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B1015 – April 11, 2010 – Psalm 19:1-4 – Fibonacci Number & Divine Proportion

Today I want to give you something that is very practical in terms of worship. Worship is a very delicate topic today but I mean real worship, giving God the glory for the great things He has done. And to do that I want to remind us of our basic Framework we've been building.

Its springtime and we're often so blind to the universe around us because we're so caught up in the daily hustle and bustle of life. We're somewhat sheltered from this in the rural town of Fredericksburg but the urban cities are very separated from nature, they're concrete jungles and the art of man contemplating nature and even one's own self has been drowned in differing degrees in both rural and urban settings of life. So I want to try to encourage you today to get out into nature, observe, ponder the things you see, think about man, the human body, the complexity, the design that surrounds us on every side. I'm reminded of Jonathan Edwards, the greatest mind ever produced by America, who would sit for hours and observe nature and record his observations and marvel at the handiwork of God, a lost art indeed.

So let's go back to our Framework. The first historical event in the Scripture sets this up: Creation. At Creation we learn the Creator-creature distinction: that God is not the creation and the creation is not an extension of the being or essence of God. God is distinct from all He has made and to show this we use the diagram; Creator-creature distinction. The Creator is in the open box to portray that He is infinite; He's unlimited in all of His attributes. Then we have the creation and the creation is in a closed box to show that the creation is finite, it's

limited and it's dependent upon the Creator. So we have the Creator-creature distinction. Then inside the box of creation we have a second distinction, the man-nature distinction. Man is not a part of nature. Man is not descended from nature, there's a boundary between man and nature, and man alone is made in the image of God. So the first event teaches us three doctrines; the doctrine of God, the doctrine of man and the doctrine of nature. These are absolutely fundamental categories of biblical thought; they set up what follows and so we have to keep coming back to these and today we want to look at the doctrine of man and nature and the order we observe in both.

The Scriptures tell us that nature is distinct from man. It says nature is not a person, it can't talk, and it doesn't have a conscience. In this sense nature is silent. However, turn to Psalm 19 and we'll see that nature does talk to us. As we approach this we want to think a little more deeply. How is it that nature that can't speak the Scriptures say do speak of the glory of God? In Psalm 19:1, "The heavens are telling of the glory of God; And their expanse is declaring the work of His hands. ²Day to day pours forth speech, And night to night reveals knowledge. ³There is no speech, nor are there words; Their voice is not heard. ⁴Their line has gone out through all the earth, And their utterances to the end of the world." That's tough stuff. The heavens are talking, the day is speaking yet there's no speaking, there are no words, nonetheless they utter to the end of the cosmos. This is not easy stuff but what this is basically saying is that a message is communicated through nature. There's a code embedded in nature that strikes you. Nature is speaking in the sense that nature is not an end in itself, there's something more there than a rock, an animal, a tree. There's something more and the way the Scriptures communicate this is to say that nature glorifies God. What we want to do is to think about how nature glorifies God. We say, "Nature glorifies God," but if you were really pinned down and asked to defend that statement, what do you mean "Nature glorifies God?" "How does nature glorify God?" What would you say? That's what we want to talk about.

Here's an exercise we want to start with. To do this you should have a piece of paper and a pen or pencil, preferably a pencil. We're going to have to do a little math. Don't worry, if you have a calculator it will

help you when we get into bigger numbers. But even a third or fourth grader can do the math we're going to do. And so that means if you're a parent or a grandparent then I encourage you to get into this with your kids. This is crucial in the war that's being fought over our children's minds. In every science class, in every geology class, throughout the curriculum our children are getting the line that we know nature because we can describe nature. My argument is that describing something doesn't mean you know something. If someone asks what is gravity and they answer this way (this is the answer that is so seductive) that gravity is $F = Gm_1m_2/R^2$, that is, the force of gravity is equal to the gravitational constant times mass of object one times mass of object two, divided by the distance between the two objects R , squared. Is that knowledge? Here's the problem, you have described a phenomena but the seduction is that the description is knowledge. There's a problem with that. The Bible grants that you have learned something. This equation may be an accurate description of the present state of affairs in a given space at a given time, but that's not knowledge. And the reason it's not knowledge is because it's disconnected from a larger framework of reality. Paul told Timothy, always learning but never coming to knowledge. That's what this equation is and it's very seductive to think that because I know this formula I know gravity. The result of this kind of training is that the human mind starts handling things of the world as independent from God, that they are just there, they're neutral, and that means we're not taking every thought captive to Christ, that means we're not worshipping Christ, that means we're idolaters. Paul said, I determined to know nothing but Christ and Him crucified and what that expression means in the context of 1 Cor 1-2 is that Paul made a conscious effort never to claim that he knew anything apart from God's revelation. And so when we do that we have a very serious worship problem. What we do today is aimed at destroying these strongholds in the mentality of our soul. And we'll do that by talking about something called Fibonacci numbers just as a tool, as an example.

Fibonacci in Mathematics

The Golden Sequence

Here's what I want you to do. In the upper left-hand corner of the page write the numbers 0, 1 like this. What we're going to do is build a sequence of numbers by adding the last two numbers in the sequence like this, $0+1 = 1$, so write another 1 in the sequence so that now you have 0, 1, 1. Now take the last two numbers and add them, $1+1=2$ and write 2 at the end so you should have 0, 1, 1, 2. Now take the last two numbers again and do the same thing, $1+2=3$ and tack a 3 on the end of your sequence. Does everyone understand what we're doing now? It's very important at this point to understand or the rest of this is going to be a waste of time. So does anyone not understand how to build this sequence? Alright, now I want you to start adding to the sequence by yourself until the math gets too high to do it in your head. Take a minute now and just elongate the sequence.

Now, you should have a sequence that looks like this.

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597,
2584, 4181, 6765,...

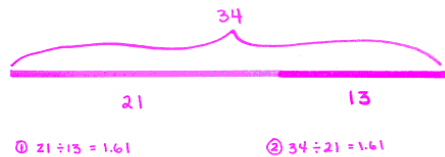
The Golden Number

Now here's what we want to do next. Let's take the number 1, third in the sequence and divide it by the previous number which is also 1. That's easy: the answer is 1. Write the answer below and between the two numbers. So below 1, 1 you'll just write 1 because 1 divided by 1 is 1. Now take the number 2 and divide it by the previous number which is 1 and you get 2. 2 divided by 1 is 2 and so write 2 under and between the 1, 2. Now do the same for 3, divide 3 by 2 and what you get is 1.66. So write 1.66 under and between 2, 3. Now do 8 divided by 5. Does anyone know what that number is? 1.66. Alright, now things are going to get interesting. As the numbers get larger the quotient is going to narrow in on a specific number and then it will just repeat. So let's try to find that number. 13 divided by 8 is what? 1.625. Now let's try 21 divided by 13. 1.61. Now watch, take any number farther down the sequence and divide it by the previous number. Let's try 610. Divide 610 by 377. What's the quotient? 1.61. Try another one for good measure. Try 144. Divide 144 by 89. What's the quotient? 1.61. Alright,

this number is what mathematicians call the Golden Number, 1.618. This is a very important number in creation.

The Golden Line

Let's play some with this Golden Number of 1.618. We'll just touch the tip of the iceberg. You can go much further than this if you want later. But stay with me, don't leave yet, we're working up to something. Okay, let's draw a straight line with two segments; make the first segment a Fibonacci number, say 21 increments long.



Make the second segment of the line one Fibonacci number less, which is 13, make it 13 increments long. You can do this with any two of the Fibonacci numbers that are next to one another once you get out of the lower numbers. So 21 increments and 13 increments when added together equal 34 increments. So the whole line is 34 increments. Now watch what you can do. There are two operations here. First, we can take the long part of the line, 21 and divide it by the short segment of the line, 13, and of course we get what? 1.61, the Golden Number. But now look what else you can do. There's a second operation. If you take the whole line length, 21+13 which is 34. And you can divide the entire length of the line by the longer segment, 21 and what do you get? 34 is the whole length, 21 is the longer segment. So 34 divided by 21 gives you what? 1.61 again. So that's intriguing. And you can do this with every line that is drawn to these specifications. Take any two adjacent Fibonacci numbers from the sequence and draw increments those lengths into a line and if you construct the line properly you will always get the Golden Number of 1.61 when you divide the larger by the smaller. This is what they call the Golden Line. The Golden Line has these proportions. So now we have the Golden Number and now we have the Golden Line.

And when you talk about a line you can also be talking about time. Time lines. When we point out dates in history we always draw them on a time line. So if we wanted to chart important things in American

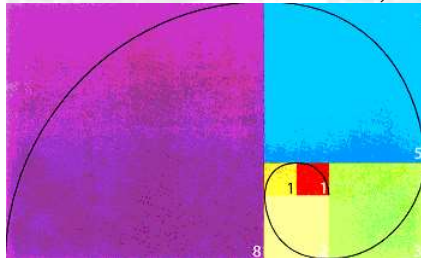
History we could plot them on a time line. The Declaration was signed in 1776, July 2nd actually, not July 4th, but in any case, we put that on a line 1776, then the Constitution 1789, the War of 1812, the War Between the States, 1860 and you can plot all these on a line. One author David Corson has done this with the major events of Israel's history and he argues that when the major events of Israel's history are plotted on a time line there are Golden Sections. A shocking discovery to find that one nation on earth has a golden history running like a thread through time. And if this is the case it's an elegant argument for the inerrancy of Scripture. That's one application of how Fibonacci can be used as a discovery tool.

The Golden Rectangle and Spirals

Now let's do one more example and this will be the end of the math. Then we can relax. You can also draw what is called the Golden Rectangle. If you're an architect or an artist you're aware of this because this is very attractive to the human eye, these proportions are used by artists, architects and even musicians. So let's draw a Golden Rectangle. Here again is the Fibonacci sequence, 0, 1, 1, 2, 3, 5, 8, 13, 21, 34 and so forth, you generate these numbers simply by adding the last two digits in the sequence. Now, starting with 1, draw a square of 1 unit, it can be 1 inch, 1 millimeter, 1 centimeter, whatever, just stay consistent throughout and you'll get this phenomena. Draw a square of 1 unit which is the first non-zero number in the Fibonacci sequence. Then go to the next number in the sequence which is also 1 and draw another square of one unit right next to it, utilizing one of the original four sides. Then come to the next number in sequence which is 2 and using the two squares side that you've already drawn draw the other three sides to make another perfect square of 2 units. The next number in sequence is 3 and do the same here, using the side that already has 3 units. Now each of these squares when added to the others is forming rectangles and the larger the Fibonacci number the closer you get to the Golden Rectangle. But putting them all together you're also forming this spiral. So keep going, After 3 the next number in sequence is 5 and so draw a square of five units using the five you already had before and keep it going in the same direction, clockwise or counter-clockwise but don't mix or you'll lose the effect. After 5 go to the next

number in sequence and it's 8 so draw a square of 8 units, then 13, then 21 and so forth. Now if you keep doing this and get into the larger numbers you realize you're drawing a series of Golden Rectangles. And how we know it's the Golden Rectangle is again if we take the length of the whole side and divide it by the longer segment, you find they're all Golden Lines, the quotient is always 1.61 and so what you're seeing in each of these boxes when you put the squares together are all these Golden Rectangles.

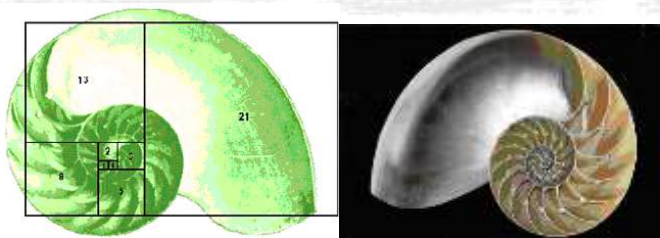
But also you're forming the Golden Spiral and the Golden Spiral looks like this. Starting on the inside where you made your very first square of 1 unit start spiraling and touching these tangents in a clockwise or counterclockwise rotation and where your next square starts that's your tangent point and just touch it, and continue rotating to the next tangent around and around and around and this spiral comes out. You say, that's just great, we can finagle with numbers and make these things. Who cares? God cares, watch.



Fibonacci in Nature

In Seashells

The Nautilus. Now do you care? That's God's design that man has discovered.



A nautilus is a seashell formed by a marine creature known as a cephalopod that secretes chemicals that lay down this spiral pattern of chambers as it grows (equiangular and logarithmic growth). And you can find these on your local seashore. If you can't find one there you can

find them anywhere they sell seashells, normally by the seashore. Look at those proportions and it's not just the nautilus, there are all kinds of seashells which contain the Golden Ratio. Why is that? Why does the chemical that is secreted by these cephalopods organize the shell according to the Golden Number, 1.618? That's something to think about.

In Spiral Galaxies

This is a spiral galaxy.



Same proportions, a series of Golden Rectangles. So from a small nautilus to an immense spiral galaxy.

In Petals

We've seen seashells, galaxies, now flowers. I used to work at the USDA with plants and flowers, took courses on ecology and plant taxonomy at the university, never learned any of this, it wasn't taught and we wonder why kids aren't interested. There are a number of things with flowers. We'll look at petals first. Again, here's our Fibonacci sequence. 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, etc... Now ask yourself, what is the most common number of petals on flowers? 1 is rare though there are flowers with one petal, example, the *white calla lily*. 2-petal flowers also are not common but you do find them, for example the *euphorbia*. 3-petal flowers are more common: *trillium*, other lilies and irises are also 3-petal. 5-petal flowers are the most common, there are hundreds of species with 5-petals, like the *bermuda buttercup*. Then we jump to 8-petal flowers, not as numerous as 5-petal but there are quite a lot. For example the *bloodroot*. Next in sequence we have 13-petal flowers like

the *black-eyed susan*. 21 and 34-petal flowers are also very common. The daisy family is famous for this. Notably the *shasta daisy* with 21-petals.

Ordinary field daisies have 34. But don't be surprised if you find one with 33 or 32 because they often lose one or more petals. But get out there and count petals and you'll find that most flowers have a Fibonacci number of petals. A reason we don't always find perfect patterns, does anyone know why not? Why is there some divergence from the pattern? Because of the Fall, because Adam's sin affected the whole creation (Romans 8:22), yet God has not allowed sin to destroy totally the marks of His great handiwork. What did Jesus tell the multitude in the Sermon on the Mount about the lily? We've just seen one. He said, "And why are you worried about clothing? Observe how the lilies of the field grow; they do not toil nor do they spin, yet I say to you that not even Solomon in all his glory clothed himself like one of these." The flowers of the field aren't just there to look at and say that's pretty, they're to remind us not to worry, if God takes care of them, will he not take care of us?

In Seed Heads

This one's fascinating. Take a look at this sunflower.



Notice how it looks like spirals are going in both directions. That's because they are going in both directions. What do you think those are? Fibonacci sequences, one spiral is one Fibonacci number, the opposite spiral is the very next or prior Fibonacci number. The spirals in one direction is 34 spirals, but the number of spirals in the opposite direction is 55.

And what's so fantastic about this is that if you wanted to fill the space optimally, this is the way you would do it. This pattern just happens to

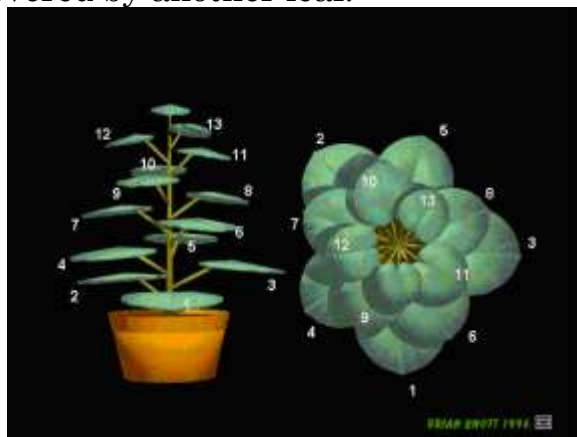
be the best, most efficient. In order to optimize the filling, it is necessary to choose the most irrational number there is, that is to say, the one the least well approximated by a fraction. Guess what number is least approximated by a fraction. You got it, the Golden Number, 1.618...The corresponding angle called the Golden Angle is 137.5 degrees. If the angle is off by only 0.1 degrees the whole pattern is blown.

In Pine Cones

Over in the conifers we have pine cones. In one direction if we trace the spirals we count 8 spirals. If we count in the other direction we count 13 spirals. The ratio of which is the Golden Number, 1.618. Not all pine cones are in the 8, 13 spiral pattern. Smaller ones are in the 5, 8 pattern. But next time you see a pine cone pick it up and think about it. Tell someone about it.

In Leaf Arrangement

Now, here's another one. Take a plant and look at it from the top down, look straight down the stem and look at the leaf arrangement. You'll notice a spiraling pattern, the leaves come off the stem at very specific places, it's not just random. You'll notice they are spaced for optimal light acquisition for photosynthesis. They are placed perfectly so they're not covered by another leaf.

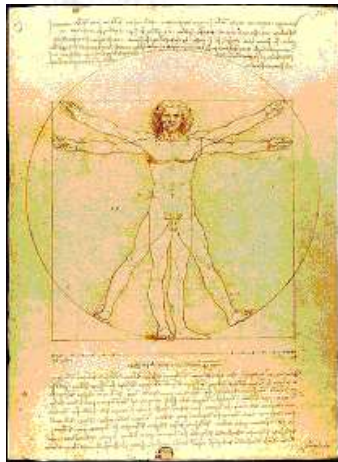


Now, with plant stems you can discover the Fibonacci numbers two ways. One, you can count the number of leaves per rotation and you'll

find that's a Fibonacci number. Or you can count the number of times you go around the stem as you count all the leaves from top to bottom and the number of rotations is also a Fibonacci number.

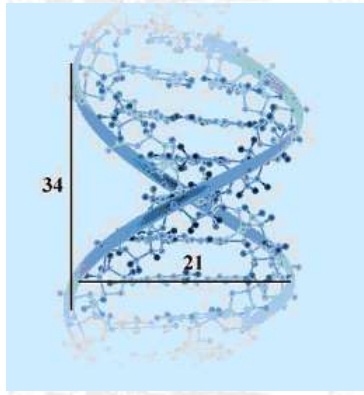
Fibonacci in Man

We've looked at Fibonacci numbers in the doctrine of nature, now let's look at them in the doctrine of man. If God made man and nature we would expect there to be a correspondence in man. Is Fibonacci in man? Look at the human body. This is Leonardo Da Vinci's famous Vitruvian Man.



The proportions from arms outstretched down to feet giving three sides and the top of man's head as the fourth side gives a near Golden Rectangle.

Here's another one, this is the DNA Helix discovered by X-ray crystallography in 1953 by Rosalind Franklin, and of course Watson and Crick got the credit. But even in the very minute things, and we could go smaller, Fibonacci is present at the atomic level. Here's our own DNA, the ratio of the twist of DNA. If we measure the length required for the DNA molecule to make one complete turn, which is 21 angstroms versus the width of the DNA molecule which is 21 angstroms we get a ratio of $21/34$. When we divide the two we get the golden ratio, 1.618.



And friends we could go on with example after example: hurricanes, the cochlea of the human ear, a ram's horn, a sea-horse tail, this one has a Fibonacci spiral and a Fibonacci rectangle in its abdomen. The Greek Parthenon. Whether the Greeks structured this deliberately to these proportions or not it has no doubt been discovered in architecture and artists paintings, architects and artists are aware that the proportions of the Golden Rectangle are the most pleasing to the human eye. This has been done on celebrity faces, dividing up the most beautiful faces you find golden rectangles, this pleases our eye, we recognize it as beauty, believer or unbeliever, it makes no difference. Growing fern leaves, waves breaking on the beach, tornados, the tail of a comet as it winds around the sun, whirlpools, planet revolution in our solar system, even in market analysis to predict human behavior in future currency and Forex markets,ⁱ etc...etc...etc...

What are we to conclude from this? Did this just happen by chance? Here you are and you have a friend and you say, "Hey, look at the heavens, look at the stars, look at the flowers, look at the patterns, doesn't that speak volumes to you of God?" And many would deny that, they would say "Yes, I see the patterns, but God doesn't speak to me through the patterns, come on, where are you coming from?" In other words, he sees the pattern but it stops there. Here's an example. This is a real quote from someone who's done a lot of work with Fibonacci numbers. He asks, "Why is it that the number of petals in a flower is often one of the following numbers: 3, 5, 8, 13, 21, 34 or 55?...Furthermore, when one observes the heads of sunflowers, one notices two series of curves, one winding in one sense and one in another; the number of spirals not being the same in each sense. Why is the number of spirals in general either 21 and 34, either 34 and 55,

either 55 and 89, or 89 and 144? The same for pinecones: why do they have either 8 spirals from one side and 13 from the other, or either 5 spirals from one side and 8 from the other? Finally, why is the number of diagonals of a pineapple also 8 in one direction and 13 in the other? For a long time, it had been noticed that these numbers were important in nature, but only relatively recently that one understands why. It is a question of efficiency during the growth process of plants.” Now is that really an answer? Has he answered the question why? The questions throughout are why, why, why. But when he came to answer did he say why? Or did he say what? Did he give an explanation or a description? It’s a description of what it does, not why it’s that way? The why isn’t answered. This is what I warned you about earlier. The answer gives the appearance of knowledge but it’s actually only a description. And descriptions of something and knowledge of something are two very different things.

So why isn’t he seeing God, why isn’t he getting the information about God that I am? How can two people see the same thing but only one gets the information? What’s the difference? The difference goes back to something Paul teaches us in Romans 1:19-20. That all people know God through nature, all people at some point see the pattern and they get the information. But if someone disparages that information, if they are negligent with that information, if they suppress that information about God then over time they gradually lose the capacity to access the information. Before long all they see is nature, “There’s no God there.” It’s not that God isn’t there any more; it’s that they have closed their eyes for so long that their eyelids are sealed shut and no longer have access to the information.

To illustrate this I want to give you a quote from Dr Richard Lewontin. Dr Lewontin was professor of zoology and biology at Harvard until 1998, and here’s a frank admission that this is a deliberate suppression, that man does not want God in his knowledge. “It is not that the methods and institutions of science somehow compel us to accept a material explanation of the phenomenal world, but, on the contrary, that we are forced by our *a priori* adherence to material causes to create an apparatus of investigation and a set of concepts that produce material explanations, no matter how counter-intuitive, no

matter how mystifying to the uninitiated. Moreover, that materialism is an absolute, for we cannot allow a Divine Foot in the door.”ⁱⁱ We will not, we cannot allow that, we do not want God in our knowledge. And if a person does that, if they shut their eyes to the message of nature, if they disparage the knowledge God has given them in nature, then, over time he will lose this language link with God. He will still be able to see the patterns in nature but he will not be able to go beyond that. He loses access.

So, the pattern is recognizable by virtually everyone but the message gets through only to those who speak the same language, for that to happen the two people have to be on speaking terms, they have to speak the same language. How do we get the language link with God? The sender and the receiver have to share a language. Where do we go to get language shared between us and God when He speaks to us? Where does He speak to us? In His word. Now the point is, that if we're not on speaking terms with the God of the Book, we will suppress His glory in nature, we will all see the patterns that may be intriguing, they may be beautiful, but they don't speak to our hearts because we're not on speaking terms with Him. That's the idea that the Bible presents of nature glorifying God, and that explains why you can have a believer and an unbeliever look at the same Fibonacci pattern and come away with two different ideas as to why. It has nothing to do with the fact people are seeing different things, it has to do with how you read it, whether you read it in terms of the Book of God's word or not.

So when you go for those evening walks, as you plant your flowers, as you look down the stem of a plant, when you think about our galaxy or your own DNA look at it through the lens of Scripture. There is a fantastic order underlying all of creation reflecting the Orderer who put it all together by His infinite brilliance. That's true worship, biblical worship. To recognize that the common pattern is due to a common Patterner; that the common design is due to a Common Designer. YHWH the Creator, Jesus Christ did that by His infinite brilliance. He gets the glory for that.

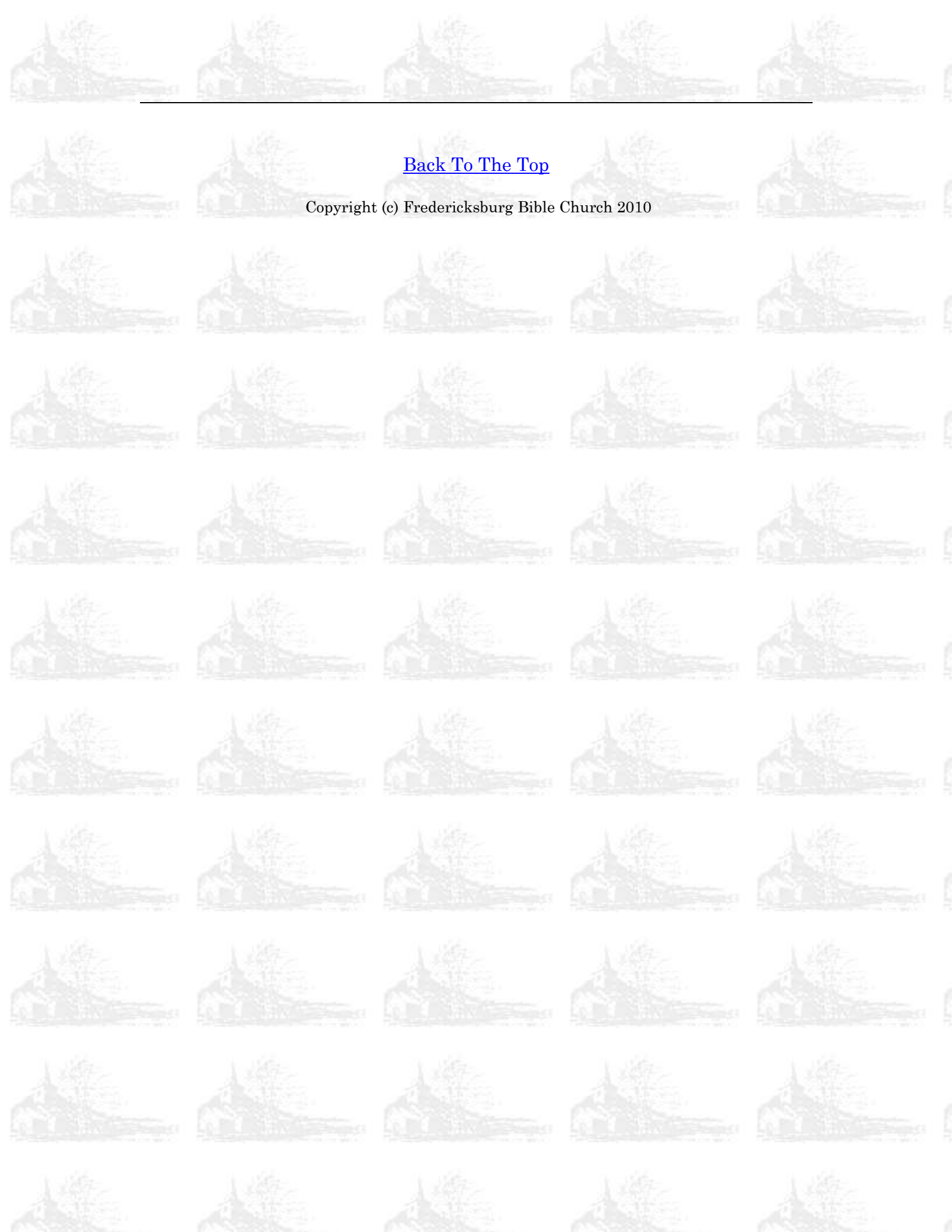
Let me close by quoting Fred Willson. Fred has been in science education for years and is now involved with the Institute for Creation

Research as an extension specialist in science education. He says, “These shapes, numbers, spirals, and the divine proportion [another name for Fibonacci] are ubiquitous in their presence throughout all of creation. They are found in living and nonliving phenomena. Their symmetry, beauty, and mathematical preciseness are evident in every aspect of nature. Although absolute perfection is not found in all of these (due to the effects of Adam’s sin), their very presence virtually everywhere and in everything argues against their having occurred by blind chance or evolutionary processes. The only rational conclusion is that the Creator of the universe is a personal, intelligent Being, who created these things as a visible fingerprint of His invisible, yet personal existence. This great, wise, powerful, creative, and sovereign God of creation is the One revealed in the Bible, of whom it can be said, “God thunders with His voice wondrously, Doing great things which we cannot comprehend.” (Job 37:5) and “Great are the works of the LORD; *They are* studied by all who delight in them” (Ps 111:2). “What is His name? The Lord Jesus Christ.” “Worthy are You, our Lord and our God, to receive glory and honor and power; for You created all things, and because of Your will they existed, and were created” (Rev 4:11).

ⁱ This is not a Christian quote, this is just an observation from a person in the business world, this individual is interested in financial markets. He says, “There is a special ratio that can be used to describe the proportions of everything in the Universe from atoms & sunflowers to humans.” Now, how can that be? Everything in the universe follows this special ratio? He goes on, “Nature uses these ratios to proportion and maintain balance and the ratios also apply to behavior and the financial markets, which are a manifestation of the human collective that participate in the markets. Fibonacci analysis is widely spread in the future currency and Forex markets.”ⁱ So he’s talking about using it to predict markets, how human behavior can be predicted and he draws Fibonacci retracements and extensions from Fibonacci. Of course we can’t go along with his philosophy that man is a part of nature and is therefore determined in the way that evolution holds. If we were we could predict the markets perfectly and make a lot of money. But we quote it for the observation.

ⁱⁱ <http://www.creationontheweb.com/content/view/703/>

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