

# Erratum for ‘Ontology-Based Access to Probabilistic Data with OWL-QL’

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This erratum reports about a mistake in [3]. It concerns Section 5 of the paper and affects Theorem 6, Lemma 1, and Theorem 7 in the main body of the paper. These results state a dichotomy for the data complexity of conjunctive queries (CQs)  $q$  over assertion-independent probabilistic ABoxes (ipABoxes) in the presence of an  $\mathcal{ELT}$ -TBox  $\mathcal{T}$ . Informally, ipABoxes can be viewed as an open world counterpart of tuple-independent databases [2]. The stated dichotomy is between PTIME and #P-hardness and also says that, notably, UCQ-rewritability of  $q$  w.r.t.  $\mathcal{T}$  is a necessary condition for PTIME.

The source of the problems is the claim in the proof of Lemma 12 in the appendix about which we say that it can be proved by induction on  $i$ . While this is true and not very hard for the fragment  $\mathcal{EL}$  of  $\mathcal{ELT}$  without inverse roles, it is actually false for  $\mathcal{ELT}$ . This implies that Theorem 6, Lemma 1, and Theorem 7 also apply only to  $\mathcal{EL}$ , but not to  $\mathcal{ELT}$ .

Nevertheless, the results stated in Theorem 6 and 7 hold also for  $\mathcal{ELT}$  and even beyond, such as for  $\mathcal{ALCT}$ . This is a consequence of results on evaluating infinitary UCQs on tuple-independent databases in [1]. The authors establish the hardness part using a combination of reductions from two different #P-hard problems, depending on the properties of universal models. These problems are counting the number of satisfying assignments for a monotone bipartite DNF formula and source-to-target reliability in an undirected graph. Our proof in [3] uses only a reduction from the former problem and it seems that this does not suffice for  $\mathcal{ELT}$ .

## References

- [1] Antoine Amarilli and İsmail İlkan Ceylan. A dichotomy for homomorphism-closed queries on probabilistic graphs. In *Proceedings of the 23rd International Conference on Database Theory (ICDT)*, pages 5:1–5:20, 2020.
- [2] Nilesh N. Dalvi and Dan Suciu. The dichotomy of probabilistic inference for unions of conjunctive queries. *J. ACM*, 59(6):30:1–30:87, 2012.
- [3] Jean Christoph Jung and Carsten Lutz. Ontology-based access to probabilistic data with OWL-QL. In *Proceedings of the 11th International Semantic Web Conference (ISWC)*. Springer, 2012.