Using the Language of Sets to Describe Nested Systems in Emergy Evaluations

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Abstract

The language of set theory has been recently used to describe the emergy evaluation of a process. In this paper this mathematical language is used as a guide to evaluate the emergy of nested systems. We analyze a territorial system on multiple scales as an example of hierarchically nested systems. In this regard, we consider two levels of organization of a territorial system with particular attention to defining the relationships between the flows at each level and between the levels. Our method is designed to make quantifying the interactions among levels easier and more accurate.

Keywords: emergy evaluation; nested systems; set theory; double counting.