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**AN ADDENDUM TO:
“Notes on models of first-order mereological theories”**

Andrzej Pietruszczak has made a comment on my Claim 1 in his paper entitled “Classical mereology is not elementarily axiomatizable”¹. His paper is a wonderful exposition of mereological structures and I think his comment is fair. However, the following are some remarks inspired by his comment.

First of all, my Claim 1 is weaker than what its proof can show. Such a proof gives two elementarily equivalent mereological structures M_1 and M_2 such that M_2 is complete but M_1 is not (Pietruszczak also proves the same result, but in a different way). Therefore, it actually shows that “being complete” cannot be defined by any set of first-order sentences, or more precisely, there is no set S of sentences in the first-order mereological language such that a mereological structure M is complete if and only if $M \models S$. Furthermore, note that M_2 is a mereological structure in Tarski’s sense while M_1 is not. Hence we can also conclude that the class of mereological structures in Tarski’s sense is not first-order (elementarily) axiomatizable. For otherwise, there is a set S of sentences (in the first-order mereological language) such that M is a mereological structure in Tarski’s sense if and only if $M \models S$, but then it cannot be the case that both M_1 and M_2 satisfy S , which contradicts the fact that they are elementarily equivalent.

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¹ In this issue: A. Pietruszczak, “Classical mereology is not elementarily axiomatizable”, *Logic and Logical Philosophy*, 24, 4 (2015): 485–498. <http://dx.doi.org/10.12775/LLP.2015.017>