

## CONCEPTION of PHYSICAL MEANING

Robert A, Kerr, 10100 N. Alder Spring Dr., Oro Valley, AZ, 85737

The most significant problem with physical science is the substitution of empirical methods for conceivable reality. Without conception science is blind and it is impossible to surmount the obstacles encountered in its pursuit. Many of the fundamentals are reduced to equations which arrive at the correct answers and dispel the requirements to visualize why the answers are valid. Ignoring basic precepts allows unlimited speculation. Conception is the criterion for reality. It is mandatory that how and why things happen must form the foundation of science.

Electromagnetism is transmitted by wave action. To conceive what is happening wave action must be understood. A wave transmits energy without mass inertial through flow. Therefore the resistance to mass flow must be equal to mass impetus. The energy is transmitted by incremental mass particle interaction. Energy is defined as momentum times velocity and energy is transmitted from particle to particle by the transfer of momentum. Energy is conserved in the momentum transfer. The energy of the projectile particle is diminished by the momentum transferred to the target. The energy not transferred is conserved by the diverted or reflected projectile particle. This is the fundamental criterion for non-inertial energy transmission which applies to all waves.

The conceptual problem is proportional to the number, dimensions, mass and energy of the particles involved and the properties of the transmitting medium. The medium must exert equal and opposite resistance to the projectile particles to confine the inertial transmission of energy locally. This local confinement defines the wave cycle producing a local compression. The wave is a sequence of local compressions and expansions that dissipates energy in accordance with square law. A unique feature of a wave is that, although the summation of particle energy is diminished, individual particle energy exerted in the direction of transmission is essentially retained. Consequently the wave frequency may be equal to or less than the frequency of emission. Another unique feature is that, although wave energy is proportional to frequency squared, all frequencies are transmitted at the same velocity.

These unique features are confirmed as attributes of visible light by the mechanics of digital photography. Each individual pixel senses electron pressure. The electron pressure magnitude is correlated with a specific color which is defined by a specific frequency. The electron pressure results from the impulse of the photons impacting the individual pixel. The momentum transfer to the electron is proportional to the velocity of the impacting photons. Since the individual pixels sense discrete velocities simultaneously which reproduce the subject image, these different frequencies must be transmitted at the same rate. This can only be explained by a medium whose resistance is equal to the radiation impulse and limits the particulate mean free path to a constant value. This correlates precisely with Boltzmann's equation for molecular mean free path which is the same for all frequencies. There is no conceivable explanation for the mechanics on the basis of individual photon behavior. Only the confinement of a wave by an elastic media can account for a digital image. The other

unique characteristic of conservation of the energy of some particles in the direction of transmission is confirmed by the retention of color with distance. The blue shift in the image indicates the greater persistence of higher velocity reflected particles. The red shift of sunrise and sunset results from the increased media field attenuation of solar radiation with radial position. The eye is a digital camera which is programmed from infancy as first evidenced by the ability of an infant to focus.

Although a wave is treated as an entity, it is actually a very complex composite of individual frequency waves. The details of an object can be viewed from all directions. Each perceivable detail is received as either an emitted or reflected wave from that detail. Only a multi-pixel receiving surface can decode the incoming confusing radiation morass as an image. The orientation of all of the incoming waves is preserved by whatever mechanism focuses the image on the receptor. Vision requires the ultimate compound wave. It provides far greater acuity than the molecular transmission of complex sound. This acuity can only be achieved through the action of a medium consisting of a very great number of infinitesimal particles. The Calculated particle density is about 10 to the 10<sup>th</sup> time Avagadro's Number at Standard Conditions. The particles are only sensed as radiation because their size is sub-visual and the and their minute mass transfers very little energy to any significant larger mass. This accounts for the high reflectivity which produces the image wave. The complexity is unbelievable but overall conception is achieved through recognition of the individual prerequisite particle mechanics involved.

Accepted explanations of light behavior make the simplistic assumption that photons are massless particles that travel in straight lines from the emitter to the receptor. When you consider the information required to form superimposed images visible from all directions, this assumption is obviously naive. The particles that transmit light must behave in specific manners to carry the detectable property of unique color and intensity. Furthermore they must transmit this information to the electrons that deliver it. The electrons deliver the information by impulse. There is no possible way that the electron energy can be increased without the transfusion of photon impulse. This mandates photon mass. Furthermore, a unique photon impulse requires a unique photon velocity. Hence it is impossible for individual unique photons to travel the same distance per unit time except as a component of a wave. Prevailing current luminal explanations are not logically acceptable in the light of the mechanical criteria required to explain the data.

Electron pressure is essentially transmitted in a conductor at the velocity of light. However, the electron is more massive than the photon and can not move at light speed. Electron pressure must therefore be transmitted from electron to electron by photon pressure which acts as an intermediate medium producing a compound wave. Displaced photons form the magnetic field surrounding the conductor which is confined by geometric focusing of surrounding media pressure. This geometric confinement maintains the eddy current flow initiated in magnetized materials. A permanent magnet maintains an equilibrium balance between confinement pressure and eddy current circulation. The interaction of the photon and electron confirms the particulate behavior and momentum transfer which produces electromagnetic effects.

Waves require local compressibility of the transmitting medium. When transmitted

in liquids and solids which maintain their particulate distribution at given conditions there must be material displacement of their boundaries. Molecular wave transmission velocity is proportional to solidity which defines particulate spacing. Contained liquids and solids are treated as incompressible because the exertion of compressive force distorts their boundaries. Wave transmission within the spectrum of sound and ultrasound is proportional to solidity in liquids and solids. Gaseous molecular fluid particles are separated to an extent where they are compressed into smaller volume by external pressure. Hence sonic transmission velocity is reduced. Transmission velocity is inversely proportional to the mass of the gaseous fluid particles. This is the basis for Avagadro's Number. Since different molecular fluids exert the same pressure at the same temperature, their particle velocity is inversely proportional to their mass. They are in the state of equilibrium with higher energy temperature particles because impulse momentum transfer is proportional to the particulate mass ratio. Atomic and molecular size is proportional to mass and the number of impulses is proportional to size so that the molecular particle energies are equal at a given temperature.

The velocity of a sound wave in a gaseous fluid is proportional to the square root of absolute temperature. Absolute temperature is the reciprocal of the coefficient of volumetric gaseous expansion which defines solidity. When molecular fluid is confined, the pressure it exerts is proportional to temperature. Therefore temperature must accelerate the gaseous molecules to increase their molecular impulse. The only conceivable way that the molecules can be accelerated is by the impulse of smaller indiscernible high velocity particles. These particles must have minute mass to transfer momentum and very high velocity to exert significant impulse. Although the particles are not directly discernible their effect is measured by the expansion they produce in atomic and molecular objects. There is no other legitimate conceivable explanation for the data.

Available energy is proportional to temperature. The inertial interaction of all discernible masses increases temperature. Therefore all masses must be permeated with the particles which produce temperature. All of the heat transfer and radiation equations are consistent with the property of pressure in the inertial equations derived for atomic and molecular particles. The equation for radiated energy is the definite triple integral of the equation for gaseous diffusion times temperature when the change in concentration is replaced by the change in temperature. There is no doubt that the equation was derived based on the assumption that temperature behaved like a gaseous fluid. The dynamic attributes of quantum mechanics are also based on the precepts of Ideal Gas Law which in turn are based on the behavior of infinitesimal particles.

Accepting the validity of the preceding inductive reasoning is the only conceivable explanation available which enables rational conception of the mechanics involved in electromagnetic energy transmission. All other explanations rest on assumptions for which a cause can not be visualized. The inductive argument meets the requirement of reality in that it is consistent with all the data and only conflicts with inconceivable but accepted theory. How can scientists be suspicious of ESP and Teleportation when they accept magical action at a distance forces? As Newton stated: "...the argument of induction may not be evaded by hypotheses...." Newton was never comfortable with the empirical equation for gravitation he derived. At that time there was insufficient available data to recognize

that the equation dimensions were the dimensions of the mutual radiation shielding of two bodies.

Magic may or may not exist but it can have no valid position in science. Science must be based on reality which can only be based on conception. Knowledge requires understanding which can only be gained by conception. The unknown must remain in the realm of religion and fantasy.

Accepting the inductive argument provides a viable concept of a steady state universe in a state of equilibrium. The diffusion of entropy is balanced by the regenerative concentration of mass resulting from the geometric focusing of temperature impetus. The logarithmic fields surrounding immersed mass concentrations define the mechanics. The limits of mass concentration are enforced by the bounding media pressure which is temperature. The distribution of universal mass and the sphericity of universal entities offer compelling evidence in support of regenerative concentration dynamics. The application of the inductive logic to the visually indiscernible microcosm is confirmed by the agreement of the concept with the data.