

THERMODYNAMICS AND FLUID FLOW VIA ART

Abraham Tamir

Department of Chemical Engineering, Ben-Gurion University of the Negev, Beer-Sheva, Israel. Fax: +972-8-647-2916. E-mail: atamir@bgumail.bgu.ac.il

Art & Science are usually considered as two different entities. The interaction between Art & Science will be demonstrated in the present presentation by subjects related to Thermodynamics and Fluid Flow. The major objective of this presentation is to accustom people to “see” Science in works of art, as well as to view Art as a rational or irrational expression of real or imagined scientific phenomena

BACKGROUND

Art & Science are in fact practically one entirety. The close interaction between the "two cultures" finds attestation in the words of Cheng-Dau Lee, Nobel Laureate in physics: "Both, Science and Art are not separated from each other. There is even a similarity between them as they help us observe nature. With the help of Science we can find out routines of nature. On the other hand, by means of Art we can describe the emotions of nature."

Historically, art did not exist as an independent genre as it does today. Great masters were well ground in both Science and Art, as represented by Leonardo da Vinci. Ben-Gurion University of the Negev in Israel has demonstrated a successful way of integrating the "two cultures" by establishing in 1998 a Museum of Art & Science in which Art is used as a means to illustrate Science, and Science serves as an instrument in creating Art.

Thermodynamic subjects are demonstrated by paintings of famous artists: What is thermodynamics?; Reversible processes; Isolated and open systems; Thermodynamic functions such as: f , P , V , T , $P.E$, $K.E$, G , H , U , S , W , A ; Law of conservation of mass for batch and continuous systems, Laws of Thermodynamics (0 to 3rd), Ideal gas Law, Law of additive of volumes and properties of solutions. *Fluid flow* will be demonstrated by: Flow over bodies, vortices, flow of viscose fluids, impulsive start of a cylinder, shock waves and Karaman vortex.

