



Entropy and Ecology: an application in education based on the thermodynamic imperative by Robert Bruce Lindsay

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Abstract

The consequences of the second law of thermodynamics have been widely discussed in the scientific literature, both regarding the maximum efficiency of heat engines but also about the preferential direction of natural phenomena. Perhaps it is not so well known that by this law attempts have also been made to provide a foundation for ethics. In 1959, Robert Bruce Lindsay, concerned about the potential harm of a science devoid of ethical constraints, introduced the thermodynamic imperative in an article published in the American Scientist magazine. In his article, titled "Entropy Consumption and Values in Physical Science", Lindsay argued that humans should strive to increase the degree of order in their environment, opposing the natural tendency of entropy to grow in accordance with the second law of thermodynamics. I have already published an analysis of Lindsay's thought in order to emphasize the relevance of his position*. This approach is particularly interesting because it includes in ethics both the conduct of humans toward their fellow human beings and the ecological behaviour of preservation of nature and sustainable use of natural resources. This paper presents a didactic application, held at Liceo "F. Sbordone", in physics/civic education lessons, which led to the creation of a dice of peace/an earth cube, starting from the thermodynamic imperative.

*Cioci, V. 2011. Termodinamica e Etica secondo Robert Bruce Lindsay. Rendiconti Accademia Nazionale delle Scienze detta dei XL. Memorie di Scienze Fisiche e Naturali, serie V, volume XXXV, part II, tome II, pp. 151-162.



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