INFORMATION FLOWS AND ENTROPY : AN OVERARCHING THEORETICAL CONSTRUCT ON EVOLUTION IN THE FIELDS OF BIOLOGY, SOCIAL SCIENCES AND ARTIFICIAL INTELLIGENCE *

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Over the last decades several attempts have been made to develop new evolutionary perspectives using entropic or entropic like processes in biology (Brookes and Wiley 1986) and in the social sciences (Boulding 1978, Faber & Proops 1983, Malaska 1986, Zelleny 1986, O'Connor 1985, Clark & Juma 1989). Others have tried more ambitious overarching attempts to combine the two fields (Eric Jantsch 1980, Laszlo 1987).

The present paper (an overview of a forthcoming monograph by the author (Goonatilake 1990) posits that the bridging can be done using information flows as a key variable on which entropic influences act, Information, flows down three channels, the genetic, the social - cultural and increasingly the exosomatic - in man made artificial devices.

The paper describes how this information system interacts with an external environment. The three information flow systems are characterised by an overall time directionality, self-organisation, conservation of past information, creation of novelty; particular cognitions of the environment, differentiation, speciation and integration; multilineerity in evolution; smooth speciation as well as sudden disjunctures; coevolution between the different information flows; differing flexibilities of the different information flow lines vis-a-vis changes in the environment; varying reaction times to changes in the environment and different survival times of information in the different lines.

References:

Goonatilaka, Susantha (1990) - Meta Evolution Information Lineeges in Gene, Culture and Machine London Printer Publisher

* A fuller treatment of this paper is appearing in the author's forthcoming book Meta Evolution:Information Lineages in Gene, Culture and Artefact. London:Francis Pinter ,1990.