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Information, Entropy, Life and the Universe

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

Shannon's (1948) work "A Mathematical Theory of Communication", has generated a great deal of confusion between Shannon's measure of information (SMI) and entropy. As Shannon emphasized, the measure of information is not a measure of any information, but rather a measure of information belonging to, or contained within, a probability distribution. Entropy, on the other hand, has a similar mathematical form as SMI. Therefore, Entropy can be said to be a special case of SMI. However, the SMI as defined by Shannon is, in general, not Entropy.

It is our hope that this issue will help to dissolve this confusion that is quite common in recently published articles and books, particularly the two most difficult concepts in science: life and the universe. Both of these are fascinating fields of research, yet far from being understood. The main question that we wish to raise in this issue is whether these two concepts can, or cannot, be applied to either an entire living system or to the entire universe.

Prof. Dr. Arieh Ben-Naim
Guest Editor

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Editor-in-Chief

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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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