Distinguishing homogeneity from presuppositions: reassessing the data from polar questions

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Summary: This abstract seeks to weigh in on the debate whether homogeneity can be regarded as a presupposition. In particular, it addresses the question whether the two phenomena can be unified using some sort of presupposition cancellation mechanism as as been proposed by Fox (2018) and Wehbe (2022). I claim that reexamining the data of the projection of homogeneity and presuppositions from questions (raised first by Spector 2013, Križ 2015) provides an argument against a unified approach based on presupposition cancellation. I argue, with Križ (2015), that while presuppositions and homogeneity both involve a truth-value gap, these gap obey different pragmatic requirements. In order to account for the fact that different pragmatic constraints apply in the two cases, I propose that the truth-value gap from homogeneity and presuppositions are encoded differently in the semantics, adopting the multi-valued system put forward by Spector (2016) to account for the interactions of presuppositions and vagueness.

Background: In the earlier literature, homogeneity has been modeled as a the result of a semantic presupposition. For instance, Löbner (2000) argues that sentences like (1) are evidence that falsity conditions in natural language should not be taken as the mere complement of truth conditions. More recently, Križ (2015, 2016) represents sentences like (1) using a three-valued semantics:

(1) a. The students passed.
[[(1)]] = 1 iff all the students passed, 0 iff none of the students passed, # otherwise.

However, despite these sentences being modeled as involving a semantic presupposition, there is a debate whether homogeneity is really a phenomena of the same nature as presuppositions, because they show a lot of differences in their behavior. Notably, it has been noticed that they show different projection patterns and that homogeneity fails certain tests for pragmatic presuppositions (for instance, the 'wait a minute' test). Two options are considered to account for the differences. In a first approach, (Križ 2015, 16), homogeneity and presupposition are two different phenomena that crucially are treated differently by the pragmatic system. As pointed out by Fox (2018), Križ's proposal works under the assumption that there are two ways to restrict when a proposition with partial truth conditions is assertable. The first one, Stalnaker's Bridge (SB) applies for presuppositions, the second, 'Križ's Bridge' (KB) applies for homogeneity

SB: A proposition p is assertable in a common ground CG only if $\forall$w: w$\in$ CG p(w) =1 or p(w)=0
KB: A proposition p is assertable in a common ground CG only if p$\cap$ CG $\neq$ 0

A second line of approaches (Fox (2018) and Wehbe (2022)) proposes that the two phenomena can be analyzed on par, and especially that they both involve a truth-value gap and that there is one unique bridge, Stalnaker's bridge. There are two key arguments for a uniform approach. First, Fox identifies that, if both phenomena involve truth value gaps, then there is no explanation for how the system knows when to apply the correct bridge. Second, Wehbe puts forth the argument that sentences with plural definites pass a test for pragmatic presuppositions, the 'post accommodation informativity' test. Both propose that the insertion of the gap canceling operator A, constrained properly, can account for the differences.

[[A]](p) = 1 if p=1, 0 if p=0 or p=#

Zooming in on polar questions: Spector (2013) and Križ (2015) notice that questions with plural definites seem to not impose the same requirements on the common ground as questions involving more traditional cases of presuppositions do. One possible explanation is that homogeneity is a presupposition that can be very easily globally accommodated. However, this doesn't seem to be sufficient. This can be seen by considering contexts where global accommodation is prevented by the fact that the speaker is clearly ignorant about whether the sentence's presupposition is true or false. In such contexts, there is still a difference in behavior between questions involving presuppositions, which are infelicitous, and questions involving homogeneity, which are felicitous.

(2) I have no idea where you spent your holidays, but you certainly seem upset these days...tell me...

#Do you regret going to Antartica?

(3) A: I have no idea how the students performed at this exam, I know some of them were well prepared but I also know a couple who might have failed… tell me...

Did the students pass the exam?

One might argue that some sentences with presuppositions still seem possible to utter in such contexts, as shown in (4).

(4) A: You never told me whether you have sibling but I saw you picking up someone that looked like you at the airport last night… tell me…

Did you pick up your sister at the airport last night?

B: No.

In such examples, however, there is a key difference with the homogeneity examples. Indeed, it seems natural to use the response particle 'no' to answer the question in (4) when one knows that the condition associated with the presupposition is not satisfied, whereas in (3) it seems weird both to answer with 'yes' and 'no' when one knows that the homogeneity condition is not satisfied. What might happen in (4) is local accommodation, or presupposition cancellation using the operator A. I will focus on presupposition cancellation here, as it is the option used by both Fox and Wehbe to explain the differences in projection between homogeneity and presuppositions. I will assume here that polar questions are formed by a Q operator that maps a proposition p to the set {p, ¬p}, and that the question particles 'yes' and 'no' are used to assert p and ¬p respectively. We can see bellow that applying A bellow Q predicts correctly that 'no' is a felicitous answer to the question in (4), but it cannot explain the data in (3), as it predicts wrongly that 'no' would be a felicitous answer to the question and it is not.

[[Q]] ([[A]] (p)) = { [[A]](p),¬[[A]](p)} , which gives us for (4) and (1):

[[(4)]] = {B has a sister and picked her up at the airport, B has no sister or didn't pick her up}

[[(3)]] = {All the students passed, Not all the students passed}

Two types of gaps: The question that arises is then the following: how do we explain the apparent differences between homogeneity and presuppositions, assuming that they both involve a semantic truth value gap? Fox's point remains. If we can't explain away the differences by using accommodation or cancellation, how do we know which bridge to apply?

A similar question has been raised by Spector (2016) regarding the difference between presuppositions and vagueness. In particular, Spector points out that, if we assume that both presuppositions and vagueness involve formally identical semantic gaps, then we need to account for why only presuppositions seem to impose a restriction on the common ground. To account for the combined projection of homogeneity and vagueness, Spector proposes a two-tiered seven valued system were there are two types of gaps. The presupposition gap is modeled as the third value # while the vagueness gap is modeled as the pair {0,1}; propositions with the value # project middle kleene on a first level and propositions with the value {0,1} project strong kleene on a second level (see table 1). This proposal seeks to address the complex patterns of interaction, but it also has the result of providing an explanation why some gaps are subject to Stalnaker's Bridge and some don't, by proposing a new version of the bridge.

SB (Spector's version): A proposition p is assertable in a common ground CG only if p doesn't receive a value that contains # in any world of CG.

To account for the specific data from questions, we make the further assumption that there is a version of the bridge that applies to questions, as proposed in Guerzoni (2003) and Theiler (2020).

Guerzoni's bridge (cited from Theiler 2020):
«A question is felicitous in a context only if it can be felicitously answered in the context»

As a result, the question in (1) is felicitous even if the gap situations are part of the common ground, as both answers are assertable given the new bridge. They are assertable because they never receive the value # but might receive the value {0,1}. However, the question in (4) is only felicitous if the gap cases are excluded from the common ground, since the gap of its answers is modeled as #.

Comparison to other approaches? The Spector inspired approach proposed here can be seen as similar in spirit to the proposal in Križ and Spector (2021). Križ and Spector propose an approach where sentences with plural definites are underspecified between several, bivalent interpretations. The final interpretation of the sentence arises through the mean of the pragmatic principle 'truth on all readings'. Representing the homogeneity gap as the set {0,1} is another way to encode the similar idea that the sentence is underspecified in the gap situation. One difference between the two proposals is that the gap in Križ and Spector arises at the pragmatic level, whereas, on the approach proposed here, the gap is encoded at the semantic level. Further research should focus on trying to find whether there are cases where the two approaches make different predictions and I will try to elaborate on this question during the presentation.

Conclusion: I have argued that representing presuppositions and homogeneity as involving the same type of gap can't account for the date from polar questions, and have proposed a way to represent homogeneity and presuppositions as two different types of gap that makes the correct predictions. However, there are some unresolved questions left. First, the solution proposed addresses some questions raised by a non-unified approach, but not all. In particular, it doesn't address why homogeneity sentences pass the PAI pragmatic test. Second, I am using here a system that has been first proposed to deal for the differences between homogeneity and vagueness, and as such my proposal bring closer homogeneity and vagueness. However, there is a set of examples that show very different behaviors between homogeneity and vagueness, notably those proposed by Feinmann (2020). In that respect, representing homogeneity like vagueness is not trivial, and pursuing a unified approach of homogeneity and vagueness will face having to explain those examples.

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Figure 1:
Truth-table for p∧q in Spector's system:

P \ Q	0	#	1	{0,#}	{0,1}	{#,1}	{0,#,1}
0	0	0	0	0	0	0	0
#	#	#	#	#	#	#	#
1	0	#	1	{0,#}	{0,1}	{#,1}	{0,#,1}
{0,#}	{0,#}	{0,#}	{0,#}	{0,#}	{0,#}	{0,#}	{0,#}
{0,1}	0	{0,#}	{0,1}	{0,#}	{0,1}	{0,#,1}	{0,#,1}
{#,1}	{#,0}	#	{#,1}	{0,#}	{0,#,1}	{#,1}	{0,#,1}
{0,#,1}	{0'#}	{0,#}	{0,#,1}	{0,#}	{0,#,1}	{0,#,1}	{0,#,1}