Chapter 3

Citation & Reviews

In any scientific investigation and research a comprehensive review of literature is very essential. Its main function apart from determining the work done before concerning the problem area i.e. area of investigation, it provides an insight into the methods and procedures and create a basis for interpretation of findings. As direct references of all the items are not in abundance, certain specific references along with some indirect references have been incorporated in this chapter for the purpose of meaningful use. In the present study, reviews of literature have been summarized among following heads.

1. Chaos theory
2. Social Ecology
3. Entropy
4. Social Entropy and Thermodynamics Entropy
5. Social Metabolism

CHAOS THEORY

Loye, D., Eisler,R.(2007), Chaos and transformation: Implications of non-equilibrium theory for social science and society, volume 32, Issue 1, Pages 53-65, The idea of applying the natural scientific self-organizing, evolutionary and non-equilibrium or "chaos" theory associated with the names of Prigogine and others to world problems of impending social, political, economic and ecological "chaos" is gaining ground. The leap from natural science to social action, however, is impossible without considerable attention to the main intervening step: the development of "chaos"-

equivalent, evolution-, systems-, and action-oriented social theory. Construction of such theory requires understanding by social scientists of natural scientific "chaos" theory as well as their own "chaos" theoretical heritage, of natural scientists of the now seemingly far distant social problem-solving potential of their non-equilibrium and self-organizing theories and of both natural and social scientists of how advancement at both levels could help gain a peaceful as well as humanistic "order out of chaos" in this troubled world of ours.

Caruso, R.,(2006) Conflict and conflict management with interdependent instruments and asymmetric stakes. University Library of Munich, Germany, MPRA Paper 214 This paper considers a partial equilibrium model of conflict where 2 asymmetric, rational and risk-neutral opponents clash in order to redistribute a divisible prize in their favour. A Potential Settlement Region (PSR) is presented as the set of all possible settlement points. The agent with the lower evaluation will expend efforts in conflict management only when the asymmetry is extremely large. When agents are asymmetrical both in evaluation of the stake and in fighting abilities, there is also a smaller PSR. Finally throughout the paper, the concept of entropy has been applied as a tool for the measurement and evaluation of conflict and conflict management.

Jehn,-K.,-A., Gregory,-B. Northcraft, Margaret A. Neale;(1999), Why differences make a difference: A Field Study of Diversity, conflict and Performance in workgroups; Administratve Science. Quaterly, Vol.44 A multimethod field study of 92 workgroups explored the influence of 3 types of workgroup diversity (social category diversity, value diversity and informational diversity) and 2 moderators (task type and task interdependence) on workgroup outcomes.While groups have become central to organizations, they present their own intrinsic problems of co-ordination, motivation and conflict management (Gladstein, 1984; Jehn, 1995).

Jehn,-K.,-A.,(1997), A Quantitative Analysis of Conflict Types and Dimensions in Organizational Groups; Administrative Science Quarterly, Vol.42, In much of the previous literature conflict is generally deemed detrimental to performance and satisfaction (March and Simon, 1958; Pondy, 1967; Blake and Mouton,1984). Thus, it is no surprise that today's managers and employees still overwhelmingly view conflict as negative and

something to be avoided or immediately resolved (Losey, 1994; Stone, 1995). Recent studies, however, have examined the benefits of organizational conflict and methods for stimulating productive conflict (Tjosvold, 1991; Amason and Schweiger, 1994; Jehn, 1994, 1995; Van de Vliert and De Dreu, 1994;Pelled, 1996)' For example, task-related management team conflict can improve organizational performance and growth through enhanced understanding of various viewpoints and creative options ((Bourgeois, 1985; Eisenhardt and Schoonhoven, 1990).

SOCIAL ECOLOGY

Bookchin, Murray .(1964). This study indicate that the complexity relationship between people and nature is emphasized.

Bateson, Geogory.(1972). cybernetics were applied to the field of ecological anthropology and concept of Homeostatics. He consider the world as a series of system containing those of individual,societies and ecosystems.

Bronfenbrenner, Urie. (1977). Proposed broader approach to research in human development that focuses on progressive accommodation, throughout life span between the growing human organism and changing environment in which it actually lives and grows.

Bhoumick ., Kumar, Sharit. (1980). This study indicate that the tea plantation has been assumed to have a distinct form of production organization which gives rise to Social relations.

Bookchin, Murray. (1987). Proposed that Social ecology is neither deep, tall,fat nor thick. It dose not fall back on incantations, sutras,flow diagrams, or spiritual vagaries. It is avowedly rational. It does not try to regale metaphorical forms of spiritual mechanism and crude biologism with Taoist,Buddhist,Christian, or Shamanistic Eco-la-la. It is a coherent form of naturalism that looks to evolution and the biosphere, not to deities in the sky or under the earth for quasi-religious and super naturalistic explanations of natural and social phenomena.

Russell, David. (1991). Social Ecology in action, its rationale and scope in education and research; Social ecology is described as away of knowing and experiencing the personal, social and ecological dimensions of day to day life.

Gunderson, H. and Lance. (2000). Introduced the Concept of Ecological Resilience.

Murray, and Bookchin.(2005). Proposed that the concept of world based on Social equality, Direct Democracy and ecological sustainability is discussed. Also difference between organic societies and ecological societies are made,creation of ecological societies expected to bring humanity back into balance with nature.

Eryilmaz, cagri. (2012) This study focused on " how can any environmental action be analyzed in terms of social ecology?"

Acharya, S.K. and Bera, Sneha. (2012). Social Ecology of Tea Gardens in India : Perspective of Global Warming ; They found a policy echelon to make clandestine intervension to protect the ecological health of that Tea garden based mega- ecological setup from both decadence and destruction.

ENTROPY

Islam,-S; Ishikawa,-K(2010) Journal-of-Food,-Agriculture-and-Environment, 2010; 8(3/4 part 2): 1352-1356**.** The extensive use of dyes causes pollution problems in the form of colored wastewater discharged into environmental water storages."Bakuhan seki-healing stone" is used to designate a Japanese stone which is a kind of igneous rock, and is principal ingredients are alkali feldspar and quartz. It is very porous in nature and is also known to adsorb residual chlorine, heavy metals, organic matter and bacteria in water and thereby remove these materials from water.The equilibrium adsorption capacity was found to be 7.716, 9.615 and 10.00 mg/g at 283, 298 and 313 K, respectively, using the Langmuir equation. Thermodynamic parameters, Delta H degrees, Delta S degrees and Delta G degrees,

Singh, V.P. (2010). The entropy theory permits a probabilistic characterization of the rating curve and hence the probability density functions underlying the curve. It also permits a quantitative assessment of the uncertainty of the rating curve. The derived rating curves are tested using field data and are found to be in agreement with the curves obtained by the least square method.

Mondal, N.C. and Singh, V.P. (2010). To determine the fractional amount of rainfall (called natural recharge), marginal entropy and

transinformation of rainfall and depth to the water table at selected wells were calculated. Then a ratio of transinformation to marginal entropy of rainfall was used as a measure for assessing natural recharge.

SOCIAL ENTROPY AND THERMODYNAMIC ENTROPY:-

Stepanic,-J;Sabol,-G; Zebec,-M-S;(2005) Describing Social Systems using Social Free Energy and Social Entropy; Kybernetes; 34; 6: 857-868,

Combination of social free energy and social entropy is on the one hand a set of quantities easily determinable from available data and on the other hand a set of indicators intuitively connected with social system states. We relate the system social free energy and levels of organization and adaptation. From these measures, we derive the measure of social system adaptation.

Trevillion,-S;(1982) Welfare, Society and the Social Worker TREVILLION Br J Soc Work.1982; 12: 23-33, The study encompasses the situation the situation where the focus is given to the clients' treatment during the moment of transition between social categories and thereby denied a place in society. An opposition is accordingly presumed to exist between welfare and society, to to intrude on the relationship between social worker and client, constituting a pressure to resolve the tensions produced by anomaly through the imposition of a welfare identity on the client. In conclusion, it is suggested that behind the apparent 'crisis' in social work lies a crisis in the management of social entropy.

Katz,-Daniel; Kahn,-1. Robert(1947), The Social Psychology of Organisations, 2-4: 3—7, Open systems theory seems to us to permit assumption of entropy, the necessary dependence of any organization upon its environment. The open-system concepts of energic input and maintenance point to the motives and behaviour of the individuals who are the carriers of energies input for human organizations; the concept of output and its necessary absorption by the larger environment also links the micro and macro levels of discourse.

Rudolf, C. (1850). In nineteenth-century thermodynamics, and is the subject of the Second Law of Thermodynamics, which states that in an isolated thermodynamic system, entropy will either remain constant or increase toward its maximum, but cannot decrease. This means that in an

isolated system, the system will gradually become more and more disordered, until it reaches maximum entropy. This is a complete state of rest or dissolution, with an absence of available energy for doing work.

Danial. K. (1947). Revealed that open-systems theory seems to us to permit assumption of entropy, the necessary dependence of any organization upon its environment. The open-system concepts of energy, input and maintenance point to the motives and behaviour of the individuals who are the carriers of energies input for human organizations; the concept of output and its necessary absorption by the larger environment also links the micro- and macro levels of discourse

Clausius, R. (1950). The term "entropy" was coined by Clausius in nineteenth-century thermodynamics, and is the subject of the Second Law of Thermodynamics, which states that in an isolated thermodynamic system, entropy will either remain constant or increase toward its maximum, but cannot decrease. This means that in an isolated system, the system will gradually become more and more disordered, until it reaches maximum entropy. This is a complete state of rest or dissolution, with an absence of available energy for doing work.

Travellion, S. (1982). Encompasses the situation where the focus is given to the clients' treatment during the moment of transition between social categories and thereby denied a place in society. An opposition is accordingly presumed to exist between Welfare and Society, to intrude on the relationship between social worker and client, constituting a pressure to resolve the tensions produced by anomaly through the imposition of a welfare identity on the client. In conclusion, it is suggested that behind the apparent 'crisis' in social work lies a crisis in the management of social entropy.

Ozilgen, M., Durkan, A. and Ulgen, N. (1991). Thermal death kinetics of *Leuconstoc mesenteroides* and *Basillus coagulans* were studied experimentally in pH adjusted orange juice and glucose or sucrose added apple juice, respectively. The frequency factor and activation energy of these processes were calculated by using the Arrhenius expression. The activation entropy and the activation enthalpy were calculated with analogy between the unimolecular chemical reactions and the microbial death kinetics by using Eyring's theory.

Bailey, k. (1994). Presents the concept of entropy theory not as merely a thermodynamic concept whose utility is primarily limited to the study of heat and temperature change, but rather as a generic concept that is inversely related to the amount of work done. Thus, it is potentially applicable to any system where energy exists in quantities sufficient to permit work. Entropy has the potential to be one of the most important generic concepts available for linking theory and research on all life support systems. All life support systems, in order to be sustainable, must possess sufficient levels of energy. And information. However, merely having available energy and information is not enough for sustainable life support. This energy must be used effectively to do work; with the end result that the entropy is not permitted to rise to uncomfortable levels.

Fotopoulos,Takis. (2000). The conclusion drawn from this analysis is that, although systems theory and complexity are useful tools in the natural sciences in which they offer many useful insights, they are much less useful in social sciences and indeed are incompatible, both from the epistemological point of view and that of their content,with a radical analysis aiming to systemic change towards an inclusive democracy.

Nilson,Andrew t. (2003). Focused that in the Systems/Ecological Perspective, (Person in environment) Social work views the individual in the context of his/ her surrounding social systems.

Stepanic, J., Sabol, G. and Zebec, M.S. (2005). Combination of social free energy and social entropy is on the one hand a set of quantities easily determinable from available data, and on the other hand a set of indicators intuitively connected with social system states. We relate the system social free energy and levels of organization and adaptation. From these measures we derive the measure of social system adaptation.

Zhou, H. Cheng., Peng, H. Z. Chi. and Xio, JlanMin. (2007). Optimization and Evaluation of Multi- Objective Crop Pattern Based on Irrigation Water Resources Allocation. Transactions of the Chinese Society of Agricultural Engineering.; An interactive fuzzy approach is applied to develop sustainable crop pattern for solving multi objective programming involving vague information related to data, model,formulation, and decision maker's preferences.

Wu, kai Ya. (2008). By establishing the index system for evaluating agricultural recycling economy and assigning weight of each index with entropy method shows that the recycling development degree of chaohu basin's economy is improving gradually.

Dong, L.M., Pu, L.J., Shu cheng, H. and Zhou, Q. (2008). *Journal of Fujain Agriculture and Forestry University Natural Science*. 2008, **37**(4): 415-419; The decrease of crop and garden land and the increase of resident, industry, mine and transportation land caused the change in information entropy of Weijiang land use structure. Socioeconomic level of whole region is the main factor that induces change in information entropy. Finally, the social, economical and environmental benefits for use and distribution of lands are given.

Wu, Y.Q., Shao, D.G. and Xiao,Y. (2008). A Comprehensie Benefit Evaluation for the Xiangjiang River Basin Rehabilitation Project. *Hydrological Science for Managing Water Resources in the Asian Developing World*, 2008, 289-295; To quantify the benefits and impacts of the project and to also evaluate its advantages and weakness, hierarchical assessment index system considers flood-control, the social economy and ecological environment. Each index of the different categories within the index system was normalized and its weight was determined through an information entropy based assessment method, including both the subjective and the objective assessments; The basin treatment project enhanced the flood control capability, boosted socio-economic development of the region and improved the ecological environment of the basin.

O' Hara,P.A. (2009). The Political Economy of Climate change, Ecological Destruction and Uneven development. Ecological Economics; Various wave of climate change through successive cooler and warmer periods on planet Earth, including the most recent climate change escalation through the open circuit associated with the disembedded economy,social costs, entropy and destructive creation, climate change and ecological destruction are impacting on most areas especially the periphery, earlier and more intensely than previously though likely.

Barboza C.I., Vazquez, A.J.M.P. and Matus, G.J.A. (2009). The social accounting matrix is a fundamental base to analyze economic policies measure the impact of external clashes and study the dynamics of markets

and the structure of institutions. A recent matrix named social Accounting Matrix for Mexico 2004 was built and put at the disposal of experts, through the cross entropy method. The matrix obtained is consistent with the principles of national accounting. Accounting Matrix for Mexico 2004 was built and put at the disposal of experts, through the cross entropy method.

Gan Hong., Zhu QiLin., You JinJun., Wang Lin., Gan- ZhiGuo. and Wang-Lin.(2010). On this basis,information entropy theory is applied to establish the function of order degree entropy of the water cycle system, which shows the evolution direction.

Dutta, Tanushree. (2010). Concluded that everychaos and entropy has got a framework to act and make the system somehow operational.

Roy, A. (2011). It has drawn up that the higher the independency, the individuality gets unleashed and the person will start behaving like a free particle in zigzag movements as has been observed by Albert Einstein's in a typical Brownian movement. The education in a person acts as a propeller and drives in out of the customized confinement or defined domain for an individual by tradition and norms. This kind of extraterrestrial behavior can be perceived as entropy per se for an apparently state and unmoved society. The educational pursuit in a family, non integrated, erratic, free flying, non committal, may add a kind of negentropy which is happening in a mundane and depletive farming system. Cropping intensity and distance matrix may experience a marital closeness and proximity through Eigen Roots and can contribute to a new factor called System Factor to substantially characterize the social entropy.

SOCIAL METABOLISM

Padovan and Dario. (2000). The Concept of Social metabolism in classical Sociology. Social metabolism has been defined as the particular form in which societies establish and maintain their material input from and energy with their environment. The Concept of social metabolism is to describe the exchange and transformation of matter, energy, labour, knowledge carried out between the social system and environmental system.

Haberl, H., Erb, k.H., Krausmann, F., Adensam, h. and Schulz, N. B. (2003). In this paper, we evaluate the relations between land –use and

socioeconomic metabolism and particularly, socioeconomic biomass flows, by constructing four scenarios for Austria in 2020. They found that increasing the use of biomass as an energy source might have considerable unwanted ecological effect including, among others, a reduction in the functioning of forests as a terrestrial carbon sink.

Haberl, h. (2006). This paper discusses sustainability problems related to socioeconomic energy flows based upon the societal metabolism approach contrary to conventional energy statistics that only include energy use in technical devices, this approach consider all kinds of energy flows related to human societies, including nutritional energy flows of human and domesticated animals.

Tambo, N. (2006). This paper discusses that Modern growing society is mainly driven by oils and may be designated “petroleum civilization”. However, the basic energy used to drive the global ecosystem is solar radiation, the amount of fossil energy consumption is minimal in the whole global energy balance. therefore vast amounts of high entropy solar energy shold always be taken into account in the water industry.

Scheidel, A. and sorman,A.H. (2012). This paper takes a biophysical perspective and explore how declining fossil stocks and a global transition towards renewable energies ultimately drive the land rush. The paper addresses,in qualitative terms, how societal needs for land change with different patterns of societal energy metabolism.