A: Great. What should we talk about? {laugh}  
 145.20 149.05 B: Well I don't know. Tell me what's going on in &America. I haven't seen the news in ages. [line static]  
 149.26 149.68 A: Really?  
 150.28 150.60 A: You did d-  
 150.40 152.55 B: In the American news I mean I know what's going on in &Russia but  
 153.06 156.85 A: yeah. Well let's see. What's going on? %uh  
 157.78 159.28 A: **You want me to just give you some headlines?**  
 160.46 162.80 B: yeah. Give me some headlines. What's &Clinton up to?

Echo	15
Entailment	3
Presupposition	2
Implicature	3
Other inference	19
Indeterminate	2
Ambiguous examples	16
TOTAL	60

Table 1: Distribution of positive declarative queries with respect to addressee commitment

- We extend Gunlogson's account to negative declarative questions: addressee is committed to  $\neg p$ .
- Always inner negation (alluded to by Büring and Gunlogson 2000 and Gunlogson 2001), but without the epistemic implicature of negative interrogatives:  $pS$ .

#### Echo

(17)

EN\_5931

635.64 642.13 A: {laugh} I am so broke I just I just closed out my savings account today and I can pay for tuition {breath} but I can't pay to live

635.76 636.56 B: yeah I know

642.91 644.87 A: so I still haven't gotten my pension money

646.27 646.90 A: I'm bitter

646.34 647.26 B: **You still haven't?**

647.38 652.04 A: No they sent it back to me and I sent it back again because my passport is not clearly stamped

652.53 652.96 A: Isn't that nice

#### Entailment

(18)

EN\_5931

685.68 689.31 A: wh- wh- what can you say tonight the &X Files are on so I'm going to watch them {laugh}

689.80 692.11 B: {laugh}

690.93 694.74 A: {laugh} this is my life I never watch T V up at school the only thing I watch is &Friends

695.41 697.13 A: that's the only T V show I watch

695.87 697.57 B: **oh you don't watch E R?**

697.87 699.67 A: I no it's too depressing

700.20 703.05 A: I can't watch that right before I go to sleep it's like {laugh}

700.51 701.67 B: oh I love that show

#### Implicature

(19)

EN\_4623

641.78 648.45 B: {breath} you know I called <Hebrew &Chayita> yesterday and I said if anybody knows about this deal probably she does because you told me Mrs. &Rubin (( ))

646.75 648.03 A: Her mother told me about it  
 648.90 653.21 B: Right, but she didn't know anything about it I was sure she spoke to her mother for a half an hour last week {laughs}  
 653.52 654.41 A: **Her mother didn't call her?**  
 655.53 656.57 B: ((and)) she doesn't know anything about it.  
 656.66 656.93 A: %huh

### Other Inferences

- (20) EN\_4310  
 1196.73 1199.31 B: It's going to be thirty minutes in about five minutes I think.  
 1199.21 1201.73 A: oh okay because there's a beep coming on my end.  
 1201.79 1202.15 B: yeah.  
 1202.06 1202.61 A: **You don't hear it?**  
 1202.93 1203.26 B: No.  
 1203.46 1205.92 A: okay. Well ignore it so we'll let them go on.

Echo	4
Entailment	3
Presupposition	0
Implicature	3
Other inference	13
Indeterminate	1
Ambiguous	0
TOTAL	24

Table 2. Distribution of negative declarative queries with respect to addressee commitment

- A few of our declarative questions turn out to have falling intonation, which raises the issue of what constitutes a question. These were marked with question marks in the transcripts. The speaker has some degree of uncertainty and they invite addressee response.

- (21) EN\_4564  
 356.89 366.75 B: {breath} when we {laugh} When I remember when I was I was up it was right a couple before a few weeks before we brought him home we cleaned out the room to switch and I said you know I said, we can't put we couldn't put any baby in this room.  
 366.73 367.78 A: {laugh}  
 367.53 369.57 B: Poor &Noam got him back {laugh}  
 369.04 370.53 A: {laugh}  
 369.78 373.58 B: {laugh} and &Jochanan you know you can mish- you can control it better.  
 373.73 374.10 A: {laugh}  
 374.06 378.89 B: So it's &Jochanan and &Gabby and &Uriel and &Noam. The way the way they used to be together.  
 377.11 377.55 A: okay.



379.06 380.87 A: **So you still have your office as your office?**

H\* !H\* !H\*LL%

381.90 385.78 B: Right. I'm sitting in it right now in front of the I was in front of the computer actually, when you called.

### III. NEGATIVE INTERROGATIVE QUESTIONS

#### **Büring and Gunlogson (2000)**

##### Diambiguating paraphrases of inner vs. outer negation interrogatives:

Inner negation: Is there no vegetarian restaurant around here?

Outer negation: Isn't there some vegetarian restaurant around here?  
(also *kein* vs. *nicht ein* distinction in German)

##### Contextual constraints on different types

Positive Interrogative: There is no compelling evidence against p

Inner Negation interrogative: There is compelling evidence against p

Outer Negation Interrogative: There is no compelling evidence for p

##### Contextual Evidence:

Evidence that has just become mutually available to the participants in the current discourse situation.

##### Compelling:

- a. Evidence for p is compelling if, considered in isolation, it would allow the participants to assume p (i.e. the evidence could reasonably be considered to justify the inference that p).
- b. Evidence against p is compelling if it is compelling evidence for the opposite of p, W-p.

#### (21) Positive Interrogative

Context: A enters S's windowless computer room wearing a dripping wet raincoat. (evidence against p=it is sunny).

a. S: What's the weather like out there? Is it raining?

b. S: #What's the weather like out there? Is it sunny?

#### (22) Inner Negation Interrogative

Context: A and S want to go to dinner

a. A: Where do you want to go for dinner? (neutral)

S: #Is there no vegetarian restaurant around here?

b. A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (evidence for p)

S: #Is there no vegetarian restaurant around here?

- c. A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (evidence against p)  
S: Is there no vegetarian restaurant around here?

(23) Outer Negation Interrogative

Context: A and S want to go out for dinner. S has been to Moosewood a couple of years back.

- a. A: Where do you want to go for dinner? (neutral)  
S: Isn't there some vegetarian restaurant around here?
- b. A: I bet we can find any type of restaurant you can think of in this city. Make your choice! (evidence for p)  
S: #Isn't there some vegetarian restaurant around here?
- c. A: Since you guys are vegetarians, we can't go out in this town, where it's all meat and potatoes. (evidence against p)  
S: Isn't there some vegetarian restaurant around here?

- We haven't examined positive interrogative contexts yet, so can't evaluate Büring and Gunlogson's claim with regard to them.
- Their claim that inner negation interrogatives require contextual evidence against p fits our conclusions.
- But outer negation interrogatives do seem compatible with contextual evidence for p (contra the judgment in (23b)).
- Many outer negation interrogatives function almost as rhetorical questions, evaluative comments, which are supported by the preceding context.

(24) EN\_6045

661.97 662.70 A: and it says here

662.27 662.88 B: oh

662.77 665.35 A: call home free anywhere in the world and

666.72 672.42 A: %ah, as part of these studies we're you are offered a free long distance phone call anywhere in the world

672.86 675.03 A: and ten dollars for your time {laugh}

675.72 676.64 A: we can talk once

676.25 676.90 B: oh

677.23 679.21 A: with anyone for up to thirty minutes.

680.08 681.95 A: both parties should be native

680.68 681.77 B: oh how marvelous

681.96 685.37 A: yeah, we have to be native speakers of American English

686.85 690.82 A: so the identities of the participants will be kept confidential

687.31 688.07 B: oh

692.03 693.22 A: **but isn't that great?**

692.58 694.60 B: a- yeah {laugh}

### Romero and Han (in press)

- Compositional account of positive epistemic implicature associated with negative interrogatives and Ladd's ambiguity.
- Positive Interrogative: neutral.
- Negative Interrogative with preposed negation
  - Contributes a positive epistemic implicature on the part of the speaker: The speaker believes or at least expects that p.
    - Source: VERUM focus operator attracts negative auxiliary preposing
  - VERUM can also arise in questions from epistemic adverb 'really' or from stress on tensed auxiliary.
  - When negation is not preposed, this epistemic implicature does not arise:
    - (25) a. Doesn't John drink?
    - b. Does John not drink?

- Accounting for Ladd's (1981) ambiguity:

#### Outer negation

- "Speaker asks Addressee for any possible (weak or strong) doubts about p."
  - A: Ok, now that Stephan has come, we are all here. Let's go!
  - S: Isn't Jane coming too?
- Positive item (PI) question
  - Negation scopes over VERUM.
  - The speaker's original belief is p and the addressee's proposition (if any) is  $\neg p$ .

#### Inner negation

- "Speaker asks addressee for conclusive evidence for  $\neg p$ "
  - A: Pat is not coming. So we don't have any phonologists in the program.
  - S: Isn't Jane coming either?
- Negative item (NI) question
  - VERUM scopes over negation.
  - $\neg p$  is the addressee's proposition and p is the speaker's original proposition.

### Our findings

- We agree with Romero and Han's treatment of negative interrogative questions.
- We have one example of non-preposed negation, and as predicted it does not carry the epistemic implicature.
  - (26) EN\_4245
  - 678.89 682.18 B: {laugh} That's really funny.
  - 682.49 683.14 A: yeah.
  - 683.52 684.44 B: Small world %huh?
  - 683.64 684.06 A: You're

684.65 686.12 A: yeah. **And now are you not smoking?**  
 686.85 688.43 B: No. I am smoking.  
 688.74 690.85 A: yeah. Well I did a few when I've been back too.  
 690.98 693.72 B: yeah. I've been smoking big time. It's been a rough couple months.  
 694.26 694.94 A: yeah?  
 695.20 696.97 B: Well yeah it's been [distortion] really [/distortion] busy.  
 696.03 697.10 A: The kid sister thing?  
 697.27 697.64 B: %huh?  
 697.68 698.75 A: The kid sister thing?  
 699.29 702.72 B: Well no. Not really that but it's been really busy as far as work is concerned.

- All of our preposed negation interrogatives carry a positive epistemic implicature on the part of the speaker.
- We only have two clear cases of inner negation:

(27) EN\_5551  
 978.31 980.57 A: it's a restaurant that's just being built and opened.  
 981.44 981.88 A: {breath}  
 981.54 982.82 B: In &Madison area.  
 982.67 984.19 A: mhm. yeah in &Madison.  
 986.04 989.97 A: But it might be a good opportunity for him to learn from somebody else. {breath}  
 990.06 992.51 A: We're going to be coming up to our time here pretty soon.  
 993.43 994.38 B: **Don't they give us a warning?**  
 994.83 995.30 A: mhm.  
 996.10 997.42 A: They give us a one minute warning.  
 997.97 998.53 B: okay.

(28) EN\_6100  
 1581.71 1584.40 B: I just told them when I was coming home. {breath} And and {breath}  
 1584.69 1587.62 B: when I expected them to pick me up at the airport {breath}  
 1587.31 1588.71 A: The twenty-second, right?  
 1588.89 1589.35 B: {breath}  
 1589.54 1590.52 B: No ma'am.  
 1590.53 1592.15 A: **Aren't you leaving on the twenty-second?**  
 1591.68 1593.02 B: {breath} No ma'am.  
 1592.92 1593.89 A: On the twenty-third?  
 1595.05 1595.90 B: Yes ma'am.

- In (27) B infers from what A has said that they possibly don't give a warning and queries this. and in (28) A infers from what B has said that she isn't leaving on the twenty-second.
- Test out as an inner negation by two replacement tests:

- (29) a. You mean they don't give us a warning?  
 b. You mean you aren't leaving on the twenty-second?
- (30) a. They don't give us a warning?  
 b. You aren't leaving on the twenty-second?

- These tests show that the negative propositions belong to the addressee.
- Otherwise, outer negation.

- (31) EN\_4673  
 249.92 254.22 B: Well as long as somebody is willing to blow himself up {breath} it makes it very difficult.  
 254.47 256.60 A: Well and they are they are willing to do it.  
 254.61 256.33 B: But it's so ((terribly)) sad. [distortion]  
 256.73 257.85 A: They're willing to do it.  
 257.86 259.98 B: It's so sad & Ida. It is so --  
 260.11 261.37 B: -- unbelievably sad.  
 261.26 262.98 A: **Well, hasn't it divided the country?**  
 263.85 264.42 A: Aren't there --  
 263.89 265.43 B: I don't know. Look I --  
 264.81 266.16 A: -- pro and against?  
 265.97 267.61 B: -- don't know. We have to do something.  
 267.71 270.50 B: {breath} No I don't know if it has really. I'm not sure.

- (32) EN\_4610  
 1164.72 1168.88 B: Well we can both make an effort you know you can I'll finish my book you finish your paper you know.  
 1169.05 1169.43 A: yeah.  
 1169.82 1170.75 B: if you if you haven't [distortion] ((already))  
 1170.50 1172.88 A: Although you know & CUNY [[pronounced as a single word]] classes start really early.  
 1173.28 1176.41 B: **uh-huh yeah but then don't you have all those holidays right at the beginning?**  
 1176.38 1177.03 A: That's true.  
 1177.17 1178.04 B: {laugh}  
 1178.43 1180.91 A: That's a good point. I should really use those shouldn't I?  
 1181.16 1181.43 B: yeah.

- The outer negation examples fail the replacement tests. These would evoke  $\neg p$  instead of  $p$ .

- (33) a. #You mean it hasn't divided the country?  
 b. #You mean you don't have all those holidays right at the beginning
- (34) a. #It hasn't divided the country?  
 b. #You don't have all those holidays right at the beginning?

- The epistemic implicature can be so strong that the result is a rhetorical question:

- (35) EN\_4686: Isn't that a pain in the ass when they do that?  
 EN\_4913: Wouldn't that be cool?  
 EN\_5242: Isn't that sick?  
 EN\_5242: Isn't that gross?  
 EN\_5712: So anyway, doesn't that sound good?  
 EN\_5777: Isn't that weird?  
 EN\_5866: Isn't that weird?  
 EN\_6045: But isn't that great?  
 EN\_6079: Isn't that funny?  
 EN\_6079: Oh I know isn't it really bad?  
 EN\_6408: Oh, isn't she still a going strong.

- The comment-type outer negation interrogatives also fail the negative proposition replacement tests.

- (36) a. #You mean that isn't weird?  
 b. #That isn't weird?

Non-preposed Negation	1
Outer Negation Comments	11
Outer Negation Non-Comments	11
Inner Negation	2
TOTAL	25

Table 3. Distribution of Negative Interrogative Types

#### IV. TAG QUESTIONS

##### Romero and Han (in press)

- Positive tag question
  - “conveys that the speaker has a belief  $p$  and that s/he wants to double-check  $p$ .”
- Negative tag question
  - “conveys that the speaker has a belief  $\neg p$  and that s/he wants to confirm this.”

- (37) a. John drinks, doesn't he?  
 b. John doesn't drink, does he?

- Reversal of polarity between tag and epistemic implicature suggests that tag questions can also be accounted for by VERUM operator in the tag.
- The only difference between tag questions and negative interrogative questions is that “the epistemic implicature is not implicit but overtly expressed by the preceding clause.”

- Romero and Han discuss the epistemic implicature of tag questions, but not the distinction between inner and outer negation (Ladd's ambiguity) in negative tag questions.
- Ladd 1981 does discuss the scope of negation in tag questions.

### Ladd 1981

- Nuclear tags

(38) This is your book / isn't it.

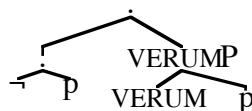
- tag forms a separate nucleus,
- tag often preceded by a noticeable pause or intonational boundary
- often falling intonation.
- "state or assert a speaker's assumption, with the tag signaling something like a hedge." (p. 167)
- negative nuclear tag questions allow negative polarity items, but not positive polarity items:

(39) \*Jane's not coming too / is she.

(40) Jane's not coming either / is she.

(41) You're not going to lift a finger to help / are you.

- Thus seem to be some type of inner negation question, although  $\neg p$  seems to "belong to" speaker rather than addressee.
- NEGATION can perhaps be said to scope inside VERUM here, so this is truly inner negation.



- Postnuclear tags

(42) This is your book=isn't it?

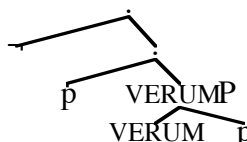
- tag doesn't form a separate nucleus: pitch contour on tag continues the nucleus of the main sentence
- noticeably less of a pause or boundary before tag
- often rising in intonation
- "the speaker is checking or reconfirming an assumption, real doubt or uncertainty is conveyed."
- negative postnuclear tag questions allow positive polarity items, but not negative polarity items:

(43) Jane's not coming too=is she?

(44) ??Jane's not coming either=is she?

(45) \*You're not going to lift a finger to help=are you?

- Thus seem to be some type of outer negation question.
- Note that (43) can be fairly accurately paraphrased: "It's not the case that Jane's coming too, is it?"
- It seems that NEGATION (in the main sentence) scopes outside of VERUM (in the tag) here, so this is truly outer negation.



## Our findings

	Positive		Negative	
	Fall	Rise	Fall	Rise
Nuclear	5	8	1	0
Post-nuclear	2	3	0	8

Table 4. Distribution of tag questions according to Ladd's typology

### Positive tag questions:

#### Falling nuclear positive tag questions

(46) EN\_4145

658.09 660.30 B: Well anyhow, did you get to meet your nephew at your, %uh

660.69 663.60 A: I did. The baby & Jack is huge.

661.50 662.14 B: at the wedding [distorted].

663.88 664.04 B: {laugh}

663.72 666.74 A: He's, he's four months and he's like eighteen pounds.

666.66 668.28 B: oh my god [[says laughing]].

667.87 670.36 A: The kid is ado-. But it's all breast milk.

669.00 672.34 B: That's huge. **That's like the size of a two year old isn't it** [[says laughing]]?

672.61 679.65 A: He's huge. He's, he's the shape of a, of a small ch- baby but you know, he's big. {laugh} He's heavy.

(47) EN\_4247

418.61 419.56 B: God what a mess.

420.00 422.84 A: oh it's a mess. It really is. W- how long have you been there by the way?

424.52 427.21 B: Over here? %um it'll be three years in November.

427.58 427.96 A: Wow.

428.51 430.90 A: **So you really are out of touch aren't you?** {laugh}



431.79 434.47 B: Well [[says laughing]] I like to think I'm not totally out of touch {laugh}

434.10 435.40 A: Well y- I know what it's like.

434.85 438.36 B: {inhale} I was never very in touch even when I was still &America so. {laugh}

438.40 441.43 A: oh okay. You're that type. I got you. {laugh}

- To test for nuclear tag question status, see if the tag question can be replaced with a bare falling declarative sentence:

(48) a. That's like the size of a two year old.

b. So you really are out of touch.

- Also check to see if a positive interrogative question is infelicitous:

(49) a. #Is that the size of a two year old?

b. #Are you (really) out of touch?

#### Rising nuclear positive tag question

(50) EN\_6107

874.02 881.62 B: Him him {breath} he and his brother, you know the two of them were in it together and there's a whole group now it's like a a conspiracy oh it's %eh {breath} --

874.77 875.08 A: %mm

881.63 883.08 A: With the <Hebrew &Kahane &Chai>.

881.81 882.71 B: -- unbelievable.

883.40 887.26 B: yeah yeah it's all those people. yeah. **You probably see them running around &New &York, don't you?** They're all --

884.86 885.46 A: yeah. [distorted]

886.82 887.96 A: oh yeah they're here.

(51) a. You probably see them running around New York.

b. #Do you see them running around New York?

#### Falling post-nuclear positive tag question

(52) EN\_4628

77.01 84.41 A: (( )) all right. This is {breath} this was the last day I could do this so I had to get it in right now {laugh}. I've had this number for a month {breath}

82.52 83.06 B: oh.

84.54 86.65 A: and kept thinking I'm going to do it. I'm going to do it.

87.17 91.61 B: oh I'm so glad you called. yeah it's just about ten until twelve at midday.

91.75 93.28 A: **And your mom's still there isn't she?**

93.53 95.45 B: They just left on Monday

95.43 96.05 A: oh okay.

95.70 101.70 B: ((and)) they went to &New &Zealand. They're in &New &Zealand right now and they're there f- for until Monday I think

- (53) a. #And your mom's still there.  
c. And is your mom still there?

Rising post-nuclear positive tag question

- (54) EN\_5777  
556.28 559.23 B: It's not something I'm worried about &Bill's thinking about going back to school  
559.23 559.67 A: mhm  
560.59 560.95 B: So  
561.61 562.01 A: For what?  
561.93 564.55 B: Everything is, for what? for music  
563.55 563.87 A: mhm  
564.39 564.76 A: %hm  
565.53 566.68 A: **That's what he wanted to do isn't it?**  
567.31 567.87 B: yeah  
568.02 568.56 A: That'll be good

- (55) a. #That's what he wanted to do.  
b. Is that what he wanted to do?

Negative tag questions

Falling nuclear negative tag question

- (56) EN\_4415  
311.66 315.71 A: okay. Ar- are you looking towards ho-, {breath} how soon would commander be coming around the pike for you &Kerry?  
316.11 318.32 B: %ah, well, I would be in zone next, next year.  
318.51 321.41 A: **okay, so that wouldn't blow the department head thing if you pick up commander would it?**  
319.56 319.66 B: But  
321.42 323.79 B: No, no, %uh %uh. But guess who got deep selected.  
324.17 324.74 A: For commander?  
324.99 325.24 B: yeah.  
326.23 329.03 A: Let me think. oh, it's got to be &Barney.
- (57) a. So that wouldn't blow the department head thing if you pick up commander.  
b. So would that blow the department head thing if you pick up commander?  
c. So that wouldn't blow the department head thing if you pick up commander? (Inner Negation)

- In comparison with the example below, it tests out as an inner negation nuclear tag question.

Rising post-nuclear negative tag question

(58) EN\_6785  
 293.44 295.99 B: some of the guys went out to a shooting range today and I'm home with the kids  
 296.72 299.14 B: We're trying to make granola you know you can't buy it here and (( ))  
 299.41 304.61 B: trying to find the raw ingredients is a treat and a half too but we finally got everything and made granola so that was our big excitement for the day  
 304.83 305.65 A: okay  
 306.29 308.85 A: **the you you don't get to carry weapons around do you?**  
 309.91 311.86 B: oh no oh no no one does  
 311.97 314.61 A: okay so you go to the shooting range and pick them up there

- (59) a. #You don't get to carry weapons around.  
 b. Do you get to carry weapons around?  
 c. #You don't get to carry weapons around? (outer negation)

- Tests out as as outer negation post-nuclear tag question

- It is curious that positive tag questions aren't used in the data for the evaluative comment function that outer negation interrogative questions often are.

- (60) a. Isn't that great?  
 b. That's great, isn't it?

- We suggest that the tag question would invite confirmation by the addressee, whether a nuclear or postnuclear tag question, and in a comment, such confirmation is somehow not really required.

- The positive proposition conveyed by nuclear positive tag questions seems stronger than the positive epistemic implicature conveyed by negative interrogative questions. The proposition conveyed by the post-nuclear positive tag seems equal:

- (61) Originally an outer negation interrogative:  
 a. But don't you have all those holidays right at the beginning?  
 b. But you have all those holidays right at the beginning / don't you.  
 c. But you have all those holidays right at the beginning=don't you?

- (62) Originally a falling nuclear positive tag question:
- a. So you really are out of touch / aren't you.
  - b. So aren't you really out of touch?
  - c. So you really are out of touch=aren't you?

- We suggest this is due to the fact that the proposition is asserted in the nuclear tag question while only implied in the negative interrogative question and the post-nuclear tag.

- Double positive tags

- Not discussed in Ladd 1981.
- We have no examples in our data.

- (63) He has a BMW does he?

- Function like a declarative question in that there is an evoked proposition which belongs to the addressee.
- While the speaker might be just expressing reaction to the new positive proposition offered by the addressee, s/he could also be expressing disbelief in the proposition. There is thus no necessary epistemic implicature on the part of the speaker.

## V. FUTURE RESEARCH

- Examine the role of intonation and prosodic boundaries in more detail
  - Falling vs. rising interrogative questions
  - Low-rise (L\*HH%) vs. high-rise (H\*HH%) questions.
  - Nuclear vs. post-nuclear tag questions
- Examine positive interrogative questions, wh-questions and alternative questions
- Examine tag questions ending in "right?", "huh?", etc.
- Explore the relationship between questions and exclamations:

- (64)
- a. How easy is that?
  - b. Isn't that easy?
  - c. How easy that is.
  - d. That's easy!

- Examine rhetorical questions
- Test our conclusions experimentally
- Extend the study to Spanish.

## VI. CONCLUSION

- Hope that the method of examining naturally occurring examples, intuitively as well as acoustically, supplemented with intuitions about substitutions, will prove a fruitful one.

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