Theory of Chaos and System Entropy: The Restless Progres and Decadence

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ABSTRACT

Chaos and Entropy, and the go of the Universe, are equally true for human civilization as well. While most of the Agricultural Sociological researches have shown the discernible dent for adoption behaviour of farmers, being trained everyday on how to increase the agricultural productivity through adoption of prescribed technology packages, seldom we attempted to measure their brunt of stress, chaos and entropy. The much acclaimed Green Revolution in India had been instrumental so far and so on, as some might demand, with transfer of exotic technology, external supply of input and a supply driven knowledge concept. A plethora of extension programs may be bracketed with this so called 'Transfer of Technology' mode. When knowledge is imposed, motivation is imported and action is imitative, the social outcome is supposed to be an exposition of disorder/ chaos despite of its quantum achievements. The present study is basically a concept paper on Social Entropy, an analogy of Principle of Thermodynamics, has been applied herewith. In a closed system of energy flow, the gap between the work done and energy lost is widening to add to, what we think that, with the increase of gap between motivation unleashed and accomplishment made, the Social Entropy will be increasing. The training and transfer of technology approach in science will be rendered classical and depletive since, it would be adding more exotic capacity without withdrawing systemic and intrinsic disorders. This would invite institutional conflict, organizational disorder and performance chaos. In 1990, American Sociologist Kenneth Bailley published Social Entropy Theory. The paper is focusing on an alternative paradigm for managing human behavior and organizations, institutions and society through managing entropy by withdrawing disorder from the system trembling with chaos, conflict, and non-performance.

Keywords: Transfer of Technology, Entropy, Social Entropy, Social Entropy Theory, Thermodynamics, Principle of Thermodynamics, Disorder, Chaos, Intrinsic Disorders, Conflict.

1. INTRODUCTION

A farming system is defined as a population of individual farm systems that have broadly similar resource bases, enterprise pattern, household livelihood and constraints and for which similar

development strategies and intervention can be applied. Farming system in India has been characterised with high level of adoption, rejection and discontinuance. Agriculture in India demands transfer of technology, external supply of inputs as well as knowledge, where rural people have become mere recipient of input and technology. In India in general and West Bengal in particular through the continuous imposing of knowledge and motivating the rural people a gap has been found between motivation unleashed and accomplished made and there is a gradual dissolving of the most advance societies due to intrinsic disorder that may be referred to as social entropy. This is responsible for institutional conflict, organizational disorder, chaos or social entropy. Social entropy is a macro-sociological system theory. It is a measure of the natural decay within a social system. It can be defined as the decomposition of social structure or of the disappearance of social distinctions. Social entropy is the amount of motivation unavailable for performing in system. Mitchel, (2009) studied on a village (Jacobs) in 1998 through creative destruction developed and predicted the fate of communities that became the base of their development on the co-modification of rural heritage. You, L *et al* (2006) while reporting agricultural production statistics on geopolitical and on national basis concludes that there is a need to know the status of production or productivity within specific sub regions, watersheds or agro-ecological zones. His study depicts entropy based approach to make spatially disaggregated assessments of distribution of crop production. Jen, .K. A *et al* (1999) in his multi-method field study of 92 work groups explored the three types of workgroups diversity (Social category diversity, Value diversity and informational diversity) and two moderators (task type and task interdependence) where these workgroups not only became central to organization but also presented their own intrinsic problem of coordination, motivation and conflict management. Therefore, keeping core periphery contradiction in the development process that has caused structured chaos and dissonance in view, the present research has been conducted for the prediction of the social entropy amongst the farmers from a score of socio-personal, socio-psychological and communication variation.

2. METHODOLOGIES

73 respondents were selected randomly from 250 growers of village Ghoragaccha of Block Haringhata in Nadia district of West Bengal. Socio-personal variables like age (x1), Education (x2), Family education status (x3), Family size (x4), Cropping intensity (x5), Farm size (x6), Annual income in Rs/year/capita (x7), Socio-psychological variables like scientific orientation (x8), Independency (x9), Innovation proneness (x10), Risk orientation (x11), Economic motivation (x12), Orientation towards competition (x13), Attitude towards discontinuance (x14), Attitude towards rejection (x15), Communication variables like Social participation (x16), Utilization of source of information (x17), and training received (x18) as predictors variables, whereas, among predicted or dependent variables, Chaos-Entropy has been measured by having a multiplicative impact of sub-dependent variables viz. Noncompliance (Y1), Disagreement (y2), Conflict (Y3),

Alienation (Y4) Social Entropy (Y5) were taken. Thus, the value of Social Chaos-entropy (y) was obtained first by multiplying all the four predicted variables y1, y2, y3, y4 and then dividing the resultant product by 4. Data were collected directly from the farmers with the help of structured schedule through personal interview methods. Collected data from the selected farmers were analysed with the help of several statistical tools like mean, standard deviation, coefficient of variation, correlation, regression and path analysis.

3. RESULT AND DISCUSSIONS

Table1: Coefficient of Correlation: Entropy (Y5) vs. 18 Independent Variables

Sl. No.	Variables	Coefficient of Correlation
1	Age in years (x1)	-0.067
2	Education (x2)	0.033
3	Family Educaion status (x3)	0.115
4	Family Size (No. Of members) (x4)	-0.027
5	Cropping Intensity (x5)	0.184
6	Farm size in bigha (x6)	0.074
7	Annual Income (x7)	0.025
8	Scientific orientation (x8)	-0.121
9	Independency (x9)	-0.129
10	Innovation Proneness (x10)	-0.124
11	Risk orientation (x11)	**-0.239***
12	Economic motivation (x12)	0.007
13	Orientation towards Competition (x13)	0.085
14	Attitude towards discontinuance(x14)	0.146
14	Attitude towards Rejection (x15)	0.152
15	Social participation (x16)	-0.114
16	Utilization of Cosmopolite Sources of information (x17)	0.041
17	Training received in days in last 3 years (x18)	0.029
18	*significance of r at 5%=	0.230
19	**significance of r at 1%=	0.300

After computation of collected data from the selected respondent it was found in table1, that the risk orientation has both resilience and strength of mind set to accept and to adapt to new and un-anticipated situation. The lesser the flexibility and resilience, the higher will be the conflict and non-compliance. A stressed mind is well vulnerable to changes and challenges. The farmers'

mindsets have become the most interesting lab for all kinds of social chemistry where in various interactions and interrelationships have come up so far as a repository or complex psychological interaction. Risk orientation (x11) has got strength to extra orbital for both averting internal rifts and welcoming external opportunities. A person having lesser risk orientation is supposed to go more and more vulnerable in a climate of society whether forecasting on eventuality is itself a complex probability.

Stepwise regression and backward elimination techniques considering highest regression coefficient for social Entropy (Y5) as dependent variable and remaining 18 variables as predictors.

Y5 = 22.17 – 2.21 X11**

R2 =0.06, R2 (adj) = 0.04, Se (estd.) =4.77

Where Y is social chaos- entropy
X11 = Annual Income (Rs/year/Capita)
R= Regression Coefficient SE = Standard Error

Above finding shows that economic gain has both consolation and contradiction. Consolation generates because present problem has been resolved and contradiction simmers because whether to justify the glory over the inglorious one. The competition in agrarian society is increasing while hegemony starts ignoring the access to income by others. The sudden surplus income creates a stress in the serene and soft relationship, the binding force is family.

Residual effect = 0.6902095

Table2: Path Analysis for Estimating Direct, Indirect and Spurious Effect

Entropy (Y5) vs. 18 exogenous Variables:							
Sl. No.	Variables	Direct effect	Indirect effect	Total effect (r)	Substantial Indirect effect		
					I	II	III
1	Age in years (x1)	-0.02799	-0.03901	-0.067	0.02751 (x2)	-0.02179 (x6)	0.01990 (x10)
2	Education (x2)	-0.07394	0.10694	0.033	0.09631 (x3)	-0.03617(x10)	0.02750 (x6)
3	Family Educaion status (x3)	0.11994	-000494.	0.115	-0.05937 (x2)	0.03206 (x7)	-0.02759 (x9)
4	Family Size (No. Of members) (x4)	-0.13765	0.11065	-0.027	0.06436 (x6)	-0.02452 (x8)	-0.1624 (x9)
5	Cropping Intensity (x5)	0.08339	0.10061	0.184	-0.04264(x10)	0.02735(x3)	0.02603(x9)
6	Farm size in bigha	0.14627	-0.07227	0.074	-0.06057 (x4)	-0.04341 (x8)	0.02959 (x12)

	(x6)						
7	Annual Income (x7)	0.11055	-0.08555	0.025	-0.05007 (x10)	0.04502(x12)	0.03478 9x3)
8	Scientific orientation (x8)	-0.10436	-0.01664	-0.121	0.06085 (x6)	0.05043 (x12)	-0.03761 (x11)
9	Independency (x9)	-0.19570	0.0667	-0.129	0.03583 (x17)	0.01931 (x6)	0.01691 (x3)
10	Innovation Proneness (x10)	-0.18714	0.03394	-0.124	0.03505 (x7)	0.02804 (x12)	0.02435 (x3)
11	Risk orientation (x11)	0.12864	-0.05186	-0.239*	0.03062 (x12)	-0.02356 (x15)	0.02311(x6)
12	Economic motivation (x12)	0.13456	-0.12164	0.007	-0.04454 (x11)	-0.04091 (x8)	-0.03869(x7)
13	Orientation towards Competition (x13)	0.11082	-0.04956	0.085	-0.01445(x4)	0.01404(x11)	-0.01295(x10)
14	Attitude towards discontinuance (x14)	0.10025	0.03518	0.146	0.02776(x8)	0.02200(x16)	-0.01957 (x9)
15	Attitude towards Rejection (x15)	-0.10000	0.05175	0.152	0.04398(x11)	-0.03975(x12)	-0.02565 (x7)
16	Social participation (x16)	0.10356	-0.014	-0.114	-0.02717(x10)	-0.02438(x14)	0.02300(x7)
17	Utilization of Cosmopolite Sources of information (x17	0.00234	-0.06256	0.041	-0.06771(x9)	0.02384(x6)	0.02100(x16)
18	Training received in days in last 3 years (x18)	0.00234	0.02666	0.029	0.02807(x3)	0.02326(x4)	-0.02056(x2)

The table 2 shows that x9 has got a substantive impact on Social entropy. Table also depicts that economic motivation is skewed version of emotion pinpointed for economic gain, may be through competition, denial to others rights, or through a clandestine performance which again can be clever or a deceiver one. The elements of consumerism, an unhealthy competition, the other side of monolithic development has done more harms than the goods delivered by it. Innovation proneness has got profuse impact on generating competition to supersede the laggards and ultimately make them subjugated in a system hierarchy. If not properly refined every ego has got deleterious impact over the peers or the defeated ones amongst the peers. Farm size with high economic motivation has made one victorious and the others deleted ones. This has got, certainly, a catalyzing role in making social entropy a more complex hecatomb to make life confined and claustrophobic: this is what we call Social Entropy**.**

Table 3: Canonical Variates of Root 4 {Social Entropy (Y5) vs. 10 Independent Variables)

Left Side Variable	*Right Side Variables*	
Social Entropy	**-1.608**	
	Age (X1)	-0.169
	Family Education Status (X3)	-0.205
	Cropping Intensity (X5)	-0.214
	Farm Size (X6)	-0.249
	Annual Income (X7)	-0.336
	Economic Motivation (X12)	-0.205
	Orientation Towards Competition (X13)	-0.304
	Attitude Towards Rejection (X15)	-0.102
	Utilization of Cosmopolite Sources of Information (X17)	-0.168

The table 3 shows the canonical correlation analysis of social Chaos-entropy which is placed at the left side of the variables and selected independent variables on the right side of the table. It is clear from the table that family education, Economic motivation, Orientation towards competition and Attitude towards rejection has been precisely chosen for conceptualising Social Entropy. Farmers in different parts of India and here in west Bengal, are engaged in or confronted with each other to show the power or defined their rights. The ambition for earning more may deny the rights of others or a sense of flamboyant intrusion may make others feel suppressed or denied. The attitude towards rejection may not go as a placid social action, but may generate harsh social reaction, too. These all are becoming more complex by the oriented towards competition.

Competition never goes linear or insulated, rather it begets splash of micro-confrontations of aims and interests, a vision and vistas of goes and gateways. That's why it is really scintillating to see

that the interaction between right side and left side variables have assumed the character of a 'chi late' function wherein, the predicted character 'social conflict has directed and precisely selected some of the right side factors or ultimately being defined as congenital and interactive disposition of social conflict.

4. SUMMARY AND CONCLUSION

The present study was an empirical- concept paper on social chaos- entropy, an analogy of principle of Second law of thermodynamics. According to second law of thermodynamics transformation from matter to energy is an irreversible phenomenon therefore it needs to be kept at a manageable level. The gradual modernization in agriculture has produced the jerk, chaos or disorder following the attitudes of the farmers towards discontinuance of the stale technologies and their increasing attitude towards rejection. This has an explicit exhibition of non-compliant behaviour, attitude towards disagreement, conflict and ultimately gets alienated. This has gradually added to, that can be refer to, social entropy.

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