# Believing the Formless?

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## Abstract

In this note, we discuss the analyticity puzzle affecting the logicality of language hypothesis. The analyticity puzzle is the fact that only some analyticities result in ungrammaticality, which seems to conflict with the idea that an inferential device plays a role in determining the set of the possible sentences of the language. The literature includes two solutions to account for this puzzling evidence. According to one of the solutions, the deductive system can access both ungrammatical and grammatical trivialities, though only the latter can be rescued, i.e. made informative, via application of a pragmatic repair strategy, which modulates the meaning of the nonlogical material. It is then argued that syntax only excludes logically trivial (i.e. unsalvageable) structures, and that nonlogically trivial structures may even be used under their trivial readings. Our focus in this note is on a possible implication of this discussion for the analysis of belief ascriptions. In particular, we discuss that occurrences of the formula 'Bel p' are acceptable when p is nonlogically trivial but unacceptable when p is logically trivial. Since the ascribed propositions differ just on a logical dimension, we suggest, against classical discussion, that belief ascriptions are sensitive to logical considerations.

*Keywords:* Logicality, Logical form in natural languages, Formal pragmatics, Contradiction.

The logicality of language hypothesis is the idea that the language system, i.e. the combinatorial device building structures out of a lexicon, is not merely interfaced with—but actually contains—a deductive inferential device, sometimes referred to as a "natural" logic (cf. Chierchia 2013; Fox and Hackl 2006; Gajewski 2002, 2009). Assuming this perspective, the set of the possible sentences of a language is restricted to structures that, beyond being syntactically acceptable in a standard sense, are logically fruitful, i.e. are not analytic ("say something" in a Tractarian sense; cf. e.g. Frascolla 2017). This idea breaks with traditional generative approaches to the syntax/logic interface, but also with philosophical well-established doctrines on logic and language, including the Husserlian distinction between nonsense and countersense (cf. Husserl 1901) and the Carnapian separation between formation and transformation rules (cf. Carnap 1934; cf. also discussion in Pistoia-Reda 2021).

Standard evidence in favor of the logicality of language hypothesis comes from the unacceptability (i.e. ungrammaticality) of certain analytic structures. An example is given in the familiar contradiction reported below in (1). The standard account for this case (cf. Fintel 1993; cf. also Gajewski 2008) is that it generates a content such that the structure is true if we subtract the complement of the exceptive from the set of students, and false otherwise; however, in light of the left upward monotonicity of the existential quantifier, the content generated is bound to result in a contradiction. Note that the property of left upward monotonicity allows inferences from sets to supersets (e.g. from 'Some philosophy students passed the exam' to 'Some students passed the exam'), but this clearly conflicts with the contribution of the exceptive, since ⟦students-John⟧ ⊂ ⟦students⟧—in other words, if the structure is true on ⟦students-John⟧, it must be true also on ⟦students⟧. Clearly, however, this behavior cannot be generalized, since not all analyticities result in ungrammaticality and incomprehensibility of this kind. Indeed, it is an established fact that in normal contexts contradictions can be used naturally, in conversation and in internal thought, since they are potentially informative and meaningful ("espressive" Gramsci would say in this connection, though on some quite different underlying assumptions). Thus, the acceptability of the example in (2) reveals what seems to be an analyticity puzzle for the logicality of language hypothesis.[1]

(1) *Some students but John attended the meeting

(2) It is raining and it is not raining.

In this note we begin by focusing on this puzzle. In the literature one finds different solutions to the observed acceptability asymmetry. According to the standard solution, the logicality of language hypothesis should be combined with a modularity vision according to which the inferential device does not access word meanings (cf. Chierchia 2013; Gajewski 2002, 2009; cf. also Abrusán 2019 for useful discussion). Since, in difference from ungrammatical analyticities, acceptable ones owe their analytic status specifically to word meanings, one can simply assume that the mechanism assessing grammaticality is blind to the contradiction in (2), while being able to access the contradiction in (1). This solution thus requires assuming representations similar to what Gajewski calls *logical skeletons*, instead of standard logical forms. Logical skeletons are of course connected to logical forms, in that they are derived from logical forms through substituting the nonlogical material with distinct variables belonging to the suitable semantic type. Assuming this perspective, ungrammaticality is predicted only when the logical skeleton, and not just the logical form, is analytic. We report below the logical skeletons, respectively, of the ungrammatical contradiction and of the acceptable case above. Since the contradiction in the first case emerges from a conflict between the quantifier and the exceptive, it is argued that this representation is already sufficient to establish the analytic status of the structure. Things are different, of course, in relation to the second logical skeleton.

(1) Some $P_{1<e,t>}$ but $P_{2<e,t>}$ $P_{3<e,t>}$

(4) It is $P_{1<e,t>}$ and it is not $P_{2<e,t>}$

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[1] It is important to keep in mind that, whereas (2) is perceived *prima facie* as a contradiction, though eventually not interpreted as such, (1) is simply not understood, and proof is necessary to even understand that it is contradictory.

An alternative solution has been recently proposed in the literature (cf. Del Pinal 2019, 2021; Sauerland 2014); this solution is pragmatic in spirit and builds on standard discussion in the previous literature concerning modulation processes and contextual enrichment (cf. e.g. Martí 2006; Recanati 2010; cf. also Stanley 2007). Advocates of this solution assume that the logicality of language hypothesis should be combined with a more conservative approach based on modulated logical forms, to avoid the theoretical cost of having to assume an intrinsically natural logic. In this connection, it is important to note that, on the logical skeletons solution, the deductive device included in the language is assumed to be blind to most classical formulas and logical laws, since it does not even access the co-occurrence of content words. To avoid exactly this, the proponents of the alternative solution submit that some analyticities are grammatical because a contextual repair strategy, i.e. *meaning modulation*, modifies the literal meaning of the non-logical material in the structures, thus apparently preventing an analyticity to be derived in the relevant cases.[2]

To be more precise, the repair strategy is described as the application of a constrained pragmatic *rescale* operator (here '$R^+$' in symbols) that specializes, i.e. strengthens, the meaning of the nonlogical words, consequently excluding non standard interpretations compatible with the literal meaning of the terms (cf. the definition in (5); cf. e.g. Del Pinal 2019 for more formal details). For instance, assuming this account the acceptable contradiction observed above can be assumed to be associated with the nontrivial representation (i.e. a *modulated logical form*) reported below in (6), which can result in an interpretation such as that reported in (7). In particular, by applying on at least one of the two conjoined predicates, the rescale operator induces a strengthening in the meaning of the relevant terms, consequently making the overall content conceivable and perfectly informative (it should be noted that Del Pinal's version also allows multiple applications of the operator).

(5) $\{x\colon R^+(P)(x)\} \subseteq \{x\colon (P)(x)\}$

(6) It is raining and it is not $R^+$(raining)

(7) It is raining and it is not e.g. raining heavily.

In conclusion, even if we assume that certain analytic structures are excluded from the language, and that the inferential device interfaced with syntax does not distinguish between the different kinds of analyticity, by adopting the pragmatic solution we can still account for the acceptability of cases such as (2): in these particular cases, the analyticity appears to be avoided, as the rescale operator applies to restore informativity. Crucially, the account is also capable of predicting unacceptable cases; indeed, in his discussion Del Pinal assumes that the repair strategy is crucially limited in its extension, in that it can only apply to nonlogical words. This seems a condition for the intended comprehensibility of such cases. As a consequence, the strategy cannot produce effects on ungrammatical analyticities such as (1), whose analytic status is crucially due to the logical material contained in them, in crucial accordance with our intuitions (for instance,

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[2] One may argue, however, that this idea cannot explain the fact that the second structure is perhaps perceived as being, at least *prima facie*, contradictory, so that the modulation cannot be claimed to take place, so to speak, *a fortiori*. On the contrary, the first structure cannot be understood right from the start

strengthening *students* to e. g. *philosophy students* does not restore informativity in that particular case).

The pragmatic solution, we take it, is motivated by important concerns from a philosophical point of view (cf. Pistoia-Reda and San Mauro 2021 for relevant discussion). In addition, it can be shown that this solution can account for the same cases as the logical skeletons solution, while also extending to some other cases (cf. Del Pinal 2021 for more recent discussion). However, recently various authors started to focus on the details of the original version of the repair strategy, and arguments have been submitted to the effect that the repair strategy should be extended so as to include weakening modulations (i.e. '$R_c$') and applications to variables (cf. respectively Pistoia-Reda and Sauerland 2021 and Chierchia 2021 for relevant proposals). Another interesting line of research is related to an over-generation problem afflicting the pragmatic solution (cf. e.g. Abrusán 2019 for relevant discussion). In particular, we would like to submit that acceptable contradictions are not merely acceptable, as we discussed above, but they can even be interpreted under their contradictory reading, as shown in (8). In order to appreciate the significance of this case, recall that, assuming the pragmatic solution, there is no structural difference between functional and nonfunctional contradictions. Thus, the prediction can be made that cases such as this, which contain a nonfunctional contradiction, should sound ungrammatical, unless of course it is rescued, against intuitions, via application of the repair strategy. The unacceptability prediction is clearly incorrect.

(8) Mary is so confused, she thinks that it is raining and it is not raining.

An influential and important response one finds in the current literature involves appealing to the notion of *logical triviality* (i.e. a structure is logically trivial if there is no modulation of the nonlogical material that makes the structure informative), and assuming that structures are excluded only if they are logically trivial, not just trivial (cf. Del Pinal 2021; cf. also Chierchia 2013, 2021 for related discussion on logical vs. grammatical triviality). The decisive and essential point is that, in order for a given structure to sound acceptable, it is sufficient that the structure can be rescued (i.e. made informative) *in principle*; it is sufficient, in other terms, that the structure be associated to at least one interpretation which is not trivial. As a consequence of adopting this notion, we can allow for the possibility that sometimes structures are interpreted under their trivial reading, provided that there is an informative interpretation which is however ignored in that particular occasion.

We believe this notion of logical triviality to be extremely rich philosophically; in this note, we would like to conclude by focusing on a possible implication for the analysis of belief ascriptions. The observed acceptability of the discourse in (8) reveals, we take it, that occurrences of the formula 'Bel *p*' can be meaningful (in this particular case, arguably, it reveals that they can even be true) when the embedded structure *p* is meaningless (*qua* contradictory). To a certain extent, this seems to confirm Mellor 1954's traditional argument to the effect that occurrences of the formula 'Bel *p*' are not necessarily meaningless when the embedded structure *p* is meaningless (cf. also Stroll 1955 for related discussion). Mellor's point, quite famously, was intended to emphasize the fact that, as follows from his general views on meaning, belief ascriptions really pertain to psychology, and that,

consequently, considerations concerning the properties of the content being ascribed (e.g. its logical coherence, its epistemological verifiability) are irrelevant for judging whether our use of the device was adequate.

However, based on the foregoing discussion on logicality, in this note we would like to submit that, if we substitute the reported contradictory embedded structure *p* equivalent to (2) with a distinct contradictory embedded structure *q*, we obtain a surprising result, at least in light of Mellor's essentially psychologistic proposal. In particular, we observe that the discourse in (9) is meaningless (*qua* unacceptable) precisely for the fact that it contains the meaningless (*qua* contradictory) embedded structure *q* equivalent to (1).[3] More precisely, the unacceptability of the discourse in (9) demonstrates, we take it, that some occurrences of the formula 'Bel *p*' cannot be meaningful if the embedded structure *p* is meaningless (*qua* contradictory). It is important to recall that the two reported embedded structures, while being both contradictory, still differ along a logically relevant dimension in that, as we discussed above, while (2) is nonlogically trivial, (1) is logically trivial.

(9) *John is totally irrational. He believes that some students but John smoke.

It should be emphasized, as indeed follows from our description above, that Mellor's argument was not intended to exclude that occurrences of 'Bel *p*' can sometimes be meaningless when the embedded structure *p* is meaningless. But the crucial observation for us is that, given his essentially psychologistic stance, in doing so Mellor merely considers meaningless cases in which *p* is just an uninterpretable "form of words" (Mellor 1954, p. 42). We intend our submitted asymmetry to show, instead, that some purely logical features (i.e. the distinction between nonlogically triviality and logically triviality structures) can make the formula 'Bel *p*' meaningless, thus revealing that "logical or epistemological" (Mellor 1954, p. 43 ) features are crucial components of belief ascriptions. Granted, if one adopts logicality, one is then forced to assume that the embedded structure with the exceptive is but a mere form of words; but the point is precisely that this structure being just a form of words ("strictly unacceptable", as we said above) is a consequence of its logical features.

In conclusion, in this note we considered the *analyticity puzzle* for the logicality of language hypothesis. This is the fact that only some analyticities result in ungrammaticality. The literature includes discussions on two possible solutions to the puzzle. In particular we focused on one of the two solutions, i.e. the pragmatic one, which has been discussed to radically improve the logicality hypothesis from a philosophical point of view. In particular, this solution maintains a conservative stance concerning logical forms, and assumes that acceptable analyticities are due to the application of a pragmatic repair strategy, i.e. *meaning modulation*, to the nonlogical material. Advocates of this solution further assume that acceptable trivialities may even be used under their trivial readings since, in order for analyticities to be grammatical, it is sufficient that the structures be rescuable in principle. Our focus in this note has been on a possible application of the distinction between logically trivial (i.e. unrescuable) and nonlogically trivial (i.e. rescuable) structures. In particular, we showed that occurrences of the formula 'Bel *p*' are acceptable when *p* is nonlogically trivial but unacceptable when *p* is logically trivial. Since the ascribed propositions differ logically in the two

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[3] Granted, we are conscious only of unacceptability, not of its being contradictory *per se.*

cases, we suggested, against classical discussion, that belief ascriptions are sensitive to logical considerations.[4]

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