

I Praise You for I Am Fearfully and Wonderfully Made-Psalm 139:14

As an eye doctor, I have wanted to write on this topic for many years. Our purpose here is to view God's genius in designing the human eye.

From the top of your head to the bottom of your feet, all cells are supplied with life-giving oxygen that is delivered by the heart, lungs, and blood vessel system. That is, all cells except for the ones that comprise one particular tissue.....the cornea (the clear portion through which light passes in the front of the eye). If there were blood vessels and blood cells racing through the corneal tissue, we would not be able to see. Compared to light wavelengths, the relatively giant red blood cells would interfere with the transmission of light to the retina in the back of the eye. The cornea, therefore, is the only tissue in the body that, due to its function, cannot have life-giving oxygen delivered to it by the bloodstream. Amazingly, the cornea is also the only tissue in the body that does not get its oxygen from the blood system. Coincidence? No, it was an ingenious move. The Creator enabled the cornea to get its oxygen supply directly from the air. The cornea has its own private breathing ability. Are we fearfully and wonderfully made, or what? But there is much more.

The retina contains photoreceptors that can be compared to transistors, though a photoreceptor is much more complex. In the foveal area (the very center) of the retina, there are 200,000 of these photoreceptors FOR EVERY ONE SQUARE MILLIMETER OF RETINAL AREA. Phenomenal! The high technology of the computer chip (100,000 transistors in a 7 millimeter area) does not even come close to the retina in complexity. One type of photoreceptor, called the rod, has a dynamic range of about 10 billion to one. Modern photographic film has a dynamic range of only about one thousand to one. This means that when you are out on a dark night with only starlight in the sky, the rod can pick up a single photon of light and see it. Further, the retina is designed to pull off an amazing "processing" trick. It wants at least six rod receptors in the same area to pick up the same photon light signal before it "believes" that it has really seen light and sends it to the brain. This happens so that the person does not see static at night. Yet, these rods, so extremely sensitive to light, bleach out in the bright daylight so that they don't work as efficiently. In essence, the rod "volume control" is turned way down so that the sunlight does not fire off the rods and cause them to blind the eye with light awareness. Again, the brilliance of pulling off that design is beyond comprehension.

It has been estimated by a number of computer scientists who are trying to simulate the human retinal system with computer models, that ten billion retinal calculations occur every second before the image even heads back to the brain. Ten Billion! John Stevens, a Ph.D. in physiology and biomedical engineering says,

"To simulate 10 milliseconds of the complete processing of even a SINGLE nerve cell from the retina would require the solution of about 500 simultaneous non-linear differential equations done 100 times. It would require several minutes of processing time on our fastest supercomputers. If we keep in mind that there are over 10 million such nerve cells interacting with each other in the retina, we realize that it would take a minimum of a hundred years of high speed computer processing time to simulate what takes place in your eye MANY TIMES every second."

The retina uses nerve cells to transfer its information around that are a million times slower than the little wires inside a computer chip. So, the eye starts out with "hardware" that is a million times slower than anything we have in a silicon computer chip, but it's put together in such a highly organized, incredibly advanced, and sophisticated way that even the retina of lowly animals marvelously outperforms our most advanced computers. Further, these retinal systems keep repairing themselves constantly. Wouldn't it be nice if the Pentium computer chip repaired itself when it went bad!? Now that would be a sophisticated design accomplishment.

John Stevens, the Ph.D. quoted above, dreams about someday building a silicon chip that actually does some of what the retina does. Though it is not yet possible to build, he conjectures that the computer chip needed to perform these functions will need to weigh about 100 pounds in order to accomplish what the retina does. This "dream chip" would also have to occupy 10,000 cubic inches of space. In comparison, the retina is

almost weightless and occupies only .0003 (that's three ten-thousandths) cubic inches of space. The "dream chip" would need about 1 million gates in it (transistors that act like one way valves), whereas the actual retina has twenty five billion gates in it. The circuit layout of this "dream chip" would be two dimensional whereas the retina is three dimensional. Remember that this retinal engineering feat was designed several thousand years ago by the Living God.

When I first began to study the physical layout of the retina, I remember being shocked at the fact that the photoreceptors themselves are buried underneath layers of nerve cells. That fact causes the light to have to pass through layers of nerve "hardware" before it can get down to the photoreceptors. This seemed to be an unusual phenomenon to me. Why not put the photoreceptors (the rods and cones) on the top so that they could catch the light immediately rather than bury them under nerve layers? I later found out that this "backwards" design turned out to be indispensable. There is an enormous metabolic activity going on in those photoreceptors. If the photoreceptors were sitting out on top of the nerve layer, they would have much less access to the nutrient supply which is vital in keeping them fully operational. Without immediate access to the nutrients, one blast of sunlight would render the photoreceptors inactive for long periods of time while they "recharged." Therefore, it makes a lot more sense to have the photoreceptors in contact with the choroid, the bottom most layer with its very rich blood supply that cases the inside of the eye ball and nourishes the retina. In other words, inside out is best!

We could go on and on with the eye's incredible design characteristics. But let us relate our discussion of the eye to evolution. A halfway functioning eye is worthless. It can't see! If the eye's pupil did not "evolve" exactly at the same moment and exactly at the right distance from the photoreceptors, the eye wouldn't see. If the retinal nerves did not "evolve" exactly at the same moment as the pupil did, the eye wouldn't see. If the optic nerve (which carries the light "images" to the brain) did not "evolve" exactly at the same moment as the retinal nerves, the eye wouldn't see. If area 17 of the occipital lobe in the brain (the part of the brain that "sees") did not "evolve" exactly at the same moment as the optic nerve, the eye wouldn't see. Hence, unless the entire eye with all of its advanced intricacies simultaneously came into existence at exactly the same moment, the eye will not work. It will not see.

Therefore, in regards to the eye, what happens to the evolutionary argument that mutational features which improve a creature's chance for survival get passed on to succeeding generations? A partly developed eye is no improvement whatsoever to the creature that possesses it. Since it would not see, it would be worthless. If worthless, there is no reason for a partly developed eye to get passed on in its halfway development while it awaits further mutational improvements. How would evolution know that the partly developed eye would eventually be an improvement to its owner? It wouldn't. The eye cannot therefore be a product of evolution. Instead, it screams out that there is a master Designer, an ingenious Creator. The eye testifies to the Glory of God.

In conclusion, what would we think of a person who saw a computer chip lying on a table. There it is, a little wafer of silicon that had the complexity of 100,000 transistors in a thin 7 millimeter square shape with prongs sticking out of it in just the right places such that it can be plugged into its proper location and instantly work. And here is this person saying, "Wow, look what a series of accidents of fire, water, gravity, sparks, chemicals, and wind created. Isn't it marvelous?" We would think that person a bit....confused? Yet, that is precisely what evolutionists think about the human eye, a far more complex system than our most advanced computer chips. As the scripture says, "The fool has said in his heart, there is no God."