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Atomic Particle and Organization Dynamics

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Abstract

In this paper, the atomic particle in physics world is utilized to compare with the social organization dynamics. Although a definitive conclusion is hard to arrive at, some emerging illuminating insights can be derived with respect to the similarities between their properties of the atomic particle and the social organization. Based on these comparisons, issues such as organizational structure, group cohesion, employee empowerment, homogeneity and size of the group, and organizational culture are discussed. The implications derived offer a new lens for both organization scholars and managers to think about the real issues in organization dynamics.

Keywords: Organization Dynamics, Subatomic Particles, Group Cohesion, Organization Culture

Introduction

It would be fascinating to tap into and unfold similarities between particles in atomic world and organization dynamics in the social arena. However, in this regard, there are two intricate problems besetting general public, even organization development researchers. The first one is that, at first glance, this might sound strange and somewhat esoteric to people who declare themselves as pure social researchers or natural scientists who exclusively take interest in physical science. After all, the distinctions between these two domains and their respective related properties are so enormous that even well-educated scholars would shy away from this topic and do not give it any thoughts to link them together. Furthermore, even though there indeed are some kinds of common features existing between the two, it would not make any sense to apply what generally considered rigid and mechanical hard physics to the social domains where social phenomena and inter-relationship embedded within are characterized by inherent complexity and ambiguity.

These may be half-true. Indeed, classical Newtonian mechanics and electromagnetism have left people with such impressions. However, the other side of the truth is that newly developed quantum mechanics has made it clear that the microscopic realm of atoms is governed by quantization, discreteness, uncertainty and probability. And still, as elucidated by Greece (2000), when extracted from technical incarnation, the themes of modern physics

could be literally universal, its abstract principles and laws can be ingeniously extended to apply to social fields, and even a growing number of artists, musicians, composers, and film-makers can draw their inspiration from modern physics and find resonance between their work and scientific challenge to the status quo.

In actuality, atomic physics is not the only modern natural science that can be used to clarify the complexity of social phenomena. For decades, principles in neuroscience, cybernetics, life science, ecology, and systems theory shed some light on the understanding of issues in organization development sphere. For example, Morgan (1997) eloquently developed an extensive appreciation of organization by using a variety of metaphors, such as machines, organisms, brains, cultures, psychic prisons. Capra (1996) also provided a brilliant synthesis of scientific breakthroughs in the theory of complexity, Gaia theory and other explanations of the properties of organisms, social systems, and ecosystems to build a new understanding of organizational dynamics issues.

In the following sections, I will first bring forth the purpose of the study. Then, literature will be reviewed regarding organization attributes and links between atom and organization. Afterward, attention will be turned to the similarities between atom and organization. Discussions will be presented focusing on the implications for both theory and practice of organization development and leadership. This paper concludes with limitations.

Purpose of the Study

Although numerous works existed in literature dedicated to exploring the natures of the human brain, organism, and ecosystems as an analogy to describe and explain organizations change and development, interestingly enough, there is a paucity of study on the link between atom and organization. As mentioned previously, it would be wise and inevitable to use comparison and metaphor to link these two constructs of totally different domains. In spite of the fact that comparison can only offer partial truth, and could not fully capture the total nature of organization dynamics, the logic of metaphor has important implications for understanding organization dynamic. For metaphor encourages a spirit of critical inquiry, and arguably, it also could be used to create a new lens to view organizations, offering supplementary or even conflicting approaches to organizational analysis (Morgan, 1980).

The intent of this paper is to probe the resemblances between the atom and social organization, so as to provide a lens to gain a better understanding of organizational structure and dynamics, allowing us to improve the efficiency of organizational functions, and to effectively transform organizations we depend on and interact with. Particularly, two questions will be addressed (1) In what aspects do atom and the organization bear resemblance? (2) As business managers or organization development professionals, what do we learn from these similarities to facilitate the process of organization development? Nonetheless, instead of providing an in-depth analysis, I only sketch a cursory and preliminary picture of this topic.

Organization Dynamics

Organizational Culture

Perhaps the most cited definition was given by Deal and Kennedy (1982) who conceptualized organizational culture as the way things get done around the organization, and further identified four dimensions of organizational culture that play an essential role in creating organizational cultures: values, heroes, rites and rituals, and communication networks. In contrast, Schein (1992), one of the foremost experts in the area, provided a more formal and

comprehensive definition by envisioning organizational culture as "A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems" (p 12). He identified fundamental assumptions, values, behavioral norms, patterns of behavior, artifacts and symbols as five levels of organizational culture.

While there are considerable variations in the definitions of organizational culture, it appears that there was a consensus among academia that fundamental assumptions and value systems constitute the core and most important aspect. Premised on the belief that cultures can be distinguished by values that are reinforced within organizations, O'Reilly, Chatman & Caldwell (1991) developed Organizational Profile Model (OCP), which is often cited to be used to measure associations between the personalities of individuals in the organization and the organization's culture.

Also, it is widely recognized that the most difficult part of changing organization is the culture change. In order to facilitate the organizations to change their culture and to prevent what Foster and Kaplan (2001) called "Cultural lock-in", a multitude of studies have been conducted, and change phases or circles have been proposed (Frost, 1991; Schein, 1999; Trice & Beyer, 1991). The two critical strategies one should keep in mind for successful cultural change are "(1) the management of the large amounts of anxiety that accompany any relearning at this level and (2) the assessment of whether the genetic potential for the new learning is even present"(Schein, 2004, p. 32). Using the British Airway in the 1980s as an example, Burke (2010) illustrated principles derived from the research could be applied to the real situation.

Group Cohesion

Group cohesion has consistently found its place and remained a commonly- researched topic in literature. However, inconsistencies in definition and measurement across different domains have inevitably occurred over time (Greer, 2012). Classic definition emphasized the relationships among group members (Festinger et al., 1950). From their perspective, group cohesion was referred to as attractiveness to individuals within the group and attractiveness to the group as a whole. Conversely, a subsequent study by Gross and Martin (1952) focused on maintenance of the entity, proposing that cohesion could be better conceived as the resistance of the group to disruption. Likewise, Carren et al (1998) defined group cohesion as "a dynamic process that is reflected in the tendency for a group to stick together and remain united in the pursuit of its instrumental objectives and/or for the satisfaction of member affective needs" (p. 213). In this definition, they captured core aspects of cohesiveness, encapsulating its multidimensionality, dynamic nature, instrumental basis, and emotional dimension.

As for what were the bonds that linked group members to one another and to their group as a whole, Beal et al (2003) suggested that group cohesiveness among group members is developed from interpersonal attraction, task commitment and group pride. Similarity among group members, the size of the group, entry difficulty, group success, and external competition and threats are generally regarded as being the main forces that glue group members together.

Similarity-Attraction

The early studies by Berscheid and Walster (1969); Byrne (1971) supported the tenet that people tended to be attracted to those who hold similar attitudes and opinions. In addition, according to these scholars, the magnitude of attraction varies depending on the perceived importance level of attitudes they share. People who hold similar important attitudes are more likely to like each other than those who share less important attitudes. Moreover, contributing factors affecting people's attraction are not merely confined to people's attitudes, sources for people's preference for similarity may include personality characteristics such as optimism, self-esteem, shyness, and conscientiousness, and other social attributes such as socioeconomic status, religious beliefs, social habits, ethnicity, and geographical proximity.

The above literature on attraction is mostly focused on similarity. However, the world is complex, and "birds of a feather flock together" is only one side of the sword. It is also worth noting that complementarity, which flourished in partner relationship research, could explain the phenomenon of "opposites attract". Studies by Nowicki and Manheim (1991) indicated that complementary interaction between two partners increases their attractiveness to each other. In their view, a closer interpersonal relationship is preferred by complementary partners than non-complementary ones. There were many studies that supported and justified their argument (Mathes & Moore, 1985; Markey & Markey, 2007).

Superficially looking, the principles of similarity and complementarity seem to be contradictory. Vinacke et al (1988) integrated these two polarities into the whole stage of the relationship. They argued that, while similarity tends to be more important in the initial stage of the relationship, complementarity carries greater weight as the relationship develops over time. So the emphasis is not on what factor, but on what time. This view is congruous with the point made by contingency theory.

While member similarity has been a main theme in the academic sphere for quite a long time, the relationship between dissimilarity and cohesiveness is somewhat ignored and less-studied by organization scholars. Only a few studies have been conducted in this area. Yet, it is worth noting that these studies have offered a new perspective in viewing organization dynamics, though their conclusions were mixed and non-conclusive. Among them, Rosenbaum (1986) suggested that attitudinal similarity does not give rise to an attraction. Rather, it is attitudinal dissimilarity that drives the similarity-liking link and leads to repulsion. A study conducted by Singh and Ho (2000) revealed that dissimilarity exerts a greater weight than similarity in the social attraction (liking, enjoyment of company), but equal weight in the intellectual attraction (intelligence, general knowledge).

Links between Atom and Organization

There is a dearth of theoretical exploration of linkage between atom and organization, much less an empirical research. Many social researchers generally do not touch on it. It is mostly the physicists or scholars with the science background who dare to tap this topic. By proposing a schema that characterized how parts make up wholes at diverse levels of organization ranging from the atomic to the biological to the social, Findlay and Thagard (2012) provided a unified understanding of the structure, function, and dynamics of the organization in physics, biology, and the cognitive and social sciences. They posited that part-whole relations at all levels of organization derive their dynamic from the following similar constituting factors: tags, organizers, attachers, and communicators, regardless of the atom or social organization.

In particular, modern physics have confirmed that atoms are made of a nucleus, containing protons and neutrons, which is surrounded by a swarm of orbiting electrons like the planets revolving around the Sun (Greene, 1999). Proton and neutron are not fundamental particles. Rather, each consists of quarks. Such a make-up of atom can be aptly akin to social organizational hierarchy so much so that for a long time, it has been used to justify the rigid pyramid-like bureaucratic organization structure (Wheatley, 1994).

However, when probing more deeply into subatomic world, it was revealed in quantum physics that the subatomic units of matter manifest themselves the dual nature depending on how they are looked at. Sometimes they appear as particles, sometimes as waves. Strangely enough, these patterns do not represent probabilities of things, but rather probabilities of interconnections. In other words, these subatomic units are not “things” but interconnections among things. As articulated before, quantum mechanics has made it clear that the microscopic realm of atoms is governed by quantization, discreteness, uncertainty and probability. These strange properties of subatomic particles are commensurate with the complexity of interrelationship in human community and represent the qualities of social organizations (Capra, 1996).

Resemblance between Atom and Social Organization

It will be not vague to see that there are similarities between the atom and social organization with respect to quite a few aspects. Nevertheless, admittedly the linkages of these two constructs were only cursorily delineated in the literature review, and atomic properties have almost not been alluded to yet. Therefore, more unfolding of atomic structure and nature is needed at the beginning of each section. Then, discussions on comparisons will be logically followed. In this way, our understanding of the relationship between atom and organization will be enhanced.

Nucleus, Electrons, and Organizational Dynamics

The first aspect to be discussed is about atomic structure and organizational dynamics. Here, a nucleus is seen as being akin to top management team (TMT), while electrons are analogous to ordinary employees. As can be garnered from any fundamental physics textbook, the atom is a basic building block of matter that consists of a dense, yet tiny nucleus circled by a cloud of very minuscule negatively charged electrons. The atomic nucleus, which is also the massive center of an atom, contains a mix of positively charged protons and electrically neutral neutrons (see Figure 1). The protons and neutrons account for the large majority of an atom's mass. Moreover, there are vast regions of space in which small electrons move around the nucleus, bound by electric forces. The diameter of an atom is about one hundred-millionth of a centimeter, so minuscule so that it is so hard to get a feeling of its size (Capra, 1984).

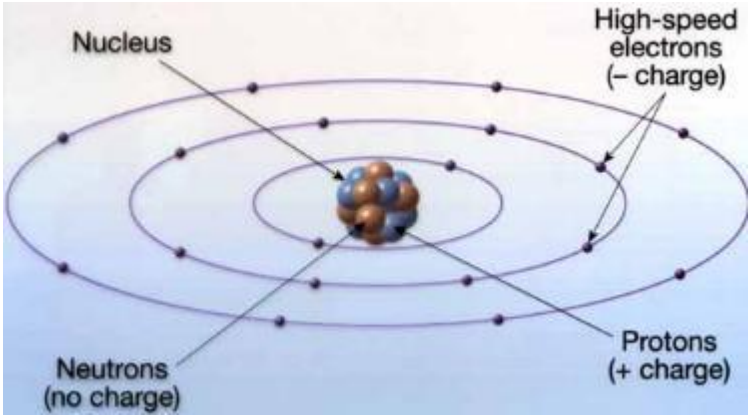

Figure 1 Structure of Atom
Source:http://chemistrybook2011.blogspot.com/2011/04/figures-of-structure-of-atom.html.

But how does atomic makeup have anything to do with social organization? What implications does it have for organization development? Long before physicists established the solar system-like atomic model, mechanistic organizations have been invented by human cultures to promote productivity and increase effectiveness and efficiency for centuries (Morgan, 1997). Division of labor, hierarchical supervision and detailed rules and regulations were further reinforced by Frederick Taylor, Henri Fayol, and Max Webber under the guise of modern management. The revelation of hierarchical atomic structure only served to justify the ideas of these classical management theorists, which in turn fostered the further development of the rigidly hierarchical atom-like organizations. After all, it is natural for people to understand that top management team (TMT) is equivalent to the nucleus, which is responsible for organization-wide decision-making, implementing and many other functions, just like the protons and neutrons. Surrounding around the TMT are electron-like employees. Just as all electrons move around the nucleus in their fixed orbits, so the employees are required to fulfill their functions in their positions.

These closely-knitted organization mentalities are consistent with Rutherford's atomic structure model. Nevertheless, it was afterward discovered that the subatomic particles are anything but solid isolated objects only abiding by deterministic laws of nature (Capra, 1984). Rather, they do not exist with certainty at definite places, instead show tendency to exist. Moreover, at a subatomic level, electrons exhibit wield duality depending on how they are measured, meaning that they sometimes appear as particles, yet at another time they behave as waves. That is to say, subatomic electrons could not be understood as isolated entities, but rather as probabilities of interconnections as described before. The same thing holds true in the current business environment characterized by complexity and cut-throat competition. Like electrons, the inter-connection, interaction, and response to the demand of customers are paramount to survival and sustenance of business. We cannot predict the behavior of electrons. In the same vein, there is no way for us to be able to effectively control the behavior of the employees. Neither could we track the process of their actions. Just as the properties of the electrons in the atoms of an element determine the element' chemical properties, so an employee can determine business's success or failure, and therefore should be treated as important assets of the companies. Extrapolating a little bit further, when facing with environmental uncertainty, we can never forecast the service behavior and consequences. For this reason, when interconnecting with customers, employees need to be empowered in

order to respond to the needs of the customers and ultimately lead to desired results of the organizations.

Particle Attraction and Group Cohesion

Particle attraction and group cohesion is the second topic I will talk about, in which there are incomprehensibly large similarities between these two constructs. Here, we see information transmitted both inside and outside of the organization as subatomic particles holding matter together. It is commonly known that electromagnetic interactions account for the force of electric attraction between the positively charged atomic nucleus and the negatively charged electrons (Capra, 1984). Conversely, inside the atomic nucleus, strong nuclear interactions, with the about one million times those of electromagnetic forces, are responsible for another attraction which binds all the protons and neutrons tightly together.

Stripped to barest essence, it is the involvement of certain kinds of subatomic particles that form these two types of interactions. For instance, massive hadrons participate in the strong nuclear interactions. Massless photons, on the other hand, are involved in the electromagnetic forces. "Attacher" advanced by Findlay and Thagard (2012) loosely parallels these subatomic particles. All these interactions, be it the result of attraction or repulsion, manifest themselves as the exchange of responsible subatomic particles. This could be shown in Feynman diagram (see Figure 2) indicating mutual repulsion of two electrons through the exchange of a photon. As can be seen from this diagram, particles entering or leaving a Feynman diagram represent real particles, while spiral line corresponds to virtual particles. Conversely, the strong nuclear interactions result from individual quarks exchanging gluons to keep quarks locked up inside of protons and neutrons, overcoming the repulsion produced by crammed positively charged protons repelling each other.

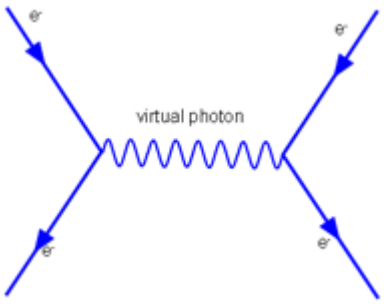

Figure 2: Mutual Repulsion of Two Electrons through Exchange of a Photon
Source: http://tap.iop.org/atoms/particles/536/page_47365.html.

In real social organizations, what are photons, gluons, or attachers which are responsible for gluing employees together to form group cohesion? Arguably, it is the information that could be considered as its counterpart, each of which is unphysical, virtual, and cannot be predicted. Be it outer space or inside atom, space is populated by subatomic particles, which according to Einstein, are also energy. Therefore, exchanges of virtual particles are pervasive. Likewise, information flows inter-organizationally and intra-organizationally at any time. Information is organization's energy, and transmission and exchange of information constitute an integral part of the organization with strong or weak forces which attract or repel people from each other. Another important thing is the willingness of expression of ideas in the organization. This metaphor is supported by theoretical physicist Bekenstein (2003) who claimed that physical world could be defined as being made up of information as evidenced by the

phenomenon of quantum entanglement. Young (1987) also proposed an entirely new definition of information as a mass-energy phenomenon, demonstrating that information can be viewed as a mass-energy form-manipulating process immanent in the physical universe via which mass-energy systems can communicate informationally and control their own energetic activities.

More specifically, Floridi (2010) asserted that information is the message (utterance or expression) being conveyed which can be transmitted as signals. Activity or process that is inextricably linked to information is communication in the process of which, according to Morris and Shin (2007), communicating parties share an communicative commonality. It was constantly indicated both scholastically and practically that effective and appropriate communication is essential to creating and maintaining personal attraction and group cohesion.

In a real social organization, the information communicated may include, but not limited to, value, mission, vision, rules and regulations, procedures, and numerous grapevines. Among them, the communication of shared core value endorsed by CEO or top management team (TMT) in organization could be roughly analogous to the gluon which provides the strongest interaction closely bond the committee members together, whereas photons could be arguably used as a metaphor to describe the functions of mission and vision of the organization transmitted to employees. In the field of organization change, Cummings and Worley (2005) asserted that “transmission of information about the intervention helps to bring new members onboard and allows participants to reaffirm the beliefs, norms, and values underlying the intervention” (p. 194). Other relatively unimportant formal and informal exchanges of information are loosely compared to weak interactions. Whether similar or not, interactions exhibit the properties of attraction, repulsion, or neutrality, depending on the forces and magnitudes.

Nucleus Interactions and Organizational Dynamics

As previously illustrated, gluon provides the strong attractive nuclear bonds for all the protons and neutrons. Protons and neutrons play a slightly different role in forming nuclear interactions. Although there are gluons holding protons and neutrons together, at the same time, protons exert a repulsive electrostatic force on each other which to a lesser extent may diminish the strong nuclear interaction. In addition, a proton feels an attractive force only from the very few other protons with which it is in close contact. Therefore, even though there is maximum strong interaction much larger than the repulsive electrostatic force, the attractive nuclear bonds would not be large enough for an all-proton nucleus to be stable. Here, the neutrons provide the extra “glue” that holds the nucleus together, since unlike protons, neutrons participate in the strong interaction but exert no repulsive forces. It is important to note that for a certain chemical element, the number of neutrons is approximately equal to, even much more than that of protons. Taken ^{238}U (a naturally occurring radioactive uranium isotope) for example, there are 92 protons and 146 neutrons in its nucleus. It is surprising that there are so many neutrons serving the role of mediators among the protons inside the nucleus.

Prior discussion has implicitly treated TMT as the nucleus with employees revolving around, and information exchange and communication are considered as external or intrinsic interactions cohering or repulsing organization members. It could not be ignored that there are also cohesion issues among TMT members. Here, studies seemed to be focused on homogeneity and heterogeneity in TMT composition literature. While homogeneity is

expected to influence cohesiveness, integration, and communication (Wagner et al., 1984; Smith et al., 1994), heterogeneity is found to be related to greater creativity and innovation (Bantel & Jackson, 1989; Murray, 1989), thus contributing to group performance. However, the dispute on group homogeneity and heterogeneity has not yet reached a consensus. Discovery of interactions among protons and neutrons may offer some insights that can be feasible in real social organizations.

As interactions among protons and neutrons demonstrated, the issue is not either/or, rather it is more about the extent and contingency. In the social world, both similarity and difference are needed to make up the high-level management team in terms of demographic characteristics such as age, gender, ethnicity, education, personality and personal value. Just as there are no nuclei that are made up of only protons other than hydrogen, so it would turn out to be a failure if TMT member of one organization is homogeneously composed. Increasing evidence shows that the role of neutron-like mediator or coordinator in a big organization is critical for the organization to function smoothly. And furthermore, as inside the nucleus, the larger the organization becomes, the more mediators or coordinators are needed to provide extra bonds to hold the groups much closer. Otherwise, the group would become unstable, and be filled with destructive conflicts, ultimately lead to organizational chaos. In addition, the larger a nucleus, the more likely it would become more unstable and radioactive, meaning that after some period of time, it will either fragment or emit some kind of subatomic particle in an effort to reach a more stable state. This property also holds true in the social organization. As TMT member of organization grows larger, it will become more and more difficult to bind all of them together, it has more propensities to be less cohesive and to fragment to form interrelated sub-group.

Extending beyond to the size of the organization, Thelen (1949) proposed a classical principle that the number of members in each organization should be the smallest “in which it is possible to have represented at a functional level all the social and achievement skills required for the particular required activity” (P.142). Specific number boundary in the organization was suggested by Dunbar (1993) based on a cognitive limit to the number of people with whom one can maintain stable social relationships. It has been proposed that optimum number lies between 100 and 230, with a commonly used number of 150. So here, again, we can see the congruity of the property of atomic particles and social organization dynamics.

Field and Culture

In the last topic, I seek to make the comparison between electromagnetic field and organization culture. From the above discussion about the subatomic interaction, it was known that, through exchanging the protons, two oppositely charged particles tend to be attracted towards each other. In this session, attention is turned back to a classic electromagnetic force field. According to classical physics, the electromagnetic field is a property of space generated by the motion of an electrically charged particle. Actually, it includes electric field and magnetic field. It is the mutual interaction of these two fields that co-produces the electromagnetic force. It could be asserted that electromagnetic field can be seen as exhibiting its own existence in space apart from the charges or currents and also be thought of as a wave transporting electromagnetic energy. The electric and magnetic fields interact with each other and permeate the space. All charges, irrespective of negative or positive, are affected when placed in electromagnetic space.

As reviewed before, organizational culture can be defined as a set of shared mental assumptions that may have negative and positive effects on every facet of organizations

(Ravasi & Schultz, 2006). As in electromagnetic field, a certain organization may have its own unique culture which dominated across the whole level of the organization. However, in addition to these dominant cultures, there may exist various and sometimes conflicting cultures that represent the values of diverse characteristics of different sub-groups in the companies. Moreover, these co-existing sub-cultures interact with each other and may be subservient to main dominant cultures which set the tones for the directing actions employees take or "ways people do the things". Again, just as the dynamic stability of atomic nucleus that attempts to maintain its equilibrium between the strengths of the strong and electromagnetic forces, so any well-managed organization struggles to keep balance among all types of various sub-cultures in order to build its unique and dominant guiding value systems.

Implications for Organizational Development

Four topics thus discussed, albeit cursorily touched, provide a powerful conceptual framework for further discussing their implications in organizational dynamics. Admittedly, scholars should be circumspect when knowledge derived from natural sciences is extended to related social domains. However, tantalizing similarities between two starkly different, yet related areas are so great that social researchers could not resist the temptation to plant what has been garnered elsewhere in their own gardens.

Firstly, recognizance of establishing organizational structure is necessary but not sufficient for the company to respond to both external and internal demands. We are required to steer the organization in the unknown and complex sea without a compass. It is recommended that we develop the awareness of what physicists call contextualism in managing organization. Traditionally, people built highly mechanistically structured organization that emphasizes precision, speed, clarity, and efficiency through the creation of a fixed division of tasks, hierarchical supervision. Even today, the legacy of scientific management has been inherited in many organizations leading to its proliferations across almost all industries. While subatomic particles have their places in atomic space, they do not exist with certainty at definite places. Particles exhibit dual natures depending on how they are measured with the property of uncertainty and probability. Likewise, operating in an environment fraught with complexity and uncertainty, we need to design the organization organically and flexibly. Also, we need to become savvy about how to build a relationship as our business reality is actually a network of interconnection. Wheatley (1994) proposed to draw an organization to emphasize the interaction and energy exchange, rather than isolated individuals, in which any individual role could be understood both as a reaction channel and generative force. Furthermore, in such an organization, employees need to be empowered in order to instantly respond to the needs of the customers and ultimately lead to desired results of the companies.

Secondly, the understanding of organization evoked by properties of protons and gluons is not a trivial issue for business executives. It is through the exchange of information that group cohesion and attraction are formed. For these reasons, emphasis should be focused on what kind of information to communicate, which channel to use, when to transmit. It is universally recognized that transmission of organizational value, mission, and vision is powerful tools for gluing members together across all levels of a company. In addition, managers need to more conscious of workforce diversity which, if properly-managed, can encourage innovation and harmony, thus producing organizational cohesiveness among individuals and inter-groups. Furthermore, as suggested by Wheatley (1994), participation and mediation is an effective

organizational strategy to broadly distribute the information, viewpoints, and interpretations. In so doing, we could make a good sense of the essence of the business world both internally and externally, which in turn, would deepen our understanding of shared visions of the organization.

Lastly, as cohesive groups are those that arise around shared understandings, so the organization needs to build a distinct and strong culture to bind all members together. Nevertheless, managers also should bear in mind that, in addition to dominant culture, the organization has diverse and sometimes conflicting sub-cultures. Therefore, we should embrace a tolerant mentality with an awareness that subcultures may not necessarily be detrimental to the value and mission of the organization. Well-managed, multiple sub-cultures would be a source to facilitate the realization of organization goals. However, this may necessitate the management to activate and magnetize the inert or inactive groups and employees to identify with the main organizational culture.

Contributions and Limitations

While almost any scholarly management writing inherently has contributions to both research and practical management, it nevertheless has limitations. The main contribution of this paper is that it provides a new lens to look at some issues of organization dynamics using subatomic particles as a metaphor. Although there were studies using machine, organism, and brain as metaphors to study organization, little research dealt with the comparison of atom and organization. As no single metaphor can capture the whole nature of organizational profile, it is reasonable that this new metaphor can create new ways of viewing organizations which overcome the weaknesses and blind spots of traditional metaphors, providing supplementary or even contradictory approaches to organizational analysis (Morgan, 1980). Furthermore, it may serve as a catalyst to encourage other organization researchers to analyze organization from new perspectives. Other researchers may realize that the use of metaphor may sensitize them to the idea that nonscientific disciplines may have relevant insights, approaches, and methods of inquiry which can contribute to organizational analysis (Brown, 1977). A second major contribution is more practice-oriented. Through the use of atom metaphor, this paper shows that similarities exist between these two starkly different phenomena. Based on these similarities, recommendations can be suggested to guide the actions and practices in the process of organization development.

The main limitation of this paper resides in the intrinsic weakness of usage of metaphor to study the social phenomenon. Although there are many similarities, enormous distinctions exist. Therefore, it would be hard to attempt to reach decisive conclusions from such a comparison. The second limitation is that, in developing the implications of the atom as a way of creating capacities for organization development, there is a danger of ignoring the dynamic aspects of the social organization. Although atomic particles possess the property of complexity and uncertainty, it is widely recognized that social organization is more complex than we imagine. For example, there are much more factors affecting the group cohesion, far beyond what the subatomic particles interaction could cover.

Conclusion

Inspired by many studies which utilized metaphors to investigate social phenomena, and compelled by the tantalizing similarities between properties of atom and organization, this paper used atom in physics world as a metaphor to discuss the organization dynamics issues. Although definitive conclusion could not be reached in this paper, some illuminating insights

emerged from comparison to gain a better understanding of properties of the social organization. It is hoped that the implications derived from this study would offer a new lens for both organization scholars and managers to think about the real issues in their process of organization development. Nonetheless, instead of providing an in-depth analysis of the issue, I only sketch a cursory and preliminary picture of this topic.

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