What Is Self-Organization?

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Message from the Guest Editors

In this Special Issue, we invite viewpoints, perspectives, and applied considerations on questions regarding the notions of self-organization and complexity. Examples include:

Routes: In how many different ways can self-organization manifest itself? Would it be meaningful, or even possible, to attempt a classification?

Detection: Can we detect it automatically—either the process or the outcome? Or do we need a human observer to classify a system as "self-organizing"? This issue may be related to the construction of quantifiers, e.g., in terms of functions on phase space, such as entropy measures.

Complexity: Is a system self-organizing only when the resulting dynamical state is "complex"? What does "complex" mean exact;ly? Are there many types of complexity, or just a single one? E.g., it has never been settled whether complexity should be intensive or extensive, if any.

Domains: Where do we find self-organizing processes? Are the properties of self-organizing systems domain-specific or universal? In which class of systems does self-organization show up most clearly?

Special Issue

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Message from the Editor-in-Chief

The concept of entropy is traditionally a quantity in physics that has to do with temperature. However, it is now clear that entropy is deeply related to information theory and the process of inference. As such, entropic techniques have found broad application in the sciences.

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