HOMOGENEITY AND ANISOTROPY OF UNIVERSAL MEDIUM

According to 'MATTER (Re-examined)'

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Abstract: Matter is the only substance that can provide objective reality and positive existence in space. (Real) universal medium should be made of matter. It should be homogeneous and fill entire space, outside 3D matter-particles, without voids (empty space). At the same time, it should be flexible enough to have properties of perfect fluid. Anisotropic nature, which allows relative motions within, requires that universal medium should be structured by sub-particles and each of its constituent matter-particles has lot of (apparently) vacant space around it, to allow relative movements. This article attempts to describe, how these contradicting properties are simultaneously achieved in the universal medium, proposed in alternative concept, presented in the book, 'MATTER (Re-examined)'.

Keywords: Universal medium, quantum of matter, 2D energy-field.

Matter and universal medium:

Matter is the only substance in nature. It provides objective reality and positive existence in space to all real entities. Matter exists in the form of tiny unstructured particles – quanta of matter. Quanta of matter, in various combinations, form all other real entities in nature, including all-encompassing universal medium. Existence of universal medium does away with the illogical assumption of 'actions at a distance through empty space'. To act and to be acted upon, universal medium has to be a real entity, like all other real entities it should be made of matter. It also has to fill entire space and encompass all 3D matter-particles in nature. Therefore, this concept envisages a universal medium, formed by quanta of matter and fills entire space outside 3D matter-particles.

Constituents, mechanism of development, structure, properties and actions of universal medium are explained in the book. In this concept, universal medium consists of infinite number of 2D latticework-formations, called '2D energy-fields', by quanta of matter. Every plane in space has one 2D energy-field each, extending in all directions, in its plane, to infinity. 2D energy-fields in all possible planes in space,

together, form universal medium. Nature of universal medium and its suitability for actions in 3D world, in terms of point of view of 3D rational beings, are briefly discussed in this article.

No 2D energy-field is ever destroyed or no new 2D energy-field is ever developed. They are perpetual and sustain eternal universe. However, local breakdowns and re-constructions in their structures are very common due to various reasons. Universal medium creates, sustains and destroys parts of 3D world in a cyclic manner.

Spatial dimensions:

Space, an imaginary entity, is presupposed by rational beings, whenever material objects are envisaged. In this concept, universal medium and 3D matter-particles, together, fill entire space. Hence, universal medium substitutes for imaginary space. Universal medium acts as container of all material objects. Space and universal medium become synonymous.

Two separate 3D matter-particles cannot simultaneously exist in same location in space. Space being a container of all material objects, different 3D matter-particles in it occupy different locations. To locate different 3D matter-particles in space, certain reference is needed. In order to create reference systems, space is partitioned in various ways. In a convenient and widely used method, space is divided into eight parts by three mutually perpendicular planes. This method gives us three-dimensional spatial system. In this system, we measure distances in different co-ordinate planes (passing through a reference point in space), to give us length, breadth and depth (thickness).

Every real object has positive existence in space. Hence, it is imperative that it should exist in all three spatial dimensions. Matter-particles, being real objects, exist in all three spatial dimensions. In nature, there are enormous differences in sizes between different material objects. Some are extremely large and some are extremely small. We, the rational beings, are macro bodies, made of numerous 3D matter-particles. Usually, we deal with macro bodies, whose sizes (though vary widely), are within our understanding. Various instruments expand our intellectual capacity to comprehend wider differences in sizes of 3D matter-bodies.

However, there is a limit (which is constantly being increased by newer instruments) to measure small distances in any spatial dimension. A distance that is absolutely intangible by our 3D standards could be counted only as negligible or functional, without real meaning in the sense of measurement of distance. Although it is not correct by absolute standards, we are bound to ignore such measurements or consider them as non-existent. If one spatial measurement of a matter-body falls in this category, we are bound to consider it as 2D matter-body that has its tangible dimensions only in 2D spatial system. It, for all practical purposes is treated as 2D matter-body. If two spatial measurements of a matter-body fall in this category, we are bound to consider it as a 1D matter-body that has its tangible dimension only in 1D spatial system. It, for all practical purposes is treated as a 1D matter-body. However, it should be very clear that both, 1D and 2D matter-bodies have their existence in all three spatial dimensions like any other 3D matter-body.

Homogeneity of universal medium:

Universal medium, in this concept, is structured by quanta of matter. In 3D world view, no two independent 3D matter-bodies can simultaneously occupy same location in space. Hence, it appears that, however close constituent quanta of matter of universal medium are packed, there are bound to be gaps between them. This cannot be tolerated in a homogeneous universal medium. Matter-density of universal medium should be identical everywhere in space, a requirement that precludes gaps. This conundrum is overcome by its structure by quanta of matter in their lower spatial dimensional states. In these states two quanta of matter in different spatial dimensions are able to coexist, simultaneously, in same location in space without interfering. This phenomenon prevents existence of gap between quanta of matter, forming universal medium.

Being capable to coexist, quanta of matter in different directions are able to fill entire space (outside 3D matter-particles) to form homogeneous universal medium. 3D matter-particles are formed by quanta

of matter, in their 3D states. Matter-densities of quanta of matter are same, irrespective of their spatial states. Therefore, matter-densities of 3D matter-particles and universal medium are same. Matter-density is equal everywhere in space (in 3D matter-particles as well as in universal medium). With respect to matter-density, whole matter in universe (in different spatial dimensions) exists as a single block of matter of uniform consistency.

Quantum of matter:

Quantum of matter is the only postulated entity, derived from basic assumption used in this concept. Diverse matter-bodies, different properties and all other physical phenomena develop from quanta of matter, which fill entire universe. A quantum of matter has certain matter-content that is continuous and incompressible. [This is only a general statement. Minute relative motions, transmissions of effort or deformations within its spatial dimensions that can be neglected for practical purposes, may be tolerated within its matter-content]. Unstructured matter has a property of self-adhesion, within quantum of matter and between quanta of matter, which are in direct physical contact. Since matter is its substance, irrespective of its negligible measurement(s) in any spatial dimension(s), a quantum of matter has objective (real) existence in 3D space.

A quantum of matter can express its individuality only in spatial dimension(s) of its existence. No two real entities can simultaneously exist in same volumetric space. Therefore, no two quanta of matter can exist in same spatial dimension(s) in space. However, quanta of matter in different spatial dimensions but passing through same point, in space, are able to coexist at the point.

Practically, a quantum of matter (in any spatial dimensional status), exists in all three spatial dimensions. When its body-measurement in any one spatial dimension is too small to be intelligibly measured by 3D beings, we must say that quantum of matter exists only in two spatial dimensions. It may be qualified as two-dimensional object. Similarly, when its body-measurements in any two spatial dimensions are too small to be intelligibly measured by 3D beings, we must say that it exists only in one spatial dimension. It may be qualified as a single-dimensional object. General actions on or by quanta of matter are limited to spatial dimensions of their existence. However, very minute and intangible actions, limited to their (apparently) non-existent spatial dimensions, are also logically possible.

Due to self-adhesion of unstructured matter, it is inherent nature of a free quantum of matter to grow and exist only in one spatial dimension [1]. External pressure from ends of a 1D quantum of matter can reduce its body-measurement in first spatial-dimension and make its matter-body grow into second-spatial-dimension (width), until its body-shape becomes a perfect circle in a plane and becomes a 2D quantum of matter. Further, if identical external pressure is applied all around periphery of a 2D quantum of matter (in its second spatial-dimensional state), its matter-body is compelled to grow into third spatial-dimension, while reducing measurements in other two spatial dimensions. Growth into third spatial-dimension (thickness) continues until its body-shape becomes perfect sphere. As soon as a quantum of matter grows in to third spatial-dimension, it becomes a 3D matter-body. This is creation of 3D matter, in nature. We, as 3D beings, can associate only with 3D matter. Additional pressure applied all around volumetric periphery of a 3D quantum of matter may reduce its volume and compel it to grow into a fourth-spatial-dimension, if any, about which we know nothing.

Since, a quantum of matter has objective existence in its spatial dimension; no other quantum of matter can occupy its space, whichever spatial-dimensional status it may be. However, two quanta of matter in different spatial dimensions have objective reality in different spatial-dimensions. Hence, each of them should be able to have objective reality at the point occupied by both of them, simultaneously. That is, quanta of matter, in different spatial dimensions should be able to co-exist at the point occupied by both of them. As long as its own dimensional space is not occupied, a quantum of matter is able to co-exist with other quanta of matter at a point in space.

Matter in quanta of matter has no substructures. It is homogeneous and isotropic. Two 1D quanta of matter occupying same point in space, essentially, have to be at an angle to each other. Their negligible widths (as and when they are developed) have to be in different planes. Since they are 1D objects, they cannot extend into each other's spatial-dimension so as to create discontinuity for other's existence.

Since two quanta of matter are in different planes and crossing each other at a point in space (they are in different spatial dimensions), they do not intrude into each other's spatial-dimensions. Due to lack of substructures, matter at the point of their crossing is able to be part of both quanta of matter, simultaneously. Similarly, a quantum of matter can also co-exist with a 2D matter-body (its thickness is zero) in different planes. However, as all spatial-dimensions are occupied by a 3D matter-body, a quantum of matter is unable to coexist with 3D quantum of matter in space. It has to remain outside 3D matter-body.

Interactions are possible only between quanta of matter, existing in same spatial dimension(s) and in direct contact with each other. Property of self-adhesion in unstructured matter, across point of contact between two quanta of matter, encourages their matter-contents to merge and form a single quantum of matter, with greater matter-content. Concept, presented in this concept envisages that due to various reasons, point of contact between two quanta of matter are never steady and therefore, magnitude of adhesion between matter-contents of two separate quanta of matter (which are in direct physical contact) through the point of contact is less than magnitude of adhesion between nearest points within matter-content of individual quantum of matter. Difference in magnitudes of adhesion prevents merger of matter-contents from different quanta of matter, while preserving integrity of matter-content of individual quantum of matter. As there are no free quanta of matter, even when two quanta of matter in different spatial dimensions co-exist at a point in space, their point of contact continuously change. Incessant changes in point of contact reduces magnitude of (average) adhesion between matter-contents of quanta of matter in contact to less than adhesion within matter-contents of individual quantum of matter and thus prevent merger of their matter-contents. Same phenomenon prevents matter-contents of intersecting quanta of matter (in different spatial dimensions) from merging their matter-contents.

Coexisting matter-particles:

Consider water contained in a vessel, whose horizontal cross section is shaped as a cross. Water in the vessel may be regarded in five separate parts, one part each in arms and another part at the center of vessel. Let water contained in each set of arms, in straight line, as separate 3D matter-bodies. Part of water, at the center of vessel, belongs to 3D matter-bodies in both sets of arms. In terms of macro bodies, we may consider 3D matter-bodies (in straight arms) co-exist at centre of vessel. This is because; water at center part of vessel can act as parts of both 3D matter-bodies.

Now, reduce widths of vessel's arms. Water in central part of vessel continues as parts of 3D matter-bodies in both sets of arms, until width of one or both sets of arms are reduced to size of a water molecule. If width of one or both sets of arms is reduced further, water molecule at center of vessel is unable to simultaneously be parts of both 3D matter-bodies, contained in straight-line sets of arms of vessel. It will be part of either of 3D matter-bodies. At this stage, 3D matter-bodies in both sets of arms are no more able to co-exist. Inability of these 3D matter-bodies to co-exist is due to sub-structure of water molecules. Sub-structures of molecules or atoms demand that each molecule/atom can have only particular formations with their neighbours. If this particular type of formations can be preserved by molecule/atom at an intersection, any number of 3D matter-bodies can co-exist in space. However, as each type of atom/molecule is unique, this is not practical in cases, where thickness of 3D matter-bodies approach very small values. Hence, it is impossible for two 3D matter-bodies to co-exist at a point in space.

Let us consider two (hypothetical) free 1D quanta of matter, in different spatial dimensions and whose matter-contents pass through a point in space, as shown in figure 1. Spatial dimensions of quanta of matter in width and thickness are at their minimum possible values. Self-constriction of matter-content in both spatial dimensions of its negligible existence has reduced to zero value (by 3D standard). Therefore, these quanta of matter have no effective borders (perimeters shown in dotted lines) in these spatial dimensions.

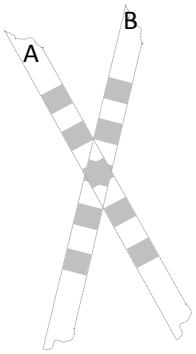

Figure 1

In figure 1, sizes of quanta of matter are highly exaggerated and only small parts of quanta of matter at the point of intersection are represented. Alternate points in their matter contents are shaded. Each quantum of matter exists in its own spatial dimension. Since, quantum of matter has no substructure; matter-content at the point of intersection is able to act as parts of both quanta of matter. Quanta of matter are not overlapping but they co-exist at the point of intersection. Matter-content in one quantum of matter is not superimposed on other. Consistency of matter and its density at intersection is same as it is for rest of quanta of matter.

1D quanta of matter, shown in figure 1, together define a plane. If one of the quanta of matter, due to external effort applied inwards at its ends, grows in this plane into its second spatial dimension, both of them would be occupying same spatial dimensions. They cannot continue to coexist at their point of intersection. As soon as one of the quanta of matter, A, grows into second spatial dimension, self-constriction in its matter content develops against external pressure at its ends. These inward efforts (towards major axis of matter-content) gives quantum of matter, A, a definite border (as shown in figure 2 by bold curved lines), to become a 2D quantum of matter. As both quanta of matter occupy same spatial dimension, during its development into second spatial dimension, quantum of matter, A, tends to divide 1D quantum of matter, B, into two. But borders of 2D quantum of matter, A, now provides anchoring points for self-adhesion of quantum of matter, B, to withdraw all its matter-content to one side and exit from space occupied by quantum of matter, A, which has developed into second spatial dimension. Similar action takes place during changes of 2D quantum of matter into 3D entity.

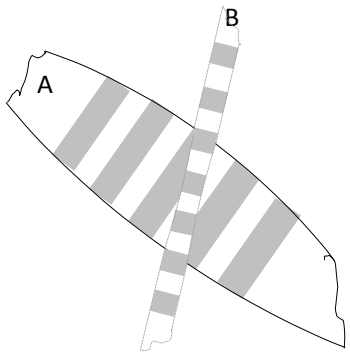

Figure 2

Figure 3 shows representation of two intersecting quanta of matter. Quantum of matter, B, is in 1D spatial status. Its matter-content cannot be compressed any more in width and thickness. Its upper end (as shown in figure beyond quantum of matter, A) is much longer than lower end. Quantum of matter, A, is at the instant of conversion of its spatial status from 1D to 2D in plane of paper. As external pressure at quantum of matter, A, overcome self-elongation, it increases in width. Increase in self-constriction of matter-content forms definite border around quantum of matter, A, except where quantum of matter, B, exists. As quantum of matter, B, is already in its 1D status, its size in plane of quantum of matter, A, cannot reduce any further. Reduction in width, shown in figure, is symbolic and highly exaggerated. It, more or less, indicates directions of effort transmitted to quantum of matter, B, (shown by thin arrows) through quantum of matter, A, from external pressure at ends of quantum of matter, A.

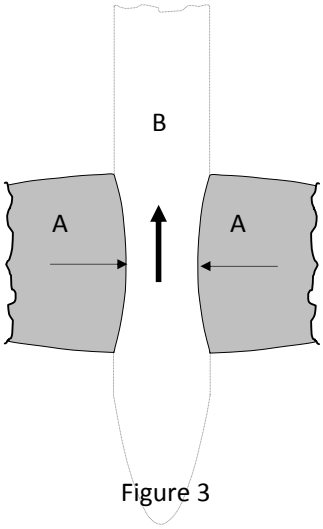

Figure 3

External effort, transmitted through quantum of matter, A, to quantum of matter, B, creates internal pressure within matter-content of quantum, B. Since matter in quantum of matter, B, cannot be compressed any further in this spatial dimension, effort generated produces translational motion of quantum of matter, B. [Like a slippery incompressible object pressed between two objects is jettisoned away]. Minute curvatures, produced at the site of compression help to convert compression into translational motion. Resultant of translational efforts on upper and lower parts of quantum of matter, B, push-out its matter-content away from quantum of matter, A. Due to self-adhesion of matter-content, continuity of matter in spatial dimension of quantum of matter, B, does not break. Since matter-content of quantum of matter, B, is continuous in its dimensional space, whole matter-content of quantum of matter, B, moves in resultant direction of translational efforts on it, shown by thick arrow. Action will continue until any one end of quantum of matter, B, moves out of matter-content of quantum of matter,

A. Matter-content, outside quantum of matter, A, in 1D spatial dimension will now form independent quantum of matter, B.

Direction of resultant translational effort on quantum of matter, B, depends on curvatures formed by matter-content of quantum of matter, A, about matter-content of quantum of matter, B, and internal pressure formed in its matter-content. For same effort, development of internal pressure in a larger volumetric space is slower than in a smaller volumetric space. Hence, usually, matter-content in larger end of quantum of matter, B, has lower internal pressure during its development. This encourages matter-content of quantum of matter, B, to move towards longer end.

Formation of partition, slightly away from center point of quantum of matter, B, with uneven curvature, produces imbalance in self-constriction and self-elongation efforts within 1D quantum of matter, B. Longer part has higher self-elongation effort with lower self-constriction and shorter part has lower self-elongating effort with higher self-constriction. Partition, at the instant of its formation, provides anchoring point for these efforts. As a result, 1D quantum of matter, B, as a whole, experiences resultant effort to move its matter-content towards the part with higher resultant effort. Thus, 1D quantum of matter, B, withdraws itself (whole of its matter-content) towards the side with higher effort before partition can be completed by formation of 2D/3D object in its spatial dimension.

External pressure, at ends of quantum of matter, A, affects its matter-content at every point and induces it to expand in second spatial dimension and shrink in first spatial dimension. Points in matter-contents, common to both quanta of matter and existing at their intersection, are also affected. Certain part of their expansion in second spatial dimension of quantum, A, may coincide with translational motion of matter-content in quantum of matter, B. Matter-contents of both quanta of matter, A and B, coexisted at their intersection, when they were in different spatial dimensions. As soon as they tend to occupy same spatial dimension(s), their matter-contents separate into independent status to form quanta of matter in their respective spatial dimensions and outside each other's matter-content.

Let external pressure act all around perimeter of 2D quantum of matter, A, such as to convert it into 3D status. Existence of 3D matter-body at the point of intersection with 1D quantum of matter tends to part it into two parts. However, by quantum of matter's inherent nature, it is unusual for matter-content of a quantum of matter to be cut into two or made smaller by reducing its matter-content. At the instant of conversion of 2D quantum of matter, A, into 3D object, a partition tends to develop at the point of intersection of 1D quantum of matter and 3D object. Self-elongating efforts, within 1D quantum of matter, B, on either side of this partition is proportional to curvature and length of parts forming, as explained with respect to figure 4. [If 1D quantum of matter is already a part of a quanta-chain, attraction to its neighbours also is proportional to lengths of parts of 1D quantum of matter, B, being formed.] Thickness of 2D quantum of matter, A, at the instant of its conversion to 3D object corresponds to thickness of a plane, in 3D spatial system. Thickness below this limit is functional or non-existent.

It is highly improbable for a partition to form exactly at the center of 1D quantum of matter, B, with even curvatures. Even so, slight motion of either 2D quantum of matter, A, or 1D quantum of matter, B, will offset center point. Development of 3D object, in thickness, is also not identical in either direction from center point. This also can offset any centralized formation of partition. Hence, we can say that formation of partition, exactly at the center point of 1D quantum of matter, with even curvature, is not probable. Therefore, it is very unusual that a quantum of matter is bifurcated.

In figure 4, 'B' represents part of a 1D quantum of matter. 'A' represents part of a 2D quantum of matter or part of a 3D matter-particle, intruding into spatial dimension of 1D quantum of matter, B. YY is perpendicular to tangent on perimeter of 2D/3D matter-body, parallel to body of 1D quantum of matter. Curvatures of perimeter on either side of line, YY, are considered different. Arrows RP

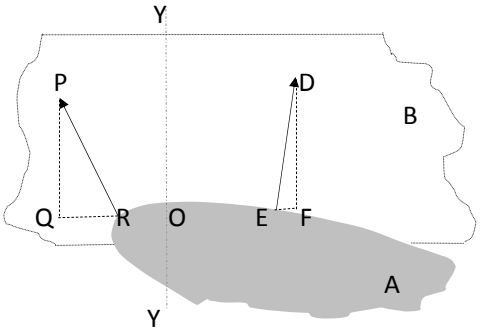

Figure 4

and ED represent directions of self-constriction in matter content of quantum of matter, B. Due to curvature of perimeters at parts of 1D quantum of matter; directions of self-constriction are not even on either side of line, YY. Horizontal components of self-constriction of either sides of line, YY, are in opposite directions. Magnitudes of their resultants on either side of line, YY, depend on curvature of intruding part of 2D quantum of matter. Difference in resultant effort compel matter content of 1D quantum of matter, B, to move towards the part that has higher resultant effort. Usually whole matter-content of 1D quantum of matter should move to one side of intruding entity before intrusion can divide it into two independent 1D quanta of matter.

It can (generally) be said that quanta of matter preserve their individuality under all circumstances. However, in exceptional circumstances, nothing prevents a quantum of matter from parting into two independent quanta of matter or amalgamation of matter-contents from two quanta of matter to form single quantum of matter. If attempt to part a quantum of matter into two may develop and persist for longer time at exactly at its geometrical centre with even curvature, it may part into two individual quanta of matter. Another possibility is that of a quantum of matter with exceptionally large matter content. Time required for it to move its whole matter-content to the side with higher resultant effort may be too long to prevent division of its matter-content into two separate quanta of matter.

1D quantum of matter exists only in its own one-dimensional spatial system. Hence, 1D quantum of matter is able to coexist with another 1D quantum of matter in all spatial dimensions other than its own. 2D quantum of matter exists in a plane. 1D or 2D quantum of matter is able to coexist with it, in all spatial planes other than in the plane of 2D quantum of matter. If located in the plane of 2D quantum of matter, 1D quantum of matter maintains its individuality and independence as a separate entity, even if it is a component of 2D matter-body, constituted by one or more 2D quanta of matter, without gaps between neighbouring quanta of matter. 3D matter-body exists in all spatial planes passing through it. 1D quantum of matter is unable to coexist with a 3D matter-body or any of its constituent quanta of matter, in any of these planes. Even if it is a constituent part of 3D matter-body, it keeps its independence and integrity as separate entity, within the 3D matter-body, without gaps between neighbouring quanta of matter.

Universal medium (in this concept) is a combination of 2D energy-fields in all possible planes in space. 2D energy-field is a latticework-structure by quanta of matter, formed by grids in geometrical shapes of squares [like; grid formed by sets of parallel straight lines, perpendicular to each other]. Each side of a square is provided by a quantum of matter. As a result of latticework-structure, in each plane, spaces within latticework-squares are free from matter in that plane. However, such gaps in the plane (or any probable gap between two quanta of matter in same spatial dimension) are occupied by quanta of matter in other spatial dimensions. This arrangement leaves no room for voids or empty gaps in space. Entire space is occupied by matter. At the same time no overlapping or superimposing of matter-contents of different quanta of matter in same spatial dimension takes place. Thus, matter-density of entire space (including that of 3D matter-particles) is the same as matter-density of quantum of matter or that of basic 3D matter-particle. This matter-density is constant throughout universal medium (space). Consequently, universal medium is homogeneous in its consistency. Due to 2D latticework-structures of universal medium, existence of matter, if considered separately for any plane, shows much larger gaps between quanta of matter in that plane (spatial dimension).

Anisotropy of universal medium:

Universal medium (structured by quanta of matter), in its stable state, is homogeneous, isotropic and serene. A homogeneous universal medium that has isotropic properties can neither deform nor have relative movements within. If universal medium cannot have relative displacement of its parts, it can neither act nor be acted upon on/by other entities. Therefore, it is imperative that structure of universal medium (which has isotropic properties in its stable state) should be able to cater for anisotropic properties during its unstable conditions, while remaining homogeneous. For detailed description on structure and properties of universal medium, see reference [1].

Relative motion within universal medium:

Space, outside 3D matter-particles, is filled entirely by all-encompassing universal medium of constant matter-density. It is of homogeneous consistency. Since, 3D matter-particles are also of same matter-density, whole space is filled with combination of entities of constant matter-density. In our 3D world, displacement of an object or its part can take place only to another location where there is no other 3D object present (or where matter-density is lower). Thus, it seems that relative motion and deformations in universal medium is impossible objectives to achieve.

In each plane, latticework-structures of 2D energy-fields leave lot of space around their constituent quanta of matter, for relative displacements. At the same time, bonds between quanta of matter in latticework-structures of 2D energy-fields in universal medium are weak enough to allow angular displacement or departure between quanta of matter at junction points. This facilitates relative angular displacement between quanta of matter in 2D energy-fields. Latticework-structures may be deformed and/or parted to facilitate motion and passage of 3D matter-particles through them. Latticework-structure enable universal medium to transfer deformations in it, even without presence of 3D matter-particles. Simultaneous actions or deformations in all 2D energy-fields about a point/object, in space, appear as action in 3D spatial system. This arrangement of 2D energy-fields distribute matter evenly throughout entire space and at the same time enable them to deform without damaging universal medium's homogeneity (constant matter-density). Displacements of one or more quanta of matter (in any spatial dimensions) do not leave space occupied by them, empty. As same space is simultaneously occupied by quanta of matter in other spatial dimensions, no empty space or void appear in these places.

Initiation of motion:

Relative motions of quanta of matter (which in turn move 3D matter-particles/objects) in universal medium may be initiated by various means; few of which are given below.

Quanta of matter – smallest matter-particles in nature – are of different matter-contents. Quanta of matter with somewhat equal matter-contents form stable 2D energy-fields, which are inherently under compressed state. An entity, within 2D energy-fields and breaking continuity of their latticework-structures are under external pressure produced by compressive state of 2D energy-fields. This phenomenon is 'gravitation' [1]. Due to latticework-structure of 2D energy-fields, gravitational efforts are applicable only on curved perimeters of 2D or 3D matter-particles. Magnitude of gravitational effort at a point is proportional to extent of 2D energy field(s), applying the compression.

Inclusion of a quantum of matter with (much) higher or lower matter-content, in latticework-structure, causes imbalance and deformation that makes a 2D energy-field unstable. Stabilizing act, inherent in 2D energy-field, tends to move distortions in latticework-structure, away from its present location and gradually group them together. Excessive deformation in a place in latticework-structure either produces circular 2D matter-particles by combining and compressing offending quanta of matter or causes local breakdown of latticework-structures of 2D energy-fields.

Every 2D energy-field extends to infinity in all directions in its plane. If there are two 2D matter-particles in a 2D energy-field, extent of latticework-structure between them is always less than extent of latticework-structure on their outer sides. Magnitude of gravitational effort is proportional to extent of 2D energy-field (which is producing it). Therefore, magnitudes of gravitational efforts applied by smaller extent of 2D energy-field between two 2D matter-particles are lesser than magnitudes of gravitational efforts applied by infinite extent of 2D energy-field on their outer sides. Consequently, these 2D matter-particles are pushed towards each other. This phenomenon is (apparent) 'attraction due to gravitation'. As and when, deformations in 2D energy-field and resultant gravitational effort by 2D energy-field about 2D matter-particles are large enough; distortions in latticework-structure move 2D matter-particles towards each other by parting latticework-structure between them. It is the distortions in 2D energy field, which are transferred. 2D matter-particles are carried by distortions along with them. Similar actions take place in cases of 3D matter-particles also.

Excessive or sudden deformation in any part of 2D energy-fields may cause breakdown of their

latticework-structures and release many quanta of matter free, into the gap. 2D energy-fields, all around the gap, rush in, to gather freed quanta of matter and compress them into single 3D matter-particle. Volumetric shape of this 3D matter-particle induce surrounding 2D energy-fields to assume appropriate deformations to re-shape gathered quanta of matter into basic 3D matter-particle and move it linearly and angularly at characteristic and constant velocities through universal medium. It is the universal medium that is moving 3D matter-particle, by transferring deformations within its latticework-structures. This, basic 3D matter-particle, together with associated deformations in surrounding 2D energy-fields is a 'photon'. Photons, with their characteristic properties, from matter-cores and associated deformations in universal medium, form basis of all physical structures in our 3D world. Distortions in 2D energy-fields, in association with one macro body, may be transferred to 2D energy-fields in association with another macro body to transfer kinetic energy from one macro body to another.

Conclusion:

Universal medium, presented in 'MATTER (Re-examined)', has all required properties of ideal aether, in 'aether theories'. It is made of matter. It is a real entity. It encompasses all 3D matter-particles. It fills space entirely. It extends in all directions to infinity. It is homogeneous with constant matter-density everywhere. It becomes anisotropic in unstable (deformed) state, without losing its homogeneity to facilitate relative motions. In its stable state, universal medium is homogeneous, isotropic and serene. Separate 2D latticework-structures by quanta of matter (which may co-exist in space) for each plane of universal medium, enables it to be homogeneous and anisotropic at the same time.

Reference:

[1] Nainan K. Varghese, *MATTER (Re-examined)*, http://www.matterdoc.info

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