

Echo questions as anaphoric phrases in English

Claudia Pilarski*

Abstract. Echo questions have proven to be a difficult question type to explain using syntactic generalizations. This analysis explains why both syntactic and semantic concepts should be used to interpret echo questions. It will describe the basic properties of echo questions, including how they typically match an antecedent. This is explained by applying focus semantics, where focus is interpreted on the echo question and requires an alternative. The antecedent is determined as this alternative, and results in an anaphoric relationship between the two utterances. This analysis further examines this topic by discussing in detail the types of mismatches that arise between echo questions and their antecedents. Entailment is shown to be a proposed solution as to why certain types of mismatches are acceptable.

Keywords. syntax; echo questions; entailment; focus; focus semantics; anaphoricity

1. Introduction. Echo questions are a type of interrogative statement characterized by repetition of a previous phrase and the *wh*-expression¹ appears in the position expected for the constituent that provides an answer, or *in-situ*.

- (1) a. Edith opened the big can of soup.
b. Edith opened WHAT?²

These are unexpected based on previous understandings of how questions are formed in generative grammar (Chomsky, 1995). Echo questions could be considered a standard question that has not undergone syntactic movement, using both syntactic and semantic approaches. A main issue is that echo questions should match something that was previously said in the discourse. A focus interpretation can explain why this happens and how the echo question and the immediately preceding utterance are related (Beck & Reis, 2018). However, what these approaches neglect to consider is echo questions that are mismatched from the preceding utterance, as in (2).

- (2) a. Spencer kicked the ball into the goal.
b. The ball was kicked into the goal by WHO?

This analysis examines these examples in detail and shows that they are not explained adequately by previous literature on this topic. This data shows that echo questions cannot be treated as a strictly syntactic or semantic issue, but a combination of both. The logical relationship of entailment will be described and applied to this analysis, showing that it can explain why echo questions can mismatch previous discourse.

Section 2 will briefly discuss the theoretical background of standard questions and how they are differentiated from echo questions. Section 3 will discuss a previous approach to echo

* Thank you to Jason Overfelt and Samuel Rosenthal for helpful discussion and suggestions during the development of this paper. Thank you also to attendees of the LSA 2025 Annual Meeting for their feedback and comments. The responsibility for any errors or misrepresentations of the ideas of others lies solely with the author. Author: Claudia Pilarski, Oakland University (claudiajpilarski@gmail.com).

¹ A *wh*-expression refers to all interrogative words (*who*, *what*, *when*, *where*, *why*, *how*, *which*) or phrases containing interrogative words (i.e. *You read [which book]?*).

² Capitalization indicates emphasis/stress on that word; in each case, this will be the *wh*-expression.

questions, which involves focus semantics. Section 4 will discuss a new interpretation of focus semantics on echo questions, which differs from previous approaches in that this analysis examines the entire utterance, rather than just the *wh*-expression.

Section 5 will show echo questions that are mismatched from their immediately preceding utterance and will explain tolerability, which is how acceptable the mismatch is. Section 5.1 will demonstrate types of intolerable mismatches and Section 5.2 will show tolerable mismatches. Section 6 will introduce entailment theory and how this relationship will account for mismatches. Section 7 will further define the connection between tolerability and entailment. It will also touch on significant distinctions between echo question in-situ *wh*-expressions and other *wh*-in-situ environments involving ellipsis. Section 8 will summarize the analysis presented throughout and comment on future work that is needed on this topic.

2. Theoretical background. Echo questions are a question type in which the *wh*-expression remains in-situ (i.e. where it is generated). They are unusual in that it is difficult to motivate the *wh*-expression to remain in a base-generated position within generative grammar, since echo questions are interrogative structures but seemingly do not bear the same question features as standard questions because no movement is occurring. Where a standard *wh*-question elicits new information, an echo question requests the clarification of previously introduced content in the discourse (Noh, 1995; Huddleston & Pullum, 2002)³. They are characterized by emphasis and rising intonation on the *wh*-expression as well as having repeated content from an immediately preceding utterance (Sobin, 1990).

- (3) a. Edith opened the big can of soup.
b. Edith opened WHAT?

The question in (3b) is well-formed and an exact repetition, where the structure and content is copied by the second speaker while only replacing the disputed information with a *wh*-expression. It would appear that, in these repetitions, echo questions have a one-to-one correspondence with its antecedent. Throughout this analysis, the term “antecedent” will always refer to the immediately preceding utterance in the interaction. An explanation is needed for the non-*wh*-movement, as echo questions challenge many assumptions about question formation.

3. Previous interpretations. Since echo questions have been difficult to interpret using a typical understanding of *wh*-expressions because they disobey established expectations about the syntax of questions, focus semantics (Beck & Reis, 2018; see also: Artstein, 2002) might be able to deliver the desired effect and characteristics of echo questions that make them distinct from typical *wh*-questions. This is accomplished by treating the in-situ *wh*-expression as an instance of focus, which indicates what information is disputed, or requires clarification instead of introducing new content (Artstein, 2002). More specifically, echo questions are proposed as having a narrowly focused *wh*-expression (Beck & Reis, 2018).

The focus marking on the *wh*-expression produces the characteristic echoic effect and introduces alternatives to the *wh*-expression, which requires a discourse antecedent. For echo questions, there is typically one alternative, which is anaphoric to the *wh*-expression and must be available within the discourse (Beck & Reis, 2018, p. 385). In this case, the immediately preceding utterance should serve as the discourse antecedent. I adopt a similar interpretation of focus

³ A standard *wh*-question is defined as having a fronted *wh*-expression with no rising intonation and having no repeated content.

marking on wh-expressions. However, Beck and Reis (2018) consider only the wh-expression to be focused and require an alternative. I will show how this analysis can benefit from treating the entire structure as needing an alternative, rather than just the wh-expression.

Unlike Sobin (2010), the analysis provided by Beck and Reis (2018) differs in that they posit echo questions to be separate, independent structures from the previous utterance. Echo questions themselves cannot be a copy of an echoed utterance structure. Therefore, the question must be related through content. I agree with this analysis in that although there is some matching or similarity between the echo question and the previous utterance, there is great variability in the structure of the echo question itself ⁴.

- (4) a. Call the doctor immediately!
b. I'm supposed to call WHO?

Treating echo questions as separate structures can account for examples like (5b) since they are not reliant on copying previous structure:

- (5) a. All the sushi was eaten by Louisa.
b. Louisa ate all the WHAT?

As Sobin (2010) also observed, echo questions are not subject to locality restrictions (Artstein, 2002, p. 101), and neither is focus, which explains why focus can be interpreted in various positions in an echo question. It is clear that the echoed information is contextual or discourse-dependent, and I agree with the authors that there is an anaphoric relationship through focus. In attempting to define this relationship, Artstein (2002) invokes givenness, which is shown to be a requirement (p. 100) on echo questions. Because the echo question follows from the antecedent, “the disputed part of an echo question must be entailed by the previous utterance” (p. 100). That is, the focused element in the echo question (the counterpart to the wh-expression) must be present in previous discourse in order for it to be felicitous. Section 4 will elaborate on this relationship.

Echo questions that are mismatched from its antecedent are not adequately accounted for, such as (5b), which is mismatched from (5a). If the previous utterance is to serve as antecedent and is anaphoric to the echo question (Beck & Reis, 2018) or the disputed information in the echo question is given by the antecedent (Artstein, 2002), then the analyses described above can account for such cases. Even if the echo question is mismatched, the antecedent contains the information that the wh-expression replaces, making it acceptable. What previous analyses lack is a formal categorization of these mismatches. They do not describe why some mismatches are accepted, like (5b), and why others are not. These mismatches will be discussed in detail in Section 5.

There is also a need to properly define and categorize echo questions. Because this account of echo questions will discuss the relationship between the question and the previous utterance, mismatches must be taken into consideration when defining this anaphoric relationship properly, as there are several environments where mismatches occur and are considered tolerable. Defining mismatched echo questions and determining when they are felicitous will demonstrate the extent to which echo questions are reliant on their antecedent for discourse context or structure. This analysis will look at these mismatches in detail and provide an explanation for when echo questions are considered felicitous.

⁴ Example (4) adapted from Beck & Reis 2018 p. 376.

4. Focus in echo questions. I adopt a similar analysis to the Beck and Reis 2018 account of Roothan semantics (Rooth, 1985; Rooth, 1992) and focus on echo questions. By applying a focus interpretation, echo questions are considered as having an anaphoric relationship with their antecedent, which accounts for the characteristic repetition of these interactions. However, Beck and Reis (2018) posit that focus only applies to the *wh*-expression and finds a replacement for it in the previous utterance. They do not account for the rest of the preceding structure in the echo question, only the *wh*-expression. Therefore, it does not account for echo questions that do not match their antecedent. The analysis presented here instead applies this focus interpretation to the entire utterance.

Focus marking is interpreted on the in-situ *wh*-expression by a squiggle operator $\sim$, which marks the element (*wh*-expression) with main stress and highlights information content (Beck & Reis, 2018, p. 391). However, in this analysis, the squiggle operator signifies the need for a discourse antecedent to the entire clause (the echo question) and determines an alternative to the entire phrase (Rooth, 1985). A propositional variable denoted by P represents a discourse antecedent to serve as this alternative (Rooth, 1992). Differing from Beck and Reis (2018), this analysis shows the squiggle operator attaching to the entire clause and pulling from previous discourse a full antecedent. In the case of echo questions, P recovers the entire previous utterance as its discourse antecedent, up to the CP.

- (6) a. [Edith opened the big can of soup]₁
 b. [[Edith opened WHAT] $\sim P_1$]?

In (6b), focus marking is interpreted on the echo question by squiggle operator $\sim$, signifying the need for a discourse antecedent to the question. A propositional variable P recovers this antecedent, which is (6a). With P recovering the previous utterance as an alternative to the phrase, this results in an anaphoric relationship between the two, where the initial statement and the echo question refer to each other. This explains why the response is often an exact repetition of the previous utterance.

The relationship between these two utterances is understood as the echo question representing a set of possible answers. The denotation of a question is the set of answers (Hamblin, 1973; Karttunen, 1977), where *wh*-expressions denote sets of corresponding elements (Hamblin, 1973). The echo question itself restricts this set to a single answer, since the request for clarification asks that the speaker repeat a previous statement. Adapted to this analysis, focus on the *wh*-expression overtly signifies the previous utterance as the alternative to the set of answers. This set contains two alternatives: the echo question and an alternative where the *wh*-expression is replaced by an anaphoric expression (Beck & Reis, 2018, p. 391). For example, (6b) is replaced by a set of answers meaning *Edith opened the big can of soup; a box; the door; etc.*; when P recovers the entire previous clause in (6a), it restricts this set to *Edith opened the big can of soup*. This relationship is expressed by propositional variable P recovering an antecedent to serve as this anaphoric alternative.

As the entire previous utterance is recovered as the antecedent, this explains the tendency for repetition as the response to the echo question. This focus interpretation shows that *wh*-expressions in echo questions are not *wh*-operators. Therefore, it explains why they do not undergo *wh*-movement into a specifier position and do not have a clausal Q operator (Beck & Reis, 2018, p. 391). These qualities prevent echo questions from being treated the same as *wh*-questions by using focus. Under this analysis, echo questions are considered to be syntactically distinct from typical *wh*-questions, as they do not share structure to the antecedent, as Sobin (2010) posits, but

are anaphoric to each other. This anaphoric relationship explains the repetitive nature of echo questions while also accounting for cases without an exact repetition, which I will discuss in detail.

This analysis works sufficiently with exact repetitions. However, there are many cases where the echo question and the immediately preceding utterance are mismatched with varying grammaticality. These are not accounted for in a focus interpretation that only focuses the *wh*-expression (Beck & Reis, 2018), which is where this analysis differs. I will demonstrate how analyzing the entire phrase accounts for these cases.

5. Tolerability between utterances. Mismatched echo questions are underrepresented in previous literature. Structural and grammatical variations between the echo question and its antecedent are considered to be mismatched. A mismatch occurs when the echo question and its preceding utterance do not match. There is a range of tolerability across mismatch types. Tolerability is whether the mismatch type is acceptable and produces a felicitous echo question. (7b) is felicitous because the echo question is acceptable in relation to the preceding utterance. (8b) is infelicitous because it is not an expected question in relation to the preceding utterance.

- (7) a. All the sushi was eaten by Louisa.
b. Louisa ate all the WHAT?
- (8) a. Seth went to the marina.
b. # Seth is going WHERE?⁵

For this analysis, an echo question is considered infelicitous when it is not an expected or appropriate response within the context of the conversation.

5.1. INTOLERABLE MISMATCHES. Intolerability arises when there is some mismatch between the echo question and the previous utterance that renders the echo question infelicitous, such as in (8), which is mismatched in tense. These are intolerable mismatches. They are not accepted within the context of the conversation. Intolerability can be found with mismatches in various environments. When tense is mismatched, it incorrectly assumes the state of completion of an action, as seen in (9).

- (9) a. Maya will finish her homework later.
b. # Maya finished WHAT?

In (9), the antecedent is in the future tense while the echo question is in the past tense. The echo question incorrectly assumes that the action (in this case, *finishing homework*) has been completed. Tense mismatches are an obvious mishearing of the previous utterance by the second speaker. They usually result in an infelicitous echo question. These can be easily seen with echo questions regarding event completion, like (9). However, intolerable mismatching due to tense holds across multiple types of verbs, as in (10) and (11).

- (10) a. Leslie is winning the race against Bobby.
b. # Leslie won the race against WHO?
- (11) a. Caroline believed jackalopes were real.
b. # Caroline believes WHAT?

⁵ An infelicitous utterance is marked by #.

(10a) states that the achievement is in progress, but (10b) incorrectly assumes that the result has been achieved (*winning*) due to the mismatch in tense. With stative verbs like *believe* in (11), a tense mismatch means that the speaker incorrectly assumes something about the state of the subject. (11a) presupposes that *Caroline* no longer *believes in jackalopes*, but the present tense mismatch in (11b) assumes that *Caroline* still does, resulting in infelicitousness. This mismatch in states is also considered an aspectual mismatch. Aspectual mismatches can incorrectly assume the state or continuity of the action.

- (12) a. Ezra is writing his first book.
b. # Ezra writes WHAT?

In (12a), the *writing* action is current or ongoing while the echo question in (12b) assumes that the action is habitual. (12b) incorrectly presupposes that the action of *writing books* is a regular behavior, but (12a) establishes that it is not, resulting in an intolerable aspectual mismatch.

Aspectual mismatches with other tenses are also intolerable.

- (13) a. Mark will have worked at home for twenty years.
b. # Mark will be working WHERE for twenty years?

(13a) states that *Mark* will have completed twenty years of working, whereas (13b) assumes that *Mark* will be working there for twenty years into the foreseeable future. In both (12) and (13), the aspectual mismatch incorrectly presupposes something about the completion or state of an action, making the echo question infelicitous. Tense and aspect mismatches between the antecedent and the echo question are shown to be reliably intolerable, regardless of the verb type. Therefore, echo questions and their antecedent have to be matched in tense and aspect in order for it to be felicitous.

Infelicitousness also arises in structural mismatches. Intolerability can be observed with a mismatch in illocutionary force⁶, as in (14).

- (14) a. Is Veronica watching the movie?
b. # Veronica is watching WHAT?

In (14a), the initial polar question is asking for confirmation on whether the action is taking place (is *Veronica watching the movie* or is she not *watching the movie*). The echo question in (14b) is requesting clarification of something that was not introduced in (14a). It assumes without confirmation that the action is taking place and asks for repetition of what exactly *Veronica is watching*, which is information that was never introduced in the conversation. In (14), there is no antecedent that the echo question can be anaphoric to which means the same thing or has the same interrogative effect. Therefore, illocutionary force mismatches are intolerable.

Intolerable mismatches imply that there is some requirement between echo questions and their antecedents that causes them to match in tense, aspect, and illocutionary force. Under this analysis, the previous utterance is designated as the alternative to the echo question, resulting in a false anaphoric relationship. It might be assumed that because *P* (the propositional variable) recovers a mismatched antecedent (one that is not an exact one-to-one match), the echo question is infelicitous. However, this prediction does not account for the tolerable mismatches, which are structurally or grammatically different in an obvious way, but are still felicitous.

⁶ Illocutionary force is the intent behind a speech act and what the speaker intends to happen by saying the utterance (Chierchia & McConnell-Ginet, 2000).

5.2. TOLERABLE MISMATCHES. An echo question is considered felicitous when it is either well-formed (an exact repetition) or there is some grammatical inconsistency between the two utterances, yet the echo question is accepted as an appropriate response within the context of the conversation, such as in (15), which is a passive-active voice mismatch.

- (15) a. All the sushi was eaten by Louisa.
b. Louisa ate all the WHAT?

These are tolerable mismatches. If it is assumed there is exact matching required for the echo question to be felicitous, then these mismatches should not be allowed. However, tolerable mismatches between the echo question and its antecedent are generally acceptable with voice and argument structure. Voice can be mismatched when the antecedent is active, the echo question is passive, and vice versa.

- (16) a. Spencer kicked the ball into the goal.
b. The ball was kicked into the goal by WHO?
- (17) a. The ball was kicked into the goal by Spencer.
b. Spencer kicked WHAT into the goal?

In both (16) and (17), there is a clear mismatch in voice between the two utterances, yet the resulting echo question is felicitous, regardless if the antecedent is active or passive. Tolerable mismatches in voice demonstrate that echo questions are not exact repetitions of the antecedent.

Another mismatched environment occurs with differences in argument structure. Argument structure can be mismatched in various ways and still produce felicitous echo questions. (18) shows a mismatch between the initial utterance, which has a double object frame, and the echo questions in (18b) and (18c), which have a prepositional object frame.

- (18) a. Caleb gave Mona “Hamlet”.
b. Caleb gave “Hamlet” to WHO?
c. Caleb gave WHAT to Mona?

Switching the frames between the initial utterance and the echo questions does not affect felicitousness. In (19), the initial utterance has a prepositional object frame while the echo questions in (19b) and (19c) have a double object frame.

- (19) a. Caleb gave “Hamlet” to Mona.
b. Caleb gave Mona WHAT?
c. Caleb gave WHO “Hamlet”?

An antecedent with a double object frame can be mismatched with a prepositional object frame like in (18) (and vice versa, as in (19)) and result in a felicitous echo question. The direct and indirect object can switch positions in the echo question and either can be replaced by the *wh*-expression with no effect on its tolerability⁷. Therefore, argument structure mismatches are another type of tolerable mismatch. Because both voice and argument structure are tolerable mismatches, a combination of both types predictably results in a felicitous echo question, which can be observed in (20).

⁷ With differing object frames, there is the possibility of having double echo questions (*Caleb gave WHAT to WHO?*). This is a topic reserved for future discussion.

- (20) a. Caleb gave “Hamlet” to Mona.
b. Mona was given “Hamlet” by WHO?

In (20b), the indirect object *Mona* is promoted from a prepositional object position to a subject position and the echo question is now a passive structure compared to the active antecedent. The echo question remains felicitous. These facts are not predicted, where the antecedent should be closely matched. Although echo questions are characteristically repetitive, the examples in (15)-(20) are clear deviations from the original utterance and are accepted as felicitous within the conversation.

Tolerable mismatch types include argument structure and voice, which are shown in examples (15)-(20). Intolerable mismatch types include tense, aspect, and illocutionary force, which is shown in examples (8)-(14). It is clear that there is no exact or one-to-one match required for a felicitous echo question to be produced because tolerable mismatches occur in voice and argument structure. Therefore, there must be some other requirement in the relationship between the echo question and its antecedent in order for it to be felicitous and to explain why the intolerable mismatches are unacceptable. I propose that entailment can explain these differences.

6. Entailment theory. When the echo question and its antecedent are not mismatched, it can be assumed that the response is an exact repetition, as in (21), of the antecedent recovered by *P*.

- (21) a. [Edith opened the big can of soup]₁
b. [[Edith opened WHAT] ~ *P*₁]?

However, this does not explain the felicitousness of tolerable mismatches or infelicitousness of intolerable mismatches. Therefore, I posit that entailment is the main determinant in which mismatches are acceptable, where entailment must hold between the antecedent and the response.

With echo questions, it would typically be an inappropriate answer to respond with an utterance that is not a repetition of some previous discourse. When *P* represents an alternative that does not correctly entail an answer, this results in an intolerable mismatch. The necessity for similar information indicates that the response is entailed⁸.

Entailment is a relationship between a set of individual propositions, where the truth of one sentence ensures the truth of another sentence. In reference to the definitions in (22), *A* refers to the antecedent and its anaphoric echo question and *B* refers to the response. It is formally expressed in the following definition.

- (22) *A* entails *B*⁹:
a. whenever *A* is true, *B* is true.
b. the information that *B* conveys is contained in the information that *A* conveys.

Entailment relations hold when (22a) and (22b) are satisfied by the set of utterances. Entailment fails when the conditions in (22) are not upheld.

Therefore, when *A* does not entail *B*, it is because the truth of *A* does not guarantee the truth of *B*. I posit that, rather than some matching requirement, entailment must hold in order for an echo question to be felicitous. I propose that it is not the echo question itself that must be entailed by the antecedent, but the response to the question. The response is a member of the set of

⁸ The answer may be considered Common Ground (Chierchia & McConnell-Ginet, 2000, p. 217; see also: Pires & Taylor, 2007). However, I do not believe this to be a result of CG, as the answer is not known mutually by both speakers, since it is the disputed information that is unknown.

⁹ Definition adapted from Chierchia and McConnell-Ginet 2000 (p. 19)

answers denoted by the echo question. When applied, this means that the truth value of some statement in the set of answers is dependent on the truth entailed by the antecedent.

7. Tolerability as Entailment. When a propositional variable P designates the previous utterance as an alternative to the focus-marked *wh*-expression, this alternative must entail one in a set of possible answers to the echo question, which is restricted to the antecedent. The echo question is also anaphoric to the antecedent. The previous utterance is pulled from the discourse to serve as an alternative to the echo question. Well-formed echo questions and tolerable mismatches result when entailment holds between the antecedent and consequent answer to an echo question.

- (23) a. [Edith opened the big can of soup]₁
 b. [[Edith opened WHAT] ~ P_1]?
 c. [Edith opened the big can of soup]

In (23), an exact repetition of the antecedent successfully entails an answer to the echo question: (23a) is true, making (23c) also true. The information that (23c) conveys is contained in the information that (23a) contains, so entailment holds successfully.

With tolerable mismatches, entailment is successful between the set of statements, making the echo question felicitous. (24) shows the antecedent successfully entailing an answer to an echo question with a voice mismatch.

- (24) a. [Spencer kicked the ball into the goal]₁
 b. [[The ball was kicked into the goal by WHO] ~ P_1]?
 c. [The ball was kicked into the goal by Spencer]

In (24), the antecedent successfully entails an answer to the echo question: assuming (24a) is true, making (24c) also true. (24c) is a member of the set of answers denoted by (24b), so it can serve as an appropriate answer. The information that (24c) conveys is contained in the information that (24a) contains. Entailment holds successfully, making the voice mismatch tolerable. The question is accepted as appropriate within the context of the conversation and the answer repeating the antecedent is an adequate response. The mismatch is tolerable when entailment is successful. This also predicts the tolerability of argument structure mismatches.

- (25) a. [Caleb gave Mona “Hamlet”]₁
 b. [[Caleb gave “Hamlet” to WHO] ~ P_1]?
 c. [Caleb gave “Hamlet” to Mona]

(25a) is true, making (25c) also true in response to the mismatched echo question in (25b). Entailment is successful between the utterances, making the mismatch tolerable.

Intolerable mismatches result when entailment fails, as the mismatch does not entail a possible answer to the echo question.

- (26) a. [Ezra is writing his first book]₁
 b. # [[Ezra writes WHAT] ~ P_1]?
 c. # [Ezra writes his first book]

Intolerable mismatches cannot entail a correct or possible answer because there are assumptions that do not follow due to the mismatch between the antecedent and the echo question. (26c) is contradictory because if (26b) is true, (26c) should also be true, but the mismatch in aspect incorrectly assumes the *writing* action to be habitual in (26b).

Echo questions are a result of entailment through the anaphoric relationship between itself and its discourse antecedent. This explains why echo questions typically repeat something that was previously said and why intolerable mismatches are unacceptable within the context of the conversation. This prediction holds for tense mismatches.

- (27) a. [Caroline believed jackalopes were real]₁
 b. # [[Caroline believes WHAT] ~ P₁]?
 c. # [Caroline believes jackalopes are real]

(27a) does not entail the answer to the echo question in (27c). Entailment fails, making the mismatch intolerable. Therefore, I believe it is likely an entailment relationship that determines the tolerability of the mismatch and whether the echo question is considered felicitous depends on the success of entailment. This can be summarized in the generalization in (28).

- (28) a. $ANT \rightarrow \{ \mathbf{ANS}_1, \mathbf{ANS}_2, \dots \}$
 b. # $ANT \nrightarrow \{ \mathbf{ANS}_1, \mathbf{ANS}_2, \dots \}$

(28a) states that an antecedent must entail one of the possible answers to the echo question in order for it to be grammatical and felicitous. (28b) states that if the antecedent cannot entail one of the possible answers to the echo question, then it is infelicitous. This shows that echo questions are affected by the treatment of the entire utterance, not just the wh-expression.

It seems that mismatches based on a syntactic relationship (voice, argument structure) are generally tolerated, while those based on a semantic or pragmatic relationship (tense, aspect, illocutionary force) are not. As a generalization, it seems that mismatches are accepted up to the point of entailment. The main factor in determining tolerability is whether or not entailment holds.

It is notable and predictable that entailment holds where tolerable mismatches (in voice and argument structure) occur. Therefore, entailment is the main factor in determining a tolerable mismatch. Any mismatch can be tolerated as long as the echo question denotes a set of answers such that one of the answers is entailed by the antecedent. This is evident by mismatches in clefting and topicalized constructions, as in (29) and (30), respectively.

- (29) a. [Bobby is easy to fool]₁
 b. [[It is easy to fool WHO] ~ P₁]?
 (30) a. [Near the street corner, Athena saw a fox]₁
 b. [[Athena saw a fox WHERE] ~ P₁]?

In both (29) and (30), the echo questions are structural (and grammatical) variants of their antecedents, and they are both tolerable. Entailment by *P* is the crucial factor in tolerability. As long as the meaning is preserved throughout, then any question derived from a grammatical variant of *P* is felicitous.

From this conclusion, it should follow that intolerable mismatches can be made tolerable depending on their entailment relationship. Environments where an intolerable mismatch would be expected can result in felicitousness as long as entailment holds. This can be observed in an aspect mismatch, shown in (31), which is a progressive and perfect progressive mismatch.

- (31) a. [I was eating spring onions when the doorbell rang]₁
 b. [[You had been eating WHAT] ~ P₁]?
 c. [I had been eating spring onions]

The echo question in (31b) could be infelicitous, as it is mismatched in aspect from its antecedent. However, the mismatch is tolerable. This is because the answer in (31c) is successfully entailed by the antecedent. The truth of (31a) is not entirely negated by the mismatch in (31b). This can also be observed in tense mismatches, which should be intolerable, but are not when entailment holds. The mismatch in (32) demonstrates how entailment can follow with habitual actions.

- (32) a. [This month, Tashi has written a new page every night]₁
 b. [[Tashi writes WHAT] ~ P₁]?
 c. [Tashi writes a new page every night]

(32a) implies that Tashi's writing is a past yet ongoing action. Therefore, (32b) is not untrue and (32c) can be entailed by (32a). This once again shows that entailment is the crucial factor in tolerability.

8. Conclusion. The structural requirements of echo questions arise when focusing just on the *wh*-expression and its antecedent, which does not account for the various types of echo question structures. Introducing entailment to the analysis can explain why echo questions appear in many forms. What this further demonstrates is that echo questions are affected by the treatment of the entire utterance, not just portions (Beck & Reis, 2018) or exact copies (Sobin, 2010).

Because echo questions have a *wh*-expression that remains in-situ, they violate previous syntactic generalizations of how questions work. Their unpredictable behavior could not be easily explained using the same treatment of standard *wh*-questions. Because they are related to a previous utterance, echo question analyses were restricted by syntactic interpretations, which relied on matching requirements to the antecedent. The goal was to provide an analysis of echo questions that explained why they can appear in so many varying structures as well as their behavior in the wider context of the conversation.

An interpretation of echo questions under focus semantics was adopted, where focus marking is interpreted by squiggle operator ~ in the echo question, signifying the need for a discourse antecedent. A propositional variable *P* recovers this antecedent. With *P* recovering the previous utterance as an alternative to the phrase, this results in an anaphoric relationship between the two, where the initial statement and the echo question refer to each other. This explains why the response is often an exact repetition of the previous utterance. Previous literature on echo questions focuses primarily on these examples of exact repetitions. Where focus analyses considered focus to be only on the *wh*-expression, this analysis instead analyzes the entire phrase, which allows a wider variety of echo questions.

I have demonstrated that various grammatical environments in English lead to mismatches between echo questions and the immediately preceding utterance (its antecedent). These environments include tense, aspect, illocutionary force, voice, and argument structure. Mismatches between the two utterances can result in either a felicitous or infelicitous echo question. I provided examples showing that infelicitous echo questions result from mismatches in tense, aspect, and illocutionary force. These are intolerable mismatches. Felicitous echo questions result from exact repetitions and mismatches in voice and argument structure. These are tolerable mismatches. This is not predicted by a strictly syntactic interpretation of echo questions.

In order to account for both tolerable and intolerable mismatches, I posit that an entailment relationship is present between the echo question and its antecedent. In this analysis, entailment must hold in order for the echo question to be felicitous. The antecedent must successfully entail an answer to the echo question. I provided examples where entailment fails to show that this is

where intolerable mismatches are found. Tolerable mismatches are acceptable because entailment holds. I propose that entailment is a dependent factor on whether or not an echo question is acceptable within the context of the conversation. An entailment relationship eliminates the need for any strict matching requirements between the echo question and its antecedent, which explains why the mismatches are appearing. This can account for a wider range of echo question structures that were unexpected under previous analyses.

It is still unclear the full extent to which illocutionary force is mismatched in echo questions. Additionally, there are other types of mismatches that are worth investigating in full detail, such as modality, as well as echo question types that replace parts other than constituents, such as partial words or multiple wh-expressions. There are many cases that have yet to be analyzed with this analysis, such as whether it can be applied cross-linguistically. Overall, an entailment interpretation accounts for the broader contexts of echo questions by introducing a semantic component and analyzing the entire phrase.

References

- Artstein, Ron. 2002. A focus semantics for echo questions. *Workshop on Information Structure in Context*, 98–107.
- Beck, Sigrid, & Marga Reis. 2018. On the form and interpretation of echo wh-questions. *Journal of Semantics* 35(3). 369–408. <https://doi.org/10.1093/jos/ffy002>.
- Chierchia, Gennaro, & Sally McConnell-Ginet. 2000. *Meaning and grammar: An introduction to semantics* (2nd ed). Cambridge, MA: The MIT Press.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: The MIT Press.
- Hamblin, Charles Leonard. 1973. Questions in Montague English. *Foundations of Language* 10. 41–53. <https://doi.org/10.1016/B978-0-12-545850-4.50014-5>.
- Huddleston, Rodney, & Geoffrey Pullum. 2002. *The Cambridge grammar of the English language*. Cambridge: Cambridge University Press.
- Karttunen, Lauri. 1977. Syntax and semantics of questions. *Linguistics and Philosophy* 1(1). 3–44. https://doi.org/10.1007/978-94-009-9509-3_6.
- Noh, Eun-Ju. 1995. A pragmatic approach to echo questions. *Working Papers in Linguistics* 7. 107–139.
- Pires, Acrisio, & Heather Taylor (eds.). 2007. The syntax of wh-in-situ and Common Ground. *Proceedings from the Annual Meeting of the Chicago Linguistic Society* 43 2. 201–215.
- Rooth, Mats. 1985. *Association with focus*. Amherst, MA: University of Massachusetts, Amherst dissertation.
- Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1(1), 75–116. <https://doi.org/10.1007/bf02342617>.
- Sobin, Nicholas. (1990). On the syntax of English echo questions. *Lingua* 81. 141–167. [https://doi.org/10.1016/0024-3841\(90\)90010-i](https://doi.org/10.1016/0024-3841(90)90010-i).
- Sobin, Nicholas. (2010). Echo questions in the minimalist program. *Linguistic Inquiry* 41(1). 131–148. <https://doi.org/10.1162/ling.2010.41.1.131>.