

The Geocubic Model Textbook

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Time/Space: The Flashing Geocubic Matrix

In the Geocubic Model the matrix is formed from 3 mutually perpendicular stacks of impenetrable force-planes that combine to enclose a matrix of unit-cubes.

The matrix of force planes is very rapidly **flashing** in and out of existence at a constant rate.

This flashing is the force of **Time**. While the matrix is in existence nothing can move between the cubes. While the matrix is out of existence, atoms and free atomic particles can (quantum) jump to an adjacent cube.



In a vacuum a Photon jumps between cubes at every flash of the matrix.

Motion of matter occurs when the momentum in atoms incrementally builds up in the unit-cube until it is sufficient to cause a (quantum) jump to the adjacent unit-cube. For example, matter moving at 1/5 the speed of light is jumping once every 5 flashes.

The Minimum Distance



What is confusing to physicists is that the size of the quantum-measure is the minimum distance between atoms, but not the only distance measure. The distance between bonded atom centers in the Geocubic Matrix depends on their relative locations, as illustrated at-left.

As objects rotate, orbit, and/or move oblique to the 3 fixed dimensions of space, the atoms change relative distances (are agitated and produce heat). This keeps the Earth's core molten.

The Geocubic Model idealizes the molecular structure to an alignment with the matrix dimensions.

The Compression Sphere: Polarity Separation & Gravity

In the Geocubic Model the **Weak Atomic Force is a spherical force surface** (conventionally known as the **Neutrino**) compressed inside the unit-cube.

The Neutrino force-surface is inversely proportional to its volume. A free-Neutrino has a volume of nearly 1 and a force surface of nearly zero (barely detectable). It does not reach a volume of 1 because the surface inverse-energy would be zero (it would not exist). When compressed, the force-surface of the Neutrino is energized.

Proton/Electron Separation

The 3 basic atomic particle charges are: **Neutron** = 0 **Proton** = +1 **Electron** = -1

The diagram at-right shows the compressed Neutrino surface preventing the Electron(-1), which is attracted to the Proton(+1) by the opposite charges, from penetrating to the Proton contained inside the Neutrino.



Gravity

The compressed Neutrinos project a gravitational field of strength and reach in inverse to the compression.

The gravity from all the Neutrinos compressed in an atom merge, and overlapping gravity of atoms in matter merge into one gravity field.

Since gravity is the inverse of the compression for each Neutrino/Proton, Neutrons do not contribute to gravity, but the mass in both Protons and Neutrons are attracted toward the gravity center.

(The compressed Neutrino is conventionally termed the "electroweak particle")

For convenience the Proton and compressed Neutrino is termed a "Geosphere", or simply "Sphere".

Electromagnetism

The Perpetually Oscillating Electro-Particle

The Electron and the Photon are the same particle. (Electron \leftrightarrow Photon).

The oscillation of the Electro-Particle is mathematically described by a trigonometric sine-wave.

The sine-wave is a trigonometric function plotted by the rotation of a radian counter-clockwise around the full 360 degrees. The angle of the transiting radian from the positive X-axis is labeled "t", and the length of the sine-line (along the Y axis) as the radian transits the circuit is labeled sine(t).





The radian begins transit from the positive X-axis, where Y is zero. (1): The sine(t) value increases to 1 (at the Y-axis), then (2): Sine(t) decreases back down to zero (at the negative X-axis). In the graph above this is the left half of the sine wave. As the radian continues the transit, (3): the sine(t) value goes negative, decreasing down to -1 (at the negative Y-axis), and then (4): increases back up to zero. In the graph this is the right half of the sine wave.

Sine-Wave Spin (The Helix Spiral)

In light propagation, the 2-dimensional sine-wave "spins" in the 3rd dimension, forming a **helix spiral** as illustrated at-right. The Photon(-) traveling on the helix generates a time-phased cylindrical electromagnetic field extending to the diameter of the sine-wave

Since the Diameter=2, the length of the sine-wave is 2Pi.



The sine-wave completes **one full cycle** and one full spin in the distance of 2Pi, so the spin is 1 to 1. It is commonly expressed as "a spin of ½" (in the distance of Pi), suggesting incorrectly that the spin is half that of the wave. (*It is important to academia that their students be confused*)

As a Photon the Electro-particle is traveling on a line-vector in the form of a helix spiral. As an Electron the Electro-particle is inside an atom, spinning on the surface of a sphere.

Electron Spin

Inside the atom, the Electron is attracted to the Proton that is inside the Neutrino, and the sine-wave oscillation is bent to the Neutrino surface, forming the "baseball seam Electron-spin" (illustrated far-left below). This is called the "excited state" of Electron-spin.

The spin automatically reduces to tighter loops (middle-right) called the "ground state" that are in balance with the 8 corners of the cube. The Electron spin would pass across the mid-point of the 12 edges of an imagined containing cube (shown far-right).



In the ground state there are 8 possible "anti-parallel" spins in relation to the 8 corners of the containing cube (see diagram below). These 8 insure that any contained Sphere can have a different spin from all of its adjacent (touching) neighbors.



The spins are characterized by the lean of the front loop, which leans up or down and leans left or right, as indicated by the arrows outside of the cubes.

The Atomic Elements

Each atomic Element has a specific number of Protons, and this is termed the Atomic Number. The syntax used in this textbook is ElementName(P), where (P) is the Atomic Number. For example Helium has 2 Protons and is shown as Helium(2).

In the Helium atom (shown at-right) the 2 compressed Spheres arrange diagonally because the diagonal has the greatest span, and the Spheres will expand to their greatest allowed diameter. Notice the 2 Electron spins are anti-parallel.

The shorthand for the Elements generally begin with the 1st letter of the Element name, and can be easily searched for in the alphabetical Element list on the last page of the textbook, however the following 10 Elements have historical shorthand that does not begin with the initial letter.

Antimony Gold Iron Lead	Sb Au Fe Pb	51 79 26 82	Mercury Potassium Silver Sodium	Hg K Ag Na	80 19 47 11	Tin Tungsten	Sn W	50 74	Because chemistry is taught without a model to understand it, these mismatched shorthand only add to the memorization burden.
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Atomic Symmetry Law

The **Symmetry Law** is that the internal arrangement of the Spheres in the cube

Must be symmetrical in 2-dimensions, but <u>Cannot</u> be symmetrical in all 3-dimensions.

Elements with no valid arrangement are **required** to loan out or borrow Spheres to reach a valid Element-form. These are called active Elements.

Transfers of Spheres result in an Element emulating the form of the Element with the number of Protons that result from the transfer.

Atomic Bonding

Hydrogen(1) and Oxygen(8) have identical symmetry in all 3 dimensions, which is disallowed by symmetry law. They are shown crossed off to the right. They are required to form an atomic bond that results in a valid Sphere arrangement. Hydrogen(1) is the only Element that can be Void of any Spheres (by loaning out its one Sphere).





Precluded Hydrogen(1)

Precluded Oxygen(8)





to the



Gravity

The Atomic Bond

The Protons of an Element are bound to the atom by what is conventionally termed a nucleonic binding force, which is assumed to be charged by energy taken from the Protons in the atom.

In forming a bond, the Sphere transfers (with the Proton inside), but the Nucleonic Binding Force taken from the Proton is not transferred with the Proton, and this locks the two atoms involved together.



The sent Spheres are shown as clear circles, and the received Spheres are shown grayed.



Shown above is the diatomic Hydrogen bond, where one Hydrogen atom is empty (Void), and the other Hydrogen contains 2 Spheres, thus emulating the inert Helium-form(2).

Shown at-left is the water molecule, where 2 Hydrogen atoms are empty (Void), and the Oxygen(8) atom has 10 Spheres, thus emulating the inert Neon-form(10).

Cube-Corner Bonding Law

In the Geocubic Model, atomic bonds are transfers of Spheres through cube corners between atoms. Spheres can only transfer between adjacent atoms. All transfers involving a given atom must go in the same direction (out or in).

Multiple-Sphere Transfer Law

Edge (2 Spheres transferred together), or face (3 Spheres transferred together) transfers can mix in with the single-transfers, and only require open corners on an edge or face.





Multiple Single-Sphere Transfer Law

Multiple single-Sphere transfers in or out are excluded on cube-opposite corners, and on cube-adjacent corners.

Due to the single-sphere-transfer law, the maximum number of single-Sphere transfers to or from an atom is restricted to the 4 corners shown below-right in one of 2 chiral arrangements.







Always Cube-Face Opposite Corners



(2 Chiral Tetrahedral Forms) Maximum 4 Single-Sphere Transfers





To illustrate the tetrahedral geometry of the Single-Spheres Transfer Law, in the graphic at-right, solid mirrored tetrahedrons are shown to the left, and to their right the edges of the tetrahedrons are shown inside a cube, with the 4 vertices marked with black dots. To the right, the Geocubic Model tetrahedral-bonding unit-cells are shown with cubes attached at the corners where the black dots are located.



Methane

Methane (CH_4) consists of one Carbon(6) atom bonded to 4 Hydrogen(1) atoms in a tetrahedral arrangement in either of the 2 mirrored lattice forms.

In the Geocubic Model's illustrations of atomic bonding, the atomic bonds are indicated by transferred Spheres marked with black arrows. The sent Spheres are shown as clear circles, and the received Spheres are shown grayed. Obscured transfers (bonds) are sometimes indicated with gray arrows.

In addition to having mirrored forms, an alkane gas is conventionally considered to consist of tetrahedral "single covalent" bonds.

The single covalent is actually a **bi-directional** bond potential, where the direction of <u>all</u> the transfers can go in either direction (making in total 4 forms of Methane).



Ethane

The alkane series builds from Methane (CH₄), adding a Carbon atom and 2 Hydrogen atoms, one set at a time. The Carbon atoms attach to each other by corners, forming a "zigzag" chain, potentially with "side-chains" (attachments). The alkane gasses move all Carbon(6) atoms either to Helium-form(2) with -4, or Neon-form(10) with +4.



 $C_2H_6 \leftrightarrow H_3C-CH_3$ Ethane 1^2

An alternate simplified illustration-form at-right shows Ethane with opaque cubes labeled with the atomic number of the Element, and the resultant Element-form shown as a superscript. The arrows in or out are Sphere transfers.



Propane

Propane consists of 3 Carbon atoms bonded with 8 Hydrogen atoms $(H_3C-CH_2-CH_3)$. Notice that the linked Carbon atoms alternate between Neon-form(10) and Helium-form(2).

This alternation of form between linked Carbon atoms is dictated by the necessity of sending 4 Spheres or receiving 4 Spheres

Butane

The linked Carbon chain is extended to 4 Carbon atoms in Butane $(H_3C-CH_2-CH_2-CH_3)$

Isomers: An isomer is an alternate arrangement of a molecule with the same mix of atoms. Methane (CH_4) , Ethane $(H_3C - CH_3)$, and Propane $(H_3C - CH_2 - CH_3)$ have only one arrangement (no isomers). With 4 Carbon atoms it becomes possible to take on an alternate arrangement of corner connections. There is only one Butane isomer, called Isobutane (diagramed below).



Reminder: Multiple-Sphere Transfer Law - Edge (2-transfered) or face (3-transfered) transfers can mix in with the corner (single-transfers), and only require open corners on an edge or face

Amino Acids

The Amino acids are chains of Carbon(6), Nitrogen(7), and Hydrogen(1) atoms (similar to the Alkane Series). The Chains sometimes include Sulfur(16) and/or Oxygen(8).

Amino acids are conventionally considered to combine an amino (NH_2) with a carboxylic acid (COOH), potentially with a chain between them. However this conventional description is wrong, in that the required Nitrogen(7) atom is not necessarily at the end of the chain, and may have only 1 Hydrogen atom attached (as seen in Glycine, below).



The "amino" NH_2 or NH is attached with a **red arrow**, and the carboxylic acid COOH is attached with a **blue arrow**. Glycine is the simplest amino-acid.

In the amino acid illustrations, 2 ways of expressing the chemical formula are used. The conventional notation is to specify the counts of the constituent atoms, as with Glycene ($C_2H_5NO_2$). The preferable Geocubic Model notation is based on the tetrahedral Carbon/Nitrogen chain, sequenced and color-coded to match the illustration.



In the Geocubic diagrams each atomic Element is color-coded on the front square of the cube. The Elements involved in amino acids are coded with **bold** black front squares for **Carbon**(6) atoms, red for **Nitrogen**(7), blue for **Oxygen**(8), yellow for **Sulfur**(16), and plain cubes for Hydrogen(1).

Glycine does not end with NH_2 , instead has NH in the middle of the chain. This is because Nitrogen(7) (in an amino acid) can only take Neon-form(10).

Carbon(6) + 4 Neon-form(10) Carbon(6) - 4 Helium-form(2) Nitrogen(7) +3 Neon-form(10)

The Carbon(6) starting the chain from COOH is always in Helium-form(2).

If the 2^{nd} atom in the Glycine chain were to be Carbon(6)Neon-form(10), the Nitrogen(7) could not attach because single-Sphere transfers are limited to 4 Spheres and 5 Spheres would have to be transferred out (7-5=2) to achieve Helium-form(2).

Isomers

Amino-acid **isomers** are variants of a given amino-acid's chain structure. In **Alanine**, the Nitrogen(7) can attach to the end of the chain, or in the middle.



Element Differentiation

Serine and **Cysteine** are the same 6-chain structure, but Serine incorporates an Oxygen(8) atom in the chain, where Cysteine incorporates a Sulfur(16) atom. These 2 Elements are circled in the upper diagrams below.



The isomers shown above switch the Sulfur or Oxygen in the chain with the Nitrogen and its attached Hydrogen.

Methionine (Met.) has a chain of 6 and with a Sulfur(16) attached to the chain (circled).







Crystal Latices

Crystal Facets

The graphic at near-right shows the external form of the 26 conventionally defined crystal facets, and to the right how the facets relate to boundaries of the 26 outer cubes of a 3x3x3 (27-cube) cube.

A crystal lattice is a repeating connected pattern. A "**unit-cell**" is the smallest number of atoms that display the basic lattice pattern. A given lattice type is assigned a "coordination number" (shown in parentheses after the name of the lattice), indicating the count of adjacent atoms to any given atom.

There is a correlation between the 3 main lattice coordination numbers and the aspects of a cube.

Lattice	Cu
Body Centered Cubic (8)	8 C
Face Centered Cubic (12)	12 E
Basic Cubic (6)	<u>6</u> f
	26

Cube 8 Corners 12 Edges <u>6</u> faces 26



"Body Centered" (8)



Edge-Connected





Basic Cubic (6)



Face-Connected

The "Face-Centered Cubic (12)" Lattice (Edge-Connected)

The "face-centered" (edge-connected) crystal is shown to the near-right. In the middle at-right, a cube is positioned over the outline of the crystal, showing how the 12 vertices occur at the midpoints q_{fl} the 12 cube edges.

In the Geocubic Model, the f.c.c.(12) unit-cell is a central cube with 12 cubes attached to the 12 edges of the central cube. This is shown far-right.

The "Body-Centered Cubic (8)" Lattice (Corner-Connected)

As shown at right, the Bravais lattice for the body-centered cubic crystal is correct for a unit-cell, which in the Geocubic Model is a central cube surrounded by 8 cubes attached at the corners.

Growth Crystals (Quartz)

The ideal Quartz crystal is shown at near-right (assuming the base is attached to a solid surface, otherwise both ends of the crystal would have a hexagonal cone).

The red dotted lines represent an often-shown conventional segmentation of the crystal. This segmentation is illustrated at middle-right with a topdown view of the crystal, which matches with a transparent cube viewed from a corner (far-right), where the 3 front faces are shaded translucent.















Quartz crystals may merge as they grow.

The Quartz Unit-Cell Linkages

The diagram at left shows the 2 chiral (mirrored) tetrahedral unit-cells of the Quartz crystal, with arrows showing Proton transfers. An entire crystal will be all one chiral form. The unit-cells connect thru an Oxygen atom. There are 3 different directional connections (based on which corners of the cube are employed in connecting).

f.c.c. crystal inside cube



Beta-Quartz

The Unit-Hexagon

Shown at-right is the right-chiral "unit-hexagon" of 6 unit-cells (with pink squares on the linked Oxygen).

The 6 Silicon atoms form a hexagon, and the 6 link-Oxygen atoms (those with pink squares) form a triangle (which is why the hexagonal Quartz lattice is termed both hexagonal and trigonal).



Suddenly at 1165[°] F the alpha-Quartz crystal of linked unit-cells converts to the beta-Quartz form of linked unithexagons. As can be seen in the diagram below, this adds empty areas to the crystal and increases the volume, which can cause the crystal to fracture.



Each unit-hexagon of 6 Silicon atoms is connected by one Silicon atom to each attached hexagon.

Bias Planes

The Spheres pack into the unit-cube according to the Symmetry and Order laws. The Order Law forces layers to occur when possible. Shown below are the valid Sphere arrangements for the first 13 Elements. Lithium(3) cannot meet symmetry demand, nor can Boron(5), Nitrogen(7), Oxygen(8), Florine(9) or Sodium(11).

The Bias-Plane law is that when the Spheres are held in fixed positions (unlike in Neon(10) where 8 Spheres are able to move) and a when a dominant group of Spheres align on a plane, the plane is energized. The configuration of such energized planes in an Element is termed its **Bias**.



Pyrite (FeS₂)

The dodecahedron is a spheroid with 12 pentagonal faces (depicted by the edges in the graphic at right). The crystal-form is intra-chiral, meaning the back (pink) and front (black) are flipped to each other, and this is the case regardless of which pentagonal face is viewed as the front face. Pyrite forms an imperfect dodecahedron.



Pyrite is Ferrous (Iron) Sulfide (chemical formula FeS_2). There are Dodecahedral and Cubic Pyrite forms.

The Dodecahedral Pyrite

The Dodecahedral atomic structure is diagrammed below. There are 2 Sulfur(16) atoms for each Iron(26) atom. One of the 2 Sulfur atoms take on Potassium-form(19), and the other takes on Neon-form(10). The Iron atom is in Copper-form(29).

The separate grayed-cube diagrams below show how the Potassium-form(19)-Bias and the Copper-form(29)-Bias effectively produce a combined Bias nearly as "warm" (having multiple reflecting angles) as the Gold(79) Bias, which is why this form of Pyrite is called "Fools gold".



Cubic Pyrite

The Cubic form of Pyrite shifts the Neon-form(10) Sulfur to the left by 1 cube, and this changes the form of the 2^{nd} Sulfur to Argon-form(18), and the form of the Iron atom to Zinc-form(30). The Zinc-form is a single Bias plane that reflects light uniformly from all the Iron atoms (a "silver" sheen).

Bias Crystallization

The law of lesser Bias energy: Molecular formation will default to the least total Bias energy.

The Hexagonal Carbon Ring

The orientation of Biases can quantum-rotate inside the cube, and will do so to align their Bias planes (the Spheres shift, keeping their arrangement order).



The Dextrose Bias

Dextrose Bias has the same hexagonal arrangement of Carbon atoms as in the Carbon Ring, but the Carbon atoms have a single Bias-plane, and an Oxygen atom is clathrated (trapped) at the center, with 3 crossing diagonal Bias planes that unify the crystal.



The chlorophyll molecule has two mirrored (chiral) forms, and they produce mirrored sugar molecules known as dextrose and laevulose, named for the reflection of light to the right or left.

Photosynthesis

Each diagonal Bias-plane contains the energy of 56 kcal.

Carbon Ring - 12 planes of 56 kcal = 672 kcal Sugar Crystal - 9 planes of 56 kcal = 504 kcal

The most common form of chlorophyll is $C_{55}H_{72}MgN_4O_5$. There are a number of variations, but in each at the core is a single atom of Magnesium(Mg), and the outer shell is a hydrophilic (water absorbing) carbocyclic casing.

Sunlight stimulates the chlorophyll to absorb Photons, and the Magnesium converts the absorbed light energy to an ionic charge that is transmitted to a lipophilic phytyl tail (a string of Carbon and Hydrogen atoms dangling from the casing). The Carbon atom in the Carbon Dioxide contacting the chlorophyll receives the ionic charge, and the Bias-planes of the Carbon atom are energized, separating the Carbon atom from the Oxygen atoms, releasing a molecule of Oxygen.



The separated Carbon atoms are added to the pyhtyl tail until a ring of 6 Carbon atoms breaks off. Water stored in the carbocyclic casing triggers a chemical reaction with the Carbon-Ring, creating the sugar, and replacement water is drawn in by the hydrophilic property. *(The hydrophilic casing attracts water but repels oil, so when the sugar is produced it is ejected).*

The following conventional formula for the formation of sugar hides a multi-step process.

Conventional: $6(CO_2) + 6(H_2O) + 672 \text{ kcal} = C_6H_{12}O_6 + 6O_2$.

The multiple-step process is numbered in brackets [] in the following text (and in the diagram below).

[1]. The chlorophyll molecule uses the Magnesium/Nitrogen core to convert sunlight into the internal Bias-plane energy that, [2] eliminates the atomic bonds binding the Carbon atom to the Oxygen atoms, casting off the two Oxygen atoms as a molecule of oxygen.

$(CO_2) + 112 \text{ kcal} = (C) + (O_2)$

[3]. The Carbon atom split from the carbon-dioxide is attracted by the crystallization force to attach to the end of the phytyl tail of the chlorophyll molecule (it does not bond to it). When 6 Carbon atoms have attached, a 672 kcal Carbon Ring breaks off.

$6(CO_2) + 672$ kcal = $6(C) + 6(O_2)$

[4]. The carbon ring reacts with water stored in the carbocyclic casing producing 6 carbohydrates that link into a sugar crystal, burning 3 Bias planes of energy [4A]. This reaction is caused by the law of lesser Bias energy. $6(C) + 6(H_2O) = C_6H_{12}O_6 + 168$ kcal



In completing the carbon cycle, the animal ingests the sugar (and breathes oxygen) in order to [5] burn off the 504 kcal of Bias-plane energy in the sugar.

$C_6H_{12}O_6 + 6O_2 = 6(CO_2) + 6(H_2O) + 504$ kcal.

The Oxygen atoms bond with the Carbon atoms, converting the 9 Bias-planes to energy **[5A]**, and releasing 6 molecules of carbon-dioxide **[5B]**, and 6 molecules of water **[5C]**.

Conservation of Energy

672 kcal -- Carbon ring (12 x 56 kcal) -168 kcal -- Energy released in sugar reaction (3 x 56 kcal)

504 kcal -- Sugar Crystal (9 x 56 kcal)

The Carbohydrate

The molecule of sugar is based on 6 carbohydrate strings. Five of the 6 carbohydrate strings incorporate an Oxygen atom (HCOH). One string is (HCH), and this is because the 6^{th} Oxygen atom is clathrated at the center of the crystal.

The energy of a carbohydrate is in the single Bias plane in the Carbon atom (56 kcal).



The Clathrated Oxygen Atom

These six carbohydrates are separate molecules, interconnected by the crystal linking force passing through the central clathrated Oxygen atom.

Normally an Oxygen atom must bond, but when clathrated by the intersecting Bias planes, the 8 Spheres are skewed by 3 of the 4 possible cube diagonal-planes, as depicted below, and thus no longer violates excluded 3-dimensional symmetry.



The Sugar Crystal of Carbohydrates

The diagrams below show how the carbohydrates are connected in 3 pairs by the Bias plane crystal alignments. The pair shown upper left has the single H-C-H string, but this can locate in any of the 6 crystal positions. The 5 Void (empty) Hydrogen atoms are shown in faint gray. The Oxygen atoms have a blue front (the center Oxygen atom is repeated in the 3 pairs).

The combined molecule ($C_6H_{12}O_6$) is shown lower-right without the crystal Bias planes. Notice the arrangement of 6 pairs of crossing arrows.



Ionic Attachment (Phantom Helium)

Ionic attachment is a transfer of 2 Spheres into an adjacent empty space-unit, forming a phantom Helium. The Sphere transfers with its Proton inside, but leaving the Electron behind (shown with an e in the diagram below). The opposite attraction of the Protons to the Electrons left behind holds the phantom Helium (pHe) in place. The empty space-unit "parking" the Spheres is not an atom and it has no nucleic binding force.

The "Law of Electronic Attachment" is that, in a molecule, if symmetry law is unsatisfied, but can be satisfied by transferring 2 ionized Sphere/Protons into an adjacent empty space-unit (cube), that transfer will occur.



Oxygen(8) atoms will form a diatomic molecule with 2 attached phantom Helium (shown above-middle). When Oxygen is compressed, a double covalent bond is forced, compressing out the phantom Helium because empty space-cubes are not available.

High-energy rays from the Sun hitting the atmosphere energize Oxygen into Ozone (O_3) , eliminating one of the 2 phantom Helium, as illustrated above-left, but in the presence of Oxygen, Ozone will decompose back into Oxygen, so a layer of Ozone is at the edge of the atmosphere, perpetually forming at the outer surface while decomposing at the inner surface. This absorbs harmful rays that would otherwise reach the Earth surface.



Nitrogen Triple Bond



Nitrogen(7), as N_2 utilizes the "triple bond", the strongest atomic bond, and also attaches a Phantom Helium.

The Nitric Oxide and Dioxide molecules (illustrated below) are bound together in pairs by sharing a phantom Helium cube, but in the case of Nitric Oxide (NO) the 2 molecules attached to each other each need a phantom Helium.



Precipitation

When atoms attach by electrostatic force to a Phantom Helium they can be replaced by atoms that by replacing reduce the Bias energy. The replaced atoms are said to precipitate. This reaction is utilized in extracting Gold from Gold-bearing ore. The ore is crushed into a fine powder and Sodium cyanide is added. The Gold replaces the Sodium precipitating the Sodium, and then Zinc is added which replaces and precipitates the Gold.

Cyanide consists of Carbon(6) and Nitrogen(7) triple bonded and linked by a Phantom Helium as diagramed below using the solid cube diagram method, with an **e** indicating the electron left behind in the transfer of Protons to the Phantom Helium (which is behind the electrostatic attraction).



Acids and Explosives

The conventional definition of an acid is "an aqueous solution of a molecule that (in solution) has the ability to react with certain other metals, or specific molecules called bases".

Reminder: A Void Hydrogen atom projects a weak intermolecular attraction (shown with dotted red arrows).

"Hydronium"

Not realizing that the intermolecular attraction is involved in the formation of acids, it is conventionally **incorrectly** thought that a Hydrogen atom from the acidic compound is transferred to the water molecule and forms "Hydronium" (H_3O) .

Despite this mistaken conception, the logarithmic measure of "percent Hydronium" (or pH) is a usable measure, because it digitalizes the strength of an acid solution.

Acidic Molecules

In the diagram of hydrochloric acid below, Hydrochloride (HCl) and Water (H₂O) are shown separately. The Hydrochloric Acid (shown below-right) is HCl in aqueous solution. The incorporated water molecule is denoted by **blue front squares** on their 3 cubes.



Circled above in black is the acidic dual intermolecular linkage (2 Void attractions and 2 atomic bonds).

Only certain active Elements are subject to the intermolecular attraction, among them, Nitro gam(7), Our gam(9), Element g(0), and Chloring (17)

Nitrogen(7), Oxygen(8), Fluorine(9), and Chlorine(17) *(All of these have no valid internal Sphere arrangement)*

Sulfur(16) is immune to the intermolecular attraction. Hydrogen Sulfide (H_2S) in solution does not form acids. However when 4 Oxygen(8) atoms are incorporated in the molecule (making H_2SO_4) then in solution it forms acids. This verifies that the acid requires an Element susceptible to the intermolecular attraction (in this case Sulfur(16) is not, but Oxygen(8) is).

In solution $H_2SO_{4 (aqua)}$ will incorporate 2 water molecules in forming 2 acidic linkages (circled below). A blue line is placed at the point in the H_2SO_4 molecule where the water molecule is inserted.

Note that the intermolecular attraction is not a bond transfer and thus is not restricted to corner-bonding law, and thus can join on empty corners adjacent to bonded corners (example circled in red below).



In a similar fashion as with Sulfur(16), Phosphorus(15) is immune to the intermolecular attraction. Hydrogen Phosphate (H_3P) in solution does not form acids. However when 4 Oxygen(8) atoms are incorporated in the molecule H_3PO_4 then in solution it forms acids.





The Nitric Oxide group is responsible for explosive molecules.







Nitroglycerin is unstable because the Nitrogen(7) atoms are reduced by 5 spheres to Helium-form(2), and the preferred bonding is for Nitrogen(7) to be increased by 3 spheres to Neon-form(10). Shock (vibrations) will dislodge the unstable arrangement and the Nitrogen will rearrange such that it bonds in the preferred form. The heat produced causes the gasses to expand rapidly (an explosion).

Gunpowder

As shown at left, Potassium Nitrate (KNO₃), also called saltpeter, has the same arrangement of Nitric Oxide as Nitroglycerin (taking Nitrogen(7) down to Helium-form(2)). In making gunpowder from saltpeter, Sulfur and charcoal are mixed with the saltpeter to serve as fuel for an explosion (of rapidly expanding hot gasses).

Pressure Bonding

Diamond Interlaced Tetrahedral Bonding of Carbon

The Two Alternating Diamond Unit-Cells

Diamond has 2 interpenetrating tetrahedral lattices formed simultaneously. Both lattices have the same structure. There are 2 unit-cells in the Diamond lattice that alternate between each adjacent atom of the lattice.



To the left the 2 unit-cells are shown separately where the central Carbon atom has bonds inward (top left) and bonds outward (bottom left). These 2 alternate between each adjacent Carbon atom in the lattice. Shown below are 2 connected adjacent unit cells.



The Conventional Diamond "Unit-Cell"

The conventional Diamond "unit-cell" is shown below-left, actually being 4 linked bond-in unit-cells. The numbers 1 to 4 are added to the conventional diagram to identify the center atoms of the 4 bond-in unit-cells. The Geocubic Model is the same arrangement as the conventional representation, substituting corner-connected cubes for the spheres connected by rods.



The Interpenetrating Lattices

The diagram below-left shows the 2 interpenetrating tetrahedral Carbon lattices, with one of the lattices darkened. The Diamond lattice is termed (4-4) because although all 8 corners touch (as in the b.c.c.(8) lattice shown below-right), the bonds are only between the 4 surrounding Carbon of the 2 tetrahedral lattices.

Diamond only forms under pressure, allowing the 2 lattices to form simultaneously, thus interlocking.

DIAMOND Interpenetrating Tetrahedral Latices



Body-Centered-Cubic(8) Corner-Connected



Lapis Lazuli (Sulfur Under Pressure)

The formation of Lapis Lazuli involves the concept of Bias Planes in the Geocubic Model.

Sulfur(16)

Sulfur must bond. The usual form of Sulfur(16) is to bond in closed chains that alternate between Sulfur in inert Argon-form(18) and Sulfur in Silicon-form(14). Sulfur usually occurs as S_8 , but also can form S_6 , S_4 , and S_2 .



Due to the **law of lesser energy**, potential bonds will default to bonds with lowest total Bias, and as shown above, Silicon(14) has a Bias area of 2 while Magnesium(12) has a Bias area of 2.82, so the Sulfur bond will normally default to Silicon-form(14)

 S_3 involves one Sulfur(16) taking Magnesium-form(12), and this can only occur under pressure, where the energy to support the stronger Magnesium-Bias is supplied.

Once Lapis Lazuli has formed, it is stable because the energy is included and does not require pressure to persist. *The ultramarine color of Lapis Lazuli was beloved by the Goddess Gaia (Mother Earth).*

The Life-Force and DNA

Neptia: The Duality of Creation

The Ancient Greek Ionians considered the Creation to be a partnership of male and female, or union of **Cronos** (**Time-space and energy/matter**) and **Theia** (Life). The Ionians originated what is called hylozoism, the concept that life permeates the Cosmos. Cronos is a mechanism operating the Cosmos under laws of physics. Theia creates dynamically, by the force of life, in a progressive continuing process, with an intelligent modeling and coordinating of species (the ecosystem).

The general term for the union of Cronos and Theia in operating the Cosmos was "Neptia". From this ancient term is derived the modern term Neptials (commonly spelled Nuptials) now representing marriage vows.

The structure of the Cosmos is based on the force-surfaces of the Cube and Sphere, and is energized by the perpetual motion of the Electro-Particle (Photon/Electron). Within this energized structure, the force of life is a cosmic-mind (intelligence) operating on top of the laws of physics. The chemistry of DNA coding ia utilized to enact the purposeful intelligence of the life-force.

DNA Strands and Nucleobases

DNA molecules are double-stranded helices, consisting of two long biopolymers made of alternating sugars and phosphate groups, with nucleobases attached to the sugars. The 2 strands run in opposite directions. Ideally the strands are spaced by thirds, but the strands can twist tighter or looser. The strands can bend at angles, form knots, intersections, and other complex structures.

There are 4 nucleobases (Guanine, Cytosine, Adenine, and Thymine), represented by the letters G, C, A, T. The nucleobases are complementary, with A **always** paired to T, and C **always** paired to G.

 $G = (C_{5}H_{5}N_{5}O)$ $C = (C_{4}H_{5}N_{3}O)$ $A = (C_{5}H_{5}N_{5})$ $T = (C_{5}H_{6}N_{5}O_{2})$



All 4 nucleobases of DNA incorporate a central hexagonoid ring. The A-T link has 2 intermolecular connections. In the diagrams below, the Adenine and Thymine molecules are shown separately and then connected.

The DNA Polymer

The DNA strand consists of joined segments (called polymers) of 19 atoms. The polymer is shown below.



In the diagrams below, the Adenine and Thymine molecules are shown separately and then connected.



Cytosine ($C_4H_5N_3O$) and **Guanine** ($C_5H_5N_5O$) are shown below, attached and with the Guanine molecule shaded.



The Spatial Nucleobase DNA Coding

Shown below are the hexagonoid Carbon/Nitrogen cores of the nucleobases. It is the spatial configuration of the 3 contiguous Carbon atoms composing the ring that determines the coding. Only Thymine has a Carbon atom attached to the hex core (circled in red) and that Carbon is removed because it confuses the 3 contiguous Carbon code.



As illustrated below, during replication Thymine is reduced to Uracil, getting rid of the circled Carbon atom. This is an anti-entropy life-force action going against chemical law.

Both of the molecules require a phantom Helium (pHe)

After the Uracil is read as genetic code it recombines as Thymine. This is because the 2 phantim Helium (pHe) electrostatic separations are eliminated by recombining the 2 separated molucules.



One way the DNA controls the organic system is by building Proteins (chains of amino acids) as disposable DNA code sequences. First the DNA code sequence is replicated, termed "replicated DNA" or RNA.

Once the RNA passes through the Nucleus membrane of the cell, it is considered as "messenger RNA" (mRNA). Outside the Nucleus it is assumed structures termed "ribosomes" construct the protein (called "translation RNA" or tRNA). The translation is a function of life-intelligence.

The strands of RNA Nucleobases are thought to be read in groups of 3, but advancing in single code steps, until the codon AUG triggers the start of building a protein, beginning with the amino acid Methionine (Met.).

Then the codes are thought to be read in nonoverlapping groups of 3, adding amino acids associated with the codons, until one of 3 **Stop** codons are encountered.

DNA Duplication

During duplication a chemical called a Helicase breaks the weak intermolecular Hydrogen attraction and "unzips" the strands, straightening them into separate linear strands with their separated Nucleobases attached.

CU x - Leu UU z UU y - Phe	U,C,A,G = X $U,C = y$ $A,C = Z$
UC x - Ser AG y CG x - Arg AG z GU x - Val. CC x - Pro. AG x - Thr. GG x - Gly.	CA y - His. CA z - Gln. AA y - Asn. AA z - Lys. GA y - Asp.
GC X - Ala. AU U,C,A - Ile. G - Start - Met.	GA z - Glu. UA y - Tyr. UA z - Stop - UG A Trp UG G Cys UG y

From a soup of chemicals an enzyme (catalyst) reconstructs (in a linear process) an exact complementary replica upon each strand.

In sexual reproduction the DNA is "unzipped" and one of the single strands, with its Nucleobases attached, is produced in the egg or sperm. When fertilization takes place, the egg and sperm strands are joined in segments called "genes", where the complementary nucleobases replace the nucleobases of the unselected strand's gene. Deformities occur when incompatible gene segments are selected from the egg and sperm.

The genetic wiring of the brain is altered by environmentally acquired learning, and the existence of "instincts" suggests that the brain can alter the DNA in the egg and sperm strands, thus passing on learning to the offspring. Savant abilities may also be transmitted in this manner.

Post-Processing of Proteins

The codon-coded sequence of amino acids creates a base protein by chemically attaching the amino acids together. The protein is obviously a disposable chemical copy of the RNA codons. The possible number of different proteins is enormous.

After the base protein is complete it may be processed further (unknown by what control or means) to refine its function, possibly adding non-coded amino acids (2 of which are commonly added for a total of 22).

Essential Amino Acids

Proteinogenic amino acids (those used in building proteins) are a small subset of all the chemically potential amino acids. The human metabolism can construct 11 of the coded amino acids, but 9 of the coded amino acids (termed essential) must be consumed, mostly from consumed proteins that contain them. The consumed protein is broken down to extract the essential amino acids. This lack of the ability of the body to construct the 9 essential amino acids is further evidence of the genetic splicing involved in producing the hybrid human.

Organic Development DNA

95 percent of the DNA is considered "junk" because it is not understood how it controls the development of the organism from the fertilized egg, to the fetus, to the birth, and on into childhood, adolescance, old age, and death.

The organic development DNA is a series of maps controlling the distribution and specialization of cells as they reproduce. The cells group into organs that interact in operating the organism.

An Octave of Scale

The mathematician and cosmologist Leibniz defined independent systems as "Monads". In Geocubic Cosmology, Monads of increasing size-scale are organized in a nested symmetrical octave(8) of scale termed "Magnitudes". This is diagramed at-right. The symmetry is centered on the scale of the Planet (Earth), where the nested Monads of Life (the planetary Ecosystem of Organisms of Cells) meet the Astral nested Monads (of Galaxies of Solar Systems of Planets).



States of Matter (by Temperature)

There are 3 common forms (states) of Matter, known as solid, liquid, and gaseous.

There are 2 additional states of Matter (relating to Electrons).

Electrons are created in conjunction with the Protons that Matter is composed of, but are not indelibly tied to the atoms. An atom is "ionized" when it has fewer Electrons than Protons.

Heat causes Electrons to exit the atoms, and when hot enough, all the Electrons are emptied out of the atoms, and this state is called "**plasma**".

Lack of heat binds Electrons to the atoms, and when cold enough the atoms become "**super-conductive**", meaning that, ionization is precluded.

Piezoelectricity

Pressure increases heat, which forces Electrons out of atoms. In Quartz, the Electrons ejected from Silicon atoms by pressure is conducted in the crystal in what is termed the piezoelectric-effect, and the crystal can be made to oscillate at a constant rate that, for example, is used to regulate time measurement in quartz clocks.

Solid-Liquid-Gas Transitions

The liquid and gaseous states differ in that a gas can be compressed and a liquid essentially cannot be compressed. The solid state is characterized by crystal lattices of repeating patterns, but many substances have multiple lattice structures depending on temperature, such as ice, which is conventionally considered to have fifteen different crystal lattices. Some substances will transition (sublime) from solid directly to gas. Each substance has its own freezing, melting, and evaporating temperature points.

Void Attraction Hexagonal Ice Lattice

Above boiling temperature the intermolecular attraction is too weak to hold the water molecules together. Above freezing temperature the intermolecular attraction links the water molecules, but the linkages can shift making it liquid.

When water freezes the linkages become rigid.

The ice unit-cell is illustrated at right. Six water molecules are linked together in a hexagonal ring by the intermolecular attraction.

The 6 outer Hydrogen not part of the linkage of the ring are shown greyed.

The lattice hexagonal unit-cells merge on the 6 edges of the hexagons. One Oxygen joins the rings by forming two intermolecular links. This is highlighted by a circle (see below).





A Hydrogen not on the hexagon layer is required for the joining (circled) Oxygen. This layer-joining Hydrogen is shown in purple behind the circled Oxygen.

This builds a solid in 3 dimensions attached only to the joining Oxygen of a hexagon layer (and is where ice will fracture).

The illustration below of 7 linked hexagons shows that the locations of the linked Oxygen atoms are random, and this is behind the random variations of frozen ice crystals (snowflakes)



In addition to state of matter transitions caused by the intermolecular attraction, Elements and compounds will transition between states at their individual temperature points.

Element Diagrams

Sphere Arrangements and Bias Planes

The following diagrams show Sphere arrangements and resultant Bias planes, deduced from cubic geometry, symmetry law, and the known properties of the Elements. They do not purport to be entirely correct or complete.

The **Symmetry Law** is that the internal arrangement of the Spheres in the cube <u>Must</u> be symmetrical in 2-dimensions, but <u>Cannot</u> be symmetrical in all 3-dimensions.

Hydrogen(1) Oxygen(8), and Cobalt (27) are symmetrical in 3 dimensions and cannot exist separately (must bond).



In the following diagrams of valid arrangements, the outside view of the Sphere arrangements are shown to the left, with the Bias diagram alongside, and followed by any supplemental diagrams to detail the structure, such as showing layers (as in Silicon(14) shown below).



An "allotrope" of an Element has atoms with different properties than the predominant properties. The Geocubic Model makes clear that an allotrope is a different valid Sphere arrangement.









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Cobalt(27), with layers of (9,9,9), or cubic fill of (3x3x3), violates the 3-dimensinal symmetry exclusion.

Copper(29) has a perpendicular Bias and a diagonal Bias, producing a warm color in reflected light (unlike the silvery color of most other metals). The compound Bias also makes it malleable because the crystal alignments along Bias planes can shift between the 2 Bias types (all Bias planes of the Elements can quantum-rotate in the interior of the cube).



The x10's

The Elements 30, 40 and 50 are divisible by 10, and have a diagonal Bias, all with similar diagonal layering as shown below. Their ratios of non-Bias Spheres (termed "Fillers") to Bias Spheres are all 3/2.



The 3-Layer Crossing Bias

Crossing Bias starts at 32 with three 8-Sphere crossing layers, and fillers offset to intermediate positions between layers.







The Refractory Group

The refractory metals are classified by the physical property of being resistant to heat and wear. They are grouped in the mid-section of octaves 3, 4, and 5. The most resistant are shown in red in the periodic table at left.

The 4 Elements (41 42 73 74) have a similar Sphere arrangement and Bias (they are enclosed in a square).

The 4 Elements of the "refractory group" alternate offset rows (of [3 & 4] for 41,42 and [4 & 5] for 73,74)

The Niobium(41) Bias alternates 3,4,3,4,3 = 17.

The Molybdenum(42) Bias alternates 4,3,4,3,4 = 18.

Both have 12 fillers on each side of the Bias.

Molybdenum(42) has a ratio of Bias to fillers of 18/24=3/4.

Niobium(41) is one Sphere short of the 3/4.

The Tantalum(73) Bias alternates 4,5,4,5,4,5,4=31. The Tungsten(74) Bias alternates 5,4,5,4,5,4,5=32.

Both have 21 fillers on each side of the Bias.

The Tantalum(73) and Tungsten(74) average to 31+32/2=31.5, each having 42 fillers, and 31.5/42=3/4.

Each is $\frac{1}{2}$ off the $\frac{3}{4}$ ratio.

Transition to 4 layers

Element 43 does not occur in nature.

Ruthenium(44) is caught in a transition between 4 crossing layers of 9 Spheres with 2 offset filler layers of 4, and 4 crossing layers of 8 Spheres, with 3 offset filler layers of 4.



Offset Crosses

Starting with Rhodium(45), offset Bias-crosses form.

Rhodium(45) has a 31 Bias-Sphere-cross (rows of 3,4,3,4,3) -- Silver(47) also has rows of (3,4,3,4,3) Palladium(46) has 32 Bias-Sphere-cross (rows of 4,3,4,3,4) -- Cadmium(48) has rows of (4,3,4,3,4) The difference between 45&46 and 47&48 is that the fillers advance from 14 to 16.



Cadmium(48) has an allotrope of 4 layers of 12 Spheres each. This is the first full "layered-cross" arrangement. Tin(50) is shown with the x10 group (30,40,50)

Tellurium(52) has four 13-Sphere layered-cross layers.

Both the Cadmium(48) allotrope, and Tellurium(52), are brittle because of their layer regularity.

Layer Shift

With the inert Element Xenon(54), 4 layers are alternated that force some of the Spheres of the layers to shift out of their plane, preventing any Bias.

Radon(86) has a similar inert arrangement.



The Neodymides (58 to 72) Conventional Lanthanides (57 to 71)

12-Layer

The **Neodymides** variously utilize the 4-layered-cross forms (shown below) of 9 or 12 Spheres, with offset fillers between the layers. Neodymium(60) is known as the "true Lanthanide".







58=12,4,9,8,9,4,12
60=9,8,9,8,9,8,9
or 12,4,12,4,12,4,12
62=9,8,12,4,12,8,9
64=12,4,12,8,12,4,12
66=12,8,9,8,9,8,12
68=12,8,12,4,12,8,12
70=12,8,12,6,12,8,12
72=12,8,12,8,12,8,12

	^(4 layer) Cerium Neodymium
	Samarium
,	Gadolinium
	Dysprosium
,	Erbium
,	Ytterbium
,	Hafnium

58-72 Neodymides (Conventional 57-71 "Lanthanides")

Layer/Offset Sequence Symmetry Required



9-La	ayer
\bigcirc	\mathcal{X}
\bigcirc	\mathbf{X}
\bigcirc	$\mathcal{O}\mathcal{C}$

Center Layers for Odd Number Elements

59= 8,9,8, <mark>9</mark> ,8,9,8	^(3 layer) Praseodymium
61 = 4,12,8,13,8,12,4 or 6,12,6,13,6,12,6 63 = 12,4,9,13,9,4,12	Promethium ^(5 layer) Europium
65=12,4,12, <mark>9</mark> ,12,4,12	Terbium
67=12,6,9, <mark>13</mark> ,9,6,12	Holmium
69=12,4,12, <mark>13</mark> ,12,4,12	Thulium
71=12,8,9, <mark>13</mark> ,9,8,12	Lutetium

12-4-12-4-12-4-12

60 Neodymium "True Lanthanide"





Elements 73 and 74 are refractory Elements shown with Elements 41 and 42.

The Heavy Elements

Rhenium(75) is considered a Refractory Element because it can bond to: Rhenium(75)Tungsten-form(74) -- Rhenium(75)Osmium-form(76)

Osmium(76) is the heaviest Element.



Iridium(77) (rare and with a very high melting point) can bond to:

Iridium(77)Osmium-form(76) -- Iridium(77)Platinum-form(78)



Gold(79) also has a unique Bias similar to Copper(29), but even more malleable and warmer in color due to twice the number of perpendicular and diagonal Bias planes.



Mercury(80), with 4 offset 20-Sphere layers, has a 'liquid Bias'' due to the unfilled space on each layer that allows the arrangement to in-effect shift between 4 layers of 4x5 and 5 layers of 4x4. This shift is illustrated as 8 offset layers of 10 Spheres. The effect of this shifting is that the metal acts like a liquid at room temperature.



Lead(82) introduces the "Shield" layer of 25 Spheres. The shield layer is highly compact and able to reflect light down to the x-ray and gamma-ray size (shielding from x-rays), but a Shield-layer requires internal support. For Lead(82) the 2 layers of 16(4.0) support the 2 layers of 25(5.0).



Radioactive Elements

The Elements between Bismuth(81) and Lawrencium(103) are radioactive. For the Elements up to Radon(86) the radioactivity is caused by Sphere sizes imbalance introduced by symmetry requirements.



Predicted Non-Radioactive Elements 105, 106, 107, and 109

Element 104 is named "Vortexium", Vo(104), because the Shield planes are predicted to collapse in a progressive shifting resembling a vortex. Scientists claim it has been produced, but in effect it has never existed.

Shield(105)

For Element 105 there are 7 Spheres interior of the surface Spheres, and this allows for the 6 Shield faces to each be supported at the face centers, with a central Sphere supporting the 6 supporting Spheres, as diagramed below-upper-left. Element Sh(105) is predicted to be heat and radiation resistant. It has not been produced because Vortexium disrupts the Shield-planes, and a critical mass is required to buffer the disruption. It will be produced when the technology advances to sufficient energy for producing the critical mass. There could be an allotrope of Shield with 8 empty corners, and these 8 filling the interior such that the Shield-planes produced are interior (below-upper-right).



Predicted Element Ty(107) (above-bottom-left) has 9 central Spheres, with eight Spheres at the interior-corners, supported by a central Sphere. This leaves the face-centers unsupported and they recess (and expand) to fill the gap toward the center Sphere. There might be a highly explosive crystal of Element Cr(106) that bonds to: Crystal(106)Shield-form(105) -- Crystal(106)Tbyronium-form(107)

The Octave-Matrix

In Octon(109) the cube is partitioned by 3 Shield-planes (see above-lower-right). The 8 corners are empty and the 8 partition-middle positions are empty (a 5x5x5 fill is 125, and 125-16 = 109).

The 3-D Periodic Table predicts Element 109, is "inert", and this is in spite of having 3 crossing internal Bias planes. The inert status is because the Bias partitions the cube into 8 empty (Void) sub-cubes. This Element is assigned the name "Octon", Oc(109), with an alternate name of "Lockon", Lo(109). The name Lockon is due to the effect of locking the 8 sub-cubes to the unit-cube.

Octon(109) is the last Element, and as an octant of empty cubes in the unit-cube, is in effect an octave Geocubic Matrix. The Octon(109) crystal is illustrated at-right, highlighting the unit-cube at upper-right-front in red outline.

It may be that **black-holes** are a massive Octon crystal. The Octon atoms would form a heavy compact mass projecting significant gravity that holds the Solar Systems in orbit around it, and the internal Bias planes would block light from passing through, making it dark.



Astrophysicists assume absurdly that the black hole is black because light cannot escape the gravity, rather than simply that it is not emitting light and matter is blocking light behind it. Based on the massive extent of this imagined greater-than-light gravity, their calculations indicate that all the solar bodies in our galaxy should have already been drawn into its central black-hole. Instead of reassessing their gravitational premises, academic physicists preposterously claim that invisible matter ("dark matter") must exist outside the galaxy that counteracts the gravity from the black hole.

There are 2 ignored factors that account for the galactic phenomenon, first is the actual gravity of the black hole that does not suck up everything, and second is the gyroscopic effect of solar systems that orbit their planets on a plane perpendicular to the orbit of the solar system around the black hole.



This probably generally accounts for the distance of solar systems from the black hole by the relative gyroscopic mass inertia of the orbiting planets.





The Sub-Atomic Geocubic Model

Quarks and Atomic Particles (3,6,9,12)

The 3 Atomic Particles and the 3 Quark Colors

There are 3 atomic particles: the Neutron, Proton, and Electron. Each particle has an identical structure made up of 3 distinct Quarks labeled as "colors".

The conventional labels for the 3 Quarks are the primary light colors "Red, Blue, and Green". In this presentation the **intuitive** primary pigment colors of Red, Blue, and Yellow are used.

The 6 Quark Types

The 3 Quark colors each come in one of two polarities: +2/3 or -1/3.

Designating the 3 Quarks by the primary pigment colors, and assigning the 2 polarities, the 6 quark types are shown in color/charge shorthand: +2/3 -1/3 +2/3 -1/3 +2/3 -1/3

The 9 Atomic Particle Variations

The 3 atomic particles combine the charges of 3 Quarks as follows:

Neutron: +2/3 - 1/3 - 1/3 = 0 **Proton**: +2/3 + 2/3 - 1/3 = +1 **Electron**: -1/3 - 1/3 - 1/3 = -1

The variations of the 2 charges (+2/3, -1/3) across colors produce 3 variants of each particle. *The variations are labeled by the color or combined colors of the* +2/3 *Quarks.*

	[
Neutrons:	Protons:	Electrons: (labeled with Proton's colors)
Red $(\pm 2/3, -1/3, -1/3)$	Purple (+2/3, +2/3, -1/3) Red+Blue	Purple (-1/3, -1/3, -1/3) Mass ratio =10
Blue $(-1/3, \pm 2/3, -1/3)$	Orange (<u>+2/3</u> , -1/3, +2/3) Red+Yellow	Orange $(-1/3, -1/3, -1/3)$ Mass ratio =8
Yellow (-1/3, -1/3, +2/3)	Green $(-1/3, +2/3, +2/3)$ Blue+Yellow	Green $(-1/3, -1/3, -1/3)$ Mass ratio =4

Electrons are all (-1/3, -1/3, -1/3)

There are 3 Electrons, conventionally labeled Electron, Muon, and Tau. (They have different miniscule mass)

The Electron is formed paired with a Proton. The color-number of the Proton is the relative numeric proportion of mass in the paired Electron. (10)Purple (8)Orange (4)Green

The conventional concept of the Neutrino is that it comes in 3 forms corresponding with the 3 forms of Electrons, but that has no experimental basis to assert.

The 12 Accelerated-Collision Tracings

Detection grids of accelerated particle collisions reveal tracings of 12 distinct objects. Six of these have the single Quark charges of +2/3 and -1/3, and six have the opposite charges of -2/3 and +1/3.

The six objects with opposite charges are conventionally mistakenly considered to be "anti-Quarks".

The actual situation is that the collision does not always split up all 3 Quarks. What happens in the collision is that often a single Quark is split off, leaving a **Quark-pair**.

The opposite charges result from 2 possible combined polarities of Quark-pairs from Neutrons (+2/3 -1/3 -1/3):

(+2/3 - 1/3) = +1/3 A Proton (+2/3 + 2/3 - 1/3) has never been detected outside of atomic containment (because it is always inside a compressed Neutrino), so it cannot be split.

By simple permutation of pairs of the 6 Quark types there are 15 possible color/charge Quark-pairs. (5+4+3+2+1=15)

3 of the pairs that pair +2/3 charges are **precluded** because their combined charge of 4/3 is not in the 12 tracings. (+2/3 + 2/3), (+2/3 + 2/3), (+2/3 + 2/3).

3 of the pairs are **precluded** because they pair the same color, and the particles must have only one of each color. (+2/3 - 1/3), (+2/3 - 1/3), (+2/3 - 1/3).

6 of the pairs are reduced to 3 distinguishable pairs because only the combined color and charge is detected.

$$\begin{array}{c} (-1/3 + 2/3) = +1/3 \\ (+2/3 - 1/3) = +1/3 \end{array} \quad \begin{array}{c} (-1/3 + 2/3) = +1/3 \\ (+2/3 - 1/3) = +1/3 \end{array} \quad \begin{array}{c} (-1/3 + 2/3) = +1/3 \\ (+2/3 - 1/3) = +1/3 \end{array} \quad \begin{array}{c} (-1/3 + 2/3) = +1/3 \\ (+2/3 - 1/3) = +1/3 \end{array}$$

These 3 pairs (+1/3 + 1/3 + 1/3) were originally conventionally labeled as "Strange, Charm, and Beauty".

The **12** <u>distinguishable</u> collision results are shown below. The 6 single Quarks are on the top row. The 6 distinguishable Quark-pairs are shown on the bottom row (with the 9 possible Quark-pairs enclosed in a rectangle above them). There are no anti-Quarks (and no anti-particles).

-1/3	+2/3	-1/3	+2/3	-1/3	+2/3
(-1/3 +2/3)		(-1/3 +2/3)		(-1/3 +2/3)	
(+2/3 -1/3)	(-1/3 -1/3)	(+2/3 -1/3)	(-1/3-1/3)	(+2/3 -1/3)	(-1/3 -1/3)
+1/3	-2/3	+1/3	-2/3	+1/3	-2/3

Quark Structure of Atomic Particles

Each quark is made up of **11 neutral frame-cubes**, face-charged in colors that have counts matching the color/numbers of the 6 cube faces shown below top-right. The cube is separated into paired faces that each add to 11, and the additions of the 3 primary pigment colors match with the addition of their numbers.



The Quarks slide together and do not interlock, they can slide apart (for particle transformations), but a strong **binding force** draws them together.

The colors of the cube faces are an analogue of the binding force as illustrated above bottom-left with colored arrows. Each primary-color face (red, blue, yellow) is paired to a face that is the additive color combination of the other two primary color faces.

Yellow's pair is Purple which combines primary faces Red and Blue. Blue's pair is Orange which combines primary faces Red and Red's pair is Green which combines primary faces Blue and

Quark Pairs from Particle Collision

There are 3 possible Quark pairs as shown at-right. The original labels for the 3 Quark pairs were "Strange, Charm, and Beauty".

All 3 Quark-pairs have charges of +1/3 or -2/3(Inverse of the single-Quark charges of -1/3 or +2/3), because two Quarks from a Neutron are either -1/3 - 1/3 = -2/3 or -1/3 + 2/3 = +1/3

If Protons could be split there would be Quark-pair charges of +2/3 + 2/3 = 4/3 (and there are not).

Auark Pairs Strange, Charm & Beauty

Particle Transmutations

Proton/Electron pairs are interchangeable with 2 Neutrons, as shown below.

Neutron = $+2/3 - 1/3 - 1/3 = 0$	Proton = $+2/3 + 2/3 - 1/3 = +1$
Free Neutrino	←→ Compressed Neutrino
Neutron = $+2/3 - 1/3 - 1/3 = 0$	Electron = $-1/3 - 1/3 - 1/3 = -1$

The transmutations require color compatible particles in order to result in all three quark-colors. The diagram below shows with colored arrows how the Proton(+1) and Electron(-1) pairs are assembled from or disassembled to the Quarks of 2 Neutrons(0).



Comparison to Academia

Shown upper-right is the "standard" nonsense chart of quarks as found on the misguided parrot of academia (wikipedia), followed by a correct labeling.

The "charm" and "strange" in the nonsense chart actually comes from accelerated collision traces (where the 3rd non-single quark "beauty" was also detected).

The gauge bosons are "virtual" (imaginary) particles needed to explain gravity and the strong and weak atomic forces.

The photon is an electron traveling on a linear vector.



Way Wrong (from wikipedia) Standard Model of Elementary Particles



The Isotope Balance Equation (Discovered by Tom Gilmore)

Atomic Number and Elements

The integer number of Protons in an atom is called its "**atomic number**", and these integer-based atoms are termed "**Elements**". One Proton in an atom is the Element Hydrogen (H), two Protons is Helium (He), three Protons is Lithium (Li), and so on.

Atomic Weight and Isotopes

Both Protons and Neutrons contain a Mass (massive energy of 1,000,000,000 mega-electron-volts) that is termed an "**atomic weight**" of 1. The atomic weight (Z) of an atom is the sum of Protons (P) and Neutrons (N), or (**Z=P+N**). Many Elements occur with variable numbers of Neutrons, and these are called "**Isotopes**" of the Element.

The syntax used in this text for identifying an Isotope is (Z)Element(P). For example Helium has 2 Protons and 2 Neutrons and is written (4)Helium(2).

The "n-value"

With the exception of Hydrogen, which has no Neutrons, every Element has at least as many Neutrons as Protons.

The excess of Neutrons over Protons is termed the "n-value" and by definition of being in excess it is the atomic weight less twice the number of Protons or n = Z-2P.

The "b-value"

The Isotope balance equation was discovered because at (Z=195)Platinum(P=78) a proportional relationship of 1/2 between Protons(P) and excess-Neutrons(n) occurs.

n = (Z-2P) = (195 - 2x78) = 39 -- and 39/78 = 1/2

In other words, for (195)Platinum(78), excess Neutrons is 1/2 of P (P/2) when P is 78 (P/78).

It turns out that $(P/2 \ge P/78) = (78/2 \ge 78/78) = (39 \ge 1) = 39$ and $(P/2 \ge P/78) = (P^2/156)$

The Platinum equation $P^2/156$ when applied to the other Elements matches with their Isotopes in a significant manner that demonstrates it is the sliding-scale **isotope balance** that applies to all the Elements.

This balance is termed the b-value, or $b=P^2/156$

The "z-value"

Applying the balance equation to atomic weight (Z), the z-value simply adds 2P to the b-value, so

Isotope Balance is $z = (2P + P^2/156)$ rounded (z is rounded because atomic weight Z is an integer)

Conformities with the Balance Equation

Isotope abundance data is from "The Elements" by John Emsley

Exact Conformity in some Elements with 100% in one Isotope:

(19)Fluorine(9) -- (2P + P²/156) = (2x9 + 9x9/156) = 18.52 rounds to 19 (23)Sodium(11) -- z = (2x11 + 11x11/156 = 22.78 rounds to 23 (27)Aluminum(13) - z = 27.08 rounds to 27 (31)Phosphorus(15) - z = 31.44 rounds to 31 (45)Scandium(21) - z = 44.83 rounds to 45 (59)Cobalt(27) - z = 58.67 rounds to 59 (93)Niobium(41) - z = 92.78 rounds to 93 (103)Rhodium(45) - z = 102.98 rounds to 103 (169)Thulium(69) - z = 168.52 rounds to 169 Exact Conformity in some Elements with 90% in one leatene:

Exact Conformity in some Elements with 99% in one Isotope:

(12)Carbon(6) - z = 12.23 rounds to 12 (14)Nitrogen(7) - z = 14.31 rounds to 14 (16)Oxygen(8) - z = 16.41 rounds to 16 (238)Uranium(92) - z = 238.26 rounds to 238

Notice that the Elements with 100% have odd atomic weight and those with 99% have even atomic weight.

Parity Demand

Parity law is that the Isotope balance z is slightly weaker than the demand for parity (of even-to-even or odd-to-odd) between the atomic-weight(Z) and atomic-number(P).

Due to the parity demand, if the Isotope-balance (z-value) is out of parity with the atomic-number(P), the tendency is the Isotope of that Element will generally be off by 1 (or minus 1) from the balance (z-value).

For example 100% of Magnesium is (Z=55)Mn(P=25), satisfying odd parity between Z and P, yet the balance is at z=54 (out of parity), one less than the Isotope of Z=55.

Following is a list of 7 Elements that have 100% (or nearly) in one Isotope, and are in parity between P and Z, but in **non-parity** to the z-value. They are 1 off the z-value (balance) because of parity demand.

z-value variance % abundance Isotope

(51)V(23)	50	-1	99
(55)Mn (25)	54	-1	100
(89)Y(39)	88	-1	100
(141)Pr(59)	140	-1	100
(175)Lo(71)	174	-1	97
(181)Ta(73)	180	-1	99
(197)Au(79)	198	+1	100

Notice Gold(79) is on the other side of the Platinum(78) balance point, and the variance shifts from -1 to +1.

Non-Parity Isotope Splitting

Six Elements of odd atomic-number split their Isotopes around their even z-value. Their percentage split exhibits a graduated percentage change, centered around the Element Silver(47) which nearly equally splits around the z-value (see list below).

All 6 Elements have averaged atomic weights (average Z) that round to their z-value.

(Copper example: $(.69 \times 63) + (.31 \times 65) = 63.62$) 69% -- (63)Copper(29) 31% -- (65)Cu(29) average Z = 63.62 **z-value = 64** 60% -- (67)Gallium(31) 40% -- (69)Ga(31) average Z = 67.80 **z-value = 68** 51% -- (107)Silver(47) 49% - (109)Ag(47) average Z = 107.98 **z-value = 108** 37% -- (185)Rhenium(75) 63% - (187) Re(75) average Z = 186.26 **z-value = 186** 37% -- (191)Iridium(77) 63% -- (193)Ir(77) average Z = 192.26 **z-value = 192** 30% -- (203)Thallium(81) 70% -- (205)Tl(81) average Z = 204.40 **z-value = 204**

Notice that the percentage split is nearly reversed between Copper(29) and Thallium(81).

Even-Atomic-Number Isotope Spreads

Elements of even atomic-number tend to spread their Isotopes more than odd atomic-number Elements. This can be seen in the sample Isotope chart below showing Isotope percentages by their n-value.

The blue squares mark the integer jumps of the b-value (balance).

The shaded squares are in parity.

P.	n-		9	10	11	12	13	14	15	16	17	18
Y	39				100							
Zr	40			51	11	17		17		3		
Nb	41				100							
Mo	42	14	3	9	15	17	10	24		10		
Tc	43											
Ru	44	6		2	13	13	17	32		19		
Rh	45						100					
Pd	46			1		11	22	27		26		12
Ag	47						51		49			
B	v Tor	n Gil	more									

The even-numbered Elements have a wide Isotope spread, but their average-Z clings to the z-value.

Average-Z calculation example for Zr(40) Z=2P+n):

Average-Z = Sum [Isotope% xIsotope-Z] =((.51x90) + (.11x91) + (.17x92) +(.17x94) + (.03x96)= (45.90 + 10.01 + 15.64 + 15.98 +

(2.88) = 90.41.

	Ave-Z	Z	variance
Zr(40)	90.41	90	0
Mo(42)	94.13	95	+1
Ru(44)	101.12	100	-1
Pd(46)	105.64	106	0

Zr(40) is 88% in parity Mo(42) is 74% in parity. Ru(44) is 72% in parity. Pd(46) is 77%) in parity.

By Iom Gilmore

Notice that the spread prefers Isotopes in parity (the shaded boxes in the chart). For example in Zr(40) the isotope percentages that are in parity are: 51% + 17% + 17% + 3% = 88%.

Alpha Decay

In alpha decay, an "Alpha particle" (2)Helium(2) is emitted from the atom. This is actually a Helium atom, not a particle (but academia still calls it a particle to preserve their early misconceptions).

Alpha decay spontaneously occurs at various rates for all the Elements from Lithium(3) upward. Decay is enhanced by various factors, but occurs regardless. Two Protons and two Neutrons are sent off and the atom reduces by 2 atomic numbers.

For example (40)Calcium(20): \rightarrow a (4)Helium(2) + (36)Argon(18)

The n-value of the transmuted Element is unchanged because 2 Protons and 2 Neutrons (being equal in number) are emitted, but Proton-count (atomic number) has dropped by 2.

Beta Decay

When the n-value is out of balance, that Isotope may transmute to move toward balance, by increasing or decreasing the Proton-count by 1, and this is called **beta-decay**.

The isotopic <u>effect</u> of a <u>beta-decay</u> on the atom is to either: change a Neutron to a Proton (Beta-minus) or

change a Proton to a Neutron (Beta-plus).

In beta-decay the atomic-weight(Z=N+P) is unchanged.

The adjustment to the n-value is:

Beta-minus +1P --> effect -2n

Beta-plus -1P --> effect +2n

The change of position on the n-value Isotope charts due to alpha(a) and beta(b) decays are illustrated to the right.



54 b-value

39



Isotope Abundance Charts

(Showing Alpha and Beta Decays)

The **Isotope Abundance Charts** below show Isotope percentages for P (atomic number) by their n-value (excess Neutrons).

The **blue squares** mark the integer jumps of the b-value (balance).

The shaded squares are in parity.



0



P	n→	14	15	16	17	18	19	20	21	22													
Cd	48	13	13	24	12	29	_b-	7								_							
In	49		4		96						23	24	25	5 26	5 27								
Sn	50	1		15	8	24	8	32	_b-	5	_b-						Ove	ract	tive				
Sb	51						,57	2	43	2				4		- 	(gra	y) A	lph	a			
		Te	52		b+	3	1	5	7	19	þ-	32	b-	√ 34	b-	-	Deca Iner	ay C 't Bi	Laus ulge	se			
		Ι	53					<u> </u>	100		_b-		b-			2							
		Xe	54				b+	2	26	4	21	27 ^a	b-	a 10 ⁶		1							
	-	Cs	55							7	100					/							
		Ba	56						b+	2	~7)	8	114	a 72	b-	1							
					La	57					, a	7	99	b-		/							
					Ce	58			b+		b+	894	b) 11 ³	a b-	a							
					Pr	59			_	7	1004	- b-			a								
					Nd	60			b+	27	12	23	8	17	/								
					Pm	61	Xe	(54)	+7					_				1					
					Sm	62				a	15	11	14	ł 7	b-	28	29	30	31	32			
					Eu	63						_	4 8	3	5 2								
					Gd	64			_		b+		b-	+ 2	15	21	16	25	b-	22			
					Tb	65											100						
					Dy	66									b-	F 2	19	26	25	28			
					Ho	67		By	Tom	ı Gil	mor	е						<u> </u>	100				
																	b+						
					P	n→	30	31	32	2 33	3 3	4 3	35	36	37	38	39	40	41				
				L	Er	68	33	22	27	b	· 1.	5											
				-	Tm	69		100	Ľ														
				-	Yb	70-	3	14	22	16	5 32	2 1	b-	13									
				-	Lu	71				97	3												
				-	Hf	72			5	19	2	7 1	13	35	b-								
				-	Ta	73						39	99 4										
				-	W	74				b	+ 20	5 1	14	31	_b-	29	b-			42	43	44	
				L			Re	75			b	+ 3	7 4		63 4								
							Os	76		b	+ 2	Ĩ	2	13	16	26	b-	41	b-				
							Ir	77						;	37		63 4						
							Pt	78					b+		b+	33	34	25	b-	7			
							Au	79									100						
							Hg	80							b+	10	17	23	13	30	b-	7	
							Tl	81										b+	30	¥	,70	b-	b-
							Pb	82		Ву	[,] Tor	n G	ilm	ore			b+	1	b+	24	22	52	

Radioactive Decay Paths of Uranium

The Radioactive Elements between 83 and 92 decay by stepping down 2 atomic numbers (Protons) with an alpha decay, and stepping up 1 Proton with a beta decay. The radioactive decay path of Uranium(92) down to Lead(82) is shown below with **red arrows**. Two alternate deviations are shown with **green arrows**, but they end up at the same Isotope of Lead at n=42, or (206)Lead(82). The **black arrows** come from beyond Uranium(92).



The radioactive Elements are subject to "Shield Intervention". A Shield plane has 25 Spheres. Layers of Spheres are formed due to symmetry and order. The depth of a layer is proportional to the inverse of the number of layers, so 4 layers are 1/4 of the cube deep per layer, and 5 layers are 1/5 deep. At Lead(82) Shield Biases form in a stable arrangement of layers of 25,16,16,25. This leaves a layer gap of 1 - 1/2 - 2/5 = 1/10, making Lead toxic, but the Shield Layers serving to block x-rays. From Bismuth(83) on, the Shield Layers try to form and are not supported so they collapse in a rapid cycle of formation and collapse causing radioactive decay. Those Elements with a symmetrical base arrangement of Spheres decay more slowly, especially at Uranium(92). This is explained further in Appendix A, with the Element diagrams.



Atomic Fusion and Decay

Atomic Fusion Processes

The diagram at-right shows the Hydrogen molecule. One Hydrogen atom sends its Sphere to the other Hydrogen atom, leaving one empty (termed Void), and the other with 2 Spheres, The necessity of Hydrogen to be in a diatomic molecule affects the process of atomic fusion.



Solar fusion occurs in phases as the solar body increases temperature.

Clouds of Neutrons and Hydrogen (possibly with Helium and other Elements) in space will contract and begin to form a Sun. As the cloud contracts internal heat builds up until the first phase of fusion initiates.

Phase 1: Fusing Neutrons into Hydrogen

In this phase, virtually all of the free Neutrons in the solar body convert into Hydrogen. Two Neutrons convert into a Proton/Electron pair.

Both Neutrons and Protons contain a massive energy (termed Mass) within the Particle (shown as a circled M in the diagram below).

The Mass from one of the Neutrons fuels the compression of the Neutrino, and the Neutron transmutes to an Electron (with minor Mass). The Mass from the other Neutron stays with its transmutation to the Proton, but without the minor Mass energy given to the Nucleonic binding force.



The Beta Minus decay covered earlier is the same process as the fusion to Hydrogen with the exception that one of the Neutrons is already incorporated in the Nucleus of an atom (highlighted in purple in the diagram below).



Phase 2: Fusing Hydrogen into Helium

As the Hydrogen volume increases in the Sun-cloud, the pressure and temperature of the cloud increases.

Further fusion (creating Helium) does not begin until the temperature reaches ten million $(10,000,000 \text{ or } 10^7)$ degrees Kelvin.

The Kelvin scale starts at absolute zero (-273 degrees Celsius)

Fusion to Helium is a complex **2x2x2** process, as diagramed below:

Fusing a Helium atom requires 2 Hydrogen molecules (4 Hydrogen atoms), but in the process restores one Hydrogen atom, which must form a molecule, so a 2nd Helium fusion must occur simultaneously.

For each of 2 Helium atoms fused

Two Deuterium atoms are fused from the Hydrogen molecule and instantly fuse into the Helium atom (releasing $2 \times 13.35 = 26.7$ Mega-electron-volts).

One of the 2 Hydrogen atoms (of each Hydrogen molecule) is decomposed into a Deuterium atom, plus a free Neutron and a free Neutrino (yielding 2 free Neutrons and 2 free Neutrinos).

- One of the 2 free Neutrinos flies off as solar wind
- The other free Neutrino and the 2 free Neutrons fuse into a Hydrogen atom.
 - (The same Hydrogen fusion process as in Phase I)



The Hydrogen atoms produced from the 2 Helium fusions bond into a Hydrogen molecule.

Phase 3: Burning Helium

When the solar temperature reaches 100 million Kelvin, **10**⁸K, the Helium begins to fuse in a chain (of single Helium's being compressing in), creating higher Elements up to Neon. The Helium has "burned away" into higher Elements (actually, the pressure has combined the space-unit contents).

(4)He (2)	(8)Be(4)	(12)C(6)	(16)O(8)
(4)He(2)	(4)He(2)	(4)He(2)	(4)He(2)
(8)Be(4)	(12)C(6)	(16)O(8)	(20)Ne(10)

Beryllium(4), Carbon(6), Oxygen(8), and Neon(10).

Phase 4: Fusing With Carbon and Oxygen

As the temperature reaches one billion Kelvin, 10°K, fusions with Carbon(6) and Oxygen(8) atoms occur, producing Elements up to Sulfur(16).

(12)C(6)	(12)C(6)	(16)O(8)
<u>(12)C(6)</u>	<u>(16)O(8)</u>	<u>(16)O(8)</u>
(24)Mg(12)	(28)Si(14)	(32)S(16)

Magnesium(12), Silicon(14), Sulfur(16)

Phase 5: The Decaying Fusions

At temperatures over ten Billion Kelvin, 10^{10} K, the final phase of mainstream sun burning initiates, building from (20)Neon(10).

This phase of fusion is affected by a decay process that is due to the Isotope balance equation

 $\mathbf{b} = \mathbf{P}^2 / \mathbf{156}$ (rounded) where P is number of Protons.

When the **n-value** (excess Neutrons) of a fused atom is less than the Element's excess Neutron **balance** number (**b** = $P^2/156$) by more than 1, the fused atom will eject a Hydrogen molecule.

When ejecting a Hydrogen molecule, the fused atom drops down 2 atomic numbers, or minus 2 Protons (-2P), but leaves the Neutron count unchanged, thus increasing the excess Neutron count by n=2 in the resultant Element. **This decay restores Isotope balance.**

For example (40)Calcium(20) \rightarrow 2(1)H(1) + (38)Argon(18) n=0 **b=3** n=2 **b=2**

The following list shows the calculated **balance (b)** for the even-numbered Elements from Argon(18) up to Zinc(30),

Example: Argon(18) = $P^2/156 = 18x18/156 = 2.08$ (rounds to 2)

```
Ar(18) b=2.08 b=2 Argon
Ca(20) b=2.56 b=3 Calcium
Ti (22) b=3.10 b=3 Titanium
Cr (24) b=3.69 b=4 Chromium
Fe(26) b=4.33 b=4 Iron
Ni (28) b=5.03 b=5 Nickel
Zn(30) b=5.77 b=6 Zinc
```

For the following fusions of the Elements the excess Neutrons (n-value) is shown as $\mathbf{n} = ($ in black) and the balance number is shown in red as **b**=. When the difference is **more than 1** a Hydrogen molecule (2H) is expelled from the Nuclide and the resultant Element/Isotope is shown.

```
(20)Ne(10)
(20)Ne(10)
(40)Ca(20) n=0 b=3
 \rightarrow 2H + (38)Ar(18) n = 2 b=2
(20)Ne(10)
(24)Mg(12)
(44)Ti(22) n=0 b=3
 \rightarrow 2H + (42)Ca(20) n=2 b=3
(24)Mg(12)
(24)Mg(12)
(48)Cr(24) n=0 b=4
 \rightarrow 2H + (46)Ti(22). n=2 b=3 (most decay to Calcium)
 \rightarrow 2H + (44)Ca(20) n=4 b=3
(24)Mg(12)
(28)Si(14)
(52)Fe(26) n=0 b=4
 \rightarrow 2H + (50)Cr(24) n=2 b=4
 \rightarrow 2H + (48)Ti(22) n=4 b=3 (73% of Titanium is n=4)
(28)Si(14)
(28)Si(14)
(56)Ni(28) n=0 b=5
 \rightarrow 2H + (54)Fe(26) n=2 b=4
 \rightarrow 2H + (52)Cr(24) n=4 b=4 (84% of Chromium is n=4)
```

```
\begin{array}{l} (28)\text{Si}(14) \\ (\underline{32)\text{Si}(16)} \\ (60)\text{Zn}(30) & n=0 \ \mathbf{b=6} \\ \rightarrow 2\text{H} + (58)\text{Ni}(28) & n=2 \ \mathbf{b=5} \\ \rightarrow 2\text{H} + (\mathbf{56})\text{Fe}(\mathbf{26}) & n=4 \ \mathbf{b=4} \end{array} \quad \begin{array}{l} (68\% \text{ of Nickel is } n=2) \\ (92\% \text{ of Iron is } n=4) \end{array}
```

In the case of fusion to Zinc(30) which drops to Nickel, some of the **(58)Nickel(28)** does not reduce to (56)Iron(26), even though the **balance of 5** is +3 more than the n-value of 2. This resistance to decay is because Iron(26) is at the peak of binding energy (as charted below).



Even though a fusion of 2 Sulfur atoms would decay to a Nickel(28) which would be in balance (-1 off), the energy of a mainstream sun is not sufficient to fuel the fusion, as shown (faded out) below.

```
\begin{array}{l} (32)S(16) \\ \underline{(32)S(16)} \\ (64)Zn(32) & n=0 \ b=7 \\ \hline & 2H + (62)Zn(30) & n=2 \ b=6 \\ \hline & 2H + (60)Ni(28) & n=4 \ b=5 \end{array}
```

Supernova Fusions

Mainstream solar bodies die out, but larger solar bodies end up exploding in a supernova. Elements heavier than Iron/Nickel are produced in supernova explosions. This means that the Elements beyond Iron/Nickel on Earth had to come from a prior supernova.

The Odd-Numbered Elements

Aside from Hydrogen(1), only even-numbered Elements are fused. The odd-numbered Elements from Lithium(3) upward are only created through Beta decays.

Cycles of Fusion and Decay

Inexorable Alpha and Beta decay eventually reduces all the Elements back down to Hydrogen and Helium, releasing all the excess Neutrons, and these clouds of Hydrogen, Helium, and free Neutrons accrete into solar bodies that begin fusion. These repeated cycles of decay and fusion are behind the Hindu conception that the Cosmos is breathing.

Appendix: Element Lists and Periodic Table



The Elements (By Atomic Number - the number of Protons)

1	Hydrogen	27	Cobalt	53	Iodine	79	Gold
2	Helium	28	Nickel	54	Xenon	80	Mercury
3	Lithium	29	Copper	55	Cesium	81	Thallium
4	Beryllium	30	Zinc	56	Barium	82	Lead
5	Boron	31	Gallium	57	Lanthanum	82	Bismuth
6	Carbon	32	Germanium	58	Cerium	84	Polonium
7	Nitrogen	33	Arsenic	59	Praseodymium	85	Astatine
8	Oxygen	34	Selenium	60	Neodymium	86	Radon
9	Fluorine	35	Bromine	61	Promethium	87	Francium
10	Neon	36	Krypton	62	Samarium	88	Radium
11	Sodium	37	Rubidium	63	Europium	89	Actinium
12	Magnesium	38	Strontium	64	Gadolinium	90	Thorium
13	Aluminum	39	Yttrium	65	Terbium	91	Protactinium
14	Silicon	40	Zirconium	66	Dysprosium	92	Uranium
15	Phosphorus	41	Niobium	67	Holmium	93	Neptunium
16	Sulfur	42	Molybdenum	68	Erbium	94	Plutonium
17	Chlorine	43	Technetium	69	Thulium	95	Americium
18	Argon	44	Ruthenium	70	Ytterbium	96	Californium
19	Potassium	45	Rhodium	71	Lutetium	97	Berkelium
20	Calcium	46	Palladium	72	Hafnium	98	Curium
21	Scandium	47	Silver	73	Tantalum	99	Einsteinium
22	Titanium	48	Cadmium	74	Tungsten	100	Fermium
23	Vanadium	49	Indium	75	Rhenium	101	Mendelevium
24	Chromium	50	Tin	76	Osmium	102	Nobelium
25	Manganese	51	Antimony	77	Iridium	103	Lawrencium
26	Iron	52	Tellurium	78	Platinum		

The Elements (Alphabetically with Symbol and atomic number)

Actinium	Ac	89	Hafnium	Hf	72	Potassium	Κ	19
Aluminum	Al	13	Helium	He	2	Praseodymium	Pr	59
Americium	Am	95	Holmium	Но	67	Promethium	Pm	61
Antimony	Sb	51	Hydrogen	Н	1	Protactinium	Pa	91
Argon	Ar	18	Indium	In	49	Radium	Ra	88
Arsenic	As	33	Iodine	Ι	53	Radon	Rn	86
Astatine	At	85	Iridium	Ir	77	Rhenium	Re	75
Barium	Ba	56	Iron	Fe	26	Rhodium	Rh	45
Berkelium	Bk	97	Krypton	Kr	36	Rubidium	Rb	37
Beryllium	Be	4	Lanthanum	La	57	Ruthenium	Ru	44
Bismuth	Bi	83	Lawrencium	Lr	103	Samarium	Sm	62
Boron	В	5	Lead	Pb	82	Scandium	Sc	21
Bromine	Br	35	Lithium	Li	3	Selenium	Se	34
Cadmium	Cd	48	Lutetium	Lu	71	Silicon	Si	14
Calcium	Ca	20	Magnesium	Mg	12	Silver	Ag	47
Californium	Cf	98	Manganese	Mn	25	Sodium	Na	11
Carbon	С	6	Mendelevium	Md	101	Strontium	Sr	38
Cerium	Ce	58	Mercury	Hg	80	Sulfur	S	16
Cesium	Cs	55	Molybdenum	Mo	42	Tantalum	Та	73
Chlorine	Cl	17	Neodymium	Nd	60	Technetium	Tc	43
Chromium	Cr	24	Neon	Ne	10	Tellurium	Te	52
Cobalt	Co	27	Neptunium	Np	93	Terbium	Tb	65
Copper	Cu	29	Nickel	Ni	28	Thallium	T1	81
Curium	Cm	96	Niobium	Nb	41	Thorium	Th	90
Dysprosium	Dy	66	Nitrogen	Ν	7	Thulium	Tm	69
Einsteinium	Es	99	Nobelium	No	102	Tin	Sn	50
Erbium	Er	68	Osmium	Os	76	Titanium	Ti	22
Europium	Eu	63	Oxygen	0	8	Tungsten	W	74
Fermium	Fm	100	Palladium	Pd	46	Uranium	U	92
Fluorine	F	9	Phosphorus	Р	15	Vanadium	V	23
Francium	Fr	87	Platinum	Pt	78	Xenon	Xe	54
Gadolinium	Gd	64	Plutonium	Pu	94	Ytterbium	Yb	70
Gallium	Ga	31	Polonium	Ро	84	Yttrium	Y	39
Germanium	Ge	32				Zinc	Zn	30
Gold	Au	79				Zirconium	Zr	40