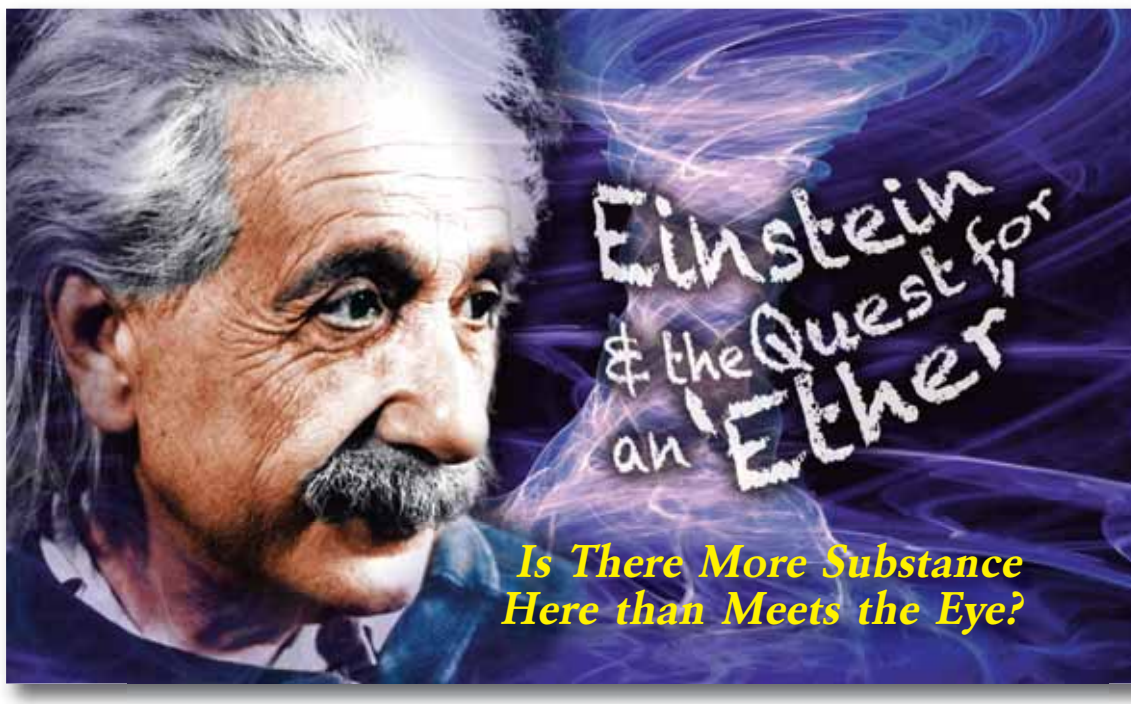
• BY CHARLES SHAHAR



The concept of the ether has been a mainstay of occult literature starting in the late nineteenth century. It was described in elaborate terms by the theosophists, who borrowed much of their thinking from Eastern esoteric traditions. The etheric field was considered to be a subtle plane of nature that interacted with and impacted upon the physical dimension. It provided the "underpinning" or template without which this worldly manifestation would have no cohesion.

For instance, in her masterwork, *The Secret Doctrine*, the founder of the Theosophical movement, Madame Blavatsky, described the ether as "a radiant, cool, diathermanous plastic matter, creative in its physical nature, correlative (with the physical plane) in its grossest aspects, and immutable in its higher principles." She went on to portray the ether as the "soul of matter." the passive feminine principle from which everything in the universe has emanated (Blavatsky, H. P. *The Secret Doctrine*, Wurzburg Manuscript. Eastern School Press, Cotopaxi, Colorado, 2014).

Later theosophists elaborated on some of the concepts introduced by Blavatsky. Charles Leadbeater described the ether as a vast sea interpenetrating the world of forms. Impressions reach our physical senses chiefly by means of vibrations that ripple through this etheric medium, although these are limited to (slower) vibrations that the senses can register (such as objects emitting or reflecting light). Other more rarified wavelengths can only be appreciated through what Leadbeater termed "occult vision" (Leadbeater, Charles W., *Clairvoyance.* The Theosophical Publishing House, Madras, India, 1939).

Using such occult vision, Charles Leadbeater and Annie Besant were able to make observations about the makeup of etheric matter in their classic work *Occult Chemistry*. They described how the ether permeates all physical substances and encircles all physical particles. They further observed that the ether itself is comprised of "etheric atoms" and is thus not uniform, but particulate, in nature (Besant, Annie and Leadbeater, Charles W. *Occult Chemistry: Clairvoyant Observations on the Chemical Elements*. The Theosophical Publishing House, London, 1919).

Leadbeater and Besant then took a larger leap in the appendix of *Occult Chemistry*, describing a universal substance called "koilon" permeating empty space that has a bubbly or froth-like structure and concluded that matter is not the densification of koilon but the absence of koilon. According to them, matter itself is "insubstantial" and all that has reality is this primordial substance. It is not clear from their writings whether this "mother substance" is synonymous with ether, or represents the building blocks of yet more subtle dimensions of nature.

In Rosicrucian cosmology, the physical world is divided into seven subdivisions of matter. The solids, liquids, and gases represent the three "grossest" subdivisions, the remaining four being ethers of varying densities. The ether is not homogeneous but exists in four different states: the chemical ether, the life ether, light ether, and reflecting ether. All these forces have a role in carrying out the activities of animate forms, enabling them to live, move, and propagate (Heindel, Max. *The Rosicrucian Cosmo-Conception or Mystic Christianity*. Fellowship Press, Oceanside, California, 1920).

Ether as a Scientific Paradigm

It is perhaps surprising to note that until the late nineteenth century, European scientists still considered the etheric plane as a fundamental division of nature and the field through which the force of light traveled. This etheric substance was known as 'luminiferous ether.' Some leading scientists took the existence of the etheric field as a given in the application of their theories, suggesting that it fills empty space and has quasi-physical properties.

In fact, as far back as ancient Greece, Aristotle posited that light couldn't travel through empty space but needed a medium or substance through which it was propagated. The concept of the ether was also mentioned in the works of seventeenth century philosophers, such as Robert Hooke, who believed that light was caused by wave motions of the ether, and Christiaan Huygens, who assumed that ether interpenetrated all matter and was even present in a vacuum (*Newton, Isaac. Mathematical Principles of Natural Philosophy and His System of the World*. Florian Cajori (Trans), University of California Press, Berkeley, 1934, appendix, and Verma, R. K. *Wave Optics*, Discovery Publishing House, New Delhi, 2006).

Isaac Newton posited a "cosmic ether" in the spaces between objects, which he believed was able to bind matter together and, hence, was responsible for certain gravitational and optical effects. The great Scottish physicist James Maxwell wrote in 1878 that "regarding the constitution of the ether, there can be no doubt that the interplanetary and interstellar spaces are not empty but are occupied by a material substance or body, which is certainly the largest, and probably the most uniform body of which we have any knowledge" (Maxwell, James C. *The Scientific Papers of James Clerk Maxwell*. Niven, W. D. (Ed.). Cambridge University Press, 1890).

Einstein used the concept of the ether in his General Theory of Relativity, and actually gave a talk on the subject in 1920. He went so far as to state that "the ether hypothesis was bound always to play some part in physical science, even if at first only a latent part." In terms of its characteristics, he went on to conclude that "the ether of the general theory of relativity is a medium which is itself devoid of all mechanical and kinematical qualities but helps to determine mechanical and electromagnetic events." In short, Ein-

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stein was saying that space itself is a static and uniform medium that provides an underpinning for the phenomenal world (MacTutor History of Mathematics Archive. *Einstein: Ether and Relativity*. April 2007).

In his address, Einstein observed that, to deny the ether is ultimately to assume that empty space has no physical properties at all. He insisted that the fundamental facts of mechanics do not support such a view. In fact, according to the General Theory of Relativity, space without ether could not exist, because there could be no propagation of light and no possibility for any measures or standards of space and time, nor any space-time intervals in the physical sense. The universe would therefore not have cohesion or continuity without the abiding and pervasive nature of the ether.

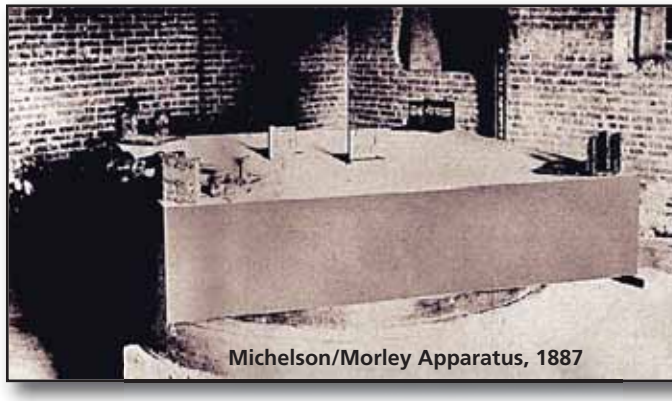
Einstein asserted that the universe presents two realities that are completely separated from each other conceptually although linked causally; namely, gravitational ether and the electromagnetic field, or more generally, space and matter. He believed that it was only when gravity and electromagnetism were combined into a single or unified framework that "the contrast between ether and matter would fade away and, through the General Theory of Relativity, the whole of physics would become a complete system of thought."

There was a point where Einstein's thoughts sounded even metaphysical in nature. For instance, in his General Theory of Relativity, it seemed difficult to distinguish between the gravitational field which existed everywhere in the universe, and the structure or fabric of space. He went on to assert: "We may therefore regard matter as being constituted by the regions of space in which the field is extremely intense. . . . There is no place in this new kind of physics both for the field and matter, for the field is the only reality." In short, both space and matter are aspects of a single totality (Nadeau, Robert. *Readings from the New Book on Nature: Physics and Metaphysics in the Modern Novel*. University of Massachusetts Press, 1981).

Even though Einstein himself resisted dismissing the idea of the ether, by the turn of the last century, the concept had fallen strongly out of favor. In 1887, an experiment conducted by Albert Michelson and Edward Morley yielded results which seemed to refute its existence. The idea of the experiment was to split a beam of light using an interferometer and then recombine the beams to see any differences in wave patterns. One beam was made to go in the same direction as the earth travelling around the sun, and the other perpendicular to it.

The assumption was that as the earth moved, it generated an "etheric wind" (in the same way you experience air winds as you ride your bicycle when the air is calm), and the beam that traveled along with the earth would thus be slowed down. In fact, there was no difference in speed, no matter in which direction the beams of light were pointed.

This result perplexed scientists who assumed that the ether was real; and, in fact, Morley continued to run later experiments, because he was not convinced of his own results (all turned out negative). However, these findings had wider implications for physics than just refuting the idea of the ether. They also suggested that there was no standard or absolute reference frame to measure natural phenomena (a framework that a fixed ether would provide)—but that everything was relative (Wells, Sarah. *The Most Famous Failed Experiment*. Smithsonian Science Education Center).


Michelson/Morley Apparatus, 1887

Ether and Quantum Theory

Despite the widespread rejection of the ether concept, by the 1950s a more "modern" scientific view of the ether emerged. Based on the field of quantum mechanics, it was recognized that energy fluctuations arise even within a so-called vacuum, in which quantum particles appear, collide, and disappear in very short periods. Physicists have concluded that there is no such thing as "zero energy" or pure nothingness in the universe. In a sense, physics needed the concept of the ether to differentiate between a vacuum and empty space. Indeed, electromagnetic fields (including light) cannot propagate in a perfect vacuum.

Along these lines, Paul Dirac, a Nobel Prize winner in 1933, suggested in a 1951 letter to the journal *Nature*, that a quantum vacuum may be the modern equivalent of the ether. He noted that "we may very well have an ether, subject to quantum mechanics and conformable to relativity theory, if we are willing to consider a perfect vacuum as an idealized state, not attainable in practice" (Dirac,

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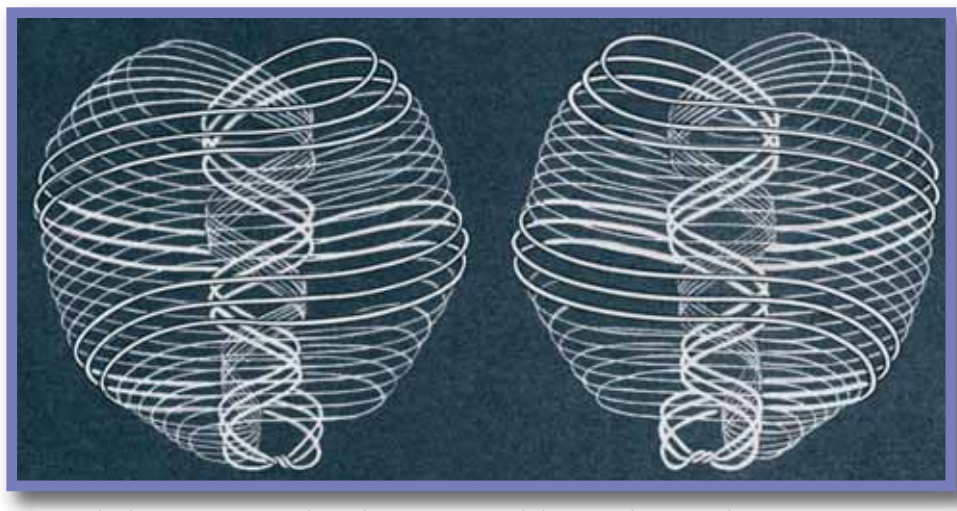
Paul. "Is there an Aether?" *Nature*. 1951, vol. 168).

Louis de Broglie took this idea one step further. He suggested that any subatomic particle, no matter how isolated, must be in continuous "energetic contact" with a hidden medium (*Annales de la Fondation Louis de Broglie*. Conservatoire national des arts et métiers, 1987, Volume 12). According to de Broglie, these particles are "constantly subjected to random perturbations arising from their interaction with a 'subquantic medium' that escapes our observation and is entirely chaotic, and which is everywhere present in what we call 'empty space' " (de Broglie, Louis. *Non-linear Wave Mechanics: A Causal Interpretation*. Elsevier Publishing Company, Amsterdam, 1960). In short, de Broglie considered ether as an energy-rich medium that "pervades all space, interpenetrates all matter, and acts as the common denominator in all particle reactions" (White, John. *Pole Shift: Scientific Predictions and Prophecies About the Ultimate Disaster*. A.R.E. Press, 1988).

Ioan-Iovitz Popescu, a Romanian physicist, posits that the ether is a form of matter that differs qualitatively from atomic and molecular substance. He further assumes that the ether "is governed by the principle of inertia, and its presence produces a modification of space-time geometry" (Popescu, Ioan-Iovitz. *Ether and Etherons: A Possible Reappraisal of the Concept of Ether*. Contemporary Literature Press, Bucharest, 1982). In attempting to describe the physical composition of the ether, he suggests that this medium consists of particles of exceptionally small mass called "etherons." For instance, he posits that there are 2.2 X 10+14 etherons comprising a single hydrogen atom (Duursma, Egbert. *Einstein's Cosmic Ether, the Atomic Ether, Their Etherons, and Our Mind*. 2013). Interestingly, his speculations are not far removed from the theosophical notion of "etheric atoms."

We can now ask some questions about this modern interpretation of the ether that may not have crossed anyone's mind only a couple of decades ago. Does the ether have something to do with the existence of dark matter and dark energy in the universe, whose natures are essentially unknown? Physicists are immensely puzzled because they cannot observe either phenomenon, yet they can indirectly measure their effects. Now that we understand that there is no such thing as a perfect vacuum in the universe, yet there are forces that are not directly perceptible with conventional means, does the concept of the ether take on new relevance?

Along these lines, Sid Deutsch, a professor of electrical engineering and bioengineering, suggests that dark matter is reminiscent of the concept of the ether. He describes dark matter as a fog that permeates all empty space and suggests that "as the cloud of dark matter expands (or contracts), the outer reaches of the cloud define space itself." (Deutsch, Sid. *Of Dark Matter, Quintessence, Aether and Ether*) He conjectures that dark matter is comprised of "ether particles" that are spherical, spinning at very fast speeds, and which carry electromagnetic waves. (Deutsch, Sid. *Aether Theory*)



Whorl vortices creating physical atoms as viewed clairvoyantly in 1895 by Annie Besant and C.W. Leadbeater (positive on the left and negative on the right).

Different Paradigms, Different Ethers

The etheric plane as described by the occultists is quite different from the conceptualizations of scientists. The latter ultimately consider the ether to be a refined state of matter rather than a state that, although tied to the physical plane, exists independently of it. The occultists suggest that etheric "substance" is so subtle that it is not visible or measurable through any conventional means.

The question is will the two sides ever intersect? Will we ever find the ether "inside" physical matter? For instance, "etherons" notwithstanding, will we get any closer to discovering the nature of the etheric field by having subatomic particles collide at progressively greater speeds? As our technology gets more sophisticated, will we ever discover a subtle energy or field that has thus far eluded physical scrutiny and defied explanation? Given the current attitudes of scientists to the concept of the ether, one can well ask: Will we necessarily recognize it if we manage to measure or record it?

At what point will the boundary between the physical and etheric dimensions be penetrated? The occultists suggest that this type of physics will require a profound shift in terms of scientific thought and, more important, in human consciousness. They suggest that consciousness is ultimately the only instrument through which these subtle planes of nature can be thoroughly investigated and understood. One needs to alter consciousness to appreciate what is beyond the ken of the physical senses, perhaps by applying clairvoyant or mystical vision.

Science applies consciousness in a different way, as a detached or dispassionate observer of applied causes and their effects. It is not that consciousness has no place in science, since it is needed for hypothesis formulation, for the construction of technology that measures and records, and, ultimately, to synthesize and interpret the results of any experimentation. What disturbs scientists the most, is that consciousness may ultimately affect all so-called objective experimental results in ways that are not controllable.

This is not occult thinking but the indications of experiments in quantum mechanics that suggest that "observations not only disturb what has been measured, they produce it" (Mermin, David N. *Is the Moon There When Nobody Looks? Reality and the Quantum Theory. In The Philosophy of Science.* Edited by Richard Boyd, Philip Gasper, and J. D. Trout. Massachusetts Institute of Technology, 1991). Is it possible that not only does a vast field of ether interpenetrate physical space, but that it also interacts with a field of consciousness that underlies all levels of reality, both subtle and material?

Einstein did not believe in the occult. Interestingly, he thought the initial predictions made by his General Theory of Relativity—that the universe would eventually collapse upon itself—were wrong, so he introduced a fudge factor, known as the 'cosmological constant.' That fudge factor turned out to be correct, the representation of a yet unseen force (dark energy) that can be observed only indirectly and that is causing the universe to expand ever more rapidly into oblivion. Is it possible that physics will stumble upon the ether by accident; and if so, what will be the impact of this discovery on human knowledge? Only time will tell. ■

Charles Shahar is a clinical psychologist by training, and a social researcher / demographer by trade. He has lived and studied Vedanta philosophy in India. He has also taught meditation and yoga for 17 years to diverse populations.