A Framework for Creativity-oriented Autonomy based on Online Social Networks

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***Abstract*—The paper deals with the problem of enabling greater autonomy in knowledge intensive organizations leading to innovation. Adoption of online social networks in organizations is a suggested solution. We draw lessons on autonomy and its effects from a real-world illustration. We examine the consequences of online social network adoption within businesses and societies. These may be viewed as self organizing systems. The autonomy-orientation of employees and members of a society is the underlying basis for this study. Stable states (attractors) in self organized systems are known to enslave or constrain the constituents of a system. The reduced enslavement in online social networks is a prominent feature of our proposed new attractor regime to which organizations in any society will shift. We discuss the enabling of this shift in terms of autonomy and self organization.**

Keywords-Organization Structures; Art Industry; Online Social Networks; Self-Organization Theory

I. INTRODUCTION

Knowledge-intensive organizations of today need creativity and innovation as driving forces necessitating greater autonomy in decision making and execution of creative ideas into tangible results.

The old paradigm of command and control to run an organization is no longer operant. Primary disadvantages include disharmony and erosion of creativity, resulting in high attrition rates and higher stress levels among employees. The consequences for organizations have been lower performance and missed opportunity in harnessing the creative potential. Recent practices towards a flat structure of organizations have led to better levels of talent utilization.

It may be noted that art galleries provide some answers as creative potential is what they thrive on. Now with the entry of new age tools such as OSNs (online social networks) [1], businesses and communication in general are rapidly adopting and using these tools.

With the adoption of OSNs in businesses, it is imperative to provide more autonomy and independence to the employees rather than continuing to operate with the hierarchical command and control paradigm. The latter would result in a clash between the mindset of the top management and the employees.

II. OBJECTIVE

We elucidate and elaborate the reasons for heavy OSN adoption worldwide. This is done by deducing a new finding from existing self organization systems theory [2]. We propose methods to enable greater autonomy and consequently creativity within organizations. These methods involve online social network usage. We also elaborate on why this OSN based approach will be successful in organizations. This elaboration is done with the help of another research finding of ours, namely existence of weak ties in the art industry. This approach is formulated as a framework. The framework helps in enabling the achievement of autonomy to tackle the challenge of continuous innovation in knowledge intensive organizations. We have provided an illustration that helps in arriving at our claims and in providing a rationale for substantiating our claim.

Existing literature talks about why autonomy is essential in prospector firms, i.e., firms that depend on innovation and differentiation [3]. Creativity arising out of autonomy and weak links is also discussed in some of the papers [3][4]. However, the existing literature focuses predominantly on usage of OSNs for knowledge management [5]. We instead argue for the adoption of OSN towards autonomy and not mere knowledge management.

III. PRELIMINARIES

A. Current Organization Structures

Organizations of today are "the large, vertically integrated, hierarchical organizations that have persisted throughout the latter half of the twentieth century." [6]. The dominant form of control is by spurring competition. In order to further self interest employees are expected to either do as they are told, faster, better. Any deviation, is dealt by a punishment mechanism. This results in a highly competitive culture that gets built into the organization DNA. Such a culture is not sustainable in the long run.

"Hierarchical systems arose from models of creating systems with a high degree of certainty and security and delineated boundaries of function, structure, order and logic." [6]. Leaders emerge as perceived knowledge holders by influencing and tightly controlling workers' duties and hence most powerful.

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The way individuals connect with one another and with the institutions in their lives is evolving. This has led to decentralization of power with greater faith amongst peers.

B. Ties and Relations in a network

Organizations may be viewed as 'holons' [7], or as networks of people, interacting among themselves based on their needs and with goals to achieve. In such networks, weak and strong ties indicate the strength of a relationship. However creativity is seen to increase with weak ties. Networks of optimal size and weak strength are more likely to boost creativity when they afford actors to access a wide range of different social circles. Weak ties are characterized by "social relationships, which are typified by infrequent interaction, short history, and limited emotional closeness." [4]. We draw heavily on the definition and attributes of Complex Adaptive Systems (CAS) [8].

C. Society as a self organizing system

Processes of self-organization create order out of chaos. They are responsible for most of the patterns, structures and orderly arrangements which we find in the natural world. Many of those are present in the realms of the mind, society and culture.

Society is a self-organizing system, because by definition, a society organizes itself without need for any external direction, manipulation, or control. The organization process in a self-organizing system refers to "increase in the structure or order of the system behavior through a dynamic and adaptive process where systems acquire and maintain themselves, without external control. Structure can be spatial, temporal or functional." [9].

D. Attractors

Self-organization means that "the system reaches an attractor, i.e., a part of the state space that it can enter but not leave. In that sense, an attractor is a region "preferred" by the global dynamics: states surrounding the attractor (the attractor basin) are unstable and will eventually be left and replaced by states inside the attractor." [2].

A self-organized configuration is more stable than a configuration before self-organization. The pattern formed by the stabilized interactions, mutual "fittings" (or "bonds") between the agents determines a purposeful or functional structure. Its function is to minimize friction between agents, and thus maximize their collective "fitness", "preference" or "utility". Therefore, we may call the resulting pattern as "organization": the agents are organized or coordinated in their actions so as to maximize their collective synergy and not individual utility.

However, this organization by definition imposes a constraint on the agents. Loss of freedom to visit states outside the attractor, i.e., states with a lower fitness or higher friction. The agents have to obey new "rules" that determine allowable actions. They lose some of their autonomy [2].

In a sense, the agents become subordinated (or "enslaved") [10] to the regulations of the collective. Different attractor regimes and imply a varying degrees of autonomy.

E. Networks as Emergent Structures

"The structure emerging from self-organization can often be represented as a network. Initially, agents interact more or less randomly with whatever other agents happen to pass in their neighborhood. Because of natural selection, however, some of these interactions will be preferentially retained, because they are synergetic. Such a preferentially stabilized interaction may be called a bond, relationship, or link. The different links turn the assembly of agents into a network. Within the network, the agents can now be seen as nodes where different links come together." [2]. In this regard perhaps the most intuitive example is a social network that links people on the basis of friendship, trust or collaboration.

IV. PROPOSED FRAMEWORK FOR ORGANIZATIONAL AUTONOMY

A. Input 1: Online Social Networks

This peer-dominated network has recently shifted online. Online communities and OSNs enable people to maintain their own profile on a website, which is akin to ego states. These also allow a person to connect with profiles of other members who are friends, acquaintances and contacts, thus creating a virtual network. "What OSNs do is to try to map out what exists in the real world. In the world, there's trust. As humans fundamentally parse the world through the people and relationships they have around them, so at its core, what a social network does is map out all of those trust relationships. So this map can be called the social graph, and it's a network of an entirely new kind and has real world implications." [1].

OSNs are increasingly mimicking the real world and yet are able to plug in some of the deficiencies of the real world arising out of geographical and temporal separation and persistence of communication. One can be in touch with multiple people from different spheres of their lives, at the same time and in the same virtual space. OSNs can be seen to be complex adaptive systems (CAS) as they evolve [8].

Most importantly, OSNs are based on broad patterns of independence and interaction without any hierarchy or coercive practices (gleaned from current adoptions such as Facebook, MySpace, LinkedIn, Mixi); an exploratory approach leads to sharing, learning and dissemination of information, knowledge and sometimes intense discussions. OSNs also have an independent structure to it, without any imposed rules.

OSNs have this novelty wherein the social context becomes more important as we are influenced by the decisions of our closest friends or peers.

B. Input 2: Observations from the Art industry

Weak ties, creativity and independence lead to success in the art industry. From this perspective an art gallery has some unique features. An art gallery in most cases is run as a proprietary firm with a few employees. The proprietor is involved in the primary activities and decision making processes.

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The nature of this type of an art organization is significantly different as there is no joint coordinated effort to create a deliverable end-product. However from another perspective, the gallery itself runs based on the artworks created by affiliated artists. So there is a strong sense of co-operation along with autonomy for the artists who can be seen as pseudo-employees.

Apart from the gallery, middlemen exist in the industry - connecting artists to galleries, and, with knowledge of the varying art styles. Sometimes they may also act as curators. There is greater dependence on trust and the patronizing attitude of galleries towards artists, although contracts and agreements do exist too.

Exhibitions for individuals and groups of artists are often held. Partnerships exist between different stakeholders, and this leads to benefits of social capital such as information, artworks and allied services, emotional support and socio-political influence. In essence, weak ties and social organization-like structure are essential features of an art gallery.

Art galleries give artists independence and complete autonomy and yet artists cooperate with the gallery to sell their works. So it is a mutually beneficial, symbiotic relationship. Artists and art entrepreneurs are predominantly free agents [11].

Often galleries thrive on partnerships with bigger galleries or museums, wherein events, shows and exhibitions are conducted by multiple galleries [12] – leading to a more collaborative rather than a purely competitive scenario. When these art galleries rely upon weak or arm's-length ties, they enjoy flexibility and access to diverse information in their networks [13]. Smaller cliques also get formed as inferred from discussions with art gallery owners.

V. KEY FEATURES AND COMPONENTS OF THE PROPOSED FRAMEWORK

Social self-organization means self-generation of order as an emergent phenomenon in a social system. In society self organization has reached an attractor or a current stable state, in which the hierarchical organization has become the dominant structure. Domination and coercion have become the prime methods for controlling employees. Individual freedom and independence have been drastically eroded.

Non-hierarchical, flat organizations are being touted in industry and academia but are very difficult to implement due to complexity. This complexity arises out of overheads required for monitoring discipline and mismatch in allocating human resources. Newer, knowledge-intensive organizations are becoming network-oriented, dynamic systems. Identification of both creativity and discipline as a necessity for organization excellence [14] makes the implementation even more convoluted.

The format of an OSN heavily leans towards a very open, autonomous system. Social networks allow multiple stakeholders to collaborate, co-create and co-command. "There is significant correlation between the use of social media and more collaborative working practices." [15].

Members of an OSN are relatively free of artificially imposed, embedded instructional strategies. Community members share information, creative work. They identify and share methods and knowledge on resources in a context-dependent manner. "Approaches in such communities rely on human beings to locate, assemble, and contextualize the resources. Meaningful learning support "anytime anywhere," is combined with rich support with human-to-human interaction." [5].

OSNs also create weak ties. The nature of an art gallery indicates that weak ties lead to success. Artists being highly independent do not want restraints by any organization setup and desire to work independently. They would like to work at their own pace and without any hindrance or interference and achieve artistic expression in the form of artwork. Any artificial speeding will actually lead to degradation of quality.

Key components of the proposed organization structure would comprise of the following elements. These are based on lessons drawn from the art industry:

i. High independence, autonomy in pursuing roles, decision-making and execution
ii. Low on competition – to counter the psychological costs of competition
iii. Cooperation for profits and benefits
iv. Employees excelling in what they are best at and what they have a passion for
v. Low on behavior change and control

Here employees will get paid to be creative, to innovate, and to find new ways of doing things. Individual idea recognition and information gathering will be valued. With increased importance placed on information flow from diverse sources and joint decision making within the organization, top management in the hierarchy will cease to be decision makers and power wielders.

Centuries-old practice of managing people through incentive structures – both rewards and punishment – based on an assumption of individual selfishness is going to decay [16]. Many successful institutions, specifically art galleries (as per our observations [11]) have turned to human cooperation to achieve desired ends. Recent work in evolutionary theory, behavioral and brain sciences suggests that collaborative systems work better and are attuned to higher human capacities.

The complexity of the evolving operating environment consisting of OSNs demands a change in the management techniques. The homogenous composition of employees that companies thought they were dealing with has now disappeared. There is far more fragmentation and companies are operating in multi-contextual environments.

People who like social media are used to sharing, collaborating, trusting and being transparent with regard to information. They are also becoming the biggest influencers of organization-wide adoption of online social networking.

An OSN viewed as a radical change is a self organizing system - people are much more independent and individuality may be expressed comfortably by logging into such a system and being a part of it. Thus we see that an OSN is akin to a cultural organization where there is

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independence and autonomy leading to holistic individuality of the performer/artist.

Autonomy may be defined as the degree to which one may make significant decisions without the consent of others. Low autonomy is associated with a low quality working life. Autonomy is a human need, in a sense similar to one of those in Maslow's hierarchy of needs.

Autonomy and strategy are interlinked through the vision of an organization. The polarized, two-fold "Miles and Snow strategies" for firms are:

(1) Defenders – they maintain a relatively stable offering (of products and services) to a relatively narrow, stable target market and gain competitive advantage through focusing on satisfying the demands and needs of their traditional customer base; and

(2) Prospectors – who generate revenues through seeking out new customer markets and developing additional offerings.

"For effectiveness of an organization, it helps if the structure supports the strategy. For instance, a strategy that emphasizes disciplined concentration on traditional customers and products—like the defender strategy—is best implemented with a structure that focuses and constrains the options of the CEO to service that market. On the other hand, a strategy that emphasizes innovation and differentiation—like the prospector strategy—is best implemented in a structure that gives managers the freedom and authority to try different approaches. Structures with low autonomy entail frequent reporting and tend to constrain the actions of organizational members." [3]. One of the means of achieving this autonomy (viz. OSN adoption) mandated for successful implementation of a prospector strategy is developed and elaborated in the following section.

A. Analogical Structures

As already mentioned, OSNs are having unprecedented growth with adoption by more than a billion users. Hence we see a possible societal paradigm shift from competitive hierarchical organizations to creative and more collaborative organizations. We bring in the concept of an attractor here. OSNs are thus the new attractor (virtual attractor) to which society shifts as their usage spreads. Adoption is getting spurred by the network effect due to perceived and real benefits.

Organizations and society may be viewed as social holons [7]. They are complex because not all parts comply to the same extent with the organizational architectural protocols. When a sufficient number of parts (individuals, groups) challenge/disobey/put stress on the protocols, there are two options; either the architecture adapts itself "i.e. shifts or it collapses as seen in revolutions, rebellions, systemic failures etc." [17]. We can apply the same argument in the usage of OSN.

"Complex systems exhibit an unusual degree of robustness to less radical changes in their component parts. The behavior of many complex systems emerges from the activities of lower-level components. Typically, this emergence is the result of a very powerful organizing force that can overcome a variety of changes to the lower-level components." [18]. We hypothesize that the effects of large scale adoption of OSNs within businesses are radical enough to make the complex societal system undergo a shift in paradigm.

As seen earlier in Section II-B, moving into an attractor that is a stable state within any social self organizing system implies mutual adaptation among agents. They coordinate their actions to minimize friction and "maximize synergy".

This brings in constraints and a form of structure along with sub-ordination for the members. However, the constraints and regulations imposed by the collective in order to maximize synergy have led to enslavement of individuals. Our significant deduction is the reduction in enslavement (perceived and real) within OSNs. The proliferation of virtual relationships and increased communication which result from this reduction, is another deduction.

Introduction of OSNs within organizations will lead to significant chaos in the short term as there is a schism between the old paradigm within organizations of control and hierarchy and the newly-found autonomy and individual power within OSNs. When OSN agglomerates have become the emergent across most organizations this chaos will subside and order will emerge once the virtual attractor is reached. This is also a new conceptual finding in terms of why and when an attractor shift happens in a complex adaptive self organizing system-- in this case, society. It primarily occurs only when an attractor regime provides greater autonomy and sufficient agents move towards so as to become the dominant attractor regime. This is a move away from an established, robust attractor to a new attractor. There may be an erosion of synergy in the process. However there is possibly an optimum autonomy level towards which each agent would trace the orbit within the state space and yet attain synergy. This is depicted in Figure 1.

The reduced enslavement in an OSN is the prominent feature of the proposed new attractor regime to which society will shift. The emergent structures (new organizations) in this phase of self organization will result in weak links (within employees) thus increasing creativity among OSN users.

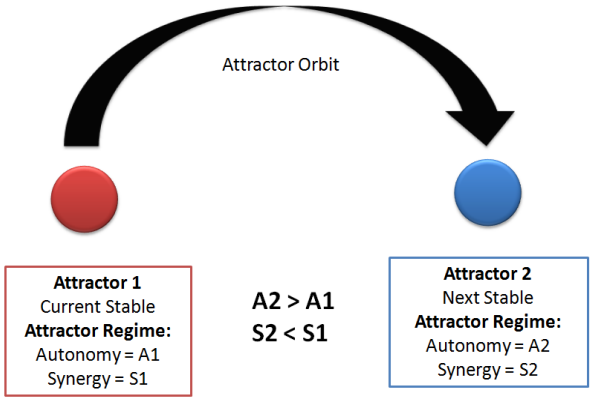

Figure 1. Autonomy-based attractor orbit

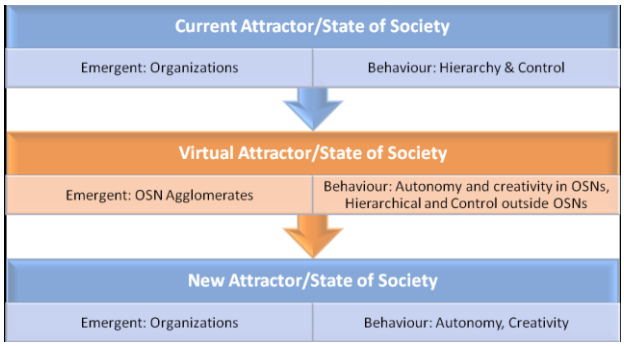

Figure 2. Stage of attractor shift

The new attractor has a regime which provides greater independence. It comprises of agglomerates of OSNs within organizations. Greater autonomy and individuality is the emergent (property) within OSNs in this new system. Since social structures emerge out of society and interactions within members of the society, these social structures in turn can "constrain or enable members". [19].

We shape our buildings, Winston Churchill argued, then they shape us. OSNs will lead to a change in the way organizations and the society itself behaves. Most organizations will be compelled to adopt these social networks online which are distributed, decentralized systems with independence to participate. The agglomerates of OSNs as emergent structures will in turn affect the creation of a society which has new organizations and structures as an emergent. These are more individualistic, comprising of greater autonomy to its members and yet being collaborative.

OSNs are the catalyst in the proposed societal paradigm shift: from a competitive hierarchical organization to a creative and .more collaborative organization that is high on autonomy, low on psychological costs of competition and low on behavior change. Metamorphosis of organizations, holistically modeled on OSNs, will be the end result. This entire paradigm shift is depicted in Figure 2.

VI. AUTONOMY-GEARED CREATIVITY IN ORGANIZATIONS

The second stage in Figure 2 can be modeled as a series of sub-stages as shown in Figure 3. We see that this virtual attractor has seen the emergence of agglomerates of OSNs. The adoption of OSNs will be championed by greater autonomy-seeking individuals or agents. These influencers will in turn propel the organizations towards adoption of OSNs. Within organizations as networks grow, splitting and breaking of links happens. This leads to intense activity for a while and then the network size again grows. In terms of attractors, this new phase of stabilizing around greater autonomy is the final stage. The degree of autonomy sought at each node goes up and as a result the overall autonomy seeking nature of the network goes up. This is a dynamic process. Optimum autonomy seeking behavior is different for different attractor regimes. The new stable state attractor in the emergent social organizations has the following properties:

- High Synergy within sub-networks
- High Creativity
- High Autonomy in all networks

Usually enablement of autonomy is seen to erode synergy as the agents no longer are bound by the rules of the collective. However in sub-networks agents have sufficient autonomy due to the smaller size and responsibilities. However network splitting simultaneously increases both synergy and autonomy because of co-working smaller teams!

Figure 3 shows state transitions within the state space which lead to dynamic equilibrium. Creation of feed-links between organizations or networks may take place. This means that some networks have higher autonomy and are thus more creative while other networks focus on innovation and execution of these creative ideas into tangible outcomes or output.

Greater autonomy is needed to break away from an existing order and to reach the next order. This is possible through creativity or in combination with self organization to reach the next new order. The chaos generated and subsequent self-organization may be viewed as constituents that are part of the process.

Autonomy leads to chaos and subsequent self-organization leads to the next higher order. The autonomy needed to transition to subsequent orders is higher than the prior stages of autonomy.

An optimal autonomy is needed to reach the maximum effective creativity in each order A_0. The optimal level occurs when the maximum effective creativity out of which a new order arises is attained in a state. Beyond this, there is fall in collaboration and effectiveness, and thus creativity ceases to be beneficial to an organization.

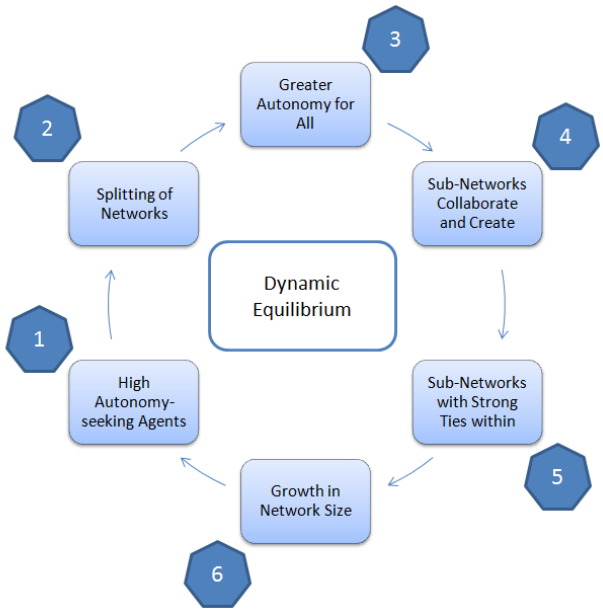

Figure 3: Cycle of States constituting Dynamic Equilibrium

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VII. CONCLUSION AND FUTURE WORK

The cyclic process of splitting of links in networks by autonomy seeking individuals can be managed better by means of adoption of OSNs. The nature of command and control that needs to be broken to become more innovative is explained using our framework. Starting from existing organization structures involving command and control based on hierarchy, the paper identifies the resultant-states that an organization and the society may reach in the longer term. We also discuss how this is to be done by means of a systematic methodology using OSNs.

We suggest that OSNs create weak links which enhance creativity. We also show that OSNs increase autonomy which has been known to enhance creativity. OSNs provide a basis for systematic harnessing of knowledge as knowledge management is a stated benefit of their usage [5]. An amalgamation of the above, results in the proposed framework that is not available in current literature.

Advantages of our framework include the transformation of creativity into organized innovation. This transformation is based on the agglomerates of OSNs within the organization. OSN agglomerates outside the organization can also be accessed for open innovation with external agencies. In our view it has proved to be quite tedious to implement flat, non-hierarchical organization structures as it involves mindset change. However a system comprising of an agglomerate of OSNs will help usher in this mindset change.

Autonomy is sought after as a basic need in organizations. We explain the rationale behind its enablement through OSNs with the help of self organization theory. However autonomy also leads to chaos. Within organizations chaos may get generated in the short term. However the end result would be more agile, connected and innovative organizations. Knowledge-oriented organizations will need to adopt OSNs for survival.

This will generate a need for a new set of tools and resources to track and measure new organizational parameters redefining productivity and efficiency

From the self-organization perspective, future study could involve specific parameters that define OSNs as self-organizing systems enabling the emergence of holistic individuality and autonomy.

Another question that needs to be addressed pertains to the determination of optimal level of autonomy in an organization context. This is due to autonomy-seeking agents within the organization

Self organization in this chaotic state leads to generation of new orders. These orders may pertain to practices, processes, methodologies, or strategies in the organization. Every greater order in terms of scale of impact requires higher autonomy in that area. This is bound by an optimal autonomy after which the effective creativity starts falling.

The culmination would be a self-organized society with a form of socialization that enables individuals to establish a form of compatibility and satisfaction between their own interests and societal interests. It will mark the emergence of self-management in all areas.

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