Light & the Essence of God; Electromagnetic Spectrum; 1st Century Knowledge of Light; Light Has No Color; Eyes & Visual Cortex Convert Frequencies into Color

9. These illustrations may be analyzed in two ways:

A) Light as an analogy to the essence of God:

1) The human eye is able to perceive only a small percentage of the electromagnetic spectrum which is defined by:

***Encyclopaedia Britannica: Macropaedia*. 15th ed. (Chicago: Encyclopaedia Britannica, 1979), 6:644-45:**

Electromagnetic Radiation is the propagation of energy through space by means of electric and magnetic fields that vary in time. (In a vacuum) the velocity is a universal constant, *c*, the velocity of light [186,282.4 mps]. The orderly arrangement of radiation according to wavelength or frequency is called the electromagnetic spectrum. The most familiar frequency range is light, that narrow band of electromagnetic radiation to which the eye is sensitive, extending from violet on the high-frequency side, to red on the low-frequency side, the neighboring regions of which are consequently called ultraviolet and infrared.

2) The Visible Spectrum is defined for us by:

www.Wikipedia.com

The visible spectrum is the portion of the electromagnetic spectrum that can be detected by the human eye. Electromagnetic radiation in this range of wavelengths is called visible light or simply light. There are no exact bounds to the visible spectrum; a typical human eye will respond to wavelengths from 400 to 700 nanometers [one nanometer is one billionth of a meter], although some people may be able to perceive wavelengths from 380 to 780 nanometers. A light-adapted eye typically has its maximum sensitivity at around 555 nanometers, in the green region of the optical spectrum. [http://en.wikipedia.org/wiki/Light]

Using multi-spectral imaging it is possible to read illegible papyruses, such as the burned papyruses of the Villa of the Papyri or of Oxyrhynchus \äk-si-ring'-kas\ [Egyptian village; site of the archaeological discovery of ancient manuscirpts of the New Testament and Greek classical literature]. The technique involves taking pictures of the illegible papyruses using different filters in the infrared or ultraviolet range, finely tuned to capture certain wavelengths of light. Thus, the optimum spectral portion can be found for distinguishing ink from paper on the papyrus surface. [http://en.wikipedia.org/wiki/Ultraviolet]

3) One may wonder if such detail was known at the time John wrote his epistle in circa A.D. 90. The answer is that the Holy Spirit clearly understood it and inspired John to include it as an example.

4) However, ancient writers had already made great progress in understanding the mystery of light long before the first century.

***Encyclopaedia Britannica: Macropaedia*. 15th ed. (Chicago: Encyclopaedia Britannica, 1979), 10:928-29:**

Light. Historical Survey. The formulation of general empirical laws and of speculation about the theory of light derives mainly from Mediterranean sources. Pythagoras \pa-thag'-a-ras\, Greek philosopher and mathematician (6th century BC), suggested that light consists of rays that, acting like feelers, travel in straight lines from the eye to the object and that the sensation of sight is obtained when these rays touch the object. (p. 928)

It is only necessary to reverse the direction of these rays to obtain the basic scheme of modern geometrical optics. The Greek mathematician Euclid \yü'-klad\ (300 BC), who accepted the Pythagorean idea, knew that the angle of reflected light rays from a mirror equals the angle of incident light rays from the object to the mirror. The idea that light is emitted by a source and reflected by an object and then enters the eye to produce the sensation of sight was known to Epicurus \ep-i-kur'-as\, another Greek philosopher of Samos \sä'-mös\ (300 BC). The Pythagorean hypothesis was abandoned and the concept of rays going from the object to the eye was finally accepted about AD 1000 under the influence of an Arabian mathematician and physicist named Alhazan \al-ha'-zen\. [Abu 'Ali al-Hassan ibn al-Haytham \a-bü-ä-lē'-al-ha-san-ib-an-al-hī-tham\] (pp. 928-29)

Angles of incidence and of refraction—i.e., the change in direction of a light ray going from one transparent medium to another—were measured by an astronomer, Ptolemy \täl'-a-mē\, in the 1st century in Alexandria.

The idea… that (light) travels in a straight line was applied to drawing and painting long ago. Euclid was familiar with the basic idea, but the main theory was developed by Leonardo da Vinci \lā-ō-när'-dō-dä-vēn-chē\. (p. 929)

5) Although the details of the physics of light and color were rudimentary in the first century the basic concepts were understood. Further, the written canon, now complete, is eternal and science has, once again, caught up with divine revelation.
6) Here are some of the things we now understand about light. First of all every ray of light is pure white and comes to us from the sun.
7) Rays of sun light contain all the colors of the rainbow plus all the tents and hues that reside between the seven basic colors.
8) Color is perceived by the visual cortex of the brain. Light actually possesses no color at all but is instead made up of frequencies.
9) These frequencies are interpreted by the eye of the observer. Details are provided by:

Thompson, Richard F. *The Brain: A Neuroscience Primer*. 2d ed. (New York: W. H. Freeman and Co., 1993), 246:

Color does not exist in the world; it exists only in the eye of the beholder. Objects reflect many different wavelengths of light, but the light waves themselves have no color. The eye converts different ranges of wavelengths into colors in a very simple way. In the human eye there are three types of color receptors, which have one of three different light-sensitive pigments: red, green, and blue. The (receptors) connect to different neurons and send color information to the brain.

A given color-sensitive ganglion cell sending its axon from the eye to the brain will respond to, say, red light entering the eye but will be inhibited by green. Another will respond to green but be inhibited by red. Still another class of color neurons will respond to yellow and be inhibited by blue, and a fourth group will respond to blue and be inhibited by yellow. Hence, detailed information about the colors of objects is projected to the visual cortex.

10) Thus light is pure white because it is made up of a cluster of frequencies that together define a ray of light emitted by the sun.
11) Thus, light becomes an illustration of the Person of God but the frequencies that make up light illustrate the characteristics of divine essence.

