Genes of Genesis

Mechanisms For Variation

There are six mechanisms that produce variation in the gene system:

1. Built-in variation in the gene pool
2. Reproductive exchange
3. Independent assortment during meiosis
4. Crossing over during meiosis
5. Transposable elements
6. Recombination of chromosomes

The faith required to believe that any one of these mechanisms, let alone all of them, came about by chance is extraordinary. If design is the option chosen, then obviously variation of organisms is a hallmark of Creation. God did not then create immutable, unchangeable species, but rather an enormous capacity for change.

Classification

With these mechanisms, animals have an enormous capacity for change.
The question is no longer whether change can take place or not, but rather how much change and where the limits are. The modern animal classification system is based on the way species look. However, scientists have discovered that the classification of certain species such as mice, rabbits and whales is incorrect when compared to their genetic make-up.

For example, some mice look similar, but have very different molecular make-up, and therefore are more closely related to gerbils than mice, while still classified as mice.[i] There are also contradictions in molecular and morphological classification of rodents, rabbits, and primates; and even conflicting classifications in whales.[ii,iii]
These inconsistencies suggest that we should not classify animals based only on their appearances.

Reproductive Isolation

Some species have a built-in mechanism that prevents crossbreeding, called reproductive isolation. Some say that species evolved this mechanism over a long period of time to keep the integrity of the species.
However, reproductive isolation could develop over a short period of time if the existing genome was reshuffled. The flexibility of the genome allows for rapid change. This flexibility has nothing to do with evolution, but rather with built-in variation ability.

Here is an example of reproductive isolation that developed quickly. Mosquitoes that fed only on birds entered a tunnel system in London. The mosquitoes rapidly

changed from feeding on birds to feeding on the rats in the tunnel. These mosquitoes are now incapable of breeding with the mosquitoes that remained above ground.

Dr. Jenny Graves of La Trobe University says this about the "jumping genes" that could cause reproductive isolation: "We thought it took millions of years of long-term selection for a jumping gene to be activated. We've now shown that it can happen in five minutes after fertilization."[iv]

Within the gene pool of each animal is a huge capacity for variety. And as we have seen, this variety can occur very quickly, and does not need millions of years to evolve.

The Biblical concept of "kinds" must be reexamined based on this information.

Built-in Variation in the Gene Pool

More than one breed of animal in a family is possible because not every allele is expressed in a gene. This built-in variation in the gene pool points to preadaptation.

For most character traits present in organisms, more than one allele exists. The different genes must have come about by chance alone, because we are dealing with genotype. The genotype of an organism includes both latent and patent genes. Only genes that have been activated are expressed in the phenotype. A new gene must first be expressed before natural selection comes into play.

As far as alleles are concerned, expression is governed by a complex system of dominance versus recessiveness. Furthermore, the frequency of genetic expression can also alter the phenotype. For example, the gene coding for growth hormone can influence the size of the organism. Variation in size does thus not necessarily require new genes, just differential expression of the same genes. An example of built-in variation in the gene pool can be seen in the differences between breeds of dogs. As to how the genes responsible for the variation came in to existence, chance or design are the only options given, since we are dealing with genotype.

By selecting from the built-in natural variation of the gene pool, various breeds of dogs and domestic cattle were produced. Great changes in physiology and morphology are involved, and evolution is here certainly excluded. Differences in dogs are greater than the differences in genera of the Canidae family.[i]

From a creationist perspective, the vast initial gene pool makes possible a vast range of adaptive morphologies and physiologies. This general gene pool is called "kind" in the Bible. Adaptive radiation as observed by evolutionists is thus nothing other than the end product of sorting the gene pool by outside factors, such as differences in climate and habitat. Gene patterns suited to the environment are selected and change is rapid.

Genetic expression is also influenced, so as to bring about differences in structural expression by the genes in terms of size. Differential hormonal modulation in response to environmental stimuli can alter the time and magnitude of response, effectively producing reproductively isolated communities which would be regarded as different species by evolutionists, but are in effect merely extremes of genetic expression within an existing gene pool. The vast numbers of latent genes would then be accounted for.

Evolutionists recognize that changes in genotype frequencies do occur to produce changes in gene distribution. They, however, explain most changes as resulting from chance mutations, and this is not tenable.

Even evolutionists admit that preadaptation must have played a major role in enabling organisms to survive environmental changes. Preadaptation, however, requires preexisting genes capable of responding to environmental stimuli—precisely what creationists claim. Where did these fully expressional genes come from? Once again, chance or design are the only options.

Reproductive Exchange

Variation can occur through the genetic information exchanged during sexual reproduction.

Through sexual reproduction, genetic material is exchanged. This induces genetic recombination. The significance of this is obvious: the exchange of material increases the variation. This holds particular advantages to populations and is considered by evolutionists to be an innovation that greatly enhances the evolutionary process.

We know what sexual reproduction achieves. It increases the variation. However, increased variation in the genotype is of no value until it is expressed in the phenotype. The new varieties must be expressed in the offspring before natural selection can feast on this increased variation. The process that brings about the variation (sexual reproduction) is not subject to selection, only the result thereof (the increased variation in the offspring) is subject to selection.

Again, we are faced with the awesome question, how did sexual reproduction arise? If the process was not subject to selection, then only two options remain: chance or design. It requires a great deal of faith to believe in the chance development of sexual reproduction. At the genetic level, sexual reproduction is extremely complex and scientists have investigated these processes with a sense of wonder.

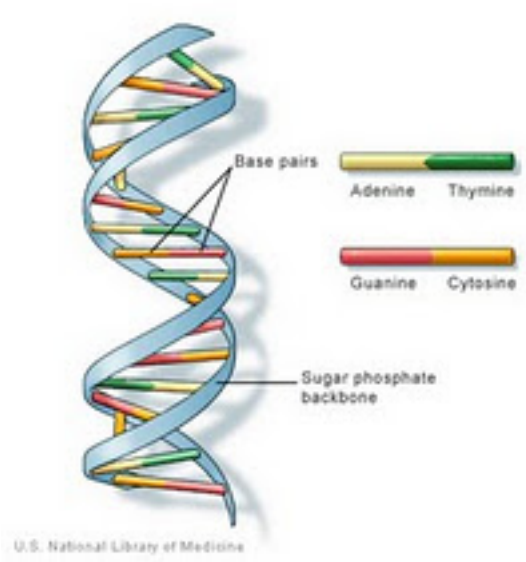
The exchange of gametes requires a modified form of cell division which is the process of meiosis. During meiosis, the number of chromosomes is halved, resulting in the gametes having half the chromosomes. Sexual fusion of two gametes then restores the number of chromosomes. Variation in the genome is greatly increased

by two processes occurring during meiosis: independent assortment and crossing over. Both these processes are extremely complex, but in themselves are not subject to selection. They rearrange the genetic material, resulting in new combinations of the material. As this reshuffling occurs at the level of the genotype, it is not subject to natural selection until the new combinations have been expressed in the phenotype.

i) Independent Assortment

Independent assortment is achieved when chromosomes line up in homologous pairs and move independently to the one pole or the other. The process is governed by complex enzyme systems which in turn must also have come about by chance. The possible variation that can be achieved by independent assortment depends on the number of chromosomes present. In humans, there are 46 chromosomes, which would arrange themselves in 23 homologous pairs. There are thus 80 trillion possible variations.

ii) Crossing Over



Crossing Over is an awe-inspiring process. When homologous chromosomes are lined up during meiosis, they can, in a very precise way, exchange genetic material. There are five steps in achieving this:

a) Enzymes open the double helix of DNA in the aligned chromosomes to permit intermolecular base pairing.
b) One strand of each helix is cut at equivalent positions.
c) The enzyme ligase joins them to form a half-chromatid chiasma (because only one strand of each chromatid cross over), resulting in a cross-shaped molecule.
d) The cross-shaped molecule is cut in half by an enzyme, leaving a break in one strand of each recombinant.

e) The break is sealed by ligase.

The process has to be extremely precise. If even one nucleotide is transferred incorrectly, the genetic message becomes useless. A typical textbook description for the process will illustrate this complexity:

A normal crossover is really a miraculous process. Somehow the genetic material from one parental chromosome and the genetic material from the other parental chromosome are cut up and pasted together during each meiosis, and this is done with complete reciprocity. In other words, neither chromosome gains or loses any genes in the process. In fact, it is probably correct to say that neither chromosome gains or loses even one nucleotide in the exchange. How is this remarkable precision attained?[i]

It might be safely said that the crossing over process is more complex than anything man has ever designed. However, it would have had to come into existence by chance if the evolutionary paradigm is accepted. Chance or design are the options at this level, and chance requires more faith than most could muster.

Transposable Elements

Dr. Barbara McClintock proposed what she calls *transposable elements*, or the idea that genes can move around on the chromosome.

Transposable elements are sometimes called "jumping genes." They consist of segments of DNA that can move from one position on a chromosome to another. In 1951, Nobel prize-winning Dr. Barbara McClintock proposed that genes are not fixed on chromosomes, but that they can move around on the chromosome. At first her findings were discarded because they contradicted the genetic concept of the day. Today, her discovery of what she calls *transposable elements* has an established place in science.

Transposable elements allow antibiotic resistance and increased variation. The genes move because they are part of a small circular auxiliary genome called a plasmid, which enters and leaves the main genome at a specific place where there is a nucleotide sequence that is also present on the plasmid. Other genes move within small fragments of the genome called transposons. Together, transposons and plasmids produce genetic recombinations.

Integration at a new position also transfers the gene to that new position. The repositioning may be random, but occurs at sequence-specific insertion points which means that the process is orderly. The splicing and repositioning is carried out by enzyme systems and involves the transfer of complete information.

Recombination of Chromosomes

Variation can be increased by the reorganization of chromosomes.

Changes in chromosomal structure have been cited as important contributing factors in providing variation, and as a mechanism for speciation.

Changes in chromosomes can include changes in chromosome number or arm number, deletions, duplications, inversions, or even radical reorganizations of the genome.

It is important to note that none of these create any new material, they just rearrange or duplicate the existing material.

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i. P.C. Chevret et al., "Molecular evidence that the spiny mouse (Acomys) is more closely related to gerbils (Gerbillinae) than to true mice (Murinae)," *Proceedings of the National Academy of Sciences* 90 (1993):3433-3436.
ii. D. Graur, "Molecular phylogeny and the higher classification of eutherian mammals" *Trends in Ecology and Evolution* 8 (1993):141-147.
iii. M.C. Milinkovitch, et al., "Revised phylogeny of whales suggested by mitochondrial ribosomal DNA sequences," *Nature* 361 (1993):346-348.
iv. *La Trobe Bulletin* (September 1998): 7-8.

Molecules That Began Life

The theory of evolution relies on the idea that life came from non-living material. However, there are many gaps in the logic of this idea. Nobel laureate Max Delbruck wrote this:

There has been an immense conceptual gap between all present-day life and no life...the how of the transition of the earth from no life to life is perhaps the fundamental question of biology.[i]

Most scientists today believe that the Biblical story of life's origins is unscientific. However, if life began from the non-living, organic molecules must have evolved from inorganic molecules to somehow form the first living cell. In this context, Creation makes more sense.

In the 1920s, the Russian biochemist Oparin and the English geneticist Haldane both suggested that there was no oxygen in the atmosphere at the time life was forming. They said that life could have come from organic molecules formed in such an atmosphere.

In 1953, Stanley Miller tested Oparin and Haldane's hypothesis. He made a simulation of the oxygen-free atmosphere (see figure 1). After passing sparks through the atmosphere, he was able to isolate nine amino acids, which are the building blocks of protein.[ii]

Since then, similar experiments have produced 19 of the 20 amino acids, as well as other building blocks of the living cell. These experiments are considered absolute proof that life came about by chance.

Popular belief is that these newly created organic molecules came together in the ocean, forming a kind of organic soup. But in order for these molecules to become living structures, they had to be polymerized (joined together).

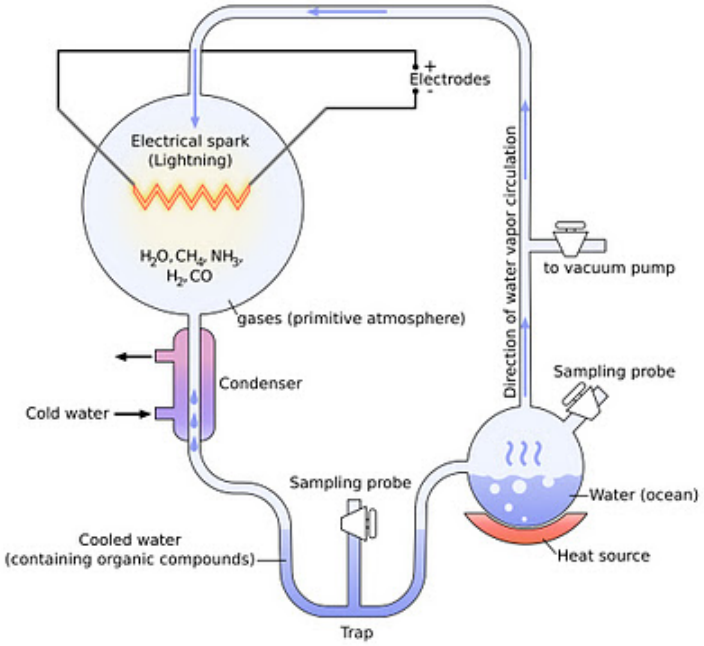


Figure 1: Stanley Miller's apparatus.
Source: [Yassine Mrabet](#).

Sidney Fox proposed that this could have happened around the rim of the equators where there was heat and evaporation. Fox showed that when a mixture of amino acids is heated at 200°C for up to seven hours, protein-like structures that he called protenoids can form. When these protenoids are cooled, they are non-living particles that look like primitive cells.

Although some say that these protenoids grow, bud, and break apart like living cells, they really only recombine due to attractive forces and chemistry. Protenoids are not living, and they are not even made of the appropriate matter to be organic. Together, these experiments are supposed to give credibility to the theories of evolution and naturalistic origins. However, the evidence is full of holes.

The Atmosphere

Scientists agree that for the organic molecules to come together to form life, the atmosphere could not have contained any oxygen. If oxygen was present, it would react with any organic compound and turn it into carbon dioxide ($C0_2$) and formic acid.

According to the naturalistic view, the earth's original atmosphere must have been made of volcanic gases, since oxygen would not be produced until later, after plants evolved. However, the atmosphere Stanley Miller had in mind did not resemble volcanic gases. Volcanic gases are rich in $C0_2$ and water, and also contain nitrogen,

hydrogen sulfide, and sulfur dioxide. When these gases are put under Miller's experimental conditions, they make ammonia, nitric acid, or formaldehyde.[iii,iv]

Our atmosphere today has 20% oxygen. This oxygen was supposedly built up after photosynthetic organisms evolved. However, without oxygen there would have been no ozone to protect the earth from the sun's dangerous ultraviolet (UV) rays. Life could not have evolved in these hostile conditions. The UV rays would have killed any molecule before it could form into even the simplest life form on Earth.

Along the same lines, amino acids would need an atmosphere rich in ammonia. However, UV rays destroy ammonia. If the atmosphere was oxygen-free, then it would also have been ozone free, meaning that there would have been extremely high levels of UV.

The evolutionary theory suggests that living molecules came together in the ocean. However, if there was an ocean, there was water. Water contains oxygen. This oxygen would have been released into the atmosphere when UV rays hit the water. And if there was oxygen in the atmosphere, living molecules could not form.

Water is necessary for life, but life could not be formed with water in the atmosphere, according to the naturalistic view. This circular problem shows that life could not have come from non-living compounds.

Organic Molecules

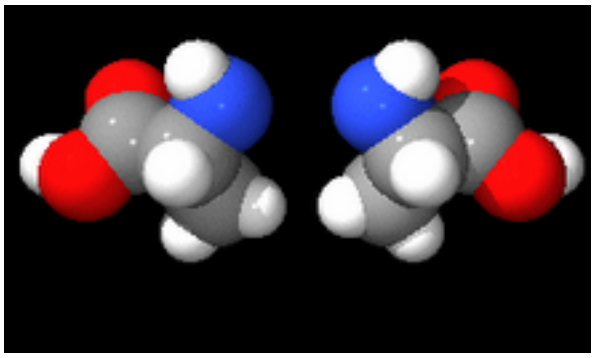
Hostile Conditions

In experiments that imitate primitive conditions, such as Stanley Miller's apparatus we saw earlier, there is always a trap to remove the molecules from the sparks or radiation used to produce them. In the real atmosphere, however, there would have been no such trap.

The conditions that, according to natural science, allow these organic molecules to form would also lead to their destruction. If the molecules were unable to escape these conditions, they would be destroyed before they could ever form into a living cell.

The Right Form of Molecule

Another problem in this logic is the combination of L and D forms of molecules. Many organic molecules occur in two forms, L form and D form.



D and L forms of the amino acid Alanine.

Living organisms can only use the L forms of amino acids and the D forms of sugars. However, experiments that simulate primitive Earth produce an equal mix of L and D forms of amino acids and sugars.

The chance that these molecules formed in the first place is extremely minute. It is even less likely that if they did form, the right ones would be selected.

Polymerization

Even if the molecules of life did form, and only the right sugars and amino acids were produced, there is still another problem. Isolated organic molecules do not make up life. These molecules would have to join together (polymerize) to form bigger molecules such as proteins and nucleic acids.

Polymerization is a delicate process. It becomes even more complicated when the right L and D forms have to be selected. Polymerization is not possible in water. Therefore, it is suggested that volcanoes heated and eventually evaporated the primitive oceans that contained the organic molecules.

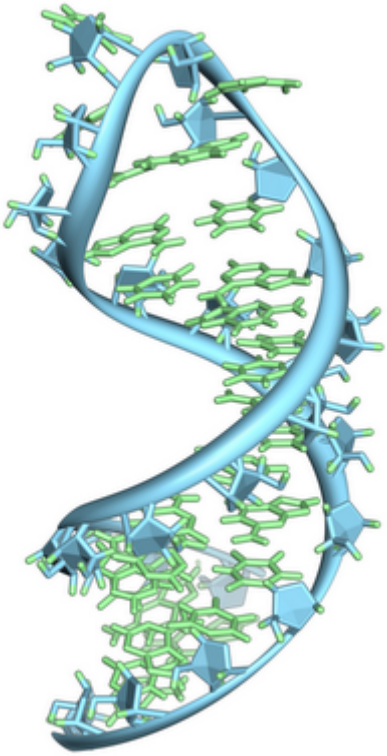
Volcanic heating would allow protenoids to form, but protenoids such as the ones produced in Sidney Fox's experiments are non-living.

These protenoids don't even have the right building blocks to form life. Living organisms use only alpha-amino acids. Protenoids, on the other hand, contain many other types of amino acids that are useless to living organisms. They also contain both L and D forms of amino acids, even though living molecules can only use the L form.

Nucleic Acids

Nucleic acid molecules contain chains of genetic information, and are found in every living cell. They are made up of nucleotides with four different bases: thymine, cytosine, adenine, and guanine in DNA, and uracil instead of thymine in RNA.

Nucleotides contain three main elements: one of the four nitrogenous bases, a sugar called ribose, and a phosphate. The sequence of these nucleotides carries the genetic information that determines the structure of proteins.



A small portion of an RNA strand.
Source: Vossman on Wikimedia Commons.

Based on this relationship between proteins and nucleic acids, which came first? The traditional view is that proteins came first. However, it was discovered that RNA (ribonucleic acid) had enzymatic activity, leading to the idea that perhaps nucleic acids were formed first.

There are many problems with this theory. Some of the nitrogenous bases of nucleotides are made from cyanide. Where did all the cyanide come from to produce the nucleotides? Also, the ribose for nucleotides forms naturally in only very small amounts, and is quickly destroyed.

It extremely unlikely that the nucleotides would arrange themselves in the right sequences for forming nucleic acid. This is a similar problem to the amino acids in proteins. The likelihood of either nucleic acids or proteins being formed by chance is beyond minimal.

If a molecule of DNA did form by chance, how would it multiply? For DNA to replicate, enzymes are required to unravel the molecule. But where did all the DNA in the enzymes come from?

This is a circular problem that cannot be explained by evolution or natural selection—and the gaps in these theories do not stop here.

Enzymes and Nucleic Acid Formation

Nucleic acids must have the exact correct information for the construction of proteins to work. Therefore, there is a complex system of enzymes to ensure that the nucleic acids don't have any errors.

The enzymes that build nucleic acids are called polymerases. While these polymerases work, other enzymes called editases check the polymerases' work, and fix any errors. How could this profound and awe-inspiring system have been formed through chance evolution?

This complex system poses a major problem to the theory of naturalistic origins. Imagine that nucleic acids are like a book of blueprints for a ship. The people editing the book would not know that there are errors in the blueprints until the ship had been built and tested. In the same way, it would be impossible for the editases to even know if there were errors in the nucleic acid unless they had a foreknowledge of the proteins that the nucleic acid was blueprinting.
The existence and work of editases points clearly to an intelligent Designer. To believe that these checks and balances came about randomly requires an awesome faith in the god of chance.

It would have been next to impossible for the molecules needed for life to evolve by chance. And even if they did, their existence does not qualify as life. These molecules must be arranged in a very particular order and joined together for life to arise. No scientific endeavor to this end has shown how this could have happened. The only other option is that life began through a Creator.

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i. Max Delbruck, *Mind From Matter?* (Palto Alto: Blackwell Scientific Publications, 1986) 31.
ii. Stanley Miller, "A production of amino acids under possible primitive earth conditions," *Science* 117 (1953): 528-529.
iii. D. Black and J Pollack, "Implications of the gas compositional measures of poineer venue for the origin of planetary atmospheres," *Science* 205 (1979): 56-59.
iv. G. Gladstone, J. Pinto, and Y. Yung, "Photochemical production of formaldehyde in Earth's primitive atmosphere," *Science* 210 (1980): 183-185.

"Species" versus "Kind"

Scientists and skeptics have long disputed the meaning of the word “kind” as used in the Bible. Genesis 1:21, 25 tells us this:

And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind, and every winged fowl after his kind: and God saw that it was good…And God made the beast of the earth after his kind, and cattle after their kind, and every thing that creepeth upon the earth after his kind: and God saw that it was good.

Many believe it means “species.” However, in light of the adapting ability in species, “kind” cannot refer to this. It is more likely that “kind” means a higher taxonomic level, such as genus, or even family.

Darwin was right when he suggested that the finches he saw had a common ancestry. However, the change that occurred between the species was not evolution. No new information was added to the genome. Rather, reshuffling in the existing genome and different genes being activated caused the change.

Genomes are similar to pianos. Piano keys are like genes, and the sequence that the keys are played in is like the activation sequence of the genes. The tune produced by that sequence of keys played is like the variant species produced by a sequence of activated and expressed genes. The amount of tunes that can be played is unlimited, just like the number of variants.

However, there is one restriction. If we wanted to make a different kind of music, or “kind” of animal, we would need to use a different instrument, or different genome. Animals cannot evolve from one species into another, but there is a huge capacity for variation within each species.

Why So Many Species-Glossary

Chromosome Fusion

Chromosomes are classified based on where the centromere is located. When the centromere is in the middle of a chromosome and the two arms are thus of equal length, it is called a metacentric chromosome. If the centromere is located at or near one end of the chromosome, it is called an acrocentric chromosome.

Rearrangement of the chromosomes can include Robertsonian fusion, tandem fusion, translocation, inversions, and drastic rearrangements. Let's take a look at the ways chromosome rearrangement can occur:

Robertsonian Fusion

One such rearrangement is known as Robertsonian rearrangement and is the result of either the fusion of two centromeres into one, or the splitting of the centromere in to two.

Robertsonian fusion changes the chromosome number, but not the arm number. When chromosomes line up during cell division, a metacentric chromosome lines up with two acrocentric chromosomes. An example of this is the house mouse Mus musculis, which has 40 chromosomes. Another population of mice from the Italian Alps was found to have only 22 chromosomes. This population differs slightly from the normal house mouse as well, and is classified as a different species Mus poschiavanus.

Other populations have been discovered with chromosome numbers varying between 22 and 40. The number of chromosome arms is the same and banding studies reveal the genes to have the same structural features and pattern of genes. Obviously, in terms of their relationship, these different species are all one group.

Tandem Fusion

Tandem fusion, on the other hand, is a fusion of two chromosomes in which one end of a chromosome fuses with the end or the centromere of another chromosome. Tandem fusion changes arm number and chromosome number.

Tandem fusions have been found in some antelope species where a sex chromosome fused with another chomosome that is not a sex chromosome. This is rare, and we can assume that the organisms probably had a common forerunner.

The antelope displays this fusion range in size from the eland (the largest of all the antelope) to smaller species such as the sitatunga and the bushbuck. They all share common features, however, such as similar shapes of the horns and stripes on the body which may be prominent, as in the case of the bongo, or less prominent, as in the case of the eland. Species with this type of fusion are the eland, bongo, lesser and greater kudu, bushbuck, sitatunga, and nilgai (Indian antelope) where the y-chromosome is fused to an autosome.

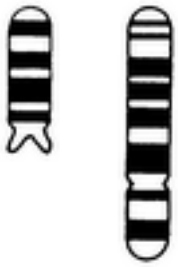
Tandem fusions are found also in Malaysian swamp buffalo and Asian river buffalo. A further interesting example of this type of fusion is the Asian deer. In the species Muntiacus muntjac, the females have only six chromosomes while the males have seven chromosomes. However, in a different species of the group, Muntiacus reevesi, both the males and the females have 46 chromosomes.

Banding studies show that the same genetic material is present in both species; the chromosomes in M. muntjac are just fused together to form very long chromosomes. Once again, no new information is added, it is just reshuffled. This provides different expressions and increased variety, just like many tunes can be played on the same piano.

Translocation

Translocations can lead to reduced fertility, or, in some human cases, Down's syndrome. This can occur when part of chromosome 21 gets translocated to another autosome. In some insects and plants, viable offspring can still be produced.

Pericentric Inversion



This type of inversion provides changes in arm number but not chromosome number. The number of arms depends on the position of the centromere. If it is located at the end then there is one arm, but if the centromere is in the middle there are two arms. The inversion can change acrocentric chromosomes to metacentric chromosomes. The rodents Neotoma (pack rat) and Peromyscus (wood mice) differ by this inversion.

Paracentric Inversion

In this type of inversion the centromere is not included. This inversion is relatively uncommon, but has been proposed for some bats, hares, and apes.

Drastic Rearrangements

Under certain circumstances of severe environmental stress, drastic rearrangements can produce greater varieties, which could enhance survival. These changes can be rapid when new adaptive zones are entered.

Chromosome banding studies show that the information is still the same—it is just rearranged. In addition, the types of rearrangements that occur in different animals are quite group-specific, meaning that one type of rearrangement doesn't necessarily occur in another group.

Natural Selection

Much of the evolutionary theory is based on natural selection.

How does this process really work? This article will help clarify exactly what is wrong and what is right about this popular foundational theory.

To begin with, we need to understand what natural selection IS and what it ISN'T. Natural selection only works if there is more than one kind of creature in existence. This may seem like an overly simplified statement, but it actually strikes at the heart of a huge misconception on the part of many.

Natural selection is an eliminator. In other words, if there are two variations of a creature, the theory goes that natural selection chooses the fittest—or best—and allows the unfittest—or weakest—to become extinct.

This goes against the evolutionary concept of more and more varied species evolving through natural selection, as natural selection creates less and less varied species. Without a pre-existing variation of species, evolution by natural selection would be impossible. Natural selection cannot explain the abundance of species we currently see on our planet if all these species stemmed from a single ancestor.

The variation that Darwin observed in the finches and other organisms on his voyage with the Beagle led to the concept of evolution by natural selection. This is significant because of the mindset during Darwin's time.

At that time, the Christian European concept of Creation was that God had created immutable, unchangeable species. It was believed that each species was created individually by God exactly as it appears today, and could not change or develop variation. The way species were, and still are, classified uses this concept to a large extent.

Before we can even consider natural selection as an evolutionary force, we need to make several assumptions.

We must assume that millions of chance mutations took place in cells and genes making an organism from which to choose. We must also assume that the genes for the varying cells in our bodies will need to have come about by chance.

By chance, these cells must have developed genes that permit the cells to communicate or work together, or else the organism will not even work. By chance, genes that switch the cell's functions on or off also need appear. All these chance

mutations need to occur before an organism can be "selected" by natural selection, because otherwise, there is no organism to choose from. But, a choice requires at least two options. So, all those chance mutations need to occur a second time to create a second organism from which to then choose from.

Is it logical to assume all these chance mutations took place without checking to see if they are even probable?

And how can a process (natural selection) that eliminates species actually make more and more? It is NOT possible. All this requires a large amount of faith in the god of "chance," and in an occurrence whose improbability is enormous.

Natural Selection as a Creative Force

Natural selection in itself is not a scientific principle because it is based on circular reasoning. By natural selection, less fit organisms are eliminated and fitter organisms survive to propagate the species. Organisms thus survive the process because they are fitter, and one concludes that they are fitter because they survive.

The process operates by elimination, not addition. In order for the fitter to survive, there must have been a less fit that did not survive. Natural selection does not create features, adaptations, or even life, it merely selects for the feature that provides greater survival value. The features themselves must still come into existence by random chance processes. Moreover, because the mechanism of natural selection operates by eliminating the less fit, it must eventually lead to less diversity unless the random chance "creation" of features outstrips natural selection in pace. This is an extremely unlikely scenario.

How can an elimination mechanism create more diversity? After all, this is what the evolutionary paradigm requires, in order for more complex diverse life forms to have evolved from a single ancestor. If natural selection is to take the place of God, then it is a god of elimination. Platnick (1977) wondered if there is any difference in the noted evolutionist Ernst Mayr's concept of "an all-powerful natural selection" and that of an all-powerful Creator. [i,ii]

A look at the palaeontological record will reveal a far greater diversity of life in the past than in the present. Moreover, as environmental pressures increase, more species are becoming extinct. Natural selection appears to be doing a good job at eliminating life forms. If given a little bit more time, it might even complete the job. Thus, if variation did not come about by natural selection, where did it come from?

Before discussing this vital question, there is a further issue regarding natural selection that needs to be discussed, and that is the level at which natural selection operates. Natural selection operates at the level of the phenotype and not the level of the genotype.

This is a cardinal rule in evolution. Processes that produce changes in the genes occur by chance through mutation and only once the gene has been transcribed and produced the phenotype can natural selection come into play. Mathematical models show that the probability is zero for selection operating at the level of the phenotype to bring about changes when random mutations are performed at the genotype level.[iii]

Let us consider this by means of a simple analogy. If I have a book with detailed instructions on how to build a number of model airplanes, how do I know which one flies best? I build the airplanes, test fly them, and select the one that flies best. In our example, the instruction book is the genotype and the actual airplane is the phenotype.

Selection can only take place once at least two airplanes have been built and can be tested. There have to be at least two variants or else there is nothing to choose from. Selection cannot take place at the level of the book, as the words in the book only become meaningful once they have been translated into the airplane. Three questions now arise:

1. Who wrote the book?

2. If the book remained closed on the shelf would I know which airplane flies best?

3. How are the instructions translated into the product?

Let's start with the first question. The book is the genotype, so it came into existence by chance. The variants on the original (more than one airplane design) came about by chance through mutations. This might sound ridiculous, but is precisely what the theory of evolution proposes.

The genotype of even the simplest organisms is far more detailed and complex than our book. To believe this thus requires a great deal of faith.

Turning to the next question, the answer to this is obviously no. A mechanism must exist to unravel the instructions in the book. This requires that the book be opened (the equivalent of enzyme systems that unravel the DNA molecules so that transcription can commence). Does this tell me which airplane flies best? No, they are still not built at this stage. Where did the mechanism to open the book (unravel the DNA molecules) come from? As natural selection will only come into play at the level of the airplanes (the phenotype), once again our only solution must be by chance. Given the complexity of these systems, once again this requires a great deal of faith.

Finally, we turn to the third question: how are the airplanes finally built? By an intelligent human or by robot assembly mechanisms designed by an intelligent

human. In the case of the cell, the complex "robot assembly line" is the complex transcription process using RNA and ribosomes to construct proteins.

The proteins are the equivalent of our airplanes, so how did the assembly process come into existence that was to build the final product (the phenotype)? The answer must once again be chance. DNA and RNA are like letters of the alphabet, their validity cannot be tested until translated.

To believe that these mechanisms come about by chance random processes requires extraordinary faith. Indeed, the handiwork of an intelligent Designer is written all over it. This also requires faith, but faith of a different kind.

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i. Ernst Mayr, *Evolution and The Diversity of Life*, (Cambridge: Harvard University Press, 1976).
ii. N. Platnick, "Review of Evolution and the Diversity of Life" *Systematic Zoology* (1977): 224-228.
iii. M. Schuetzenberger. 1967. "Algorithms and neo-Darwinian theory" *Mathematical challenges to the neo-Darwinian interpretation of evolution* (1967): 73.

Ernst Haeckel's Theories on the Origin of Higher Life Forms

Recapitulation

Ernst Haeckel (1834-1919), the main evolutionist in Germany during his time, was one of the first scientists to propose a model for the development of multicellular organisms from unicellular ancestors. He proposed that the development of an animal's embryo today reflects its evolution.

This concept, the theory of recapitulation, states that organisms go through a series of stages during their embryonic development that resemble the adult forms of their ancestors. However, Von Baer's suggestion that young stages of development resemble young ancestral stages is more widely accepted.

Haeckel's theory is largely discredited today. Evolution is based on genetic change through mutations over time. Recapitulation requires both retention of the ancestral features and change. Just because structures appear the same does not mean that they were developed from the same ancestor.

As Michael Denton points out, homologous organs and structures may develop by radically different embryogenic routes, and "the evolutionary basis of homology is perhaps even more severely damaged by the discovery that apparently homologous structures are specified by quite different genes in different species."[ii]

The Gastraea Hypothesis

Ernst Haeckel also proposed a mechanism whereby unicellular organisms may have evolved to form multicellular, and eventually multi-layered organisms. This theory is known as the Gastraea Hypothesis. Today, the Planula Hypothesis, a variant of the Gastraea Hypothesis, is more popular, but the problems remain the same as for the Gastraea Hypothesis of Ernst Haeckel.

Haeckel proposed that multicellular organisms evolved from hypothetical unicellular organisms which he called *Cytaea*. Eventually these cells remained attached after cell division and a multicellular organism which he termed *Moraea* evolved. The Moraea gave rise to a jelly-filled hollow ball of cells, called *Blastaea* which developed an indentation on one side and thus gave rise to the *Depaea*. Through completion of the indentation, the Depaea gave rise to the *Gastraea*.

The Gastraea then underwent further differentiation. A third layer of cells developed between the original germ layers. He proposed that this layer, the mesoderm, arose through cellular migration from the outer ectoderm and inner endoderm, thus giving rise to triploblastic organisms (animals with three layers)

which would then also have evolved bilateral symmetry after becoming bottom dwellers. Associated with the change in structure there would also have occurred cellular differentiation and specialization, thus giving rise to complex organisms where cells became arranged into organ systems.

For most of these proposed ancestral forms, analogous living forms are presented as evidence for the viability of such organisms. The Cytaea could have resembled living protozoa of the Class Mastigophora, the Moraea represents colonial protozoa such as Pandorina, the Blastaea in turn can be compared to colonial protozoa such as Volvox. The evolution of subsequent stages would have required some complex changes, and it is proposed that the modes of feeding and locomotion of the ancestral types would have affected further differentiation. The bottom dwelling triploblastic animals that developed bilateral symmetry could be compared to present day flatworms.

Is the Gastraea Hypothesis Viable?

On the basis of morphology, Haeckel's Gastraea Hypothesis seems to provide a reasonable pictures of how multicellular organisms evolved. However, at the genetic level there are serious obstacles.

In order to survive as living cells, the early ancestral cells needed a genotype capable of producing all the relevant proteins required to fulfil their physiological and structural needs. These early cells would have had genes coding for all the essential enzymes required to maintain the physiological processes and genes coding for all the necessary proteins involved in the structure or morphology of the cells. The probablility of a cell being formed by chance is incredibly minute, but for the sake of this argument, we will assume that such a cell did in fact arise.

Furthermore, it is not too difficult to imagine that a situation could have arisen where cells remained stuck together after cell division, thus resulting in multicellular colonies with the cells embedded in a common matrix. Problems arise, however, when the evolution of cell differentiation and eventual specialization are considered. If the colony arose through cell division, then each of the original colonial cells would have had the same genetic composition, coding for the simplest of cells.

The evolution of specialized cells requires that the different cells also evolve different morphologies and specialized structures dictated by their function. New and diverse morphological and physiological features had to develop as the organisms became more and more complex. The simple colonies would thus eventually consist of more than one cell type.

In order to ensure continuity, the genetic changes would have to be passable to the next generations, which requires a far more complex gene arrangement than existed

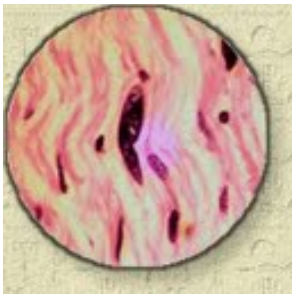
in the unicellular organism. All the variants would have to be located in each cell, with the possibility for selective activation of one or the other batteries of genes.

Assuming that the new genes somehow did evolve, and the organism was endowed with different sets of genes governing the different morphological expressions, there would then be an even greater obstacle to overcome, namely selection. The genes of cells in particular situations would have one set of genes activated and cells in another situation would have the alternative genes activated. As a comparison, in organisms living today, nerve cells have a set of genes activated that distinguish them morphologically and physiologically from liver cells, which have a different part of the genome activated, although both possess the full set of genes.

This differential activation of either the one battery of genes or the other requires a complex system of controlling genes, which would all have to come about by chance. The probability of just one function gene arising by random chance process is less than one in the number of particles in the entire universe. In fact, it is more probable for an explosion in a woodpile to construct a functional house by chance than it is for just one such new gene to come about by random chance processes. Moreover, one would have to postulate the same scenario thousands of times as cell differentiation increased. This requires a great deal of faith.

The complexity of the genetic requirements for just two different cell types to coexist within an organism is awesome, as can be illustrated by the following example.

If we look at the relationship between a muscle cell and a nerve cell, then it is obvious that there is a great deal of morphological and functional difference between the two. This requires different gene sets to be activated in the two cell types.



A nerve cell.

Of course, these two cell types would have to cooperate with each other in the living organism in order to be of any value to the organism. Also remember that at the level of the genotype, the processes occur by chance and natural selection can only come into play once thephenotype has been produced. We are not dealing with just a simple genetic variance to achieve these goals, but a host of new genes is required

to allow just these two cell types to coexist, let alone the thousands of cell types present in complex multicellular organisms.

A muscle cell.

For just these two cells, the following genes are required at minimum:

1. Promoter genes enabling the selective activation of either the one or the other. In nerve cells, only those genes which are required for nerve cells will be activated. In muscle cells only those required by muscle cells will be activated.

2. Genes, or DNA sequences, which are sensitive to the environmental cues.

3. Genes to govern the cooperation between the two cell types. This is a very complex arrangement. The two cells would have to link up morphologically in order for the one to activate the other, and there would have to be receptors that enable transfer of information from one to the other.

Where did all these genes come from? The first simple organism required more of these genes which make cooperation between different cells possible. As natural selection does not operate at the level of the genotype , and cannot create anything anyways (only sort out that which is already there), these genes had to come about by either chance or design. Considering the complexity of the system, design seems to be the only option.

Haeckel's Gastraea theory is based on a simple morphological sequence that looks good on paper, but is untenable in reality.

All mechanisms that produce variation rely on existing genetic material. None of them were subject to selection, and each of them had to come about by chance or design.

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i. M.W. Strickberger, *Evolution* (Jones and Bartlett Publishers International, 1996).
ii. Michael Denton, *Evolution: A Theory in Crisis* (London: The Hutchinson Publishing Group, 1985).

Variation and Classification

People have been classifying species for hundreds of years. Aristotle was one of the first to attempt a logical system of classification. Using characteristics such as structural complexity, behaviour and development, he classified about 500 organisms into 11 categories. He placed organisms into a hierarchy of categories, each more inclusive than the one before, a concept that has remained with us to the present day. In fact, much of the evolutionary theory finds its origin in Greek philosophy.

Carol Linnaeus (1707-1778), the father of the modern classification system, placed each organism into a series of hierarchically-arranged categories based on its resemblance to other life forms.

He also introduced binomial nomenclature, whereby the scientific name of an organism is based on the genus and species. Linnaeus believed in the immutability of species, and classified thousands of life forms into different species even though there were relatively minor variations between them. It was not until nearly 100 years later that Charles Darwin added a new significance to the categories created by Linnaeus and other taxonomists that reflected the evolutionary relatedness of organisms.

What Darwin saw was so different to the concept of immutability that he felt he had no option but to reject this concept. The finches he observed on his journey were obviously related and must have shared a common ancestor. This conflict led him to reject Creation altogether (kind of like throwing out the baby with the bath water) and develop the concept of evolution by natural selection.

A very important point to note, however, is that the science of genetics had not yet come into existence at the time of Darwin. This means that Darwin's conclusions were based on what he saw physically on the animal—the phenotype. If Darwin had known what we know today about the genetic basis of an organism (the genotype), his conclusion might have been quite different. The good news is that the genome is endowed with a marvelous capacity to produce variation, and all of these are governed by very complex mechanisms. Variation, therefore, need not be caused by chance mutation, but is possible because of the built-in variety available within the organism itself, as has been learned through the science of genetics.

The Australian Problem

The unique animals of Australia present a challenge to the theory of evolution.

The accepted paradigm is that the Australian marsupials are ancestors of mammals who carry their young in placentas. However, this theory cannot be correct because none of the native animal families have a fossil record outside of the Australian realm. In other words, the unique animals of Australia and even their immediate ancestors only existed in Australia. Perhaps the answer lies elsewhere.

Primitive or Adaptive?

Why should marsupials be called primitive just because of the way the young are born and raised? Why can't they be considered adaptive?

Placental mammals usually migrate based on the season. Young are born in the favorable season and can move on their own from an early age. This is very important to species that require stable seasonal food supplies and have to undergo long migrations between seasons.

The same cannot be said for Australia. The food is far less predictable and migration is not an option. The unique reproductive style might have been an early answer to the challenges of this environment.

Marsupial reproduction is not primitive, unless premature birth is considered primitive. Marsupials' young receive the best protection while still preventing the parent from having to carry fetuses to full term. Marsupials are thus reproductively more flexible and capable of meeting extreme environmental circumstances.

For example, marsupials can raise two young simultaneously and give them differential treatment according to their needs. This parenting must be considered adaptive rather than primitive, especially because environmental stress can cause the young to stop developing.

Only Creation seems Plausible

The particular challenges of the post-flood isolated island communities like Australia have indeed led to some wild and wonderful animal adaptations. Rather than reflecting primitive conditions, they could be demonstrating the superb adaptability of organisms and the built-in capacity of the genome to produce and supply variation when needed.

No model of origins can supply all the answers, particularly if our knowledge of many biochemical and genetic mechanisms is still so incomplete. The creationist model does, however, supply many plausible answers to some of the many questions that plague us in terms of origins. There will be areas where faith must supply the lack of knowledge, but the same is true for the evolutionary paradigm.

In the final analysis, both paradigms thus require faith. The question that everyone must ask himself is, which of the two requires more faith?

Synesthesia: Mystery of God's Creation

What if you could see the notes coming from a piano?

What if each meal you ate was its own bouquet of colors?

What if you could reduce every equation to a shape or sound?

Synesthesia

Perhaps it's not as ridiculous as it sounds. There exists a condition known as Synesthesia which causes some people to confuse two senses in various patterns, leaving them with very unique talents and frames of reference, but also allowing other incredible skills such as amazing memory.

These people experience things that defy human expectations and perceptions of reality, experiencing multiple senses at a time in extraordinary combinations, and achieving incredible feats. But why? How is this possible? What does it mean?

Synesthesia simply means combining senses. In other words, instead of merely seeing a color, a synesthete might actually hear and see it. Instead of merely hearing a symphony, a synesthete might actually taste and hear it.

The prevalent theory as to why this occurs is that the neuron pathways in our brain can experience "cross-talk" if the inhibitions imposed upon these wirings are not in place to prevent this sort of mix-up. In other words, the pathways in our brain, though blocked in most people, can sometimes open up and allow cross-sensory interaction. Therefore, an accident, such as an impact to the head, or a defect of some kind, is sometimes the precursor to this kind of condition. In fact, some have concluded that this can be replicated by drug-abusers, and that "existing connections become used in a way that's neurochemically altered for a few hours" when this occurs.[1] So not only those with the condition of Synesthesia can experience this, but theoretically anyone can.

Forms of Synesthesia

Synesthesia comes in various forms, but one of the most common forms is known as grapheme-color synesthesia, which simply means that individual symbols for numbers and letters of the alphabet, known as graphemes, are viewed by the synesthete as having color—and sometimes even texture, shape, or gender. Therefore, a Grapheme-Color synesthete might view the letter "G" as being tall and lanky, having the color blue, and being male—along with other possible attributes. And many other symptoms exist.

One such synesthete with this ability is a man by the name of Daniel Tammet. His condition allows him to "learn a language fluently in a week, memorize 22,500 digits of pi, and remember every book he's ever read" according to a Harvard Brain article.[2] Patricia Duffy related one of her experiences as a synesthete child, "I realized that to make an 'R' all I had to do was first write a 'P' and then draw a line down from its loop. And I was so surprised that I could turn a yellow letter into an orange letter just by adding a line."[3]

Other forms of Synesthesia include Number Form Synesthesia, which allows some to actually map out mathematical problems as shapes, and Sound-Color Synesthesia, which causes the synesthete to not only hear a symphony, but to also experience an automatic light show accompanying it. Lexical Gustatory Synesthesia is quite fascinating as it allows the synesthete to associate taste with spoken language so that words can literally leave a bad taste in your mouth.

Any two senses can be paired together. And this only expands the potential for enjoyment for the person, as they can now experience not one, but two dimensions of sensation simultaneously. In fact, some synesthetes look for not only good taste combinations when shopping for groceries, but also color combinations produced by these foods.

A 6th Sense?

This condition is very rare and some have estimated that no more than 100 synesthetes are alive today, though the numbers vary. However, if this is hardwired into every human brain, as researchers are beginning to conclude, perhaps this means we all have some perception of this "6th sense" on some level, remote as it may be.

In fact, many of our idiomatic expressions suggest we have. Have you ever heard someone describe a color as "loud?" Or have you ever heard music or tonality described as "dark," "light," or even "round?" When it is extremely cold, we say it is "bitterly cold." We often use phrases that reflect upon a combination or "crossover" of two senses. Haven't you ever tasted food that had a "sharp" flavor? "Sharp" is a feel word, while "flavor" is a taste word. We reflect in our language and expressions that we do have some ability to sense in multiple dimensions. And the list goes on.

But it goes deeper than that. It turns out that these aren't just random mix-ups of the senses. In fact, often, the synesthetes agree on colors of letters, or tastes of sounds indicating a possible pattern.[4] Jonah Lehrer sought out to find the cause behind this. His research found that these sensory connections are based on conceptual contexts.

For example, one subject, when trying to recall the word "Castanets," before she had actually found her word, experienced "Tasting tuna fish as she grappled for the word."[4] It was later "confirmed that these were the tastes [she] normally associated" with this word. And the same experiment was successfully replicated, indicating that it was not the actual word that sparked the taste, but the very concept alone.

And often these sensory perceptions were common across the board with synesthetes, and not random. He found "the letter o, for example, is very often white; a is usually some shade of red, b is blue or brown, while q and j are often purple or pink."[4]

Another find was that often, words taste like things whose names share phonetic sounds with those words. "Words often taste of things they share a speech sound with," he says, "'prince' tastes of mint, 'forage' of orange."[4] Indeed, it seems something exists in man that could be the residue of a system of perception far superior to, more advanced, and more complex than anything we're accustomed to today.

Synesthesia—A Glimpse of Glory?

Some have concluded that perhaps these amazing phenomena just might be a peek into what is in store for the saint in his glorified body. Scripture tells us that "Eye hath not seen, nor ear heard, neither hath entered into the heart of man, the things which God hath prepared for them that love him" (1 Corinthians 2:9). Imagine the glory of heaven if we could enjoy the entire electromagnetic spectrum, seeing sounds, and tasting colors.

What if we could memorize every piece of information with the ease of a computer by combining color, sound, taste, feel, and sight in so doing? But hold on just a minute. If these things are built into the bodies God has already given us, could it be we have stumbled onto something that was once available to us, but is now covered by the cursed condition of the universe? Perhaps the Garden of Eden was much more than we can even imagine.

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1. Carpenter, Siri. "Everyday fantasia: The world of Synesthesia." Monitor on Psychology, Volume 32, No. 3 March 2001. Available at: http://apa.org/monitor/mar01/synesthesia.html.
2. Cooper, Rebecca. "Simple Brilliance: Daniel Tammet's 'Born on a Blue Day.'" Harvard Brain, Volume 14, May 2007. Available at: http://www.hcs.harvard.edu/~hsmbb/harvard_brain2007.pdf.
3. Duffy, Patricia L. Blue Cats and Chartreuse Kittens. Holt Paperbacks (November 1, 2002).
4. Lehrer, Jonah. "Blue Monday, Green Thursday." New Scientist May 19, 2007. LexisNexis Academic. Retrieved March 26, 2008.

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