Interplay of *Arkān Arba´a* - An Understanding Towards the Basic Design of Natural Substances as Discussed in Unani Medicine

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Abstract

The theory and practices of Unani system of medicine are based on logic and philosophy that is why observation and reasoning have been used as important tools for its exposition. Therefore for proper understanding of Unani system of medicine, knowledge of traditional logic and philosophy is a prerequisite. However, in present scientific era Unani fundamentals are also required to be comprehended in the light of contemporary sciences. The present paper is an attempt towards the understanding of basic precursors of life and universe as stated in literature of Unani medicine and contemporary sciences.

Keywords: Ajzā Awwaliyya, Arkan, Element, Kafiyāt

Introduction

All physical things exist due to presence of primordial matter in a specific form and with unique configuration. This necessitates existence of primordial matter (*Hiula*), form (surate nauyiah) and configuration (surate jismiya) for existence of substances (Tabri, 2002). Since the substances are diverse in term of organization and number, therefore philosophers and researchers picked up common threads to arrive at the basic building blocks or *Juzie Ula*. Various theories were put forwards to explain the diversity in number of existing things and their organization.

From very beginning, a human has always been intrigued to know about him and the universe. How a man was created and universe was crafted? The placating theory of spontaneous generation seemed to give an implication to this enduring enquiry over thousands of years.

In antique China, people imagined that aphids were unexpectedly created from bamboos. The Indian texts revealed unprompted formation of flies from mud and sweat, whereas Babylonian writing pointed out that dirt from canals was supposed to have life in the form of worms (Brack, 1998).

Roman and Greek scholars tried to solve the problems someway and stated that life was inherent to matter; it was unending and appeared all at once, whenever the conditions were favourable. These ideas were clearly stated by Thales, Empedocles, Pythagoras, Democritus, Epicurus, Lucretius, and even by Plato. Aristotle after critically evaluating different claims developed a relatively different theory. Famous thinkers like Newton, Descartes, and Bacon supported the idea of unprompted generation (Brack, 1998). In primitive epoch, different concepts and ideas were perceived by sages from time to time about the cosmos and universe (Pudritz, *et al*., 2007). In the present study the basic blocks for

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existence of things living or non living were evaluated from two perspectives: one to emphasize the number of basic blocks and the other to elucidate the interplay of the basic blocks for the formation of various objects.

Methodology

The literature of Unani medicine regarding basic blocks (*Arkan*) was thoroughly surveyed. Various books regarding the philosophical interpretation regarding the formation of universe, objects and organization of life were also studied. It was attempted to see the perspective of Unani medicine regarding nature of things and how *Arkan Arba* theory became tenable. Moreover, present perspective was correlated with the inferences derived from the *Arkan Arba* theory.

Theory of *Arkan*

Many theories regarding the origin and existence of universe and life had been proposed. The theory of *Arkān* was suggested by ancient Greek philosophers. One of them projected that only *Mā*' (water) is responsible for origin of everything; this theory was proposed by Thales (640-546BC) and Hippon (Zhmud, 2006; Russel, 1945; Furley, 1987; Said, 1975). Thales said that the earth floats on water indicating that alimentation of everything is moistness and warmth. It was supported by the argument that all seeds have the moist temperament; while water is the principle source of moistness (Furley, 1987). Few scholars have implied Thales view by saying that the water is starting point (arch) of whole universe and it continued to exist all the way through the life of the universe; hence, it may be reasonable to say that everything of this planet is basically water (Zhmud, 2006; Furley, 1987). Diogenes states that air is eternal thing which is common to origin of all creatures. It means it can penetrate everywhere and guide the whole thing and set out everything (Furley, 1987). Anaximenes specified that basic *Rukn* (constituent) is *Hawā*' (air), taken however in a wider meaning than the blend of gases that we breathe. For him it was a medium that holds the whole universe together. It has different densities, which explain different forms in which matter exists. His speculative reasoning was a step toward establishment of physics (Teerikorpi *et al*., 2009; Furley, 1987). Further he explained fire is a rarefied air, while air condenses and becomes water, next earth and ultimately stone. This theory suggests that differences between different substances exclusively depend upon the degree of condensation. He justified the idea by stating that entire earth is surrounded by air. *"Just as our soul, being air holds us together so do breath and air encompasses the whole world"*. It appears that the whole universe breathes (Ahmad, 1983; Russel, 1945). Further he thought that *Hawā*' (air) controls the cosmos and clutches it together as the psyche controls the body (Jaeger, 1936). Likewise, Pherecydes (600-550BC) holds the thought about *Arz* (Earth) (Ahmad, 2009) and according to Heraclitus

(540-475BC) and Hippasus (Zhmud, 2006) *Nār* (fire) was the basic constituent by which the world was made. Even *Nār* (fire) is apparently not a matter just as the *Mā'* (water) and *Hawā'* (air) are, because it does not have definite physical dimension and naturally it transforms into other thing, rather than acquiring different properties itself. In one facet it extirpates; green forest full of wild life; on other way heat as a cause of life like the warmth of the sun brings growth into new life in the spring and the warmth of the body is at least a necessary condition of life in animals. But the fire has not been attributed to transform from the living to the dead or vice versa (Furley, 1987). Heraclitus doctrine shows *"All things are an exchange for fire, and fire for all things, even as wares for gold and gold for wares". "Fire lives the death of air and air lives the death of fire, water lives the death of earth, earth that of water"* (Russel, 1945). He thinks that fire is the system where material changes are brought about and maintained by the application of heat. Likewise, Milesians suggested that moisture and breath are the material basis of life. Hence Heraclitus beseeches to the upholding cause of process of life. A specific amount of heat keeps the process of growth and genesis sustaining (Furley, 1987).

The change of climate is an evident paradigm for the sequential expansion, decomposition and then new development. Although at any time the fire must not be entirely extinguished or too dynamically fire up; both extreme warmth and extreme cold carry the life to the finish (Furley, 1987).

More than one component theories

Two components (*Ar* and *Mā'*) theory set forth by renowned philosopher Xenophanes (570-470 BC) (Jalinoos, 2008; Draper, 2010). Anaximander (546 BC) was the second philosopher of the Milesion School. He stated that all things have originated from single primal constituent but it is not water as Thales held or any other substance that we know. It is boundless, endless and unchanging, and *"It encompasses all the worlds"*- inference to this our globe is only one of numerous. The primal constituent is metamorphosed into several constituents with whom we are easily recognized, and these are metamorphosed into one another (Russel, 1945). Thereafter some of the philosophers thought that two *Arkān* theory was inappropriate, so the concept of three *Arkān* emerged. This theory advocates that the matters are in three states i.e. *Rukn Jamidah* (solid), *Rukn Maiyah* (liquid) and *Rukn Hawā'iyah* (gaseous) (Ahmad, 1983).

Parmenides of Elea (540-470 BC) assumed that everything is composed of two primary constituents, of which one conforms to being and the other not being (Feller, 1958). Anaxagoras of Clazomenx (500-428 BC) concurred with Empedocles where he said that each and every thing comes into being in the form of *Tarkīb* (composition) and ceases to be separation of already existing matters, and that the qualitative modification is based on the alteration of composition of

substances (Feller, 1958). Finally, Empedocles (6th century BC) proposed the concept of *Arkan Arba* (*Nar, Hawa, Ma, Ard*) (Osaibah, 1990; Leary, 1949) which corresponds to four forms of matters i.e. *Jamid* (solid), *Saiy'āl* (liquid), *Hawā'i* (gas) and *Khilt-e- Mai* (plasma) in right way (Anonymous, 1973; Russel, 1945; Said, 1975; Teerikorpi *et al*., 2009; Hajar, 1991; Magner, 2005). He states *"Four roots of the all"*. These might be mixed in different proportion, and thus produce the varying composite that we observe on the earth (Russel, 1945, Stelmack *et al*., 1991). They are empowered by two moving forces of action and reaction "tying and untying forces" i.e. Philia and Neikos (love and strife). These forces are essential for mixing and taking part of any stuff to bestow with amalgamation and decomposition. There is a phase, where primary constituents have been mixed thoroughly by Philia, and Neikos, it can cause parting them out again slowly. Hence, every composite of this universe is temporary (Russel, 1945; Teerikorpi, *et al*., 2009; Jaeger, 1936; Stelmack, *et al*., 1991; Bertolacci, 2006).

Pythagoras (6th century BC) agreed with the concept of *Arkān Arba* that was perceived by Empedocles by which everything of this universe cropped up. (www.mysecurepayment.com/essays/Pre-socratic-cosmology.html/ 2014)

Impressed by the theory of *Arkān Arba*, Hippocrates (460-361BC) put forward the theory of *Akhlāt* (humors) (Chandpuri, 1998). Hippocrates states that disease is not a localized pattern, but a disorder affecting the whole body through some disproportion in the four humors viz. *Dam* (blood), *Balgham* (phlegm), *Safrā* (yellow bile) and *Sawdā* (black bile). The microcosm of the human body contains four humors and four associated qualities i.e. hot, cold, moist and dry corresponding to four basic constituents (*Nar, Hawa, Ma* and *Ard*) that form the macrocosm (Magner, 2005).

After Hippocrates, Plato (429-347BC) was also convinced with the doctrine of Empedocles. He said that these are in fixed ratio i.e. "Fire is to air as air is to water and as water is to earth". Nature brought to play the four constituents in making the universe, and hence, it is complete, and not accountable to old age or malady (Russel, 1945). In view of the above principles Plato theorized that *"The diverse forms of soil have been derived through Mā' (water), converted into shape of weighty Hawā' (air) and then compressed to solid that it no further dissolves in water. The equal and homogenous (cubic) part makes the finer and transparent stones"*. Further for attaining state of perfection of inorganic material a special type of force is necessary that leads the formation and unity of inorganic matter to achieve its perfect state (Hurle, 1993).

It was believed in Plato academy that five forms of primary constituents i.e. *Nār* (fire), *Ar* (earth), *Hawā'* (air), *Mā'* (water) and celestial matter were supposed to be Ajza-eAwwaliyah (Teerikorpi *et al*., 2009). Aristotle (384-322BC) said that the amalgamation of primary constituents is the cause of natural world evolution (Russel, 1945).

Interplay of *Arkan* - The Dynamic Flux

The physical objects are made up of different components which are arranged in harmonized or uniform combination that are themselves comprised of the four primary constituents (Wood *et al*., 2004). Some bodies are susceptible to *Kaun o Fasād* (generation and destruction), while others are not and instead exist as a result of a temporal creation. If that is the case, then there is no common substance in the first of the two, since there is no single substance that is sometimes susceptible to the form of what undergoes generation and destruction and at another time is vulnerable to the form of what is naturally imperishable and has no material genesis. Therefore it is not possible, however, it might be possible that the class of bodies subjected to *Kaun o Fasād* (generation and destruction) has a substance that is common to those that are generated out of and destroyed into one another, as can be seen in the case of the *Arkan Arba* (four basic constituents) (Mc Ginnis, 2009).

Aristotle states that *Ard* (earth) and heavens are entirely diverse in nature. The *Ard* and everything on and above it, up as far as the moon, were held to be subject to vary, decompose and flawed. Everything here is composed of the amalgamation of *Arkan Arba* and all natural movement on the earth is basically in a straight line, either straight up like *Nār* (fire) and *Hawā'* (air), or straight down like *Mā'* (water) and *Ar* (earth) (Ladyman, 2002). He also delineated that four primary properties of all substances are opposite to each other. *Burudat* (cold) and *Yabusat* (dryness) are contrary to *Hararat* and *Rutubat*. On the basis of metamorphosis the concept of transmuting agent came into surface over the hundred years. This encourages the transformation of one kind of material into another (Hurle, 1993). He further said that bodies are likely to fall into one point that is center of the *Ard*. He realized that *Ard* is like a ball and that its center is also the central point of the universe. Aristotle justified that only a finite universe could have a Markaz (center). Aristotle concurred with Empedocles that *"down here"* there are four *Arkān*, one of which is the *Jamid madda* (solid material) of which the earth is made. It was an essential part of Aristotelian dynamics that motions of bodies are governed by their striving toward their *natural place*. The normal place of *Rukn Ar* (earth) is the center of the universe, so the normal movement is toward *downward*. The movement of the *Nar* is towards *"up"* which is opposite to the earth. In the same way *Maá* and *Hawa* had their inclination to settle in different stratum (Teerikorpi *et al*., 2009).

Some of the predecessors of Aristotle had a different view in context of mixture and its separation. They said substances are composed by different proportions of four primary constituents. If these are in right proportion of mixture a substance is produced otherwise substance is destructed (Stone, 1999). The alteration occurs on the basis of changes in qualities not driven by the mixture

of *Arkan Arba* because they remain unchanged. Ibn Sina also corroborated the concept of Aristotle (Mc Ginnis, 2009; Stone, 1999; Maier, 1955). Aristotle asserted that Arkan Arba are distinct types of sensible matters, and that they can be metamorphosed completely one into the other. The substrate in which metamorphosis takes place is the physical substance common to *Arkan Arba*. This substance might be a prime substance in the physical sense, because all other corporeal substances are mixture of *Arkan Arba*. The substances which are common to these four must be common to every corporeal thing, and so remain invariable through all corporeal alterations. Still it might be metaphysical primary substance (Stone, 1999).

Description of Four *Arkan*

Earth is a simple body; its natural position is in the centre of other *Arkān* due to its gravity (Nafis, YNM; Anonymous, 1993; Anonymous, 1973). In that position, it remains stationary by virtue of its nature, but when it is displaced it returns to its original position. This is the explanation for its absolute heaviness. Earth is by nature cold and dry (Anonymous 1993; Kant, 2008) and serves the purpose of making the objects firm and stable, and maintains their forms and figures (Anonymous, 1993; Antaki, 2008),

Water is a simple body which, in its natural position, surrounds the earth while it itself is surrounded by the air provided that both of them are in their natural position. This is the explanation for heaviness of water which (Anonymous, 1993) is cold and moist in nature. It is naturally cold therefore it acquires its natural property even if it is warmed (Nafis, YNM) (Jurjani, 2010; Ibn Sina, 2010; Antaki, 2008; Arzani, 2010). The warmness indicates the presence of fire in the body. Fire is dry and hot in nature, due to its dryness it hardly occupies any shape (Israili, YNM). Fire is a *Jism-e-Baseet* (simple body) that is subtle and light in nature (Baghdadi, 2004). Fire is an inanimate and uniform matter, it raise higher than other constituents, owing to its absolute lightness. The fire intermixes with everything on account of being light and having imbibed heat. The power of fire also causes the penetration of air everywhere in the bodies even it disintegrates the extremeness of *Mā'* and *Ar* (Baghdadi, 2004, Jurjani, 2010; Ibn Sina, 2010; Arzani, 2010; Ahmad, 1983).

Hawā' (Air) is a simple body; its natural position is above *'Mā'* (water) and below the *Nār* (fire) (Anonymous, 1973). The nature of *Hawā'* (Air) is *Har Ratab* (hot and moist) (Baghdadi, 2004). Air is not *Barid* (cold) because a barid substance becomes heavy and dense since, as *Burūdat* is the cause of heaviness and density (Israili., YNM). Air stands for *Latafat* (lightness), *Takhalkhul* (porosity), *Tause'e* (expansion) (Jurjani, 2010; Ibn Sina, 2010; Arzani, 2010).

All the four qualities of *Arkān Arba´ a* play key role in the formation of natural substances, for instance, *Kafiyāt Har* causes heating, disintegration, evaporation and annihilation. *Burūdat* (coldness) stands for cooling, compaction and freezing whereas, *Rutūbat* (moistness) stands for soften, greasy and fluidization and *Yubūsat* (dryness) as denseness, firmness and protection (Israili, YNM).

In the light of the description of Unani philosophers the physical properties and phases of *Arkān Arba´a* (four basic constituents) can be interpreted easily by contemporary physical sciences which state that physical state of a sample of physical matter and its physical condition is determined by its physical properties. Two samples of a matter that have similar physical properties will always be same in nature (Atkins, *et al*., 2010).

In the Latin West, Ibn Sina and Ibn Rushd were known as the principal adversaries on a much-discussed question of element theory, especially in the fourteenth century. Given that if all physical substances (apart from the elements themselves) are mixtures of *Arkān Arba´a* (four basic constituents), the question then arises that how do the elements exist in them? Ibn Sina's answer is simple that substantial form of the elements remains unaltered when a compound is formed; only the qualities of the elements are altered and unite to a mean of quality, or complexion (Gutas, 2012; Magner, 2005; Mc Ginnis, 2009).

Present Perspective

Atomism of Dalton leads to the understanding of basic blocks as atoms of different physical and chemical properties. This progressed to the acceptance of number of distinct element that have composed all the substances in the world. The principle of organization and special configuration however remains intact. Since the advent of particle physics only organization and configuration have retained permanency whereas the very nature of elements has shifted to localized energy packets. It seems right time to view the same with new enlightened revision to the theory of existence of matter as stated by ancient philosophers.

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