Is Life Singularly Nested or Not?

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KEYWORDS

nested, hierarchy, netted, bioclassification, nature of God, biosystematics, baraminology, chimeromorphs, homoplasy, typology

ABSTRACT

Life forms have long been assumed to be arranged in a single, inviolably nested hierarchal pattern. However, evidences of typology, examples of chimeromorphs, problematica, low orthologous gene frequencies, horizontal gene transfer, iterative, convergent, parallel, and heterochronic evolution, and alternate classifications from changes in taxonomic prioritization of characters, as well as cladistic observations of unresolved multichotomies, abundant most-parsimonious cladograms, low consistency indexes, and increased character weighting suggest that more than one hierarchal pattern might be equally and simultaneously true. Biblical bioclassification not only classifies organisms differently from modern bioclassification, but also appears to be purposely flexible -- varying according to the specific needs of the one who uses the classification. Divinely instituted hierarchies of family, government, and church are neither inviolably nested nor descriptive of all the complex, many times hierarchy-contradicting relationships which exist within the institutions. Man creates things which can be grouped into multiple, equally valid classifications, and God's very nature cannot be described by any single hierarchy. It would seem that neither God's nature nor His creation (reflective of His nature) is arranged in a singular nested pattern. A multiple-nested and/or networked pattern for life should be seriously considered by creationists for superbaraminic classification.

INTRODUCTION

It has been common -- even in my own writings -- to claim that life is hierarchal. Clearly, it would seem, the opposable thumb unites apes, humans, and monkeys into the order of primates, internal placental development of the young unite non-opposable-thumbed critters and primates together as placentals, hair and milk production unite the placentals and non-placentals together as mammals, notochord development unites non-mammals together with mammals as vertebrates, blastula development unites vertebrates with invertebrates as animals, and DNA and RNA unite non-animalian organisms and animals together as living things. Every organism enjoys membership in many groupings -- an all-inclusive one and a hierarchy of successively smaller groupings, each nested within the former. One of the most basic features of life is claimed to be this 'nested hierarchy of similarity'. Biosystematics with its nested hierarchy of group names (species within genera within families within orders within classes within phyla within kingdoms) has supposedly arisen to allow for the proper classification and naming of this most fundamental feature of life.

In creationist and evolutionist circles alike life's hierarchy is taken as a given. It is usually felt that the hierarchal classification system was developed by creationists in an effort to describe an observed pattern of life -- of even God's very nature as Creator. Additionally, there seem to be many non-biological examples in God's creation (e.g. ranks of angelic authority, as well as hierarchies of authority within the home, the church, and government) [22]. There is even a hierarchal pattern to those things created by man (e.g. soup spoons within spoons within silverware within tableware within kitchenware within housewares, etc.), who, being created in the image of God might be expected to create in ways rather like the way God created life

[22]. One creationist writer has gone so far as to say that if life is not hierarchal then his whole theory of biogenesis is falsified [14].

This paper seeks to re-examine the claim of the nested hierarchy of God's creation. Other possible understandings of the pattern of God's creation are suggested as alternatives.
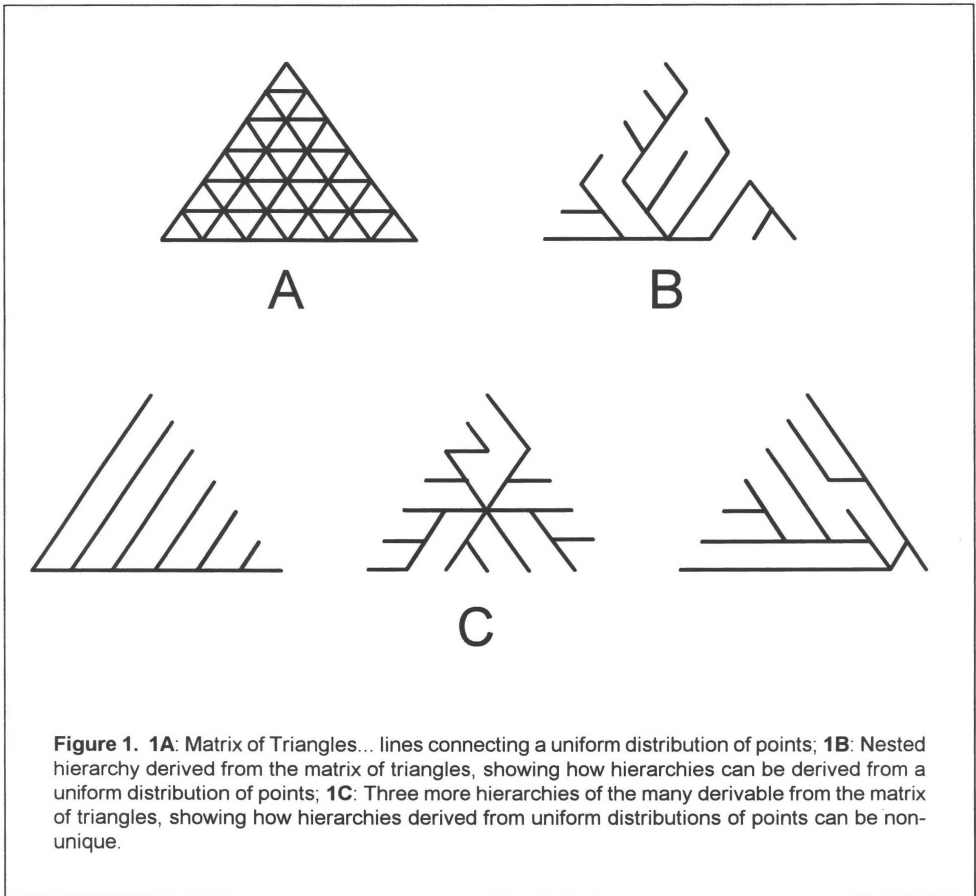

Figure 1. 1A: Matrix of Triangles... lines connecting a uniform distribution of points; **1B**: Nested hierarchy derived from the matrix of triangles, showing how hierarchies can be derived from a uniform distribution of points; **1C**: Three more hierarchies of the many derivable from the matrix of triangles, showing how hierarchies derived from uniform distributions of points can be non-unique.

A MATRIX OF TRIANGLES

I was one day gazing at the decor of a hotel near Philadelphia when I became interested in a pattern exhibited in several places in the building's design. The pattern of the window frames in the skylight and the 'roof' frame over the bar was that of a matrix of triangles (Figure 1A). What struck me was that I could start at an intersection of lines in that pattern and construct (without using all the available lines) a 'tree' which connected all the intersections (Figure 1B). However, there were far more trees than one which could be so constructed (*e.g.* Figure 1C). If I had stopped with the first tree I could have erroneously concluded that the points were distributed in a single nested hierarchal pattern. In point of fact, the points were not only just as consistent with many other nested hierarchal patterns, they were actually distributed uniformly!

As a general rule (and as a principle of common sense) when a person searches for something he or she stops when it is found. It has thus been true heretofore, that biologists (*etc.*) have stopped when they found life's characters to be distributed in a nested hierarchal pattern. But, is this the true pattern, or (like the matrix of triangles in the Philadelphia hotel) is it merely the first pattern found and the true pattern has thus far eluded us?

IS LIFE IN A SINGLE, INVIOLABLY NESTED HIERARCHY OF FORM?
Cladistic Ambiguity and Consistency

The modern cladist usually relies upon a computer program (*e.g.* MACLADE, PAUP, PHYLIP) to determine the choice cladogram for his organisms. There are several reasons for this. The main reason is that, depending upon how many organisms and organismal characters one utilizes, thousands to hundreds of thousands to even millions of different cladograms can be constructed from those organisms. The computer is able to search through and evaluate each of these possibilities in the light of criteria given by the researcher to choose the preferred cladogram. The commonest criterion is parsimony (specifically, choose the cladogram with the fewest number of homoplasies and reversals). No matter what the criterion, however, it is not uncommon to have many (even thousands of) nearly identically desirable cladograms (*e.g.* [13] and [19]). A particular cladogram represents a single nested hierarchal pattern of characters. An alternative cladogram represents an alternative nested hierarchal pattern of characters. Multiple cladograms with equal desirability represent the possibility of a *multiply*-nested hierarchal pattern -- one where more than one nested hierarchal pattern is true at the same time.

Large numbers of alternate cladograms arise at least in part because of homoplasies. Cladists use a 'Consistency Index (CI)' as a measure of homoplasy frequency [7]. A low CI indicates that homoplasy frequency is high. It is not uncommon for cladistic studies at higher taxonomic levels to result in cladograms with low consistencies -- thus high homoplasy frequency (*e.g.* [19] and [12]). A homoplasy is a lack of fit between the observations on actual organisms and a proposed cladogram. Therefore, the commonness of low consistency indexes at higher taxonomic levels suggests that at higher taxonomic levels life does not fit single nested patterns.

Degrees of Taxonomic Significance

Long before cladistics introduced its quantitative measures of consistency, it was recognized that dealing with characters equally results in contrary alternative classifications. Yet, biosystematics seeks to identify the 'natural' classification of organisms (which was thought to be a single, inviolable nested hierarchy). It was recognized that weighting characters (*i.e.* considering them more 'taxonomically significant') allows the production of singular classifications. As a result of this weighting process, organisms which appear to be very similar in certain characters end up classified in separate groups by the use of other (more 'taxonomically significant') characters.

In macroevolutionary biosystematics, natural groups are considered reflective of phylogeny. For the macroevolutionist, then, a homologous character (*i.e.* one inherited from a common ancestor from which it evolved) has higher 'taxonomic significance' than an analogous character (*i.e.* one independently evolved in at least two different organisms). Many evolutionary taxonomists simply do not include analogous characters in their biosystematic studies. Analogies would typically be explained by the macroevolutionist as being due to either convergent, parallel, or iterative evolution. Since any of these analogies could theoretically be made into homologies if these characters were given higher taxonomic significance, most analogies are the consequence of character-weighting in evolutionary systematics. Therefore, all claims of convergent evolution (*e.g.* in marsupial/placental comparisons), parallel evolution (*e.g.* among families of mammal-like reptiles), and iterative evolution (*e.g.* in foraminifera) constitute examples of character weighting. They may also imply that the true arrangement of organisms is more consistent with multiple nested patterns than it is with a single nested hierarchy.

In cladistics, shared, derived characters (synapomorphies) are weighted more than other characters (*e.g.* plesiomorphies, reversals, homoplasies). Again, changing the criterion of parsimony (or abandoning it) would result in different characters becoming taxonomically significant. Thus cladistically discovered homoplasies are effectively evidence of character weighting. The abundance of homoplasy in a given cladogram (indicated by a low CI) is thus an implicit measure of the amount of character weighting which is required to do that given cladistic study. It has even become a rather common cladistic practice to further weight the characters of a study in order to reduce the number of equally parsimonious trees which result from a given study. The commonness of homoplasy, low consistency indexes, and explicit character weighting in cladistic studies may well indicate that multiple nested hierarchies better describe life's structure than does a single nested hierarchy.

Chimeromorphs

Organisms can contain a mixture of fully developed characters which are usually associated with two different groups. Steven J. Gould calls these creatures evolutionary chimeras or mosaics; Wise [23] calls them chimeromorphs. Chimeromorph examples would include the *Archaeopteryx* (called a 'curious mosaic'

by [10]), the platypus, and the Burgess Shale arthropods and 'problematica' (see [9]). Many organismal character states explained as the result of heterochrony or mosaic evolution (*e.g.* the ape/human character state mixture in *Australopithecus* -- see, *e.g.* [8]) are probably also merely chimeromorphic character combinations.

Chimeromorphs which are not phyletic intermediates would violate the idea of a single nested hierarchy of similarities. This in turn would challenge the idea of a single nested hierarchy of life and its phylogeny. The increasing number of chimeromorphs being denied intermediate phyletic status upon close examination would suggest yet another fundamental failure of the single, nested hierarchal view of life.

One or a few characters of a chimeromorph can deceptively appear to be evidence of evolutionary relationship (*e.g.* the various characters which appear to evidence endosymbiotic theory [see 16] -- and the similar bipedality of humans and australopithecines). Too many chimeromorphic characters in too many organisms results in unresolved multichotomies in cladograms (*e.g.* as would be the case considering the development of invertebrate phyla -- see [21]). This ultimately seems to provide powerful evidence for typology. Much of the data Denton [5] interprets typologically is probably a consequence of the chimeromorphic nature of created organisms. A closer evaluation of the evidences of evolutionary similarity, unresolved cladistic multichotomies, and typological data will likely reveal much more chimeromorphism among creatures than is currently recognized. This in turn will progressively increase the challenge to the traditional single-nested hierarchy view of life.

The use of any current biosystematic scheme will result in some particular (single) nested hierarchal classification for the organisms involved. If alternate character-weighting is used, a different nested hierarchal pattern usually results. If, in this latter case, *equal* weighting were to be utilized, a *multiple* nested hierarchal pattern would result. The commonness of homoplasies in cladistics, the existence of chimeromorphs, as well as claims of analogies, convergences, parallelisms, and iterative evolution in evolutionary biosystematics suggest that alternate and/or multiple nested hierarchal patterns are not only possible, but may be likely, among organisms on earth.

Other Developments
As research in biology continues this author is convinced that the evidence against a singular nested pattern to life will continue to mount. As entire genomes of organisms are being characterized, similar genes in distantly related organisms seem to be stimulating increased discussion about lateral gene transfer (*e.g.* [11] and [6]). There is also the curious observation of the low frequency of orthologous genes (those thought to be similar because of common ancestry) as compared to both non-orthologous genes and even 'orphan' genes (those with no known function) (*e.g.* [3]). Discussions of lateral gene transfer and examples of relatively high non-orthologous and orphan gene frequencies challenge the idea that life's structure is characterizable in terms of a single nested hierarchy. The wealth of information promised from these genome-wide comparative genomic studies of the future will (in this author's opinion) continue to challenge the concept of the singular nested hierarchy of life -- as well as other claims of the conventional biological community.

Divine Bioclassification
While inspiring Scripture, the Holy Spirit classified things into nested hierarchies. Figure 2 (Classification A) is the nested hierarchal classification of beings which seems most consistent with Scripture (see Appendix for justification).

Although the nested hierarchy of Classification A **minimizes** the inconsistencies in classification used throughout Scripture, it does not eliminate them:

1. Taxa in this classification are blurred by organisms which exist on boundaries between groups (*e.g.* flying insects lying on a boundary between flying things and creeping things: see Lev. 11:13-23; Deu. 14:11-20; believers who possess both flesh and spirit; and incarnate Christ who was Creator, but also took on the form of a created being) and by organisms which take part in two different groups at two different stages of their development (*e.g.* mustard which although it is an herb, grows into a tree: see Mat. 13:32).

2. Homoplasies seem to exist in this classification. For example, life (He: *chay* and derivatives; Gr. *zao* and derivatives) is not only possessed by the living things listed in the above classification (*i.e.* water-dwelling, flying, and walking/crawling creatures), but is also possessed by God (Num. 14:21,28; Deu

```
God
      Father
      Son
      Holy Spirit
Creations of God
      Created Spirits
            Fiery Spirits
            Ministering Spirits to the Elect
      Green Things/Creations
            Grass
                  of earth/land
                  of field
                  of mountains
            Herbs
                  of land
                  of field
                  of mountains
            Trees
                  of land
                  of field
                  of forest/woods
      Living, Moving, Soul, Flesh Creations (i.e. Creatures)
            Water Creatures
                  tanniyn
                        (clean vs. unclean?)
                        (sea vs. rivers?)
                  Non-tanniyn
                        Clean (w/both fins & scales)
                              Fish
                                    in seas
                                    in rivers
                              (non-fish?)
                        Unclean
            Earth Creatures With the Breath of Life
                  Flying Creatures
                        Clean
                        Unclean
                  Walking/Crawling Creatures
                        Cattle
                              Clean
                              Unclean
                        Beasts
                              Clean                        Unclean
                                    of Land/Earth                of Land/Earth
                                          Wild                          Wild
                                          (Non-Wild)                    (Non-Wild)
                                    of Field                     of Field
                                          Wild                          Wild
                                          (Non-Wild)                    (Non-Wild)
                                    of Forest                    of Forest
                                          Wild                          Wild
                                          (Non-Wild)                    (Non-Wild)
                                    of Desert                    of Desert
                                          Wild                          Wild
                                          (Non-Wild)                    (Non-Wild)
                        Creeping Things
                              Clean
                              Unclean
                        Man
```

Figure 2. **CLASSIFICATION A**. Biblical classification of organisms (see Appendix).

5:26; Acts 14:15; Rom. 9:26, *etc.*) and at least some spiritual beings (Eze. 1:5,13-22; 3:13; 10:10-20). Life does not, on the other hand, appear to be possessed by plants [18]. If things were classified according to the type of life they possess, the following higher classification might result:

CLASSIFICATION B

Green (non-*chay*) Things
Living (He: *chay* and derivatives) Things
    Creator
    Creatures
        non-fleshy creatures
        fleshy creatures

In this classification 'creation of God' is a homoplasous condition since it is possessed by the green things and the creatures, but not by God Himself.

3. The day of creation was not included in Classification A because a) we don't know when the angels were created; and b) the Day 6 creatures (the walking/crawling creatures) would end up a subset of the living, moving, soul, flesh creatures. The insertion of the Day 5 creatures in the hierarchy would make the Day 6 creatures a subset of them, something which is not permitted in a nested hierarchy. The higher classification using the time of creation would be something like:

CLASSIFICATION C

Creator
    Day 3 Creation
        Green Things
    Moving, Living, Soul, Flesh Creations
    Day 5 Creation
        Water Creatures
        Flying Creatures
    Day 6 Creation
        Walking/Crawling Creatures

The attendant homoplasous characters in this classification are *chay* life for the Creator and the creatures (but not the green things), and 'earth creatures' for flying things and walking/crawling things (but not sea creatures).

4. Occasionally hierarchies were utilized in Scripture which associate things in a different manner than is evident in any of the above classifications. On the subject of dominion, glory and honor for example, man is considered "a little lower than the angels", and in turn over all created things -- specifically mentioning the earth, water creatures, flying creatures, and moving, living land creatures like cattle, beasts, creeping things, and the earth (Gen. 1:26,28; Ps. 8:3-8; Heb. 2:6-8). The classification based on human authority may look something like:

CLASSIFICATION D

God
    Creation
        Angels (= Spirit Creation?)
        (Material Creation)
           Man
               Water Creatures of the sea
               Flying Creatures
               Walking/Crawling Creatures
               Earth

Attendant problems in this classification include: a) the position of the plants (*e.g.* as a product of the earth?); b) the lack of character trait(s) which unite man and creatures (*i.e.* moving, living, soul, flesh) but not the earth; and c) (an argument of [20]) angels are supposed to minister to man (Ps. 91:11-12; Mat. 18:10; Heb. 1:14) and will be judged by man (I Cor. 6:3).

5. Some Biblical taxa occupy two different higher taxonomic groups of equal taxonomic status simultaneously (*e.g. tanniyn* describes both a water organism (Gen. 1:21; Isa. 27:1; Eze. 29:3; Lam. 4:3) and a desert organism (Exo. 7:9-10, 12; Deu. 32:33; Neh. 2:13; Job 30:29; Ps. 91:13; 44:19; 74:13; Isa. 13:22; 34:13; 35:7; 43:20; Jer. 9:11; 10:22; 14:6; 49:33; 51:3).

6. The classification of food into acceptable and unacceptable categories changes throughout Scripture. Acceptable food changed from just plants (Gen. 1:29-30), to plants and all blood-drained animals (Gen. 9:3-4), to clean animals (and presumably plants) (Lev. 11 and Deu. 14), and finally to all things (Acts 10:11-16).

7. There are some ambiguities in the classification which do not seem to be clarified in Scripture. Examples include:
   a. The Hebrew words *behemah* and *chay*, sometimes translated 'cattle' and 'beast' respectively) seem to be in some passages distinct (*e.g.* Gen. 1:24,25; 2:20; 3:14; 7:14,21; 9:10; Lev. 5:2; 11:2; 25:7; 26:22; Num. 35:3; Pss. 50:10; 148:10; and Isa. 46:1), but in other places interchangeable (*e.g.* compare Gen. 8:17 and 19; I Sam. 17:44 and 46).
   b. More specific groups of plants and beasts are sometimes identified in Scripture by reference to 'of the field' or 'of the earth/land' or 'of the forest', 'of the mountains', *etc.* It is not clear whether the two most common terms ('of the field': Hebrew word *sadeh* and Aramaic word *bar*) and 'of the earth' (Hebrew word *erets*; Aramaic word *'ara*)) are distinct classifications or not. Intuitively, 'field' would be a more specific designation (*i.e.* a subcategory) of 'land' or 'earth', yet 'field' is rarely used with land or earth, and when they are (*e.g.* grass of the earth and field in Dan. 4:15; herb of the land and field in Exo. 10:15; beast of the field and earth in Job 5:22-23), they can be understood to be synonymous.
   c. It is not clear what the subset of water creatures known as the *tanniyn* in Hebrew actually represents and whether or not there are clean or unclean forms of this creature.

8. In different situations where such differences seem to matter, different characters are used to define the lowermost taxonomic groups. For example, in the passages which distinguish organisms with respect to either dietary law (Lev. 11 and Deu. 14) or to ark membership (Gen. 7:2-3) the beasts are divided according to clean vs. unclean. In contrast, in other passages (possibly where man's ecological relationship with organisms is stressed) an ecological division of the beasts is utilized (*e.g.* forest vs. field in Ps. 50:10 and 11; Pss. 104:11 and 20; and Isa. 56:9). In yet other cases, a wild (*vs.* tamable?) designation is either used instead of a clean/unclean distinction or an ecology designation (*e.g.* Lev. 26:22; II Chr. 25:18; II Ki. 14:9; Job 39:15; Hos. 13:8; Mk. 1:13; Acts 10:12) or as a subcategory of clean/unclean (*e.g.* Deu. 14:5) or of ecology (*e.g.* I Sam. 17:46; Pss. 50:11; 80:13; Isa. 13:21,22; 34:14; Jer. 50:39).

All of these observations suggest that Scriptural bioclassification was never meant to be absolute, but that it was *intended* to be flexible. Such flexibility would allow different classifications to be utilized in different situations -- depending upon what classification most aptly suited the situation at hand. This suggests that organisms may not have been created to reflect a single classification system, but that they were created in such a way that a variety of classification systems could be applied to them to better suit the needs of man and his God in given situations.

The last observation to consider here is that the Biblical bioclassification is rather different from our current bioclassification schemes. First of all the Biblical bioclassification primarily classifies organisms by means of their ecology rather than their morphology. As a result, there are many organisms united in Biblical classification which are separated in traditional bioclassification. Bats, for example, are united with birds (Lev. 11:19; Deu. 14:18), (sometimes at least) flying insects (Lev. 11:21-23) and probably also with pterodactyls in the category of flying creatures. Whales (the *tanniyn* of Gen. 1:21?; Jonah's 'fish'?) are united with swimming reptiles (*tannanyn* of Gen. 1:21?; *leviathan* of Job 41, *etc.*), fish (Lev. 11:9; Deu. 14:9), and marine invertebrates (prob. Lev. 11:10-12; Deu. 14:10) in the category of water creatures. Finally, non-flying insects, reptiles, small mammals, and probably other terrestrial invertebrates all seem to be united as creeping things (Lev. 11:29-31). As a consequence of this, Biblical bioclassification often divides groups traditionally united (*e.g.* invertebrates, reptiles, and mammals are each divided into at least the categories of flying creatures, swimming creatures, and creeping creatures) and unites groups traditionally divided (including some of the reptiles and mammals united within the 'beast' category). The incompatibility of traditional bioclassification with Biblical bioclassification strongly argues against the 'naturalness' or absoluteness of traditional bioclassification.

ARE OTHER DIVINE CREATIONS FASHIONED IN SINGLE NESTED HIERARCHAL PATTERNS?
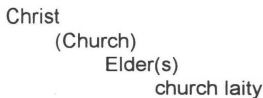### The Family
God created the family when He created Eve for Adam. Under Christ (I Cor. 11:3) the husband is to have authority over the wife (Eph. 5:22-3; Col. 3:18; I Pet. 3:1-6) and the children are to submit to the authority of the parents by command (Eph. 6:1-3; Col. 3:20; Tit. 2:5) and by Christ's example (e.g. Luke 2:51; John 19:25-7). Even before the Fall, however, the husband was probably given authority over the wife because a) Adam was created first (I Tim. 2:12-13), b) woman was made from man (I Cor. 11:8), c) woman was made for man (I Cor. 11:9), d) after Adam and Eve had both disobeyed God, God spoke first to Adam (Gen. 3:9-11), and e) the Fall was the result of Adam's (not Eve's) disobedience (Rom. 5:12,15,16,17,18) even though Adam did not disobey first. It is also reasonable to assume that even before the Fall the children were to be under the authority of their parents who in turn were under God's authority, even as is the case today. The current hierarchal pattern of family authority has thus likely existed from the beginning:

God
   Husband
      Wife
         Children
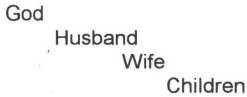
At the same time, the husband and wife are to be one (Gen. 2:24; Mat. 19:5-6; Mk. 10:7-8; Eph. 5:31; I Pet. 3:8) and in **mutual** submission to one another (Eph. 5:21; I Pet. 5:5). Husbands are to serve their wives over whom they have been given authority (Eph. 5:25-30; I Pet. 3:7). Note also how the obedient son Joseph (Gen. 37:13-14) becomes ruler over his father and mother (Gen. 47:11-12) as prophesied in an earlier dream (Gen. 37:9-10) [20]. Thus although a divinely instituted hierarchy of authority exists within a family, it's not the only hierarchy which does or can exist within the family. Many complex relationships can, do, and should exist within the family which relate members in very different hierarchies. Note also that even if it was inviolable, the family authority structure is not nested, for the family is not a subset of God, nor the wife a subset of the husband, etc.. Here equivalent hierarchal levels in a nested classification of beings (e.g. Creator vs. Family; husband vs. wife vs. children) are at **different** hierarchal levels in a classification of authority.

The Church
New Testament epistles outline a divinely instituted hierarchy for the local church. Christ is the head of the church (Ps. 118:22; Mat. 21:42; Mk. 12:10; Luke 20:17; Acts 4:11; Eph. 1:22; 4:15; 5:23; Col. 1:18; I Pet. 2:7) with the under-shepherds (pastors/elders) under Him and over the people of the church (I Cor. 16:16; I Pet. 5:1-4):

Christ
   (Church)
      Elder(s)
         church laity

Yet, as in the case of the family, church members (including the elders) are commanded to be **one** (Ps. 133:1; John 17:11,21,22; Rom. 15:6; I Cor. 12:25; II Cor. 13:11; Eph. 4:3, 13; Php. 1:27; 2:2; I Pet. 3:8) and in **mutual** submission to one another (Eph. 5:21; I Pet. 5:5). Leaders (e.g. elders) are called upon to serve those over whom they have authority (Luke 22:24-27; John 13:4-17; Acts 20:28; I Pet. 5:1-4). Thus, although the hierarchy of authority exists within the church, it's not the only hierarchy which does exist. Note also, as in the case of the family, the church hierarchy is not nested, but equivalent hierarchal levels in a nested classification of beings (e.g. Christ and church; elders and laity) are at **different** hierarchal levels in a classification of authority.

It is also important to note that the institutions God has established for man to relate to Him have changed through time -- from walking in fellowship in the pre-Fall world (inferred from Gen. 3:8) to (apparently) family priests through the patriarchal ages (Abel: Gen. 4:4; Noah: Gen. 8:20-9:1; Job: Job 1:4-5, 42:8; Abraham: Gen. 12:7, 12:8, 13:4, 13:18, 22:2ff; Isaac: Gen. 26:25; Jacob: Gen. 33:20, 35:1-7; Jethro: Exo. 2:16, 3:1, 18:1, 18:12; and Moses Exo. 17:15), to Aaronic priesthood until the time of Christ, to finally the church since Pentecost. It seems that God has related to man through a series of different hierarchies through time.

Scripture compares the relationships within the church to a body (e.g. Rom. 12:5; I Cor. 12:12-27; Eph. 4:11-16) No one is to see himself any more important than any other -- all members of the body are to be 'fitly joined together'. Nested hierarchies can be found in the body (e.g. atoms within molecules within organelles

within cells within tissues within organs within organ systems within the body). Yet there is such inter-relationships among various body parts that body parts many times must take part in multiple systems (*e.g.* the hypothalamus and adrenal glands in both the endocrine and nervous systems). A completely acceptable singular nested description of the human body does not seem to be possible.

Government
According to Romans 13:1 God has established governmental authorities. Under the authority of God (Col. 2:10), a government is to have authority over the people in its jurisdiction. People in its jurisdiction, in turn, are to obey the government (Rom. 13:1-7; Heb. 13:17; I Pe. 2:13-16; Tit. 3:1). Yet, the government also has a responsibility to serve the people it has divine charge over (Rom. 13:4). Furthermore, as in the case of church hierarchy, government hierarchy has not always been. It did not exist when Adam was alone; it may not have existed until after the Flood.

Changing, Inter-related Hierarchies
In reality, institutions and their associated hierarchies are in a state of flux. Children leave their families to begin new ones. Parents die and children are born. Church members leave their local churches to start new ones, families relocate, local church hierarchies are revised. People immigrate to other countries. New provinces are divided out of given countries. Government hierarchies are continually revised. Because change characterizes all life, all hierarchies must be fluid enough to change and adapt.

A given person occupies a number of different hierarchies simultaneously (in their family, their church, their city, their state, their national government, their workplace, *etc.*). Many times two people in proximity may even simultaneously occupy multiple **conflicting** hierarchal relationships. As commander in a local Awana program I am in authority over the man who is my boss in the workplace. When I was a secretary in the Cubbies program in which my wife was Director, I was under her authority in Awana, and in authority over her in the family. My changing positions through time in the church and in the workplace have also altered authority relations (*e.g.* in Awana being under my wife as her secretary then later over her as commander). Not only are divinely created hierarchies of authority not nested, they change through time. They represent only one of many simultaneous relationships which exist at a given time, but they are overlapping and versatile enough to adapt to the changing complex needs of reality. The life of Jesus is a good example [20]. At one point Creator of all -- including man -- (*e.g.* John 1:1-3), He was made lower than angels (Heb. 2:9), made in the form of a servant (Php. 2:7), was humbled (*e.g.* Isa. 53:9; Luke 22:37; Acts 8:33; II Cor. 8:9; Php. 2:8), was obedient to (Luke 2:51) and honored his parents (John 19:25-7), and is now and will ever be elevated again above all (*e.g.* Mat. 16:9; Php. 2:9-11; Eph. 1:20; Rev. 5:2).

DOES MAN CREATE IN SINGLE HIERARCHAL PATTERNS?
[22] suggested that the hierarchal pattern of God's creation was mirrored in man's hierarchal pattern of creation. After all, different 'species' of forks can be classified into the 'genus' of forks, which in turn can be united with the knife and spoon 'genera' to form the 'family' silverware, and that family can be united with plates, *etc.* into the 'order' tableware, which can be united with furniture, *etc.* into the 'class' housewares, *etc.* Shapiro [17], however, took issue with this, saying "The objects could be classified equally persuasively by materials, or size or weight or color or country of manufacture, or..." Shapiro is correct. Multiple hierarchal classifications **are** possible -- just as they are among living organisms.

Another example can be found in the classification of written materials in libraries. More than one classification system exists for published material (*e.g.* the Dewey Decimal system, the Library of Congress system, and the system for my office books). It is not apparent that there are 'correct' and 'incorrect' systems of classifying books. There are certain systems which are most efficient for certain types of information retrieval. Other systems are more efficient for other retrieval purposes. Most of those systems reflect the purposes of the organizers without reflecting at all the mode of origin of the books. This might well function as a reasonably good analogy of how life is arranged. Regardless of how life actually came to be, or even how it is actually arranged, it may be more appropriate to see alternate bioclassifications as alternate methods of information summary and retrieval.

CAN GOD'S NATURE BE DESCRIBED BY A SINGLE HIERARCHAL PATTERN?
Because God called (Hos. 11:1; Mat. 2:15) and sent (John 5:23; 16:77; Rom. 8:3; Gal. 4:4) the Son, sent the Spirit (John 14:26; 15:26; 16:27), and Jesus repeatedly submitted to the will of the Father (Mat. 26:37; Mk. 8:31; 14:33-6; II Cor. 5:21ff; Heb. 5:7-8) and is called God's servant (Ps. 2:7; Isa. 42:1), it is tempting to characterize the very nature of God as hierarchal. In fact, Origen and others did just that in the first few centuries of the Christian Era in the form of the doctrine of subordination [4]. However, the true nature of

God seems to be much more complicated (see, *e.g.* the discussions of [1] and [2]). The three persons of the Godhead are one (Deu. 6:4; Isa. 44:6; Mat. 23:9; Mark 10:18; 12:29; John 5:44; 17:3; Rom. 3:30; I Cor. 8:4, 6; Gal. 3:20; Eph. 4:6; I Tim. 1:17; 2:5; Jam. 2:19; 4:12) and Christ is all God (Php. 2:6; Col. 2:9). At different times one or more of the members of the Godhead may step into the forefront with respect to man, but overall it cannot be validly argued that a definite inviolable nested or even linear hierarchy exists within the Godhead.

When it comes to the Godhead, a matrix of triangles (actually one triangle) seems to be the best way to describe the relationships involved [4, p. 1376]. Although a particular hierarchal relationship **can** be observed within the Godhead at a given time, closer examination reveals that that hierarchy is neither unique nor unchanging, most times the hierarchy is not nested, and in point of fact all three Persons are equal.

MULTI-NESTED OR NETTED STRUCTURE OF LIFE

I would suggest that God's very nature is best described by a matrix of relationships which can be variously understood in nested or non-nested, complementary or paradoxical, unchanging or changing hierarchies. It is reasonable to assume that God's creations might well have been created reflective of His nature. This would explain the non-nested hierarchies of family, church, authority, the mutual submission required among all levels of human authority, and the changing, inter-connected, and even conflicting hierarchies of human experience. Rather than forcing such entities into single, inviolable nested hierarchies they should be understood to be multiple-nested hierarchies or even (in some cases) networks of relationship. Perhaps every item is equal and related to every other item in a variety of ways -- sometimes in a non-nested hierarchal fashion, sometimes in a nested hierarchal fashion.

Finally, when it comes to life, the abundance of homoplasies, reversals in cladograms (and associated low cladistic consistency), the abundance of convergent, parallel, and iterative evolution in macroevolutionary studies, the existence of chimeromorphs, and the Scriptural classification which contradicts the conventional classification, all suggest that it is better to understand life in a multiple nested or network pattern of form rather than a singular, inviolably nested pattern of form.

DISCUSSION

It has been traditional, since at least since the time of Aristotle, to claim that the character states of living organisms are distributed in character space as a single, inviolable nested hierarchy. To Aristotle the pattern was the inevitable consequence (and thus evidence) of logic as he understood it. Centuries later, Linneaus's binomial nomenclature (placing more than one species name within an organismal genus) assumed a nested hierarchal arrangement for taxonomically significant characters. To Linneaus the nested pattern he saw in life was the consequence (and thus evidence) of the (Aristotelian-like) logic under which God created. Since the time of Linneaus a deeply nested hierarchal classification system (species within genera within families within orders within classes within phyla within kingdoms) has arisen, supposedly to match the unique, inviolable nested hierarchal pattern of organismal characters in morphospace. To the modern macroevolutionist the nested pattern of life is the consequence (and thus evidence) of the tree-like phylogenetic history of all organisms.

In any multiple nested or networked pattern, a singular nested pattern can be observed if sought. I would like to suggest that the (singular) nested pattern observed through the centuries was observed because it was sought -- not because it was a complete or even a comfortable description of life's pattern. I would suggest that it's the non-Christian beliefs of Aristotle and those since which required them to see a single, inviolable nested pattern in life. This, in turn, led to the observation of life's nested pattern.

There has been a desire among creationist biosystematists to preserve the traditional classification of higher groups (Scherer, personal communication; [15, Table 1]). If, however, life's baramins were not created in a nested hierarchy of form, they should not be classified in such a way as to imply they were. Bioclassification is to reflect 'natural groups'. To the creationist, the most 'natural' of groups are first of all the created kinds (the baramins) and then the natural clades within the baramins (*e.g.* separately created lineages within a created kind and/or clades which were produced phylogenetically within the kinds after the creation). The superbaraminic classification should be non-nested and/or be allowed to be flexible, or (least desirously) be placed into a nested pattern very different from that of traditional biosystematics.

Finally, there is pedagogical advantage to a new superbaraminic classification. The unique nested pattern of life memorized by our children in secondary schools is pointed to as evidence of macroevolution in

tertiary schools. This contributes to the faith-challenges encountered by our children in evolutionary education. If life is networked or multiple-nested and not singularly nested, and our children were taught a proper perspective on that, the appeal to bioclassification as evidence of macroevolution would be nullified.

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APPENDIX: BIBLICAL CLASSIFICATION OF ORGANISMS

The classification of organisms summarized in Figure 2 is justified as follows:

The division of God into Father, Son, and the Holy Spirit is based upon trinity proof texts (Mat. 28:19; John 14:26; 15:26; II Cor. 13:14; I Pet. 1:2; etc.). The separation of God from the creation is based upon transcendence proof texts (John 1:1-3; Heb. 11:3, etc.). The division of spirits into fiery and ministering spirits to the elect is inferred from Ps. 104:4 and Heb. 1:7, 14.

The label "Green Things" or "Green Creations" is used because the Hebrew words yereq, yârâq, and ra`ânân and the Greek word chlōrōs (usually translated 'green' in KJV) only seem to be used to describe grass (Num. 22:4, translated 'grass' in KJV; Isa. 15:6?; Job 39:5-8?; Mark 6:39; Rev. 8:7; 9:4), herbs (Gen. 1:30; 9:3; Exo. 10:15; II Ki. 19:26; Ps. 37:2; Isa. 37:27), and trees (Deu. 12:2; I Ki. 14:23; 17:10; II Chr. 28:4; Isa. 57:5; Jer. 2:20; 3:6, 13; 17:2; Eze. 6:13) -- the things we currently classify as plants. The plants are never referred to as living, moving, soul, or flesh creations (see [18]). The grass vs. herb vs. tree division of green things is taken from Gen. 1:11-12. Other than specific identifications, these seem to be the only group classifications of plants in Scripture. 'Of the earth' or 'of the land' descriptors are found for grass (Job 5:25; Ps. 72:16; Dan. 4:15; Amos 7:2; Rev. 9:4), herbs (Exo. 10:12, 15), and trees (Lev. 26:20). 'Of the field' descriptors are found for flowers (Ps. 103:15; Isa. 40:16), plants (Gen. 2:5), grass (Num. 22:4; II Ki. 19:26; Isa. 37:27; Dan. 4:15, 23; Mat. 6:30), herbs (Gen. 2:5; 3:18; Exo. 9:22, 25; 10:15; Jer. 12:4), and trees (Exo. 9:25; Lev. 26:4; Deu. 20:19; Isa. 55:12; Jer. 7:20; Eze. 17:24; 31:4, 5, 15; 34:27; Joel 1:12, 19). 'Of the mountains' descriptors are found for grass (Ps. 147:8) and herbs (Pro. 27:25) and 'of the forest' or 'of the wood' descriptors are found for trees (I Chr. 16:33; Ps. 96:12; Song 2:3; Isa. 7:2; 10:19; 44:14; Eze. 15:2, 6). Other than this 'grass on the housetops' (II Ki. 19:26; Ps. 129:6; Isa. 37:27), 'trees of the garden' (Gen. 2:16; 3:1, 2), 'tree of knowledge of good and evil' (Gen. 2:9, 17), and 'tree of life' (Gen. 2:9; 3:22, 24; Rev. 2:7; 22:2, 14) are mentioned in Scripture.

The 'Living, Moving, Soul, Flesh Creations" or "Creatures" is used because: A) the Hebrew word ramas (translated 'moving' in KJV) is only used with water creatures (Gen. 1:21; Lev. 11:46; Ps. 69:34), flying creatures (Gen. 7:21; 9:2), beasts (Gen. 1:28; 7:21; 9:2; Ps. 104:20), cattle (Gen. 1:28; 7:21; 9:2), creeping things (Gen. 1:28; 7:21; 9:2; Eze. 38:20, etc.), and man (Gen. 7:21) -- all the categories of non-plant organisms listed in Genesis One; B) the Hebrew words chay, chayah, and chayay (usually translated 'living' in KJV) is used only of water creatures (Gen. 1:20, 21; Lev. 11:10, 46; Eze. 47:9), flying creatures (Gen. 1:30; 2:19; 6:19-20; 7:3, 23; 8:1, 17, 21; 9:10-12, 15-16; Lev. 14:4, 6, 7, 51-3), beasts (Gen. 1:28, etc.), beasts of the earth (Gen. 1:30; 9:10-12, 15-16), beasts of the field (Gen. 2:19, etc.), cattle (Gen. 1:28; 6:19-20; 7:23; 8:1, 17, 21; 9:10-12, 15-16, etc.), creeping things (Gen. 1:28, 30; 6:19-20; 7:23; 8:1, 17, 21; Lev. 20:25), and man (Gen. 2:7; 3:20; 7:23; 8:21; genealogies of Genesis 5 and 11, etc.) -- again, all the categories of non-plant organisms listed in Genesis One; C) the Hebrew word nephesh and the Greek word psuche (sometimes translated 'soul' in KJV) is used only of water creatures (Gen. 1:21, as 'creature' in KJV;

Lev. 11:10, as 'thing' in KJV; 11:46, as 'creature' in KJV; Isa. 19:10, as 'fish' in KJV; Rom. 8:9; 16:3), flying creatures (Gen. 2:19; 9:10, 12, 15, 16; Lev. 11:46, all as 'creature' in KJV), beasts (Lev. 11:46, as 'creature' in KJV; 24:18, as 'beast' in KJV, Pro. 12:10, as 'life' in KJV), cattle (Gen. 1:24; 9:10, 12, 15, all as 'creature' in KJV), creeping things (Gen. 1:24, as 'creature' in KJV), and man (Gen. 2:7; Deu. 11:13; 26:16; 30:2, 6, 10; I Cor. 15:45, all as 'soul', *etc.*) -- again, all the categories of non-plant organisms listed in Genesis One; and D) the Hebrew word *basar* and the Greek word *sarx* (translated 'flesh' in KJV) are used only of water creatures (Lev. 11:11; I Cor. 15:39), flying creatures (Gen. 6:17-20; 7:14-16, 21; 8:17; 9:11-17; I Cor. 15:39), beasts (Gen. 7:14-16, 21; 9:11-17; I Cor. 15:39), cattle (Gen. 6:17-20; 7:21; 8:17; 9:11-17), creeping things (Gen. 6:17-20; 7:14-16, 21; 8:17), and man (Gen. 2:21, 23; 6:3; 7:21, *etc.*) -- again all the categories of non-plant organisms listed in Genesis One.

The water vs. flying vs. walking/crawling distinction of living, moving, soul, flesh creations is based upon separate creations (Gen. 1:20-22 and 1:24-25). The flying, walking, and crawling creatures are grouped together with man as 'earth creatures' in Gen. 2:19-20; Gen. 6:7, 18-20; 7:1-3, 7-9, 13-14, 15-16, 21-23; 8:16-17, 18-19; 9:9-16. The 'Breath of Life' is specifically applied to flying things, beasts, cattle, and creeping things in Gen. 6:17-20; 7:14-15, and 21-22, and to man in Gen. 2:7.

The *tanniyn* division of the water creatures is based on Gen. 1:21, although very little is known about the group from Scriptural passages which mentions them (Gen. 1:21; Exo. 7:9-10, 12; Deu. 32:33; Neh. 2:13; Job 30:29; Pss. 44:19; 74:13; 91:13; Isa. 13:22; 27:1; 34:13; 35:7; 43:20; Jer. 9:11; 10:22; 14:6; 49:33; 51:37; Lam. 4:3; Eze. 29:3; Mic. 1:8). In fact, *tanniyn* is used to describe both marine (*e.g.* Gen. 1:21; Isa. 27:1; Lam. 4:3; Eze. 29:3) and desert (*e.g.* Isa. 13:22; 34:13; 35:7; 43:20) organisms. Although all the Scriptural references to the water-dwelling form of *tanniyn* seem to be marine, fresh-water forms are not so precluded (especially given that *tanniyn* is also used to describe terrestrial organisms). Finally, although water creatures are specifically divided into clean and unclean in Leviticus 11:9-12 and Deuteronomy 14:9-10, the *tanniyn* are not specifically divided, so their clean vs. unclean status is also unclear. Fish are the only other major division of swimming creatures mentioned in Scripture. Some fish are described as coming from the sea (Gen. 1:26, 28; Num. 11:22; Ps. 8:8; Eze. 47:10; Mat. 17:27) and some fish are described as coming from rivers (Exo. 7:18, 21; I Cam. 50:2; Eze. 29:4, 5; 47:9). And, given that fish generally have fins and scales, it would seem that they should be classified among the clean water creatures as defined in Leviticus 11 and Deuteronomy 14. They may also be the only clean water creatures.

The Flying Creatures, the Beasts, and the Creeping things are divided into clean and unclean in Leviticus 11 and Deuteronomy 14. Wild beasts (Lev. 26:22; II Ki. 14:9; II Chr. 25:18; Job 39:15; Hos. 13:8; Mark 1:13; Acts 10:12), wild beasts of the earth (I Sam. 17:46), wild beasts of the islands (Isa. 13:22; 34:14; Jer. 50:39), wild beasts of the desert (Isa. 13:21; 34:14; Jer. 50:39), and wild beasts of the field (Pss. 50:11; 80:13) implies that there is a wild vs. non-wild distinction in Biblical classification -- at least among the beasts. Since Deu. 14:5 indicates that clean animals can be wild, it is also likely that clean animals can be non-wild and unclean animals can be wild or non-wild as well. Since the designations 'cattle' and 'beast' appear to synonymous in some cases (see the text, *e.g.* compare verses 44 and 46 in I Sam. 17), there might be situations where there are wild vs. non-wild cattle. Whether or not creeping things are divided into wild and non-wild is not known from Scripture. Beasts are also divided ecologically: A) 'of the land' or 'of the earth' (Gen. 1:24, 25, 30; 9:2, 10; Deu. 28:26; Job 5:22; 35:11; Ps. 79:2; Isa. 18:6; Jer. 7:33; Eze. 15:3; 16:4; 19:7; 29:5; 32:4 34:20, 28; Rev. 6:8); B) 'of the field' (Gen. 2:19, 20; 3:1, 14; Exo. 22:31; 23:11, 29; Deu. 7:22; I Sam. 17:44; II Cam. 21:10; Job 5:23; 40:20; Pss. 8:7; 104:11; Isa. 43:20; 56:9; Jer. 12:9; 27:6; 28:14; 31:6, 13; 34:5; 38:20; Eze. 34:8; 39:47; Dan. 2:38; 4:12, 21, 23, 25, 32; Hos. 2:12, 18; 4:3), and C) 'of the forest' (Pss. 50:10; 104:20; Isa. 56:9; Mic. 5:8).