

DISCUSSION 3

FROM COMPLEX TO MORE COMPLEX

Ariel A. Roth

sciencesandscriptures.com

OUTLINE

- 1. The conflict**
- 2. Interdependent parts**
- 3. Natural selection**
- 4. Some problems of natural selection**
- 5. Complex systems abound**
- 6. The long search for an evolutionary mechanism**
- 7. Cladistics**
- 8. Predation**
- 9. Parasites and disease**
- 10. Conclusions**
- 11. Review questions**

1. THE CONFLICT

1. THE CONFLICT

In the book of Job in the Bible, God informs Job that He is the Creator. One of his comments in verse 15 of chapter 40, reflects on His creatorship of advanced organisms: “Behold now behemoth, which I made with thee.” Behemoth is probably referring to a hippopotamus, a dinosaur, or some other large organism.

On the other hand, and in sharp contrast, biologist Scott Todd (Nature 401:423, 1999) indicates that God is not allowed in scientific interpretations: “Even if all data point to an intelligent designer, such an hypothesis is excluded from science because it is not naturalistic.”

Our discussion will focus on whether science has been able to provide adequate naturalistic (no God involved, i.e. evolutionary or materialistic) answers for the origin of the complex features of advanced organisms. Our tiny microbes are very complex, here we look at more complex organisms.

2. INTERDEPENDENT PARTS

2. INTERDEPENDENT PARTS

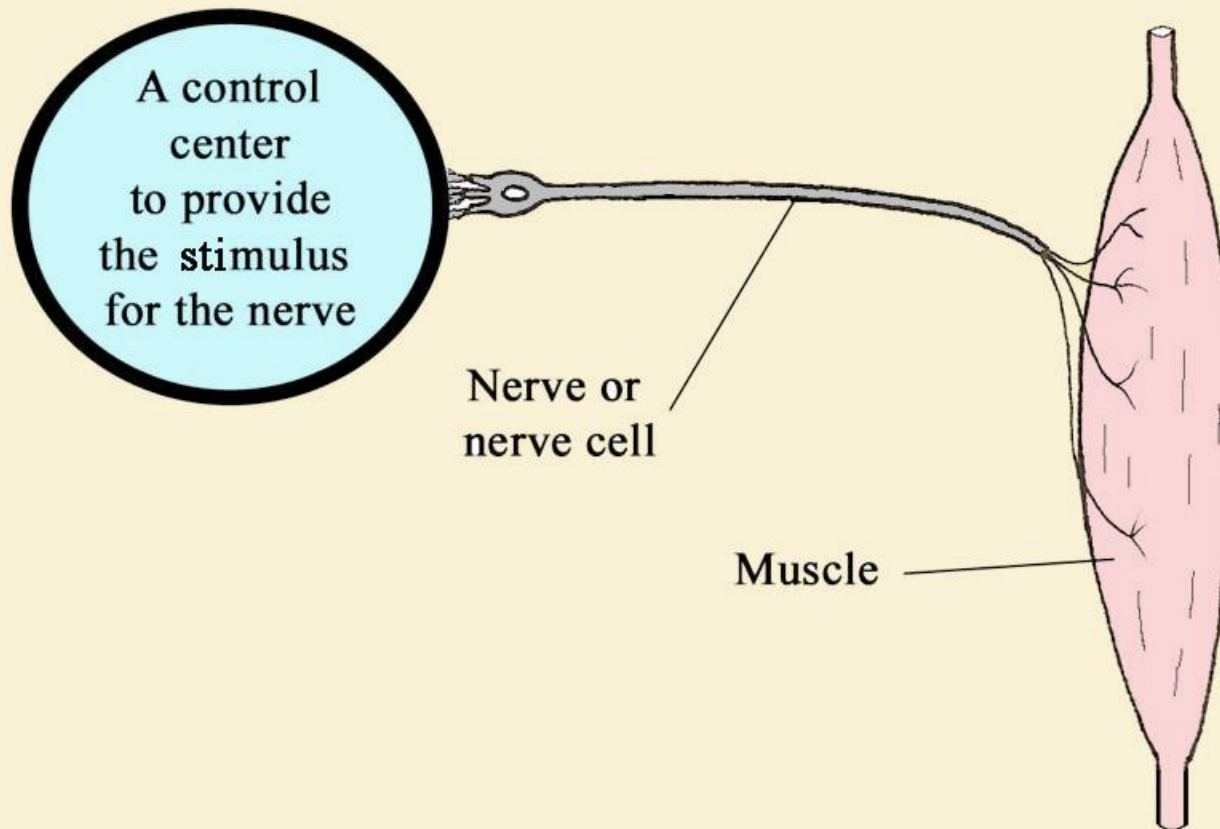
My friend had a tragic accident. He fell asleep while driving at night, and his car rolled into a stream. While he did not die, the accident severed the lower part of his spinal cord and he was confined to a wheel chair for the rest of his life. His legs that could no longer receive any nerve impulses from his brain were useless cumbersome impediments. The tendency for them to degenerate was so great that after five years he had his legs cut off.

Most parts of our body, like the legs of my friend, are dependent on other parts in order to function properly. We call the parts of these associations *interdependent* parts. These are parts that are dependent on each other in order to have a useful function. Unless *all* of the necessary interdependent parts are present, you do not have a system that works. Nothing works until all the necessary parts are present. Most biological systems consist of a multitude of interdependent parts. Interdependence is also referred to as *irreducible complexity*.

2. INTERDEPENDENT PARTS

The muscles in my friend's legs needed the impulses from the nerves in order to function. The muscles were useless without the nerves that had been severed. Of course, the nerves themselves would be useless without some kind of control mechanism in the brain or spinal cord to initiate an impulse to the nerves. All three of these parts, the control system, the nerve, and the muscle are necessary to provide a system that is useful. These three essential and interdependent parts are illustrated in the next slide.

MINIMUM REQUIREMENTS FOR A NEW MUSCLE



2. INTERDEPENDENT PARTS

The significance of this example of interdependent parts is that in an evolutionary model, you need all the essential parts of a system, in order to have something that works and that would provide evolutionary survival value. Useless parts that do not work are an encumbrance and should be eliminated by the natural selection (survival of the fittest) process because organisms without these encumbrances would be superior.

Blind cave fish, that live in total darkness and lose their eyes, illustrate how useless parts, that are an encumbrance, tend to be eliminated by degeneration. Their eyes are replaced by just a pocket of fatty tissue.

2. INTERDEPENDENT PARTS

A burglar alarm system also illustrates interdependent parts. In such a system you need (1) a sensor to detect an intruder; (2) wires to communicate to a control system; (3) a control system; (4) a source of power; (5) wires to communicate to an alarm system; (5) an alarm system, usually a siren. All these interdependent parts are essential; and like the muscle system, all the essential parts have to be there in order for the system to work.

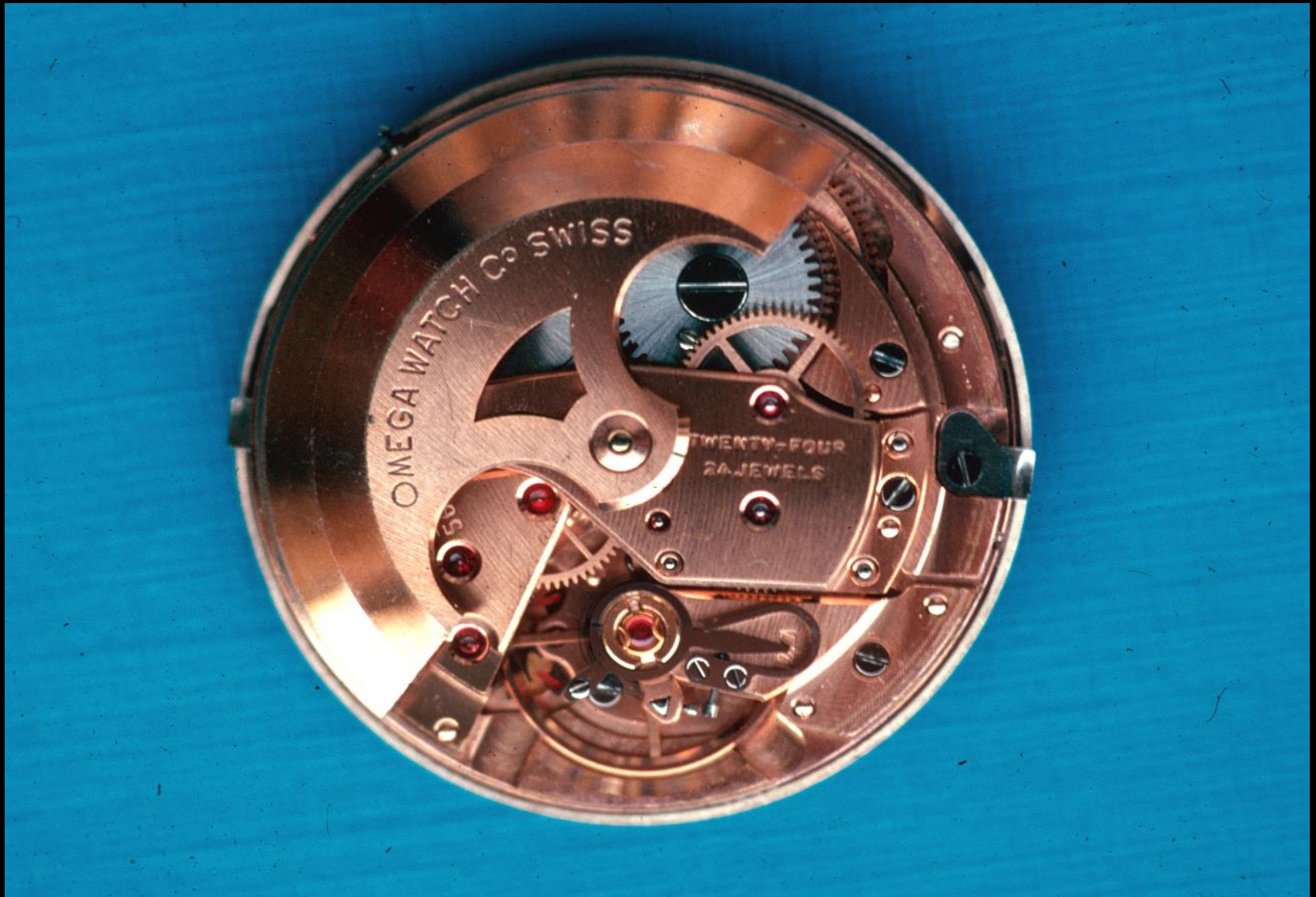
We will be using the term *complexity* to describe systems with interdependent parts. It is helpful to distinguish between the terms *complex* and *complicated*. Something that is complicated is not necessarily complex because the parts of something that is complicated may not be associated with other parts and the parts may not be interdependent.

2. INTERDEPENDENT PARTS

Something that is complicated can be complex if the parts are interdependent.

As an illustration, a pile of sand is complicated, especially as you consider the various shapes of all the grains, but the grains are not dependent on each other, so the sand pile is not complex. On the other hand the various parts of a computer or of a watch, such as the chips, springs and the gears that mesh with each other represent complexity. These parts are dependent on other parts in order to work properly.

Some interdependent gears of a watch are illustrated in the next slide.



GEARS IN A WATCH. The gears are dependent on other gears in order to be able to work. They represent interdependent parts.

2. INTERDEPENDENT PARTS

The watch has turned out to be a prime example in the discussion between creation and evolution. It was made famous two centuries ago by the English philosopher and ethicist **William Paley** who raised a number of challenging questions for those who did not believe in a creator God. Paley pointed out that if you were out for a walk and found a stone, you might not be able to explain its origin; on the other hand if you found a watch on the ground (illustrated on the next frame), you would immediately conclude that the watch had a maker. Someone who understood watches had to have put it together.



The philosopher William Paley pointed out that when you find a watch, you immediately conclude that it has a maker. Photo courtesy of Clyde Webster.

2. INTERDEPENDENT PARTS

Paley then goes on to point out that since it would **require some kind of designer to put a telescope together, the eye must also have a designer.** Furthermore he points out that small gradual evolutionary changes will not work for the evolution of some parts, like the vital **epiglottis** that keeps food and drink out of our lungs when we swallow. If the epiglottis evolved gradually, it would have been useless most of that time, since an epiglottis that is too small would not close the passage to the lungs.

2. INTERDEPENDENT PARTS

As expected, Paley's argument has been much criticized by evolutionists. Recently, Oxford University professor **Richard Dawkins** wrote a book titled *The Blind Watchmaker*. It claims that Paley is very wrong and that the “**only watchmaker in nature is the blind forces of physics.**” However, this is not a good example to use, because it turns out that the “**blind forces of physics**” are **extremely precise** and they themselves present an **additional** strong argument for a perceptive designer! More about that will be considered in Discussion 6 titled **THE FINE-TUNED UNIVERSE.**

2. INTERDEPENDENT PARTS

Paley's arguments have persisted for two centuries. The **recent complexities we have discovered in DNA and biochemistry** make his kind of question all the more significant. The complexity of advanced organisms adds further interest to the question of who put this all together.

Evolutionists suggest that Darwin's idea of **natural selection** provides the answer to Paley. We will now take a closer look at that process, and the problem that natural selection itself poses for the gradual development of complex features with interdependent parts.

3. NATURAL SELECTION

3. NATURAL SELECTION

In 1859 Charles Darwin published his famous book *Origin of Species*. In that book he proposed that organisms evolved from simple to advanced forms, one little step at a time by a process he called *natural selection*.

The principle is quite simple, and you likely know about it. Darwin noted that there is (1) **variation** in nature. Offspring are not exactly like their parents, some will be better than others. He also noted that there is (2) **overproduction** which results in too many organisms and this causes **competition** for survival. The combination of these two factors means that those **organisms that are superior will survive** over those that are inferior. Thus, over time, we have gradual evolutionary **advancement by natural selection**, a process also designated as **survival of the fittest**.

3. NATURAL SELECTION

Natural selection is generally accepted as the basic mechanism for evolution, although some evolutionists opt for variation without any natural selection. Natural selection is also accepted by creationists, but it acts only as a process that eliminates weak inferior organisms, not as something that can create new complex systems or organisms. This distinction is important.

3. NATURAL SELECTION

Most, whether creationists or evolutionists, agree that there is variation in nature and that small changes can sometimes occur as organisms reproduce. These minor changes, usually within species, are commonly called *microevolution* and are an observed fact. Proposed larger changes, especially involving advancement and not degeneration, usually at the family, order, class, phylum, division, and kingdom classification levels, are called *macroevolution*. This is where creationists and evolutionists disagree. Creationists do not believe these large changes occur because they have not been observed. Evolutionists point out that you would not expect to observe them since they would occur gradually and take a very long time. However, when you look at old fossils that represent the past, you don't see significant evidence for these gradual major changes. See the discussions No. 12, and 13, titled PROBLEMS FOSSILS POSE FOR EVOLUTION.

3. NATURAL SELECTION

While there is no question that microevolution takes place, some of the commonly purported cases of rapid microevolutionary changes are probably not that. The darkening of the **peppered moth**, the adaptation of **insects to insecticides**, and some of the resistance of **microbes to antibiotics** are likely caused by the manifestations of traits **already present** in some of the organisms of the population rather than new novel evolutionary advancement as often suggested. Some leading evolutionists agree that for the three examples given above, the mutations are already present, and become abundant when the right conditions prevail. However, some new mutations do occur. The **influenza and AIDS viruses are notorious for mutating rapidly**, but the changes are very minor.

**4. SOME
PROBLEMS OF
NATURAL
SELECTION**

4. SOME PROBLEMS OF NATURAL SELECTION

The natural selection process of itself does not “prove” evolution. The fittest would survive by natural selection whether they evolved or were created by God!

a. CHANGES CAUSED BY MUTATIONS ARE USUALLY DETRIMENTAL.

This is expected because of the complexity of organisms. Mutations that cause changes [some mutations are likely neutral] are usually considered random events, and when you make random changes in complex systems with interdependent parts that work together, this usually has serious harmful effects. It is similar to making a random change in just one letter on a printed page. The change is usually detrimental because **words need to be spelled correctly** and the **interdependent** words have to **fit into the meaning** of the sentences and paragraphs.

4. SOME PROBLEMS OF NATURAL SELECTION

a. MUTATIONS ARE USUALLY DETRIMENTAL.

While we do not have good figures as to the proportion of good changes from mutations to bad ones, an estimate of **one good change out of a thousand mutations** is sometimes suggested by evolutionists and is at times considered to be very generous for evolution. Some suggest only one advantageous mutation out of a million. With such a low proportion of good changes, evolutionary advancement has to wait a long time for the right change. And in the meantime, it has to **survive a tremendous number of bad changes**, and this also poses a very serious problem for evolution especially in limited slowly reproducing populations. There isn't enough time.

4. SOME PROBLEMS OF NATURAL SELECTION

b. NATURAL SELECTION CANNOT PLAN AHEAD SO AS TO DEVELOP COMPLEX SYSTEMS.

In the competition for survival of the fittest, natural selection acts on the **immediate results** of a mutation in a plant or animal. Natural selection **does not have the ability to look into the future** and select for something that is not useful now but may be later on if associated with some other advanced change. This is a serious impediment when you consider the origin of complex systems, such as the **focusing mechanism of the eye**, etc. The developing parts of complex systems are usually useless until all the necessary parts are present so you can have some function; and without some function you have no survival value for evolution.

4. SOME PROBLEMS OF NATURAL SELECTION

b. NATURAL SELECTION CANNOT PLAN AHEAD

Some evolutionists have addressed this problem. One suggestion is that the **gradually developing** parts are useful, but this does not explain the problem of interdependent parts that cannot work without other parts. For instance, what would be the usefulness of muscles to change the shape of the lens of the eye and focus an image, if you did not have a system to detect if the image in the eye was out of focus?

Another evolutionary suggestion to explain complexity is that **previously existing complex systems changed their old function** into a new one. Some old parts might be used, but for this kind of change, you have to have a complex system to start out with, and how did it evolve when natural selection has no foresight to plan ahead?

4. SOME PROBLEMS OF NATURAL SELECTION

c. SURVIVAL OF THE FITTEST WOULD INTERFERE WITH THE EVOLUTION OF COMPLEX PARTS

In complex systems all the parts that are necessary have to be there for the system to work. This is the typical “chicken and egg” conundrum. Which evolved first, the chicken or the egg? Both are necessary for survival by reproduction.

Parts of developing complex systems would likely be **useless impediments** until all necessary parts had evolved and you had a functional system that could provide some evolutionary survival value.

4. SOME PROBLEMS OF NATURAL SELECTION

C. SURVIVAL OF THE FITTEST WOULD INTERFERE WITH THE EVOLUTION OF COMPLEX PARTS

The **eyes of cave fish** living in total darkness or the **legs of my friend** with a severed spinal cord, are excess baggage that you are better off without. Natural selection would be expected to eliminate these non-functioning parts. Hence, **natural selection**, which is considered to be the basic mechanism for evolution, **would actually interfere with the evolution of complex systems!**

4. SOME PROBLEMS OF NATURAL SELECTION

c. SURVIVAL OF THE FITTEST WOULD INTERFERE WITH THE EVOLUTION OF COMPLEX PARTS

In our simple muscle, nerve and control system example; if you were evolving a new muscle, **what survival value would a new muscle have without a nerve and a control system?** You need at least all three essential parts to provide function and survival value. A useless muscle is an encumbrance, and, like the eyes of cave fish, degenerative mutations and natural selection would be expected to get rid of useless parts. Organisms that would not have excess useless developing parts would be expected to survive over those that did.

4. SOME PROBLEMS OF NATURAL SELECTION

C. SURVIVAL OF THE FITTEST WOULD INTERFERE WITH THE EVOLUTION OF COMPLEX PARTS

It is of interest that as we look at over a million different living species over the earth, we don't see complex systems in the process of evolving. Why are there not some gradually evolving leaves or flowers in plants that don't produce them, or new muscles, lungs, eyes, livers, etc., in animals that don't have them. This is a serious indictment against an evolutionary process that is deemed to be real and going on at present. Complexity poses several serious problems for evolution.

5. COMPLEX SYSTEMS ABOUND

5. COMPLEX SYSTEMS ABOUND

Biological systems illustrate many cases of interdependent parts that would be useless by themselves. While it is easy to suggest some kind of usefulness for many things, and evolutionists try and do this, the problem lies with the authentication of such suggestions.

There are many examples of interdependent parts. Evolutionists have a gigantic task trying to explain these on the basis of gradual changes that would have survival value throughout the whole slow process of evolution.

5. COMPLEX SYSTEMS ABOUND

For instance, if a primitive animal is adding a **a new bone** in a limb, what good is that bone without **muscles** to move it, and muscles have to have **nerves** and a precise **control system** in order to work effectively. Which of these parts evolved first, and what survival value would these have until all the interdependent parts were present. To suggest that all the random and very scarce good mutations for all these interdependent parts occurred at once challenges both rationality and scientific observation. Except in the case of minor variations, we just do not see evolution in the process of happening.

5. COMPLEX SYSTEMS ABOUND

One of the marvels of nature is to watch a worm-like **caterpillar** build a cocoon around itself, then lie dormant for a short while, and then emerge as a **flying butterfly**. This is a complete transformation. In the evolutionary scenario, one can ask: which evolved first, the system that provides the **cocoon stage** or the system that makes a butterfly? The process needs survival value all along for natural selection to work. What good is a cocoon without producing a new kind of organism, and vice versa? For this kind of scenario you need both a working cocoon and a working butterfly.

We are beginning to learn some details about this fascinating process. For instance, the caterpillar of the silkworm moth, which is only eight centimeters long, will spin out nearly a kilometer of silk thread in building its cocoon.

5. COMPLEX SYSTEMS ABOUND

We have learned that the **caterpillar is programmed ahead of time** to form the butterfly. In the cocoon, most of the tissues of the caterpillar disintegrate and are used to build the butterfly, which develops from small bodies in the caterpillar called *imaginal discs*. Many genes and hormones are involved, and the timing of hormonal activity is crucial.

5. COMPLEX SYSTEMS ABOUND

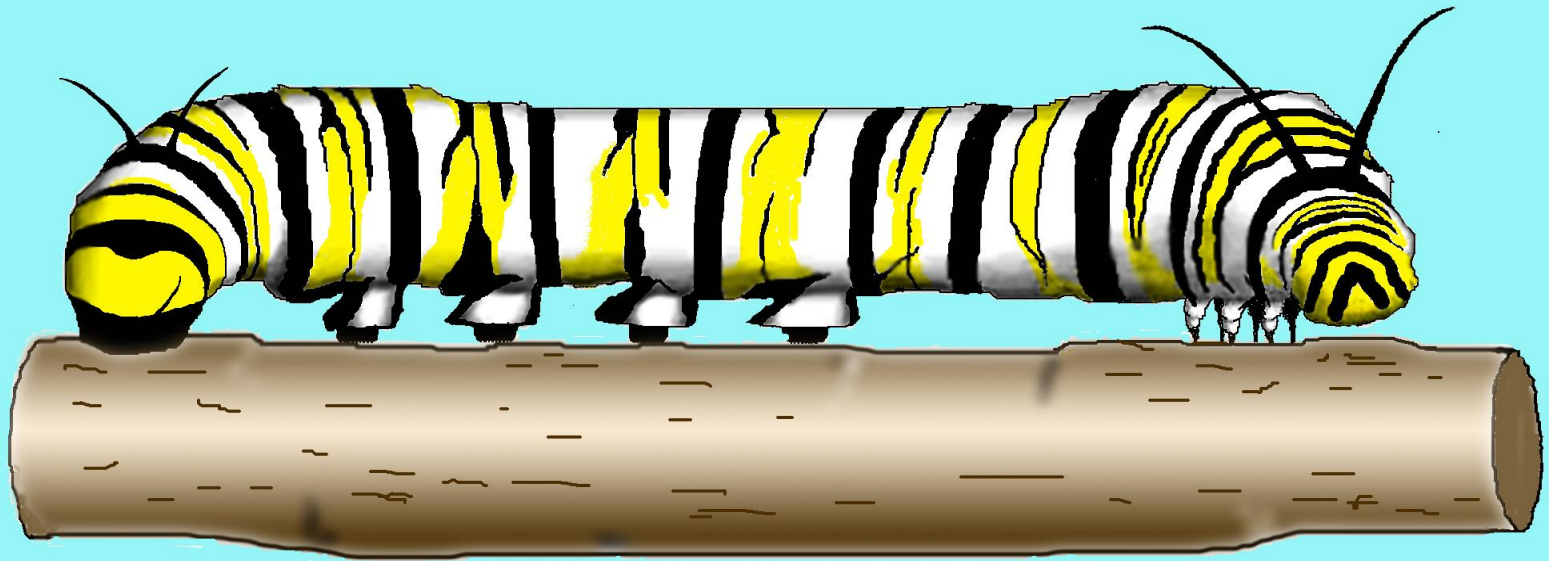
Another question this activity poses for evolution is, how did all these integrated changes that are necessary for forming a butterfly ever evolve over a long period of time? For instance, why evolve a hormone for certain activities without a timing mechanism, and why evolve a timing mechanism without a hormone to act on? Without timing the hormonal activity would be out of control. One can also ask how all the right random mutations necessary to produce a flying butterfly ever occurred over time, without foresight, while providing survival value all along the way.

5. COMPLEX SYSTEMS ABOUND

Evolutionists recognize the problem. Some suggest some kind of **gradual evolutionary process in the caterpillar** that eventually ended up as a butterfly, but authentication is lacking. Others suggest that the **caterpillar and the butterfly evolved separately** as independent organisms. Then the two organisms reproductively mated to form the present caterpillar-butterfly combination. This kind of extremely unlikely speculation is what is sometimes called *fact free science*.

The next picture is that of a monarch caterpillar, and the following is of a number of cocoons (chrysalises) with a recently emerged monarch-like kind of butterfly, that was all scrunched up in one of the cocoons. The butterfly is likely now pumping fluids into its wings so as to spread them out and letting them dry out before it flies away.

MONARCH CATERPILLAR



The monarch caterpillar will change into a cocoon stage, and the cocoon stage will change into a monarch butterfly.

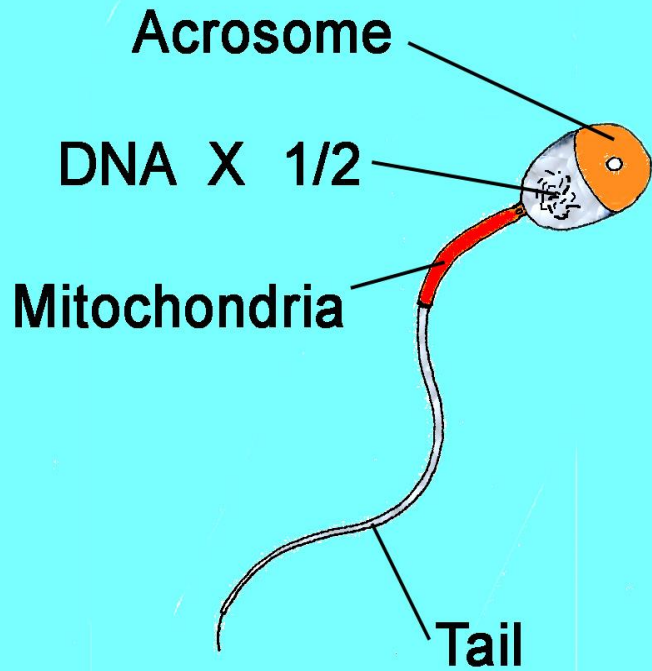


Cocoons and recently emerged monarch-like butterfly

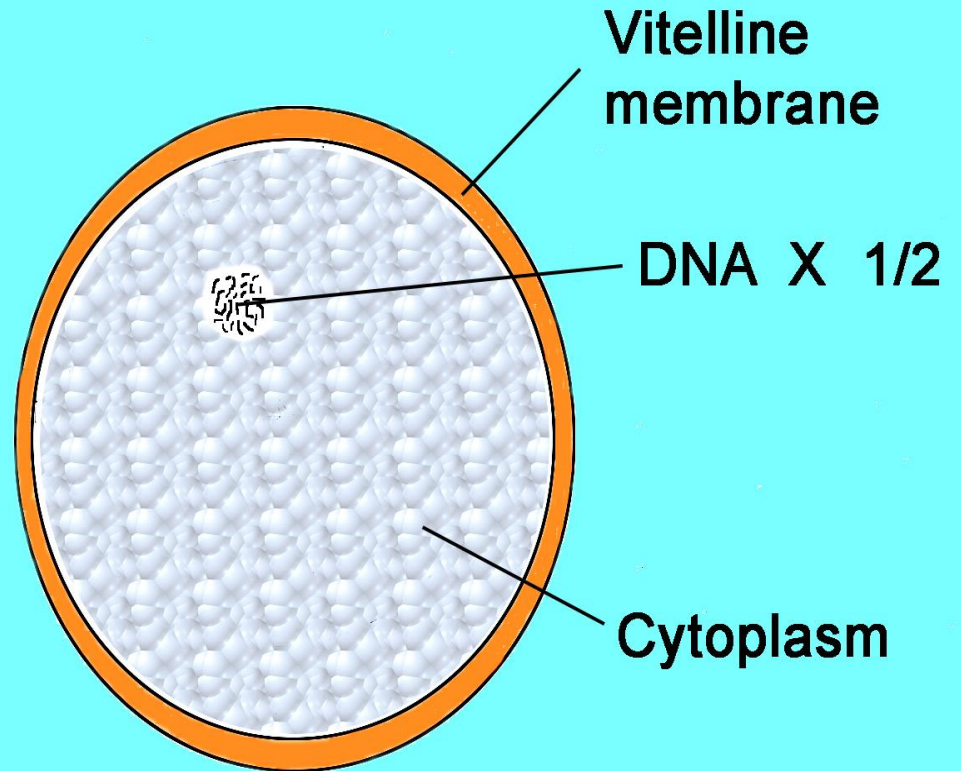
5. COMPLEX SYSTEMS ABOUND

Another complexity is **sexual reproduction**. Some simple organisms commonly reproduce by dividing into two by ordinary cell division, forming two new organisms with the same DNA formula. More complex organisms employ sexual reproduction that combines the DNA from two organisms. This is a complicated process. In producing sperms and ova (eggs) two special successive divisions take place (meiosis). In the first there is exchange of DNA, in the second the number of chromosomes is cut in half so that the resulting offspring, with DNA from both parents, will have the right total number. The process of forming the different complicated bodies of sperms and ova is not simple either. See the next figure.

SPERM



OVUM



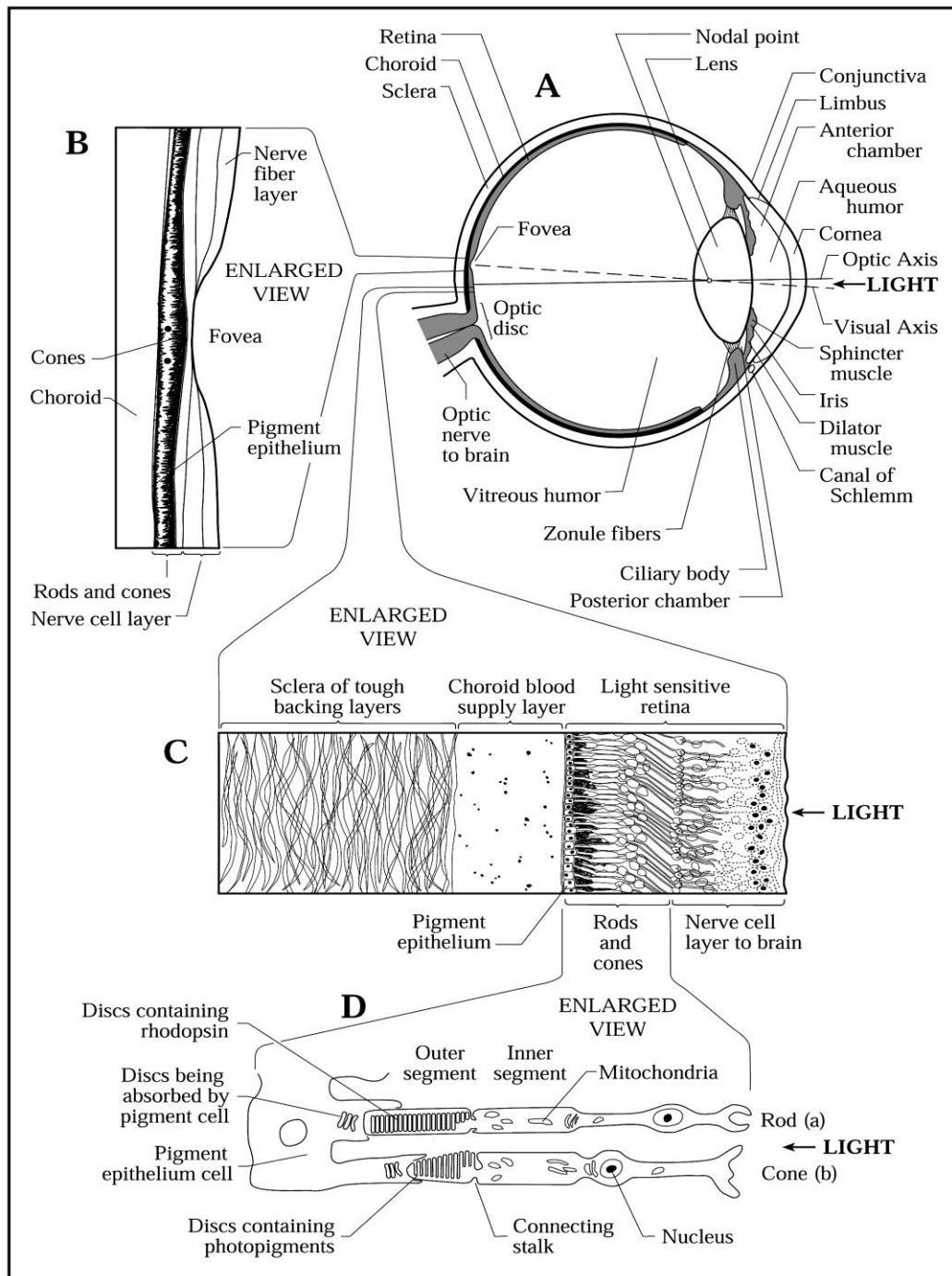
5. COMPLEX SYSTEMS ABOUND

Fertilization requires a system that will combine the sperm and ovum. Many highly specialized steps are necessary before the system can work at all. This is another example of a series of interdependent steps that would have no survival value until all the necessary steps were functioning. It does not seem that complex sexual reproduction could ever gradually evolve. You need functional sperms, ova, and a fertilization process in order for the system to work at all and have any evolutionary survival value. A sperm without an ovum is useless and vice versa, and both are useless without a system to combine their DNA, and many other things are needed.

5. COMPLEX SYSTEMS ABOUND

Sensory organs provide other examples of systems with interdependent parts. For instance, a cell on our tongues that detects sweetness is useless without a nerve fiber to communicate that sensation, but both are useless without a part of the brain that responds to the sensation. Both seeing and hearing involve many interdependent parts and complicated feedback mechanisms. The illustration of the eye in the next frame has many systems with interdependent parts, such as the autofocus, mentioned earlier, and the auto exposure systems of advanced eyes. We will discuss the eye in detail in the next two discussions (No. 4, and 5) titled **DARWIN AND THE EYE**.

VERTEBRATE EYE



A. The complex vertebrate eye.

B, C, D, enlarged details.

**6. THE LONG
SEARCH FOR AN
EVOLUTIONARY
MECHANISM**

6. THE LONG SEARCH FOR AN EVOLUTIONARY MECHANISM

How do evolutionists explain the origin of complexity? Natural selection, which is the usually understood evolutionary model, cannot plan ahead and would tend to eliminate the parts of developing complex systems that have no survival value until all the parts necessary to provide useful function are present.

6. THE LONG SEARCH FOR AN EVOLUTIONARY MECHANISM

For **two centuries**, evolutionists have been searching for an evolutionary mechanism that would gradually produce advanced systems. One idea after another has been adopted, but a realistic model that explains the origin of complexity has yet to be demonstrated. Most scientists agree that evolution has taken place, but how it could happen by itself has not been explained.

6. THE LONG SEARCH FOR AN EVOLUTIONARY MECHANISM

Some evolutionists cling to natural selection, others prefer more pure chance models and neutral mutations. Some feel that evolution proceeds by many small steps, but these have survival problems. Still others prefer larger jumps, but these larger jumps would require that lots of fortuitous good mutations occur all at once to provide systems with evolutionary survival value. Some computer models are purported to generate complexity, but the programs are too simple to reflect real life and are designed to give the desired results, hence are unimpressive.

The next slide summarizes the history of the search for an evolutionary mechanism.

THE LONG SEARCH FOR AN EVOLUTIONARY MECHANISM

DESIGNATION AND DATE	MAIN PROponents	CHARACTERISTICS
Lamarckism 1809-1859	Lamarck	Use causes development of new characteristics that become inheritable.
Darwinism 1859-1894	Darwin, Wallace	Small changes, acted upon by natural selection, causing survival of the fittest. Inheritance by gemmules.
Mutations 1894-1922	Morgan, de Vries	Emphasis on larger mutational changes. Natural selection not as important.
Modern Synthesis (neo-Darwinism) 1922-1968	Chetverikov, Dobzhansky, Fisher, Haldane, Huxley, Mayr, Simpson, Wright	Unified attitude. Changes in populations important. Small mutations acted upon by natural selection. Relation to traditional classification.
Diversification 1968-present	Eldredge, Gould, Grassé, Henning, Kauffman, Kimura, Lewontin, Patterson, Platnick	Multiplicity of conflicting ideas. Dissatisfaction with modern synthesis. Emphasis on cladistics. Search for a cause for complexity.

6. THE LONG SEARCH FOR AN EVOLUTIONARY MECHANISM

Evolution is the best model scientists can come up with if God is excluded, but it comes far short of plausibility.

Evolutionists are to be commended for their perseverance, but after **two centuries of an essentially fruitless search for a plausible evolutionary mechanism that evolves complex systems, it would seem that it is time for scientists to look for **non-naturalistic explanations**. **A perceptive God seems essential** to explain what we are discovering in nature.**

7. CLADISTICS

7. CLADISTICS

There is a new quiet trend going on in evolution that is revising the way organisms are classified. Instead of classifying by the general appearance of the plant or animal, classification is by what is assumed to be the past evolutionary history of that organism. For instance, this permits some evolutionists to claim that birds are dinosaurs, since they think birds evolved from dinosaurs, hence are the same group.

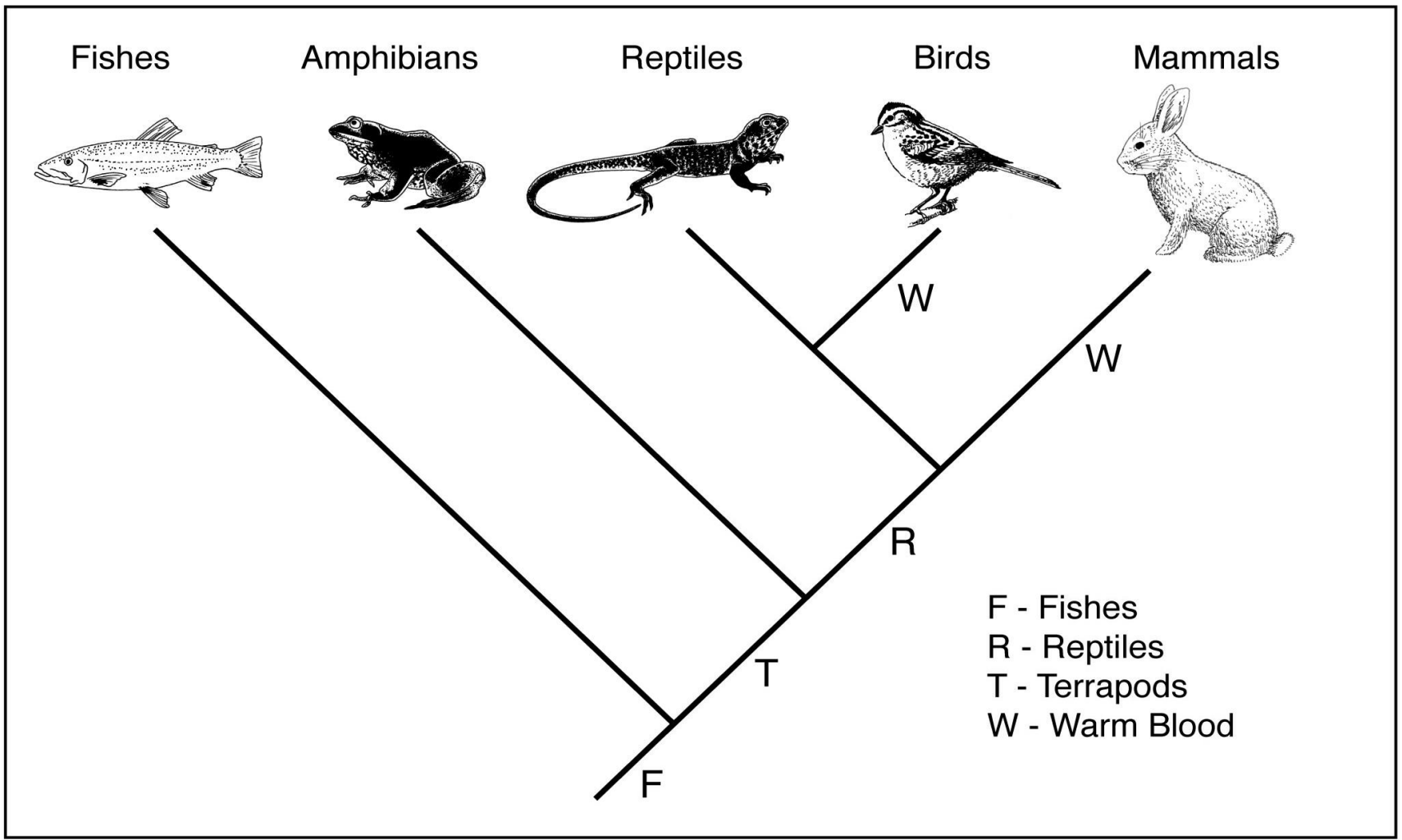
7. CLADISTICS

In this new trend called *cladistics*, sophisticated mathematical comparisons are often made of *unique characteristics* (*synapomorphies*) that are not found in most other organisms. Many different characteristics are used for the comparisons. The similarities in DNA base sequence patterns are a very common factor used in comparisons.

The idea is that the closer the DNA pattern the closer the evolutionary relationship of the organisms. That seems to make good sense if you assume evolution, but that is also just what you would expect from creation by God. DNA largely determines what the organism will be like, hence the closer the similarities of various organisms the closer the DNA pattern, *whether the organisms evolved or were created.*

7. CLADISTICS

Sometimes the proposed evolutionary relationships are illustrated in branching diagrams called *cladograms*. A simple example of a cladogram for vertebrates is given in the next frame. As you follow the lines *up* through the cladogram you are following the proposed evolutionary pathway. Development of new characteristics may be designated along the lines. For instance in the vertebrate cladogram the letter “T” (for tetrapod) represents the evolution of the four legged pattern of most vertebrates, and the organisms in the lines above the “T” have this.



Simple cladogram for vertebrates. Note that the warm-blooded feature (W) originated twice.

7. CLADISTICS

In the vertebrate cladogram on the previous slide you can see that the characteristic of warm bloodedness “W” evolved two separate times, once for the birds and once for the mammals. This is an example of what evolutionists call *convergent* or *parallel evolution*. Indiscriminate use of this concept confuses a pattern that is supposed to be based on unique characteristics (synapomorphies). It does not seem likely that many random mutations can produce the same thing.

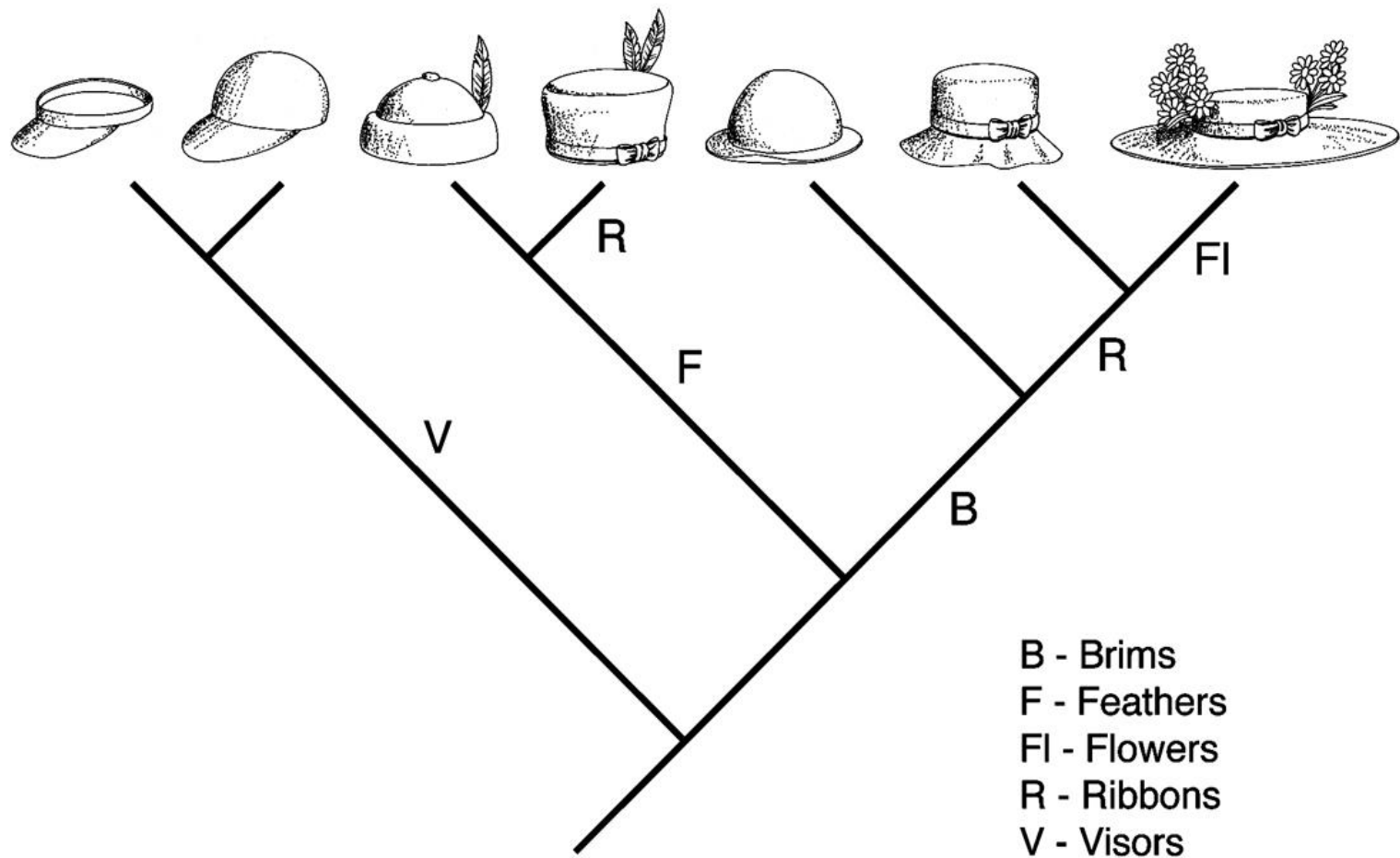
Recently a number of evolutionists have been proposing that the traditional reptile class (lizards, dinosaurs, crocodiles, turtles, snakes) is not a valid group because they are too much like other groups such as birds and mammals. Many ideas change.

7. CLADISTICS

The basic problem with cladograms is that while evolution is implied, the suggested patterns do not mean that the organisms necessarily evolved the way suggested or any other way, and some evolutionists point this out. **Cladograms mainly show unique similarities, not evolution.**

You can play the “cladogram game” with all kinds of things that did not evolve from each other like toys or houses. The next frame shows a cladogram for ladies hats. In this hat cladogram, ribbons “R” evolved independently twice by parallel or convergent evolution.

Actually, we all know that ladies hats are created, and did not evolve from each other, but they make good cladograms.



Cladogram for ladies hats. Note that the ribbons feature originated twice by parallel evolution.

8. PREDATION

8. PREDATION

When we look at nature, all is not well. The Bible indicates that God's creation was "very good" (Genesis 1:31), but it is not that way now. Sharks devour people, and cats play with mice before eating them. How did animals get that way? Evolutionists think they evolved that way, but there appears to be too much design in some of the predatory systems, like the venomous fang mechanism of a snake, to think it could all happen gradually as a result of random mutations.

Unfortunately, we do not have very definite answers. Neither the Bible nor science give us the details we would like. There are some things we just don't know yet. However, we can suggest some answers, and need to keep in mind that these are not facts, but only suggestions. A few ideas from creationists follow.

8. PREDATION

- **Some predation may be caused by changes in behavior. Maybe the original cats would have played with a ball as they do now, but not with mice, and would not have initially eaten mice.**
- **Sharp teeth need not imply eating other animals. The hippopotamus has huge sharp teeth, but eats almost only grass.**
- **Minor mutations producing small anatomical changes by micromutations may have favored predation. The beak of some birds that are now useful for predation may be an example.**
- **When Adam and Eve sinned, the Bible tells us that plants and the snake were changed (Genesis 3:14, 17-18). This could explain the fang mechanism of snakes. Some other organisms may also have been changed.**

8. PREDATION

- **Some suggest that there may have been selective breeding, as we now do for different breeds of dogs; or possibly there may have been some genetic engineering by man or Satan before the Flood, resulting in predatory traits.**
- **There may have been some limited “predation” in the original plan of creation. The suggestion is that some simple organisms like ants or shrimp, are more like motile vegetables or seeds, in that they do not have a sense of suffering or happiness any more than a carrot or a microbe seems to have.**

The idea is that small simple animals or plants do not suffer when eaten. This may also explain the intriguing questions about suffering posed when a spider web traps a fly, or an elephant walked on an ant, in the idyllic Garden of Eden – the ants or flies do not suffer! More advanced animals do. The Bible indicates that plants were at least the main food for animals in the Garden of Eden (Genesis 1:30).

- **These are a few speculations. Remember, there are things we don't know.**

9. PARASITES AND DISEASES

9. PARASITES AND DISEASE

Parasites are another example of advanced organisms where nature does not seem “very good.” A parasite is an organism that lives on or in another organism, and is dependent on that organism that is called the host. The tick on a dog, the tapeworm in a human intestine, or a germ infecting your blood stream are examples.

Here we have a distinctly different situation than suggested advancement by evolution because we are dealing with **degeneration**. We are going mainly in the opposite direction of evolutionary advancement. It is easy to degenerate by microevolution. You don't have the problem of complex planning for interdependent parts mentioned above. Both evolutionists and creationists agree that parasites likely originated from free living organisms that in the past have invaded their hosts, and then degenerated to the point that they are dependent on the host.

9. PARASITES AND DISEASE

Sometimes, in parasites, you can find parts of biochemical pathways (See Discussion 2) used by free living organisms to make a needed molecule. The molecule is no longer manufactured by the parasite, because it can be obtained directly from the host that manufactures it. However, the presence in the parasite of part of the mechanism to make the molecule indicates that in the past the parasite was likely capable of making that molecule when it was free living, but it has degenerated since then.

Another bit of evidence that parasites degenerated from free living organisms is that, for instance in plants you can find some species of tiny roundworms that just stay on the outside, other species dig in a little, others dig in a lot, and some can only live if inside a plant. This sequence suggests gradual degeneration from a free living state to a fully parasitic existence inside the host.

9. PARASITES AND DISEASE

There are a lot of questions and few definitive answers about the origin of parasites and disease. Evolutionists think generally of degeneration along with a little progressive evolution. A few ideas from creationists follow.

Viruses are not organisms, but fit in this discussion. They could have been created by design, possibly even helping in the normal balance of nature for the microorganisms in which they lived. Another idea for the origin of viruses is by the degeneration of bits of originally created DNA or RNA coming from various organisms.

Some viruses may have degenerated and some have even become harmful to humans and other animals by small mutations (**microevolution**).

9. PARASITES AND DISEASE

Our bacteria that cause diseases such as tuberculosis and cholera can be quite easily explained in a creation context. They probably have come from free living microbes or harmless microbes living in other organisms. Random mutations, likely mostly degenerative, or toxin-generating mutations, engendered disease producing organisms. Mutations in bacterial populations can occur quite rapidly, because there can be so many of them. Under favorable conditions some of these organisms can reproduce themselves in less than an hour.

There are some special features of parasites that may have been designed. These include complex attaching organs of worms with special hooks so they can stay in place in the host. Also some parasites have very complex life cycles involving several hosts, like the parasite that causes malaria. It adjusts to reproducing in both mosquitoes and humans. These special capabilities do not seem to be just simple degeneration of free living organisms. Complexity seems involved.

9. PARASITES AND DISEASE

Some who believe in creation suggest that parasites are the result of genetic engineering in the past by man or Satan. Others suggest that parasites were a fascinating part of a “very good” original creation where parasites were present but not originally harmful to their hosts. They have degenerated and become harmful since then.

One original form of parasitism seems to be very good. In human reproduction, each of us is a parasite of our mother (the host) during our first nine months of development before birth, hence, at one time we were all parasites!

At present we have suggestions, but we do not have enough information to come up with very secure answers about the origin of parasites and disease.

10. CONCLUSIONS
FOR:
FROM COMPLEX
TO MORE
COMPLEX

10. CONCLUSIONS

Organisms are provided with an **abundance of complex systems with interdependent parts** that cannot function unless other necessary parts are present.

Mutations are random and only very rarely beneficial, hence they do not provide a realistic mechanism for designing complex systems.

Natural selection cannot provide for the origin of complexities because it has **no foresight** and cannot plan ahead. Natural selection responds to immediate conditions, not future postulated ones.

Furthermore, natural selection would **tend to eliminate** the cumbersome developing parts of complex systems, because these parts do not provide survival value until all the necessary associated parts are present to provide a useful function.

10. CONCLUSIONS

For two centuries, evolutionists have been looking for a **plausible** evolutionary mechanism for complexity, but they have not found one. Science needs to seriously look for other alternatives. **God seems necessary** to explain what science is discovering.

Cladograms show similarities not evolution.

Changes in behavior and by microevolution may be the leading causes for the change from the original “very good” creation, to the significant **predation** now seen in the animal kingdom.

Parasites and infectious agents may largely represent **degeneration** from originally harmless free living organisms that were part of the original “very good” creation. Degeneration by harmful mutations is much easier to explain than evolving complex systems by mutations that have no plan or foresight.

11. REVIEW QUESTIONS

(Answers given later below)

9. REVIEW QUESTIONS - 1

(Answers given later below)

- 1. It was pointed out that there is a major difference between complicated systems that have independent parts, and complex systems that have interdependent parts. With this in mind, what special problem does the gradual evolution of complex systems pose? What problem does the sudden evolution of complex systems pose?**
- 2. Natural selection as proposed by Charles Darwin is considered to be the leading driving mechanism for evolutionary advancement. Describe the two main factors in this mechanism.**
- 3. Explain why creationists believe in natural selection, but not in major evolutionary development by natural selection.**
- 4. Three major problems of natural selection were discussed above. They are: Mutations are usually detrimental; natural selection cannot plan ahead; incomplete complex systems would not survive. Briefly explain each one in your own words.**

REVIEW QUESTIONS - 2

- 5. What major problem does sexual reproduction and the production of a butterfly from a caterpillar pose for evolution by natural selection? What is the significance for evolution of the fact that we don't now see developing complex systems in organisms?**
- 6. What are the implications of the fact that for two centuries, scientists have been trying to find a mechanism for evolving complex systems?**
- 7. Evolution is often implied as you follow the various lines up through a cladogram. What is the real meaning of a cladogram?**
- 8. What is the significance of the fact that hippopotamuses eat mainly grass?**
- 9. Parasites that live in other animals are considered to be degenerate from free living organisms. Why is degeneration much easier to explain than the generation of complex systems by evolution?**

REVIEW QUESTIONS AND ANSWERS - 1

1. It was pointed out early in this discussion that there is a major difference between complicated systems that have independent parts, and complex systems that have interdependent parts. With this in mind, what special problem does the gradual evolution of complex systems pose? What problem does the sudden evolution of complex systems pose?

When you gradually evolve complex systems, the various parts will not have evolutionary survival value until all the necessary parts are there so the system can work and be useful.

The sudden evolution of complex systems is not considered plausible for evolution because all the different parts would have to appear at the same time, and in the right place, just by chance.

REVIEW QUESTIONS AND ANSWERS - 2

2. Natural selection as proposed by Charles Darwin is considered to be the leading driving mechanism for evolutionary advancement. Describe the two main factors in this concept.

There is variation in nature as organisms reproduce.

There is competition and the fittest would survive thus resulting in advancement.

3. Explain why creationists believe in natural selection, but not in major evolutionary development by natural selection.

Natural selection has been observed to occur in some cases resulting in minor variations, and natural selection should eliminate the weak and aberrant organisms. However, it has not been observed to produce new major kinds of organisms, and there are major scientific problems with such suggestions, such as the gradual evolution of complex systems having useless parts with no survival value.

REVIEW QUESTIONS AND ANSWERS - 3

4. Three major problems of natural selection were discussed above. They are: Mutations are usually detrimental; natural selection cannot plan ahead; incomplete complex systems would not survive. Briefly explain each one in your own words.
- a. *Changes caused by mutations are usually detrimental because biological systems are such complex integrated systems that most any change tends to cause the interdependent parts of these systems to function poorly or not at all.*
 - b. *Natural selection cannot plan ahead to design complex systems because natural selection acts on immediate changes, and cannot favor revisions that would only be useful some time later.*
 - c. *Natural selection would tend to hinder the development of complex systems with interdependent parts by eliminating the parts of developing systems that would be useless until the system can work and provide survival value. Natural selection occasionally works for small changes, but should usually hinder the gradual development of complex systems.*

REVIEW QUESTIONS AND ANSWERS - 4

5. What major problem does sexual reproduction and the production of a butterfly from a caterpillar pose for evolution by natural selection? What is the significance for evolution of the fact that we don't now see evolving complex systems in organisms?

In the gradual evolution of sexual reproduction and in producing a butterfly that can fly we have a great number of changes that are necessary before anything works. When nothing works you have no survival value, hence it does not seem that natural selection that has no foresight could function to gradually evolve all the many necessary parts. Natural selection would be expected to eliminate excess useless developing parts and thus would actually interfere with the evolution of complex systems!

The fact that we don't see all kinds of new evolving complex systems in the organisms of the earth suggests that complex systems do not evolve.

REVIEW QUESTIONS AND ANSWERS - 5

6. What are the implications of the fact that for two centuries, scientists have been trying to find a mechanism for evolving complex systems?

The fact that after proposing various models for two centuries scientists are still looking, suggests that there may not be a plausible evolutionary model. It is time for science to seriously reconsider creation by God.

7. Evolution is often implied as you follow the various lines up through a cladogram. What is the real meaning of a cladogram?

A cladogram is a diagrammatic representation of degrees of similarity between organisms, especially unique similarities. Of course some organisms are more similar to some than to others, but this does not mean that they have a common evolutionary ancestor unless you assume evolution. The cladogram basically says how organisms are similar or different when compared to others, not that they evolved from each other.

REVIEW QUESTIONS AND ANSWERS - 6

8. What is the significance of the fact that hippopotamuses eat mainly grass?

Hippopotamuses have huge sharp teeth that would normally be interpreted as useful in eating other animals. However the hippopotamus eats mainly grass, thus indicating that you can't always tell the diet of an animal by looking at the teeth.

9. Parasites that live in other animals are considered to be degenerate from free living organisms. Why is degeneration much easier to explain than the generation of complex systems by evolution?

There are two main reasons. Mutations are usually detrimental and thus easily contribute to degeneration. Also, mutations, which are random, have no foresight to plan ahead, and thus cannot design complex systems that would only have survival value after all the parts necessary for the system to work were present. Simple degeneration of complex systems that already exist bypasses that problem.

ADDITIONAL REFERENCES

For further discussions by the author (Ariel A. Roth) and many additional references, see the author's books titled:

1. **ORIGINS: LINKING SCIENCE AND SCRIPTURE.** Hagerstown, MD. Review and Herald Publishing Association.
2. **SCIENCE DISCOVERS GOD: Seven Convincing Lines of Evidence for His Existence.** Hagerstown, MD. Autumn House Publishing, an imprint of Review and Herald Publishing Association.

Additional information is available on the author's Web Page: Sciences and Scriptures. www.sciencesandscriptures.com. Also see many articles published by the author and others in the journal **ORIGINS** which the author edited for 23 years. For access see the Web Page of the Geoscience Research Institute www.grisda.org.

Highly Recommended URLs are:

Earth History Research Center <http://origins.swau.edu>

Theological Crossroads www.theox.org

Sean Pitman www.detectingdesign.com

Scientific Theology www.scientifictheology.com

Geoscience Research Institute www.grisda.org

Sciences and Scriptures www.sciencesandscriptures.com

Other Web Pages providing a variety of related answers are: Creation-Evolution Headlines, Creation Ministries International, Institute for Creation Research, and Answers in Genesis.

USE PERMIT

Free unrevised use for personal and non-commercial distribution of this material in its original publication medium is granted and encouraged. Proper attribution should be given. Permission for multiple printing for classroom use or not-for-profit public meetings is also freely allowed.

In using this material in this format, accurate attribution should be maintained for any illustrations where credit is designated. Many illustrations are by the author and free use is granted for all media. However, when credit to another source is given, permission might be necessary from the source for certain different kinds of communication media than the present use.