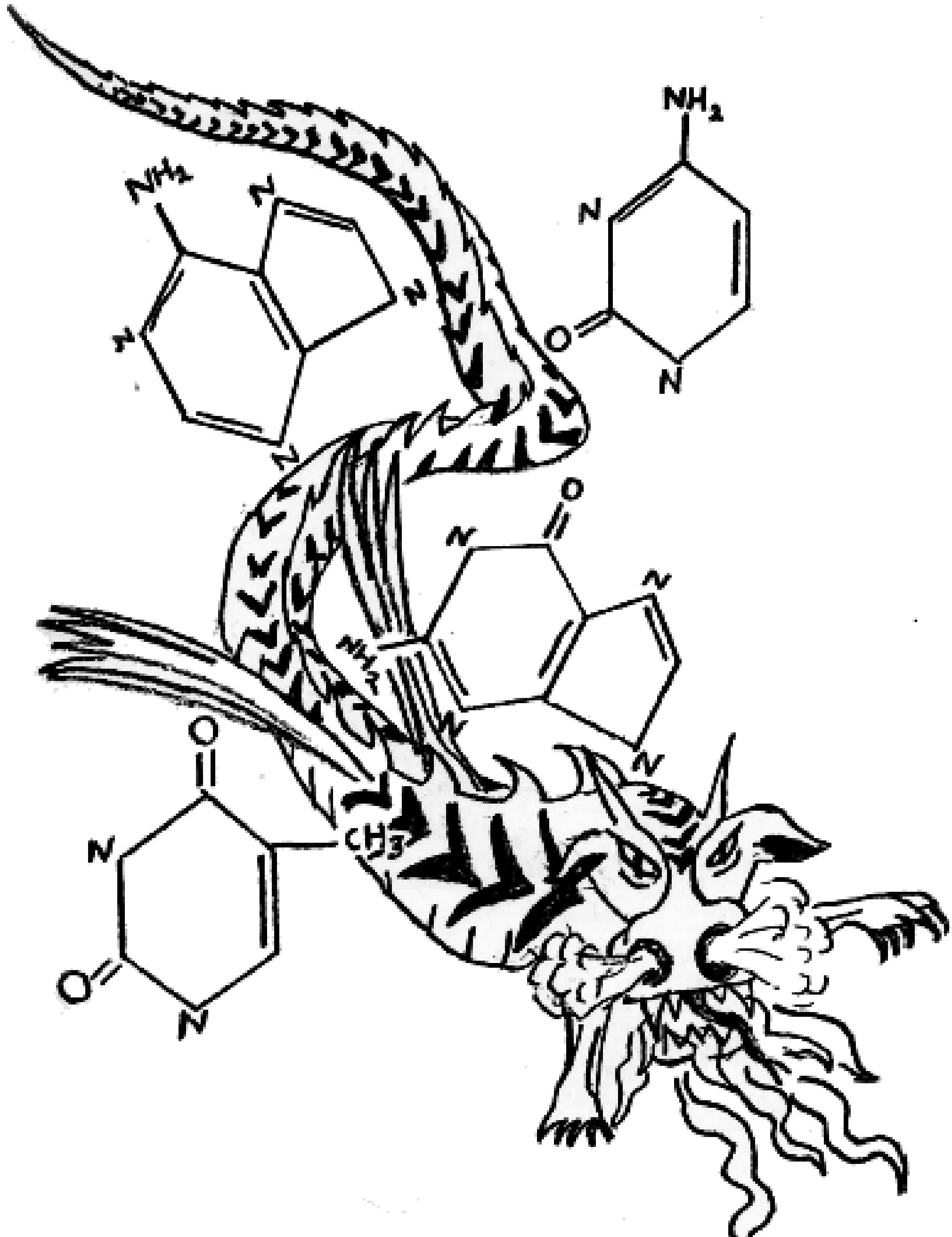
HOW AN ANCIENT CHINESE DRAGON WAS FOUND LURKING WITHIN A MODERN BIOCHEMICAL CHIMERA



In Saros Philosophy there are three fundamental principles. These combine in six permutations. If the principles are labelled A, B and C then the permutations are ABC, ACB, BAC, BCA, CAB, CBA. These are the six constructors of Creation.

The six constructors can be arranged in three pairs or mirrors. In each pair the two letter sequences are mirror images of each other. The three mirrors are as follows:

ABC:CBA BCA:ACB BAC:CAB

If we select any two out of the three pairs they can be combined in sixty four permutations. These are arrived at by combining the two pairs in groups of three. Let us take ABC:CBA. and ACB:BCA as the two pairs.

We could have a group of three containing only one pair of constructors.

ABC : CBA	ACB : BCA
ABC : CBA	ACB : BCA
ABC : CBA	ACB : BCA

We could have groups containing both pairs.

ABC : CBA
ABC : CBA
ACB : BCA

Other permutations are produced by rotating one of the mirrors.

ABC : CBA
CBA : ABC
ACB : BCA

In working out all the possible permutations we can ignore one of the vertical rows of constructors since the two rows are mirror images. This row can be filled by using four constructors.

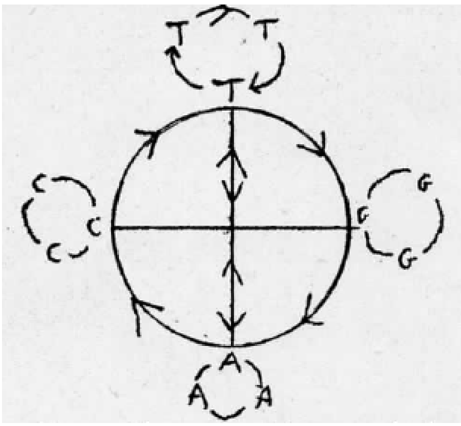
ABC
CBA
ACB
BCA

These four are to be grouped in threes. Therefore the total number of permutations is: 4 x 4 x 4 = 64.

The working out of these permutations can be shown diagrammatically. Let the four constructors be symbolized as follows:

ABC A
CBA T
BCA C
ACB G

The following flow diagram can now be used to show all possible ways of joining up the four constructors in groups of three:



If we take T as the starting point we can see that there are sixteen routes on the diagram. These give sixteen groups of three (see diagram 1).

There are sixteen possibilities starting with each of the four constructors A, T, C and G. The total number of possibilities is therefore 4 x 16 = 64.

The letters A, T, C and G stand for the names Adenine, Thymine, Cytosine and Guanine. These are the four molecules that form the basis of the genetic code. The four form part of complex molecular structures called deoxyribonucleic acid or DNA for short. These take the form of long strands of alternating sugar and phosphate molecules. Attached to each sugar molecule is one of the four bases adenine, cytosine, thymine or guanine.

```
 /
P
 \
  S - A
 /
P                    This is an example of part of a strand of DNA.
 \
  S - C
 /
P
 \
  S - G
 /
P
 \
  S - T
 /
P
 \
```

Diagram 1:

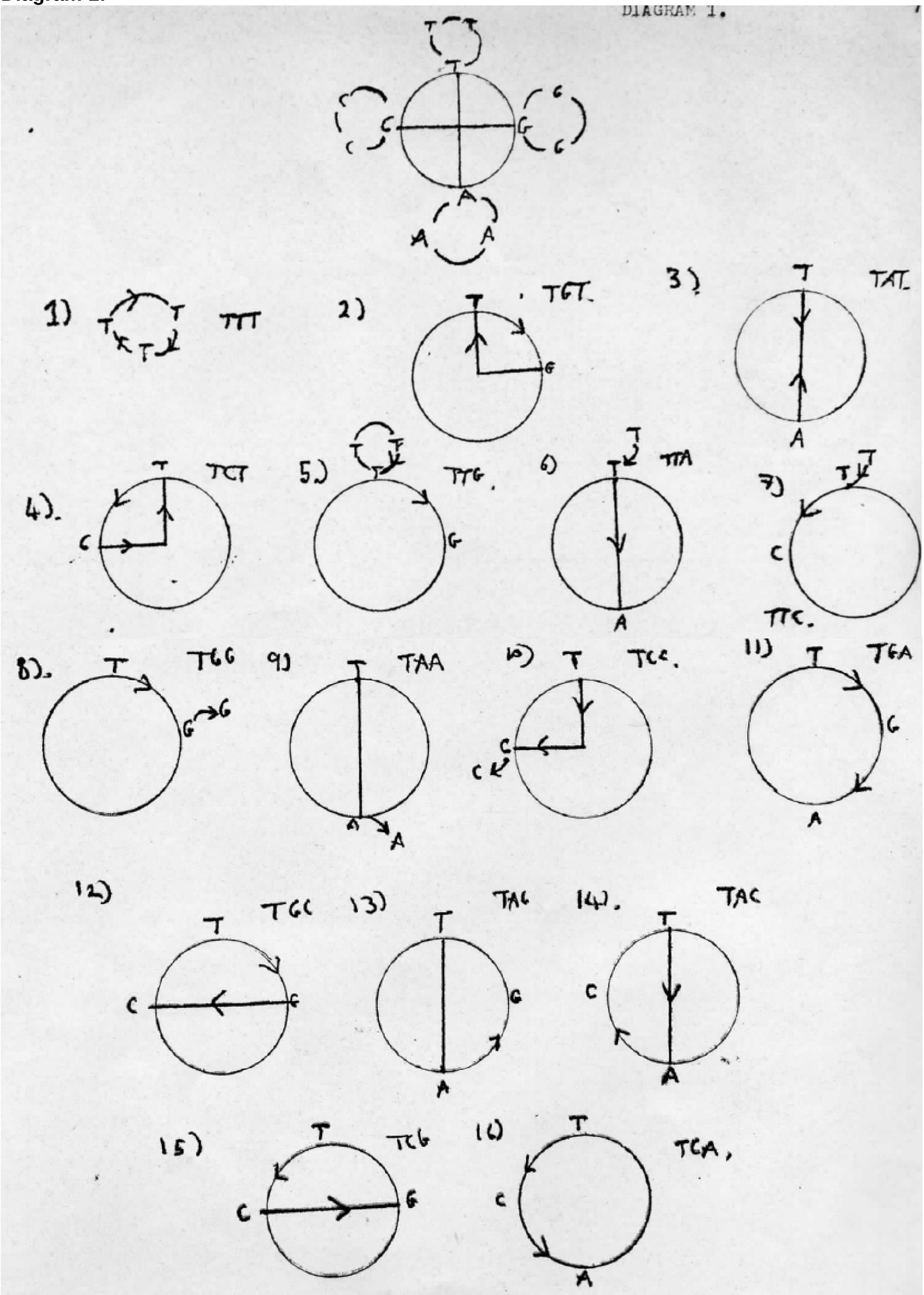
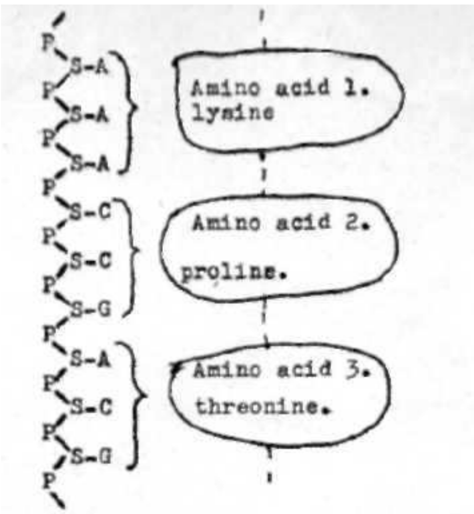


DIAGRAM 1.
1) TTT
2) TGT.
3) TAT.
4). TCT
5.) TTG.
6) TTA
7) TTC.
8). TGG
9) TAA
10) TCC.
11) TGA
12) TGC
13)
14). TAC
15) TCG
16) TGA,

Each full DNA molecule consists of two such strands twisted round each other in a double helix. The two strands are held together by chemical bonds between the four bases attached to the sugars. The chemical affinities are as follows. Adenine bonds only with thymine. Cytosine bonds only with guanine. Below is an example of a portion of a complete DNA molecule.

```
P              P
 \            /
 S – A --- T – S          This is analogous to          ABC:CBA
 /            \           sets of mirrors in Saros
P              P          Philosophy.
 \            /
 S – A --- T – S                                        ABC:CBA
 /            \
P              P
 \            /
 S – C --- G – S                                        BCA:ACB
 /            \
P              P
 \            /
 S – G --- C – S                                        ACB:BCA
 /            \
P              P
 \            /
S – A --- T – S                                         ABC:CBA
 /            \
P              P
 \            /
```

The pairs of bases can be divided into groups of three. Each group codes an amino acid. Only one of the two strands is used in the coding mechanism. Therefore, when the code is read the two strands temporarily separate. Amino acids are joined together in the sequence represented by the groups of three bases on each DNA strand.



Example of amino acids being linked in accordance with sequence coded on a DNA strand.

These chains of amino acids form the basis of complex structures called proteins. Proteins form enzymes. Enzymes are catalysts which govern the rate of chemical reactions. By controlling enzyme production DNA indirectly controls all the chemical processes in the body of an organism.

Diagram 2: The Genetic Code

TTT	phenylalanine	TCT	serine	TAT	tyrosine	TGT	cysteine
TTC	"	TCC	"	TAC	"	TGC	"
TTA	leucine	TCA	"	TAA	terminator	TGA	terminator
TTG	"	TCG	"	TAG	"	TGG	tryptophane
CTT	leucine	CCT	proline	CAT	histidine	CGT	arginine
CTC	"	CCC	"	CAC	"	CGC	"
CTA	"	CCA	"	CAA	glutamine	CGA	"
CTG	"	CCG	"	CAG	"	CGG	"
ATT	isoleucine	ACT	threonine	AAT	asparagine	AGT	serine
ATC	"	ACC	"	AAC	"	AGC	"
ATA	"	ACA	"	AAA	lysine	AGA	arginine
ATG	methionine	ACG	"	AAG	"	AGG	"
GTT	valine	GCT	alanine	GAT	aspartic acid	GGT	glycine
GTC	"	GCC	"	GAC	"	GGC	"
GTA	"	GCA	"	GAA	glutamic acid	GGA	"
GTG	"	GCG	"	GAG	"	GGG	"

tryptophane	TGG	isoleucine	ATT, ATC, ATA.
methionine	ATG	terminator	TGA, TAG, TAA.
phenylalanine	TTT, TTC	valine	GTT, GTC, GTA, GTG.
tyrosine	TAT, TAC	proline	CCT, CCC, CCA, CCG.
histidine	CAT, CAC	threonine	ACT, ACC, ACA, ACG.
glutamine	CAA, CAG	alanine	GCT, GCC, GCA, GCG.
asparagine	AAT, AAC	glycine	GGT, GGC, GGA, GGG.
lysine	AAA, AAG		
aspartic acid	GAT, GAC	leucine	TTA, TTG, CTT, CTC, CTA, CTG.
glutamic acid	GAA, GAG	serine	TCT, TCC, TCA, TCG, AGT, AGC.
cysteine	TGT, TGC	arginine	CGT, CGC, CGA, CGG, AGA, AGG.

Twenty amino acids form the building blocks of life. These and a command for stop/start, the terminator are coded by sixty four triplets.

Two acids are coded by one triplet.
Nine acids are coded by two triplets.
One acid and the terminator are coded by three triplets.
Five acids are coded by four triplets.
Three acids are coded by six triplets.

The sixty four triplets are all derived from four bases. These are thymine T, adenine A, cytosine C and guanine G. In the DNA molecule the bases occur in two pairs. A-T and C-G.

There are 64 possible groups of bases. These form the letters of the language of life. But only 20 types of amino acid are used. A punctuation mark is also required to say when one sequence ends and another begins. The technical name for this is a Terminator. Thus there are 21 items that need to be coded in order for DNA to govern the body's chemistry.

Since there are 64 groupings of bases the terminator and most of the amino acids can be coded by more than one group. Diagram 2 shows the complete genetic code. A careful study of this reveals that 2 of the amino acids are coded by a single group. Nine acids have two alternative codings. One of the acids and the terminator have 3 codings. Five of the acids have 4 codings. Three acids have six possible representations. It is a strange coincidence that this corresponds to the number of constructors present in the four types of cosmos derived from a single constructor in Saros Philosophy.

Starting constructor	ABC	One component.
Cosmos 1:	ABC-CBA	Two components.
Cosmos 2:	ABC-CAB-BCA	Three components.
Cosmos 3 & 4	ABC-CAB-BAC-CBA ABC-CBA-ACB-BCA	Four components.
Cosmos 5,6,7:	ABC-CBA-ACB-BAC-CAB-BCA ABC-CAB-BCA-ACB-BAC-CBA ABC-CAB-BAC-CBA-ACB-BCA	Six components.

The main subject of this article has been to show how a level of great complexity represented by the number 64 is derived from one of comparative simplicity represented by two pairs of triads. It is also possible to derive 64 permutations from a single pair of triads. That is in Saros Philosophy terms 64 can be reached from a single mirror. Let us take as an example the mirror ABC:CBA. The two constructors involved in the mirror can be represented as follows.

ABC ________ CBA ___ ___

If the two constructors are combined in triads the number of permutations is 2 x 2 x 2 = 8. These eight are as follows.

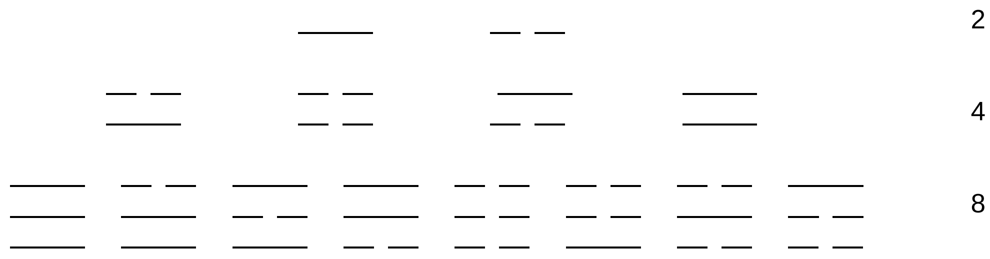
ABC ________ ABC ________ ABC ________	CBA ___ ___ CBA ___ ___ CBA ___ ___	ABC ________ ABC ________ CBA ___ ___	ABC ________ CBA ___ ___ ABC ________
CBA ___ ___ ABC ________ ABC ________	CBA ___ ___ CBA ___ ___ ABC ________	CBA ___ ___ ABC ________ CBA ___ ___	ABC ________ CBA ___ ___ CBA ___ ___

These triads can be combined in groups of two to form hexads of the following type.

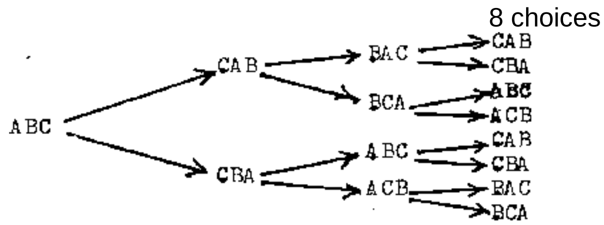
____
____
____
___ ___
___ ___
____

The total number of permutations is 8 x 8 = 64. These 64 hexads form the basis of the symbolism used in the Yi Ching, an ancient Chinese system of divination.

The philosopher Shao Yung derives the 64 hexads in a different way. He begins with the two mirrors and combines them in groups of two. This yields four groups. He then combines them in threes, in fours, in fives and in sixes. These combinations yield eight, sixteen, thirty two and finally sixty four groups. Thus the six levels contain the binary sequence 2, 4, 8, 16, 32, 64.



This same binary sequence can be obtained from a single constructor. If we start with ABC there are two choices. We can go to CAB or to CBA. The rule followed is that the last letter of the constructor becomes the first letter of the next.



As well as being the basis of computer operation such binary sequences are the pattern followed by cell division in the human embryo.