DESIGN IN THE HUMAN BODY

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Explanations of two examples of a pulley system, an example of a wheel and axle system, an example of lubricating discs in the joints, and an example of bone design in the human body are presented. These examples of complex design in the human body are further evidence of a divine creation and militate against belief in the philosophy of chance combination of molecules-to-man evolution.

Introduction

Many years ago the beneficial use of a pulley system was discovered by man by trial and error experience. It was later proven that a pulley system furnishes a means of changing the direction of a force by altering the angle of pull around a pulley wheel. It sometimes increases the magnitude of angular velocity of joint movement.

The common example of using a pulley to lift an automobile engine out of the hood area is well-known. Without a hoist acting as a pulley system this would be a difficult task. Engineers have "designed" many types of pulleys for use in gaining a mechanical advantage in other critical situations.

In the human body there are two significant structures that have been "designed" to act as a pulley system. They are at the knee and ankle joints.

The Knee Joint: A Pulley System

The knee joint, with the following structures, functions as a pulley system in the movement of extension:

A. The *quadriceps femoris* muscle group. Four muscles comprise this group: *rectus femoris, vastus medialis, vastus lateralis,* and *vastus intermedius.* Contraction of fibers of these muscles produces a force in the form of a pull on the *patella* and *tibia* bones (Figure 1).

B. The *quadriceps* tendon. This is a tough, inelastic cord that connects the *quadriceps* muscle group to the *patella* (kneecap), a hemispheric bone imbedded in the anterior portion of the knee joint (Figure 1).

C. The *patella* bone. This rounded triangular bone, which floats over the knee joint, acts as the pulley wheel of the pulley system (Figure 1).

D. The *patellar* ligament. Fibers of the *quadriceps* tendon blend into and pass over the *patella* bone to form this ligamentous band, which attaches to the *tibial tuberosity* on the anterior surface of the *tibia* bone (Figure 1).

E. The *tibial tuberosity.* This is a bump on superior, anterior surface of the *tibia* bone of the lower leg. It is at this point that the force from the muscular contraction is applied to the bony lever, the *tibia* (Figure 1).

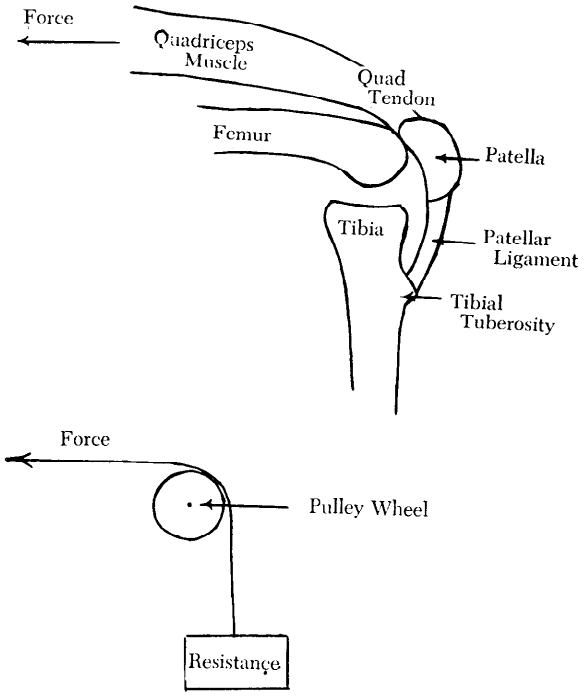

Figure 1. The knee joint, shown above, acts as a pulley system, shown below, as explained in the text.

The *quadriceps femoris* muscle group, the *quadriceps* tendon, and the *patellar* ligament act as the cable that is pulled, while the *patella* bone acts as the pulley wheel of the system (Figure 1).

The advantage of this mechanism is that by changing the direction of the application of force, a pulley-type muscle may provide a greater angle of insertion than would otherwise be possible. By passing over the *patella* bone, the *patellar* ligament inserts at a greater tension angle, i.e., the angle formed between the tension vector (F_T) and the axis of the bone.

The resulting pulley-like action increases the mechanical advantage of the system by lengthening the true effort arm, i.e., the perpendicular distance from the action line of the applied force to the joint center or fulcrum of the lever system. In this situation a change of direction of force achieves an increased effective torque in extending the knee.

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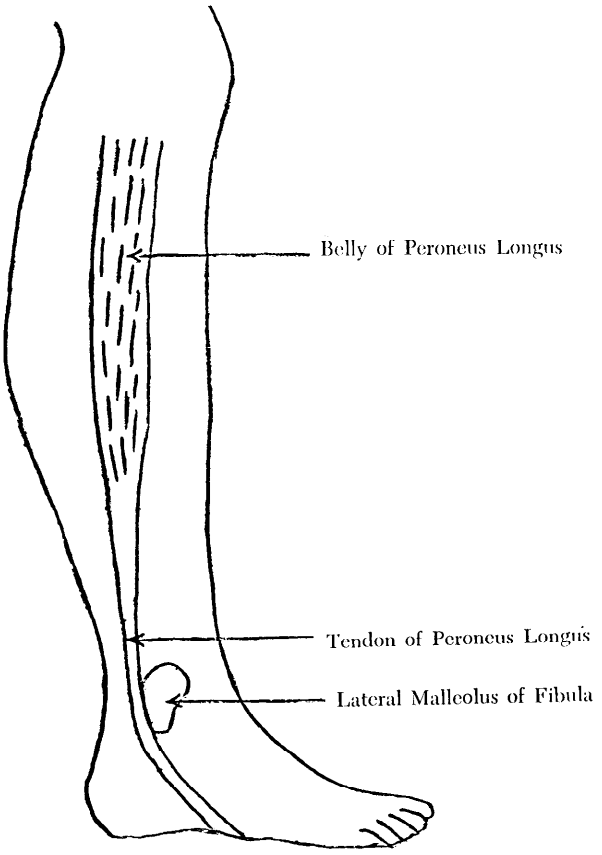

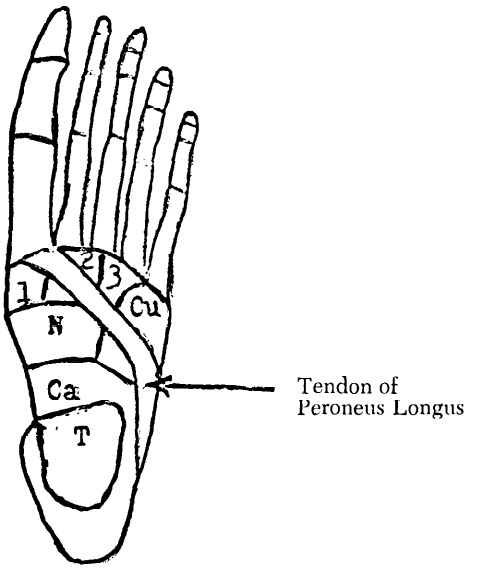

1 = 1st Cuneiform
2 = 2nd Cuneiform
3 = 3rd Cuneiform
Cu = Cuboid
N = Navicular
T = Talus
Ca = Calcaneus

Figure 2. The *peroneus longus*, shown at the left, acts as a pulley system in moving the parts of the ankle and foot, shown at the right.

The Ankle Joint: A Pulley System

The talocrural (ankle) joint, with the following structures, functions as a double pulley in the movement of plantar flexion and eversion:

A. The *peroneus longus* muscle and tendon. This muscle originates on the *lateral condyle* of the *tibia* and the upper two-thirds of the lateral aspects of the *fibula,* the thin bone on the lateral side of the calf. It is inserted on the lateral side of the first cuneiform bone and the lateral side of the proximal end of the first metatarsal which are situated on the inner foot. Contraction of this muscle provides the pulling force for plantar flexion and eversion of the ankle joint (Figure 2).

B. The *lateral malleolus* of the *fibula.* This is a rounded process on the lower, *lateral fibula.* It acts as the first pulley wheel of the system (Figure 2).

C. The *cuboid* bone. This is one of the tarsal bones of the lateral foot. It acts as the second pulley wheel of the system (Figure 2).

D. The first *cuneiform* and first *metatarsal* bones. It is on the inferior surfaces of these two bones at the base of the big toe that the pulling force is applied (Figure 2).

The tendon of the *peroneus longus* proceeds down the lateral calf behind the *lateral malleolus* of the *fibula,* curves forward around its inferior end at an angle of about 60 degrees, passes forward along the outside of the foot to the groove in the cuboid bone, where it makes another turn of about 100 degrees and proceeds diagonally forward and across the bottom of the foot to the point of insertion at the base of the big toe (Figure 2).

Here is an example of a double pulley system where there are two changes of direction of the angle of pull. Contraction of the *peroneus longus* muscle plantar flexes the foot (i.e., extends the foot as in pointing the toes) and everts the foot (i.e., moves the lateral border of the foot away from the midline of the body in a frontal plane). Without the pulleys this muscle would insert in front of the ankle and on top of the foot, and action would be limited to only dorsiflexion of the ankle joint (i.e., moving the instep toward the *tibia* bone in a sagittal plane).

Did these two examples of pulley systems develop by chance due to purposeless applications of force over a speculated long period of time? Or were they devised and made operational by some supra-human Engineer to afford great versatility of movement in the highest member of the animal kingdom?

Is it not logical to believe, since intelligent human engineers devised the many pulley systems that are so useful in inanimate mechanical systems, that some Intelligent Divine Designer devised the magnificent pulley systems, which operate so efficiently in bone and joint systems of man?

Example of Wheel and Axle System

Also, in the human body, there is an example of bones functioning as a wheel and axle system. The following structures make up such a wheel and axle system:

A. The shoulder girdle. This oblong ring of bones consists of: 1. the two *scapulae* (shoulder blades), 2. the two *clavicles* (collar bones), and 3. the *manubrium* of the *sternum* (breastbone).

B. The rib cage. This is made up of 12 pairs of ribs which are attached to the *sternum* in front and the vertebral column in back.

C. The vertebral column. This is a row of 26 bones and 24 intervertebral discs by which the *skull* is attached to the pelvic girdle.

D. The pelvic girdle. This consists of the two hip bones. These bones and the *sacrum* and *coccyx* bones of the vertebral column make up the bony pelvis.

E. The muscles that attach to the shoulder girdle, rib cage, vertebral column and pelvic girdle.

The shoulder girdle, along with the adjunct rib cage, acts as one wheel. The vertebral column acts as the axle. The pelvic girdle acts as the other wheel.

In trunk twisting exercises, the oblique abdominal muscles pull on the trunk as though it were the rim of a wheel, and the trunk is rotated in the direction of the pull. This empowers dancers, athletes and workers to perform various twists and pivots. The wheel and axle system in the human body is even more versatile than the wheel and axle in automobiles, because the wheels in the human body can turn in opposite directions at the same time.

Are not these examples of mechanical advantage in the human body indications of supernatural design rather than the chance happenings imagined by proponents of mega-evolutionary belief?

Lubricating Discs in Joints

The reader might remember a television commercial for the Shell Oil Company in which the representative explained how engineers have dedeveloped discs of lubrication that are placed between the body and chassis of giant railroad freight cars. Such discs act as lubricating cushions between the joint structures of the railroad freight cars.

Has not the Divine Designer devised this same principle of lubrication in certain joints of the human body? Tiny sacs containing lubricating fluid are situated in certain joints to perform the same function of the lubricating discs developed by the Shell Oil Company engineers. These sacs are called *bursae*, and if anyone has ever had bursitis, they know how important they are in maintaining normal functioning of their joints.

Is it not logical to conclude, since some brilliant human engineers devised these lubricating discs that reduce friction in giant railroad freight cars, that some Supreme Being Engineer devised and made operational the lubricating *bursae* that reduce friction in the joints of man?

If the lubricating sacs in man came about by random factors over a postulated long period of time, why did not the Shell Oil Company just wait around for the same thing to happen for lubrication of the chassis of railroad freight cars instead of hiring an analytical and creative human engineer to design the system?

Shell Oil Company could have saved a lot of money if this were possible. Of course, it is impossible, and this is why the creation model is best for explaining both the complex functional apparatus in both the joints of railroad freight cars and the joints of the human body.

Example of Bone Design

When an engineer designs a structure to withstand disrupting and crushing forces, he devises the structure to include stays which can withstand tensile forces and struts which can withstand compression forces. Also, human bone is so constructed that it can withstand both tensile forces and compression forces.

The tensile strength of bones is maintained by the structure of the bone, which was secreted by the *osteoblast* cells. The *periosteum*, including the outer fibrous layer and inner osteogenic layer, provides resistance to compression forces. Hence, bone shows considerable structural advantages over many constructional materials, such as cast or wrought iron and wood, which are strong in withstanding tensile forces but weak in withstanding compression forces. Yet bone is three times lighter and much more pliable than cast iron.

The tensile strength of bone has been demonstrated by experimental studies on rats[1] to be "35,000 lb/in^2 in average fracture stress to bending as compared to 40,000 lb/in^2 for cast iron." Also, it is claimed[2] that bone material is "three times as strong as timber and half as strong as mild steel."

Conclusion

In light of these facts, a person must ask these questions:

If a civil engineer designed the superior structures of steel beams and the like, did not some

Superhuman Engineer design the superior material and structure of our human bone system????

Is not ascribing these highly complex designs of pulley systems, wheel and axle, lubricating discs and bone structure in the human body to time, chance and environment an exercise in far-fetched reasoning?

Since analogous inventions in engineering have been developed by human minds with certain inventive powers, is it not more plausible to explain these precise working mechanical systems in the human body by the creative acts of an Intelligent Planner?

The great design in the human body is further evidence of a divine creation during some short unprecedented period of time and militates against belief in the philosophy of chance combination of molecules-to-man evolutionary development during some speculated long period of time.

References

[1]Bell, C. H., D. P. Cuthbertson, and J. Orr. 1941. Strength and size of bone in relation to calcium intake, *Journal of Physiology* (London), 100:298-317.
[2]Clark, W. E. LeCross. 1971. The tissues of the body. Oxford, Clarendon Press, p. 102.

THE MAGNIFICENCE OF KINDS AS DEMONSTRATED BY CANIDS

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The author speculates about the degree of excellence with which the Creator first endowed the newly created kinds (MIN), and suggests that one manifestation of this past glory was the genetic variability with which each "kind" was endowed. The canids are used as an example to demonstrate this potential for variability.

The article proceeds to list the major categories of canids: 118 different breeds of domestic dogs and many types of mongrels, Pariah Dogs, Dingos, and seven true wild dogs; four different species of Jackals; five different species of wolves, among which the Gray Wolves and Coyotes are known to occur in a large variety of races; and at least 13 different species of Foxes. All four major categories of canids have been known to crossbreed.

While evolutionists consider these many varieties as results of evolutionary processes at work, the author argues that these varieties "devolved" from superior created canids, but within the boundaries of the MIN. He also suggests that creationists begin to use the term "baramin" when referring to "kind."

And God saw everything that he had made, and, behold, it was very good.
—Genesis 1:31

One can only speculate as to the degree of excellence with which the universe was started, and how this excellence was embodied in plants and animals first placed upon the earth. There remain, today, many manifestations of this past glory. One of these must surely be the fantastic variety of plants and animals found on earth.

There is strong evidence that the Creator in the beginning of time endowed each kind (MIN) with attributes superior to those found in the individual species existing today.[1] One very important attribute was the genetic variability these kinds possessed. This is demonstrated to a marked degree by the carnivores in the Family Canidae.

Members of this Family are distributed worldwide and seem to be absent, according to Walker,[2] only from New Zealand, New Guinea, Melanesia, Polynesia, the Moluccas, Celebes, Formosa, Madagascar, the West Indies, and several other oceanic islands. Walker[3] lists the following 14 genera:

(1) *Canis* (Domestic Dogs, Wolves, Dingos, Coyotes, Golden Jackals, Black-backed Jackals, and Side-striped Jackals);
(2) *Alopex* (Arctic or Polar Foxes);
(3) *Vulpes* (Red Foxes and Kit Foxes);
(4) *Fennecus* (Fennecs);
(5) *Urocyon* (Gray Foxes);
(6) *Nyctereutes* (Raccoon Dogs);
(7) *Dusicyon* (South American Foxes);
(8) *Atelocynos* (Small-eared Dogs);
(9) *Cerdocyon* (Crab-eating Foxes);
(10) *Chrysocyon* (Maned Wolves);
(11) *Speothos* (Bush Dogs);
(12) *Cuon* (Indian Dholes);
(13) *Lycaon* (African Hunting Dogs);
(14) *Otocyon* (Big-eared Foxes).

Again one can only speculate how many of present day known canids are derived or were embodied in one God-created "kind" (or "baramin," as proposed by Marsh[4]). Jones presented[5, 6]

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