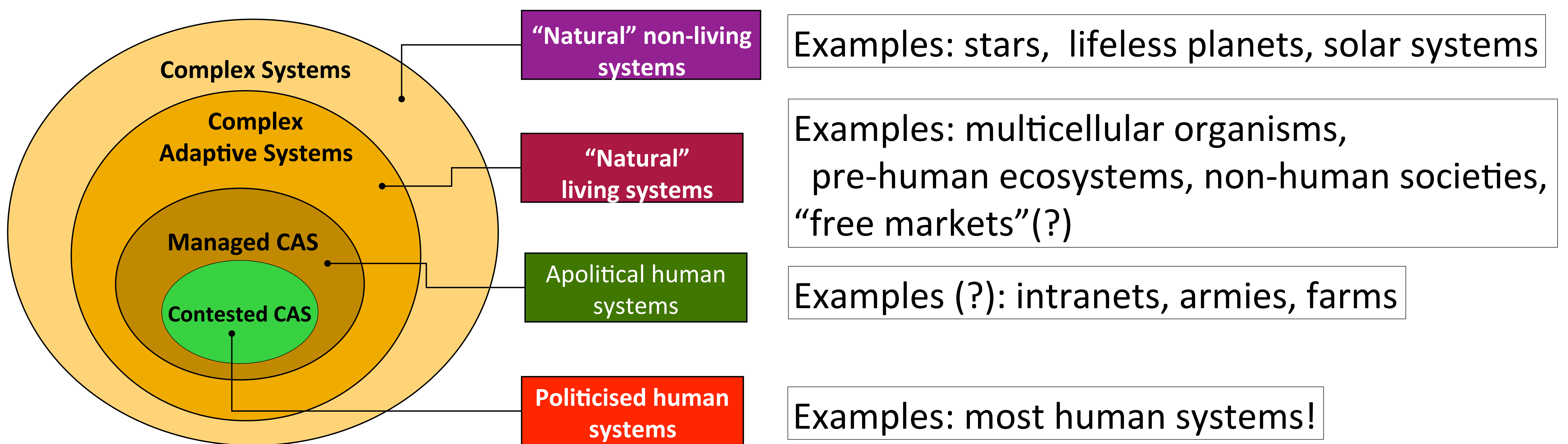
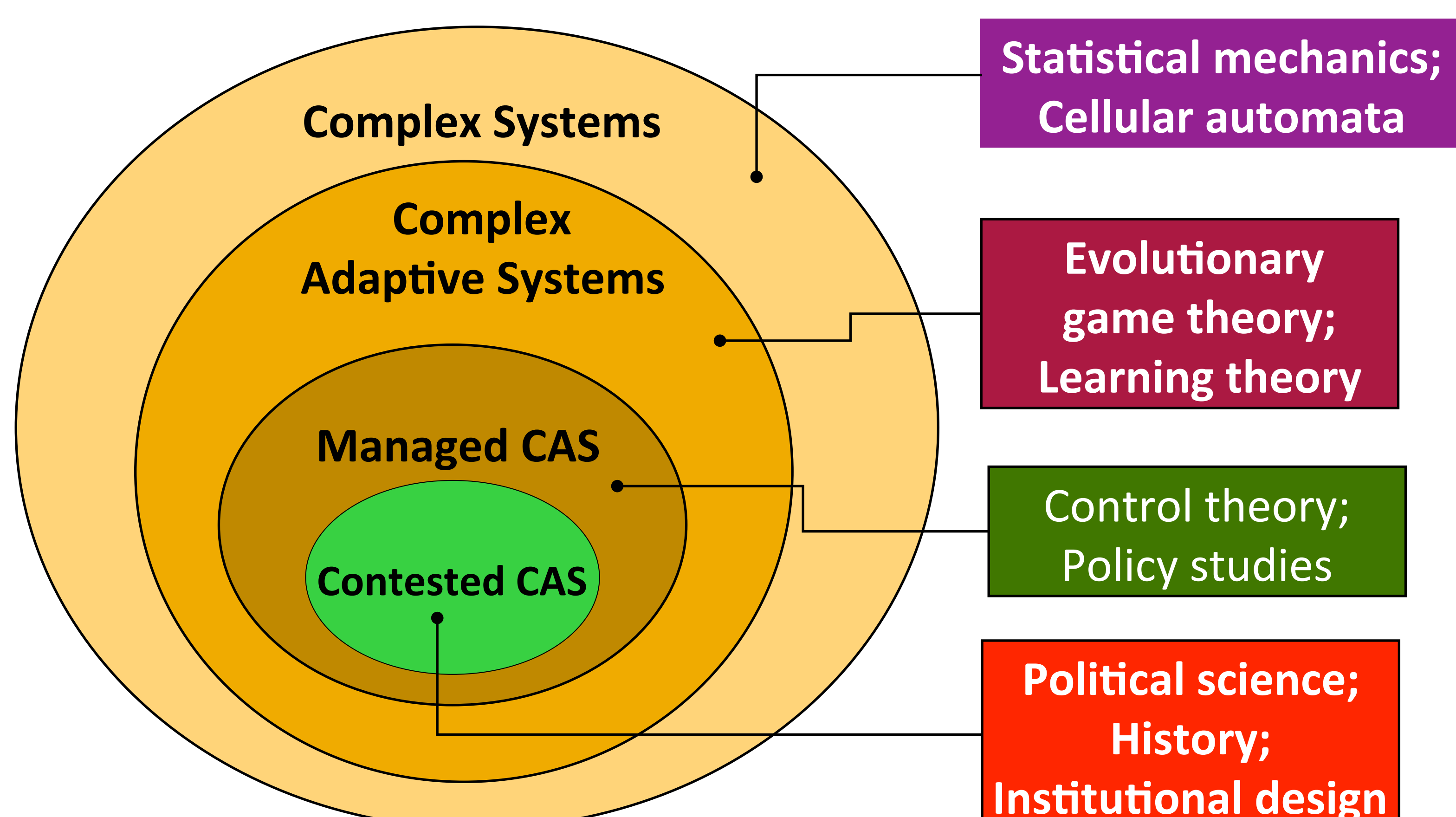
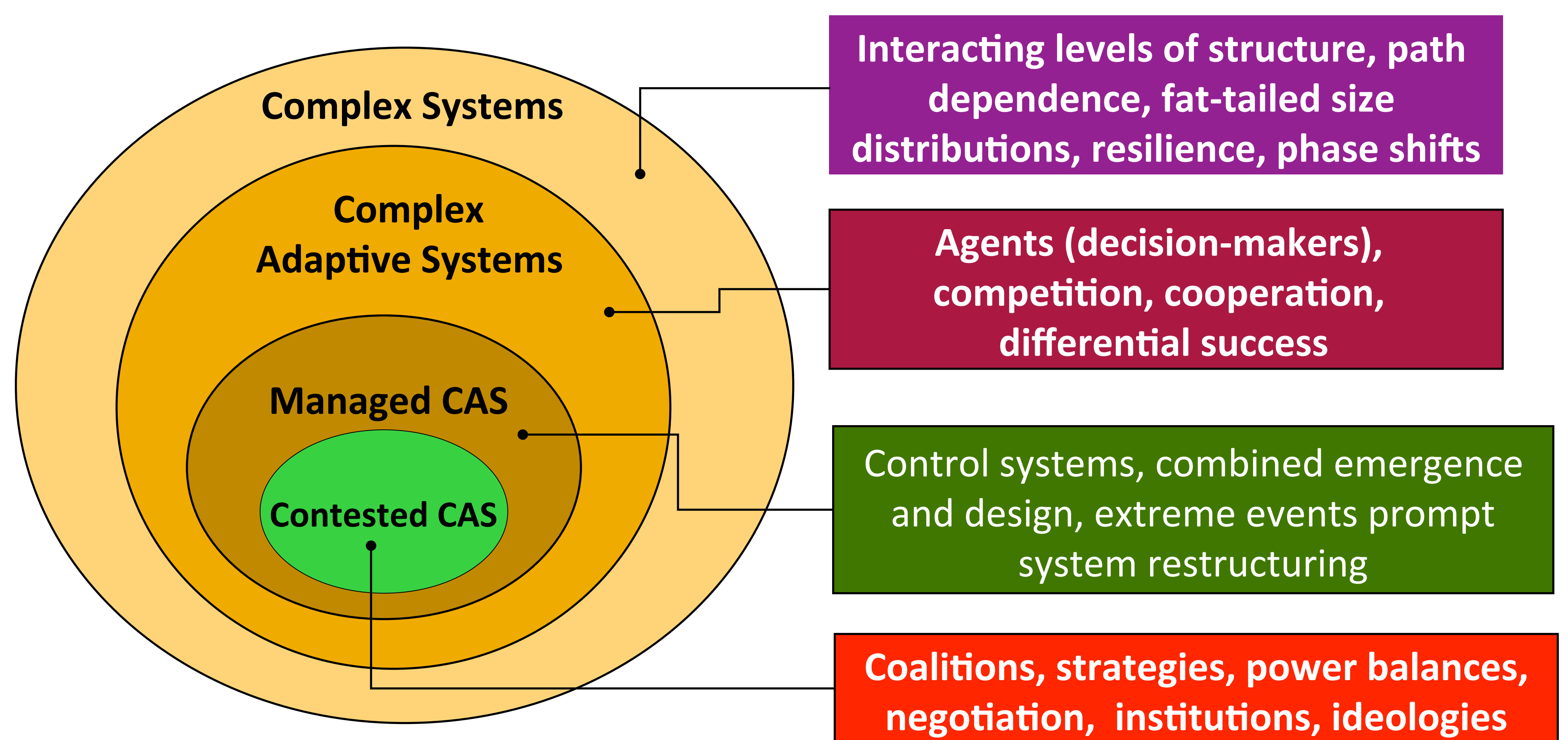


Classifying Complex Systems

System complexity must be distinguished from algorithmic and computational complexity. A complex system can be defined as one that cannot be successfully approximated as a collection of constituents each responding independently to the situation jointly created by all. When this is not possible, understanding requires the identification of intermediate levels of structure. The properties of both constituents and intermediate structures can be used to define classes of complex system. One way of doing so is outlined here.



- Interacting levels of structure: useful descriptions possible at two or more levels, but full understanding requires them all.
- Combined emergence and design: people describe, critique, experiment on, and try to alter emergent outcomes.
- Extreme events prompt system restructuring: epidemics, software crashes, financial panics.



- Lists of disciplines are not exhaustive.
- With each step inwards, more disciplines become relevant.
- Relevant disciplines can assist in refining the classification.