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THE APPLICATION OF CHAOS MANAGEMENT THEORIES IN ORGANIZATION

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ABSTRACT: *Since the formation of the primary basis of the management in organizations and the formation of the governance of organizational bureaucracies until now with the goal of increasing production efficiency, various theories have been provided under the influence of different scientific paradigms. At the beginning of the 20th century two important paradigms i.e. Newton paradigm and chaos paradigm seriously influenced all organizational theories and patterns. In classic theories of order, stability and consistency were considered as organization's inseparable features. In organic theories an organization becomes ill or sick like a live organ; so for cure it some changes must be made. Among these theories complex system and chaos theory is the basis of another paradigm which in addition to management area has affected other scientific areas by itself. The Complexity theory has this massage for the managers that the time of managing with the use of hierarchical (predetermined) goals or predetermined logic and precise controlling is over. Systems are continuously moving between different attractions (dynamic balance) in chaos and disorder conditions and sometimes a small change results in vast and basic changes in the system. For change management in complex and chaotic system, traditional methods are no more applicable and managers should learn the changes in these systems.*

KEYWORDS: Chaos Management, Change Management, Organization, Organizational Strategy

INTRODUCTION

In 1960s some Meteorologists, mathematicians, physicists, and biologists found some evidences and some arguments started among them which resulted in different reactions consisting annoyance, interest, surprise, and even anger. They couldn't believe that nature is behaving on the basis of new evidences they have just observed. Experiment revealed that nature had unpredictable behavior and created some accidental and complicated patterns which were not compatible with linear calculations and formulas, but in some certain points and situations branched out and separated its way from predetermined theories. Cloud, lightning, Bubbles which are formed at the bottom part of a waterfalls are some examples of these phenomena. Following these evidences and experiments a new theory named chaos theory was formed. In newton paradigm, an organization is like a machine which is capable of going through a path predetermined for it with the use of a precise predetermined pattern and by placing human beings (as parts of the machine) in predetermined places. But tremendous changes in different areas including competing, production, business, knowledge and awareness of the clients, the structure of the sources, knowledge and technology and techniques and elimination of traditional boundaries of organizations and societies and the increase of relations and interactions between them has led to some complexities and dealing with these complexities and answering those needs was out of the ability of newton paradigm. The complex system and chaos theory, is the basis of another paradigm which has the power to

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explain and illustrate new conditions and has affected the management area as well as the other scientific areas (Hajikarimi, 1390).

The word Chaos means bedlam; turmoil and disorder and turbulence is its synonym in mechanic. This word means lacking any kind of structure or order and usually in everyday language chaos and disorganization is considered the signs of disorder and includes a negative aspect. But actually after the new attitude has been appeared and its scientific and theoretical aspects have been cleared today chaos and disorder aren't considered disorganization; inefficiency; and bedlam but disorder is the presence of unpredictable and accidental aspects in active phenomena which has its own property. Disorder is a kind of ultimate order in disorder (Hajikarimi, 1390).

Chaos management needs to increase its levels of awareness about "management on the edge" and acquire some skills in the art of "management on the edge". He must protect new initiatives against "dominant attraction "and leaves it alone when it can protect itself (Morgan, 1997, P 267) .In chaotic systems, to determine a predetermined plan and a mechanized design is not possible at all and if it is it can't be explained in the organization. Information, awareness, experience, and experiment can create recognition in these systems.

Chaos theorists in their researches paid special attention to the systems which are influenced by different "attractions". To understand "different attractions" better, assume that to enjoy morning beauties you are sitting on a porch in a sunny morning and thinking about your sweet dreams. For example you feel that you are beside an azure lake in which the image of blue sky has been reflected. A green jungle surrounds the lake and the penguins are diving in the water so beautifully. Suddenly for some reasons your attention is caught by something behind you. In this condition the ticking of the clock mixed with the sound of the refrigerator brings you out from that feeling for a moment. Although your eyes may be still on that moment but your mind is somewhere else. In this condition you are captured by two attractions which have completely different backgrounds. The more you are pulled toward one of them the more you'll be distant from the other one. Being pulled toward the lake the sounds of home appliances are eliminated, but if you are attracted toward the ticking of the clock and refrigerator (what is done in brain washing) noises are dominant (Morgan, 1997). It seems that complex systems are captured by tensions like these by nature. They are always under the influence of several "attractions" and finally the background of the dominant attraction detects the behavior of the system. Some attractions pull the system to the balance or near to balance condition; this is done through negative feedback which prevents the instability from growing. Some other attractions attempt to bring the system to a new form and order. If the "dominant attraction" (existing background) succeeds in repelling the motional energy of the system and its instability, potentials for chang diminish and the system returns to its ex-unstable condition. On the other hand if the new attraction becomes dominant, it attracts produced energies and the new order rules. According to widespread and active changes in today world especially in organizations, the suitable organizational culture together with the rules – policies and assumptions are constantly contrary to the organization's environment and so constant revision will be of the primary principles in chaos theory.

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METHODOLOGY

Regarding the basics of chaos theory, the present study is going to study it in the bureaucratic organizations in the country. The descriptive-analytic approach is taken in this study. The references used in the study are selected after reviewing the national and foreign studies, reports, and books.

Chaos Paradigm

According to chaos theory the world is a nonlinear, complicated and unpredictable system. This theory refers to systems which while displaying disorder contain a kind of order hidden inside them, and present disordered, nonlinear, unpredictable behavior in systems and believes in a ultimate order pattern among all these disorders. Because of being nonlinear and complex it is very difficult to present a model for chaos systems. For this reason it is attempted to present some aspects of chaos systems with the help of examples and computerized models. Morgan's example (1997) for these systems is the mass of "birds", "bats", or "fish" which are moving according to these three laws: 1- moving without collision, 2- moving beside each other and maintaining the movement like this, 3- not getting so distant of each other. This pattern is a computerized pattern which represents a dynamic mass or a chaotic system whose movement details is unpredictable but as a whole contains order. The mass of birds, weather patterns changes, complex chemical reactions, termites community, and insects noisy flying, are different types of chaotic systems.

Decision Making in Chaotic Condition

Considering the decision making in certain and specified conditions and in stable environments different models are designed for decision making in management texts. Disorder overshadowed all scientific areas in chaos theory and decision making models in this theory are not exception to this. In traditional look to management, decision making is a predictable process and failure in decision making is resulted from lacking knowledge or limits in prediction techniques and in attempt. While chaos theory, assumes that decision making is unpredictable and attempt for prediction future is a vain attempt. Or at least it believes that predicting future confidently and without any doubt is a hard task. In chaos theory it is believed that correct and complete information is not achievable, and events are continually inconstant and have no relation with what happened in the past. One of the models which is provided in response to current conditions is a model called "Garbage Can" which may refer to disordered and turmoil condition of the decision making. Some scientists have accepted this model as a suitable one for modern organizations since they are organized disorders. This model was first designed by three person named Cohen, March, and Olsen. Using this model they wanted to describe decision making in too vague and disordered conditions. This model actually put the presupposition of politic and rational models under question and thinks that their insensitivity to vague and disordered conditions is the reason of their incredibility.

The effect of chaos theory on organization and management theories

This effect can be observed in issues such as learning organizations, analyzing the organization through the brain metaphors and hologram, paying attention to autonomous teams and decentralized and teamwork structures. According to Alvani (1387) the theories of scientific management, human relationship, quantitative management, and system management become

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legends and modern realities are appeared in chaos and disorder theories with particular properties.

According to Hutch (1997) in the era that changes are continual, accidental and constant, it is essential to break traditional thinking methods in order to use changes for our benefit. We are entered the era of misology; the era of big dangers and big opportunities.

Four common properties in chaotic systems are as follows:

1- Butterfly effect

According to butterfly effect, a small change although insignificant like flying of a butterfly can lead to tremendous changes in a system, or according to the author of scientific articles "Kevin Kelly" in complex nonlinear systems any small change can create another small change and the next change will create another one until a qualitative change occurs (Morgan, 1997). For example in the following non-linear equation changing the value of the x from 0 to 0.01 will bring a big change in the value of the function.

F(x)= (10000)100x
X=0 F(x)= 1 X=0/01 F(x)=10000

2- Dynamic Adaptability

In relation to their environment disordered systems act like live creators and a kind of active adaptability is established between them and their environment. Like the intelligence of human being's brain this adaptability is of immediate emergence kind. The amount and kind of the intelligence of human being's brain isn't predetermined, no pattern is predicted for that, but it is an emerging and unplanned phenomenon which evolves as time elapses. Active adaptive systems possess following properties:

A) They have the ability of self-organization: In the framework of general limitations of the system any part adapt itself to the occurred conditions and organize itself on the basis of the overall order of the system. For example any part of the brain can coordinate itself with the new conditions without losing the coordination to the whole. In chaotic systems changes are possible through the very property of self-organization. Faghihi (1376) states that: Self organizing systems to some extent possess a kind of awareness to their existing condition and its different with the desired condition. They can renew themselves on the basis of the information they have obtained.

B) They have the Property of Synergy: In complex systems the whole is larger than the sum of the components. This means that in comparison with simple and closed systems people's effort in the framework of an open and free system is more effective.

C) They are learning systems: Morgan (1007. P 86) believes that a learning system requires four principles:

- Systems must be able to feel, monitor an recognize the sight of the same impotence as their environment;
- They must be able to relate these information with the operational norms which guide their behavior;

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- They must be able to distinguish between important deviations and norms;
- They must be able to correct their operation by detecting the error.

In the case of the presence of the four requirements mentioned, system will be able to have a control on the changes in the environment and take the suitable reactions and act in an intelligent and self-regulating way.

3- self-likeness

In chaos theory and its equations, a kind of likeness is recognizable between the components and the whole. Its well-known example is a hologram plate on which an image has been recorded by laser. This plate has this property that in the case of being taken apart each part shows the complete image. Just like a piece of mirror each part of which will be another mirror in the case of being broken.

4- Strange attraction

Strange attractions are patterns that from a perspective or different perspectives are disordered but from other perspective or perspective they have order. The wider the point of view it will be more likely to find strange attraction and the power of predicting will increase (Alvani, 1378).

Five key notes for change management

1- Rethinking about concepts such as organization, management, hierarchy and control: How hierarchy would be used in complex, non-linear and chaotic systems? What concept would the planning have in the system in which consequences are accidental and events follow disorder logic? It is exactly like when you decide to travel a path by moving on a straight line. Future isn't predictable in this system and the only thing we can do is guessing while there is no certainty in that. What it is our knowledge increases and decreases the possibility of predicting events' happenings. In these systems management through hierarchic goals or preset logic, like what is applied in the design of bridges and buildings, is not possible. Managers should learn that events and changes are momentary and they have to encounter such events. Orders appear in the struggle between different attractions, but the exact nature of this order is not at all planned ore preset. Patterns appear and it is not possible to impose them. Everything is being changed and mangers are a part of the change themselves. They must change the set of their attitudes and thoughts about "change and control". In complex systems planning and controlling before the action doesn't work but the managers should learn how to lubricate the process of change (Morgan, 1997, p266-267).

2- Learning the art of management and changing the backgrounds:

In terms of complexity and chaos the central role of managers, is to form and create backgrounds in which suitable forms develop through the organizing itself. When by the pattern of "dominant attraction" an unsatisfactory condition is ruling, it is necessary to open the boundaries of system to the instability or even deliberately create the instability; this action can help to the advent of a new behavior. To break the power of "dominant attraction" managers must find some ways for creating new

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backgrounds. For example they can engage key experts' and consultants' minds of the organizations through showing financial realities to be unpleasant, stating the power of creation and innovation, illustrating the status of competitors and the emerging competitive characteristics, and so on. Coalition of key compartments of the organization, who are able to change the existing condition, is another strategy of this kind. These strategies can bring the instability to the closed system and as a result make it move toward the critical points. In this condition if the changing powers have sufficient energy to conquer dominant attraction, dominant attraction set aside and new attraction replaces it. By applying new operation formation of changes and appearing new backgrounds will also be possible. Making some changes in reward patterns, or in the composition of the key employees and their posts, creating fake financial crisis, making redundancy are some examples of what can be done to make the system move from its closed position. In fact it is necessary to note the fact that in complex non-linear systems, managers don't have a control on changes. They can't describe the exact form of the replacing attraction pattern; but by making changes in key elements of the "dominant attraction" and by opening the boundaries of the existing system to the new information and experiences, they can provide necessities for the "replacing attraction" to appear. In complex systems there are two kinds of loops in activity: Reinforcing loops and balancing loops. Reinforcing loops are always seeking to change the "attraction" and balancing loops try for stability through negative feedback. According to Sangeh (1382, p 111) each time a resistance is seen against the change, it should be noted that one or more than one hidden balancing process or processes are acting, this resistance is neither stable and temporary nor something strange, but it is caused by the fear of changing the organization's traditional norms and the way of doing affairs. Instead of increasing the pressure to make the changes in organization and breaking the resistances, conscious leaders are looking for references of this resistance.

3- Learning how to use these small changes to create big effects: Another lesson of chaos and complex theory for change management is paying attention to "chaos edges". Small changes can make big changes on this point if they are applied in appropriate time and place. Sangeh (1382, p 81) calls this the working lever rule. He believes that in solving problems the start point should be a point where the working lever rule has the most effect in order to gain a great result and development with the minimum attempt. The only challenge in front of those involved changes is to find the suitable position for the lever and in fact this position is not simply recognizable. About recognizing point Morgan (1997) writes: If managers learn to recognize momentary paradoxes or if necessary learn to create paradoxes which cause tension between the existing condition and the desired condition; they will be able to recognize important points and use them for powers which are trying to maintain the existing condition.

4- Living with upheaval and constant changing and momentary order as normal and natural life affairs: In complex systems nobody is in a position to control or plan system operations comprehensively. Forms and conditions appear and it's not possible to impose them. In best situation managers can lead the system to the "desired attraction" or active the critical parameters which are effective on the evolution of the system. Managers also need to look to each innovation and experiment as an opportunity to learn. What is more under consideration in the issue

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of the art of creating new backgrounds is the use of learnt experiences and patterns in order to change "dominant attraction". Successful experiences help managers about what can maintain the role of "dominant attraction" and what can help the new attractions to emerge.

5- Openness against new metaphors which can lubricate self-organization: Metaphors such as organization as brain, organization as organism, and organization as hologram, can be helpful for managers to understand self-organization and provide its necessities. In post-modern literature, a new metaphor named "collage" has been arose. Collage is a kind of art in which different objects, pieces and components are stick to each other in a manner that a new, exquisite, and meaningful image is achieved. Applying this metaphor in the organization means that using different methods and microfacies[1]the manager, theorist, or the leader must be able to make his facies[2], therefore he must act as an artist. In the art of collage artist puts several unrelated images beside each other and through this he gives a powerful idea and feeling to the audience. This idea and feeling is different from the audience's typical habits. A manager must do the same and know that describing or understanding organizations only with a one dimensional view and in terms of one theory is impossible.

CONCLUSION

The era we live in is the era of rapid changes and growing complexities. Managing complex organizations, complex problems, complex goals, and complex world, needs complex people. Complex people grow in complex organizations. Social systems which open their boundaries to these rapid changes and great upheavals gain the opportunity of achieving the maturity of understanding complexity. Closed systems remain simple and therefore their members also won't have the opportunity to manage the complex world. As a part of modern world our country also, needs managers who have the ability to manage complex organizations and disordered and chaos condition; therefore these organizations must start to open their boundaries to upheavals and external changes and increase external interactions so that in complexity their members attain the opportunity of being complex.

The last word is that without complex people we are not able to manage complexity and without complex context we are not able to grow complex people.

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ISSN 2055-0847(Print), ISSN 2055-0855(Online)