

Language Logicality and Nonclassical Logic

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Abstract. We report recent evidence that language logicality accounts based on nonclassical deductive systems, such as relevance logic, overgenerate ungrammaticality predictions (Pistoia-Reda and San Mauro, Logicality and Natural Logic, *Natural Language Semantics*, to appear). In particular, we build a logical propositional variant of an ungrammatical structure with exceptives via equivalence between existential quantification and generalized disjunction. We argue that the accounts based on relevance logic are forced to predict such variant to be ungrammatical, crucially against intuitions. We suggest that more plausible accounts combine classical logic with contextually modulated logical forms.

Keywords: Language Logicality; Triviality; Ungrammaticality; Classical vs. Nonclassical Logic

Recent work in linguistics argues for language logicality. This is the idea that the language system includes an algorithmic deductive system to exclude trivialities. Standard evidence for logicality comes from the ungrammaticality of contradictory exceptives such as (1) or tautological *there*-existentials such as (2) (cf. von Stechow 1993; Gajewski 2008; Barwise and Cooper 1981). But, since acceptable trivialities are obviously also observed, one needs an account as to why only some trivialities are excluded from the language.

(1) *Someone but John smokes.

(2) *There is every student.

The standard response one finds in the literature (cf. Gajewski 2002, 2009; Fox and Hackl 2006; Chierchia 2013) argues that language logicality should be paired with an extremely weak deductive system that only accesses the logical status of ungrammatical structures. More precisely, according to a recent version of the response, language logicality operates on standard (non-modulated) logical forms combined with a non-classical deductive system, such as relevance logic. In recent discussion, however, we focus on this version and argue that it is bound to overgenerate ungrammaticality predictions (cf. Del Pinal 2019 for criticism of the *skeleton* version and Pistoia-Reda and Sauerland 2021 for possible extensions). In what follows, we report some of the evidence.

In particular, in our discussion we build a logical propositional variant of an ungrammatical structure with exceptives such as (1) via equivalence between existential quantification and generalized disjunction. We do not submit the details of the process; however, for concreteness, in the following we submit a natural language translation of such propositional variant, in (3), where we assume cardinality to be irrelevant for grammaticality. Our empirical observation is that such sentence is perfectly acceptable. However, since relevance logic includes the aforementioned equivalence between existential quantification and generalized disjunction, we argue that the particular version of the response we are considering, i.e. based on combining standard logical forms with nonclassical (e.g. relevance) logic, is bound to predict (3) to be ungrammatical, crucially against intuitions.

(3) Alice or Bob smoke, and it is not the case that Alice or Bob or John smoke.

We conclude that in this case language logicity with relevance logic overgenerates ungrammaticality predictions. In addition, we argue that such account is actually forced to overgenerate ungrammaticality predictions. In particular, the argument is that the standard account for (1)'s uncontroversial ungrammaticality requires the existential quantifier to be interpreted as an upward monotone operator (cf. von Stechow 1993) which then turns out to be incompatible with the exclusion due to the exceptive. However, as we discuss in our proposal, this interpretation in terms of upward monotonicity only becomes available if the existential operator is taken to be equivalent to generalized disjunction. This then implies that the account for (1)'s ungrammaticality is only available if the existential quantifier is equivalent to generalized disjunction. But, as we mentioned, if the existential quantifier is equivalent to generalized disjunction, then (3) is predicted to be ungrammatical as well.

References

1. Barwise, J., Cooper, R. (1981) Generalized quantifiers and natural language. *Linguistics and Philosophy* 4: 159–219.
2. Chierchia, G. (2013) *Logic in Grammar. Polarity, free choice and intervention*. Oxford, Oxford University Press.
3. Del Pinal, G. (2019) Triviality and logical form. *Noûs* 53(4): 785–218.
4. von Stechow, K. (1993) Exceptive constructions. *Natural Language Semantics* 1(2): 123–148.
5. Fox, D., Hackl, M. (2006) The universal density of measurement. *Linguistics and Philosophy* 29(5): 537–586.
6. Gajewski, J. (2002) L-analyticity and natural language. Manuscript.
7. Gajewski, J. (2008) NPI any and connected exceptive phrases. *Natural Language Semantics* 16(1): 69–110.
8. Gajewski, J. (2009) L-triviality and grammar. Handout.
9. Pistoia-Reda, S., San Mauro, L. (to appear) Logicality and natural logic. *Natural Language Semantics*.
10. Pistoia-Reda, S., Sauerland U. (2021) Analyticity and modulation. *International Review of Pragmatics*, 13, pp. 1-13.