# Various types of divisibility and the role they play in statistical mechanics

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In this talk, I will argue that besides the conventional divisibility property (that is, the semigroup property), other types of divisibilities arise naturally in the context of open systems' dynamics. The common thread connecting them all is a general idea of "inferential locality", which is necessary when discussing the physics of open systems. As concrete examples, I will focus on the problems of system-bath divisibility and prediction-retrodiction divisibility, and explain their role within the conceptual foundations of statistical mechanics.