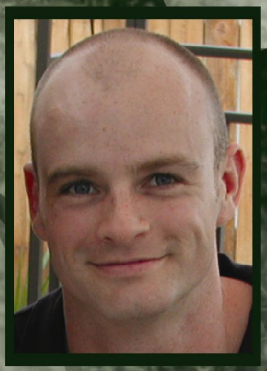

MEME
SEAN SINJIN

- What is the nature of reality?
- Where did we come from?
- Is there a God?
- What is the point of life?

Give your brain a shake and take on a radically new understanding of your world by joining author Sean Sinjin as he fills in the gaps in our contemporary understanding of everything from physics to religion, from the universe's birth to its death, and how to find happiness in the midst of all this seeming chaos. Meme pits science against the supernatural in a final battle that can only end with the truth.

Intentionally written with the layperson in mind, the entertaining analogies, diagrams, and clearly stated concepts construct a complete and purpose-filled perspective on what reality really is. An open mind and heart are the only prerequisites__but be warned, the concepts introduced herein can be quite overwhelming and may change your life forever.



I consider myself to be a citizen of the world, having visited many lands and discovered that the whole planet is my home. Nothing is more important to me than understanding our reality; to this end I've searched my entire life for the truth, and just may have found it. My credentials are considerable but are so greatly humbled by what is contained within this book as to deserve no mention. May Meme help you to find peace and happiness in your life, as it did for me in mine.

Meme is here for you, so enough about me.

MEME

by
Sean Sinjin

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Meme, much like our perspective on reality, is an ever-evolving story. Be sure to visit us on the Internet at:

www.betterhuman.org

for revisions, as Meme continuously changes to reflect reality as accurately as possible.

Dedications

To my dear mother, for the gift of life, your love, and purpose.

And to my friends of the future who may perceive the reality presented in this book…I long for your company.

The successful pursuit of truth requires a strength of mind never before conceived.
One step may open your eyes,
the next takes your purpose,
the last, your soul;
and you will turn to stone.

But you will come to realize that you've always been stone;
a stone capable of awe.

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Foreword

If you were to draw an accuracy chart of all the information presented in this book, it would most likely be mottled with many gross inaccuracies and subjective liberties. In our world, there is just so much information available that suffers from creative license, deficiencies, inconsistencies, and political oppression, that it is inevitable our perceptions will always cloud the truth. This book is not meant to be the exact truth, it is meant as a foundation for seeking the truth. The lines between known fact and plausible conjecture have been intentionally blurred to afford a more story-like feel to this book, so please forgive my arrogance or ignorance in regard to specific details. An earnest effort was made to research adequately, and though perfect truth may not be disclosed within, then at least a high accuracy will suffice for our purposes. I did not wish a book full of disclaimers and so this disclaimer alone is all I will offer. Ultimately though, I did learn a great deal of truth in writing this book, as I'm sure you will too from reading it.

Though this writing has the presentation style of the truth, it remains nothing more than a story, in the sense that there is no such thing as a bona fide, verifiable, true "fact". Without the possibility of the existence of a fact, there can only be new theories that build on previous theories, as the whole truth about reality continues to and may forever escape the accessibility and capacity of our minds. I expect many of the theories and concepts within this book to become outdated quickly. This is desired, and I welcome evidence to reject or improve the concepts presented, but that evidence must be founded in truth and with proof. Hearsay, religious argument premised on an ethereal entity, arrogance, denial, etc. all fail as counter-arguments, for by their very nature, they secretly betray the necessity for this book. If you feel that some of the information in this book is questionable, then by all means, please, do the research and prove it wrong. This book is meant to be a catalyst for the uninhibited pursuit of knowledge, not the end of that pursuit.

You may find some portions of this book to be difficult to understand. This was unavoidable so it is probably best to read it in small bites, and many apologies if perhaps the fault lies in my inability to sufficiently explain these concepts, or is due to my severe lack of diagram-sketching talent. But, this is the way reality is, and it is inherently complicated. There are a lot of difficult concepts that lay in the pages ahead but I urge you not to put down the book. Instead, if you find your ability to grasp some ideas is waning, then skim ahead until the content is more comprehensible to you. I've made an attempt to keep the diction reasonable but if you don't understand a word, or question my usage of a word, please first refer to the glossary, and failing that, look it up in a dictionary so that you'll understand my intended meaning better. I would almost encourage reading my glossary first as it contains many common words that I've slightly redefined to suit the purposes of this book.

Be eager for a challenge when you read this book; the secrets of the universe are contained herein and it would be a shame for you to miss out on them because you were discouraged early on in your reading. The first few chapters start with some very difficult concepts, but as you progress through the reading, you will find the content to be continuously easier to understand, until we end with the simplest thing in the universe.

Introduction

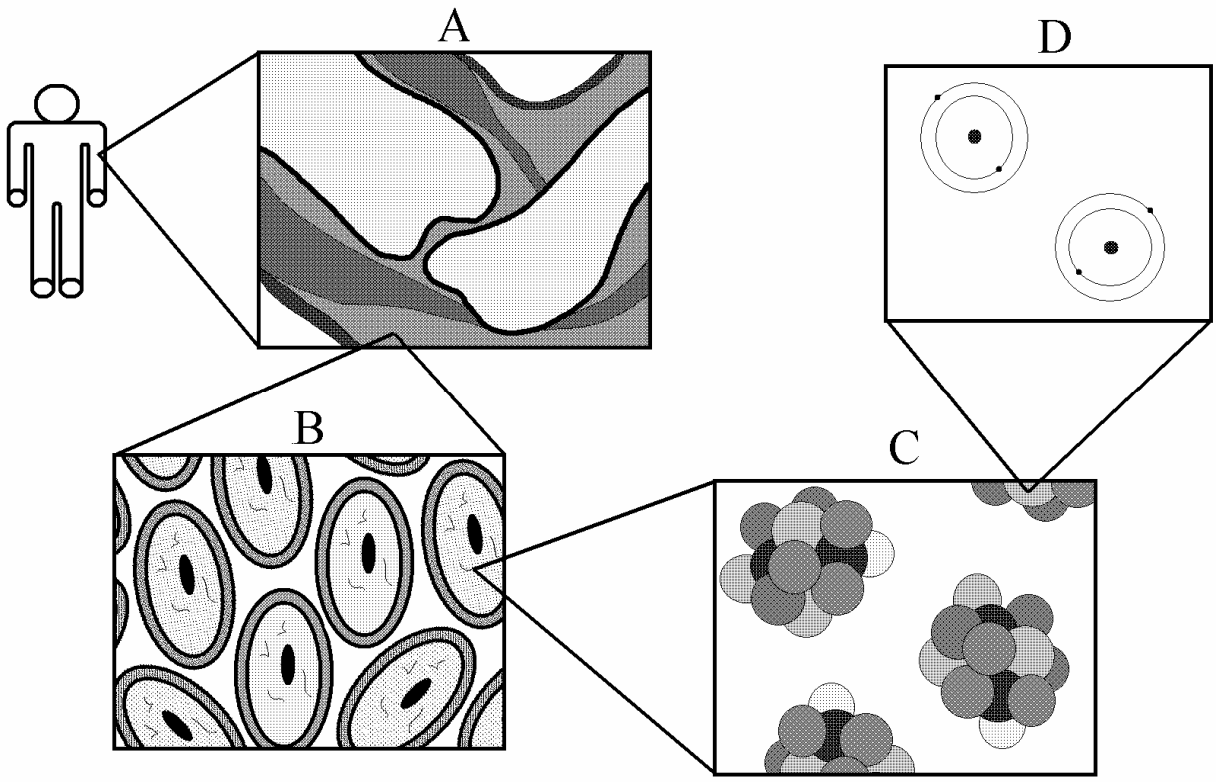
Clear your mind.

The true meaning and purpose of this statement might not become apparent to you until near the end of this book, but I want you to remember it because these three words will soon serve you well. All that I ask is for you to lay down your mighty weapons of knowledge, faith, and soul. You won't need any of them. I'm going to teach you to fish for true happiness. What I have to offer is the sum of knowledge that I've accumulated thus far in my journey through life. It may not be presented in the best form, nor be entirely accurate since I can only work from the tools afforded me, but it is certainly offered with the best intentions of contributing to humankind's growth, and providing direction and meaning for those who are unsatisfied with existing outdated philosophies.

Chapter 1 - Diminutive

INTRODUCTION

Let's get started with the start and introduce the "universe". What is it? It's big, it's a mess, and it is our home—that's the short answer. Why do we need to start here? Well, in order for you to understand yourself, you need to understand where you came from. When you look at yourself, you see a head, arms, legs, and a torso. Look a little closer and you'll see cells, bones, a brain, blood, etc. With a little help from science you can look a little closer still, and you'll see DNA, RNA, and other complex molecules. Look even way closer and you'll see atoms, electrons, and so on.



A: Skin and bones
B: Cells
C: Molecules
D: Atoms

It's hard to believe that we are composed of the same fundamental pieces of the universe much like any chunk of ordinary rock. Every single piece of our bodies is fundamentally composed of some elementary particles arranged in a very specific way, that all combine to make us wholly what we are. So what are these tiny little pieces of atoms, electrons, etc. made of? Good question. Physicists have been racking their brains for centuries trying to answer that exact question.

You will see the loosely-defined terms "particle" and "matter" used many times in this writing to refer to everything from sub-atomic particles to molecules, and on up.

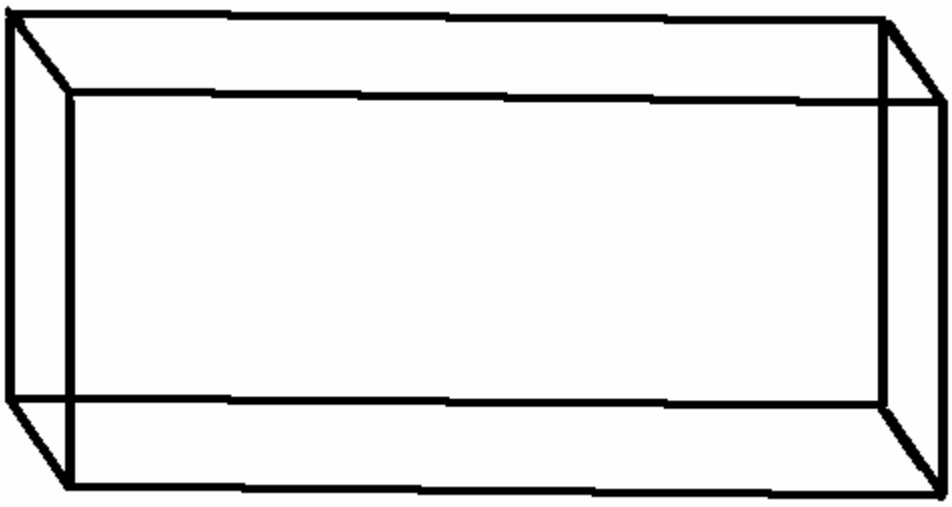
SPACE

For a moment let's take a seeming tangent and talk about space, referring to outer space, aether, that big emptiness just past the end of the upper atmosphere. It might be confusing to ask the question, "what is space", when by common definition space is "what isn't", or a complete vacuum. Let's challenge that understanding by proposing that space "is", rather than "isn't". It wasn't so long ago that most scientists entertained the concept of "aether", and this theory described aether as a medium, or rather a "sea" of some substance in which we were suspended, like fish in an ocean. Aether filled every nook and cranny of the universe. Of late though, unfortunately, this theory was abandoned for the "isn't" version of aether, an empty void, merely on the premise that we couldn't find a way to measure the "flow" of aether. The minds of the time thought for sure that if we are immersed in a sea of aether, then we should be able to measure our relative speed as we move through it. No luck there. Proof of the existence of aether with fluid-like properties was not to be had, and so the aether concept of space was abandoned since it seemed to complicate things unnecessarily.

Could Occam's razor have been wielded prematurely? Let's re-invite this aether concept but with a different name, "Bether", and different attributes than the historical sea-like version. One endearing

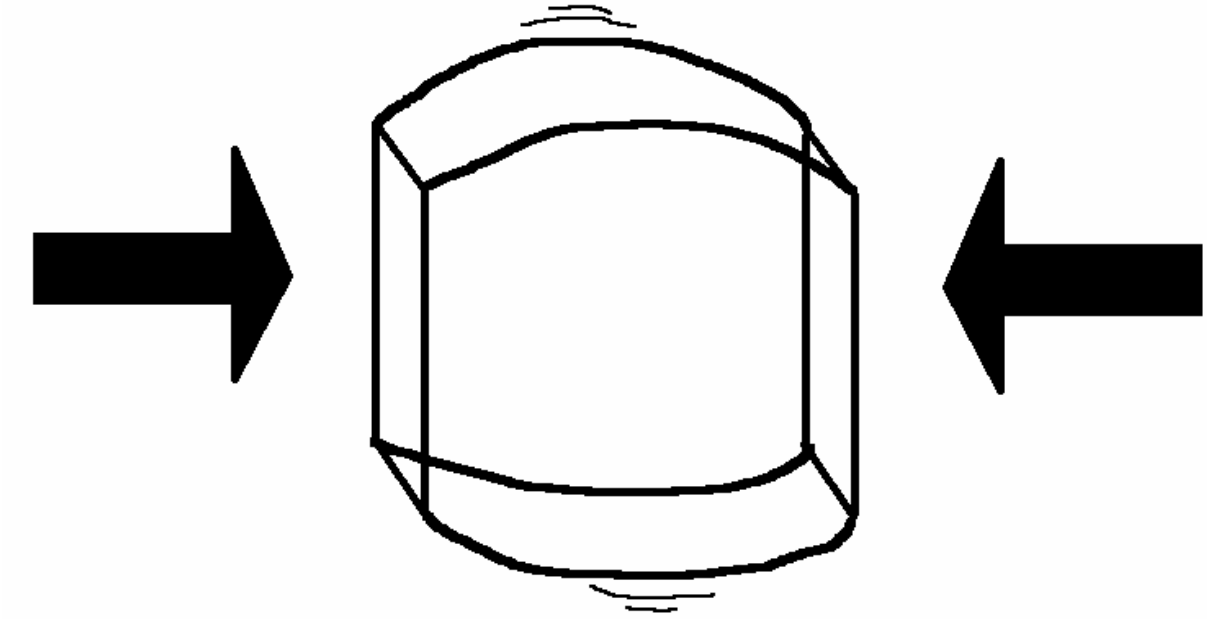
new quality we'll introduce is homogeneity, or a lack of particles. Our relativity-compatible bether claims to be the *only* substance in existence, and also claims that it is not composed of smaller particles, it is simply pure. We'll use a "soft, massless, transparent rubber" model to help us describe the properties of bether, rather than the fluid, sea-like historic model. The advantage of our model is that you cannot easily "stir" rubber and this is fundamental to the concepts about to be introduced. Bether is very much a real substance, not merely a metaphysical construct for the convenience of mathematics. Also, think about just how odd the property of homogeneity really is—it renders bether to be absolutely frictionless. There isn't a lubricant in the world that can compare to the slipperiness of bether. The importance of this property pertaining to gravity is explained later. As well, later there'll be an answer to the obvious question: if our bether is the only substance in existence, then how can we exist?

So what can you do with bether? The same things you could do to a transparent rubber brick: maybe squeeze it, stretch it, twist it, or even vibrate it. By influencing our bether, you are affecting its ambient "pressure" and it will be forced to "elastically" respond to these influences. What does it mean to say bether is compressed, or stretched, or even twisted for that matter? To explain, imagine you had your very own solid, massless, transparent rubber brick.



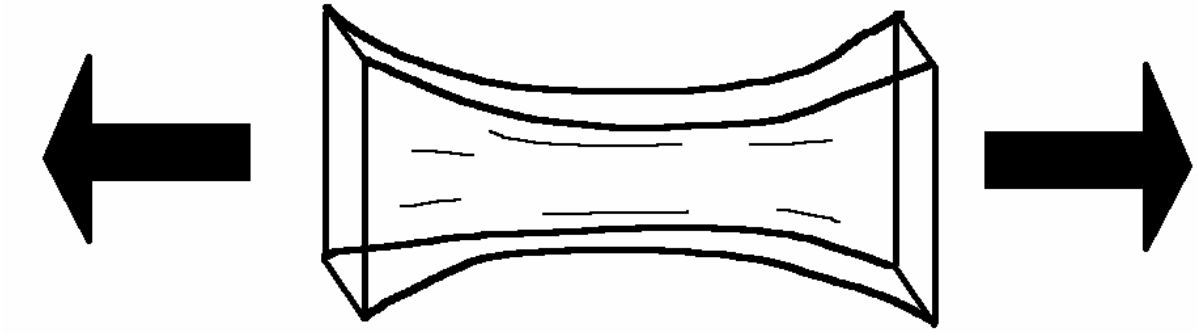
Transparent Rubber Brick with no pressure or stretching

If you were to squeeze the brick, it would increase in internal pressure.



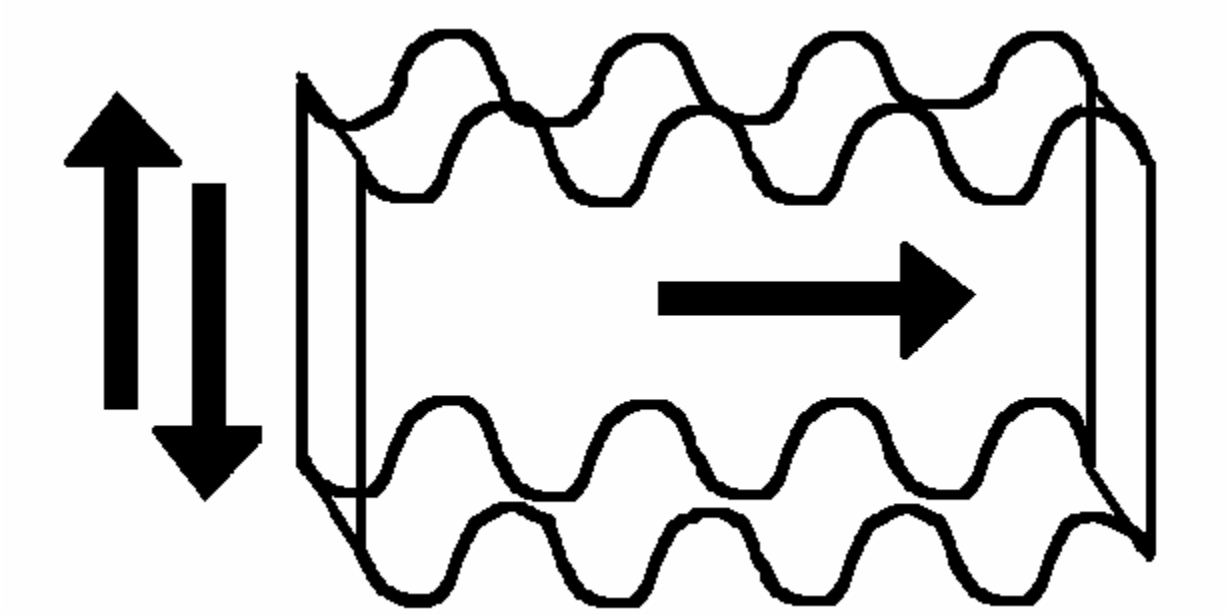
High pressure

If you were to stretch the brick by pulling it from both ends, the internal pressure would be negative, or stretched.



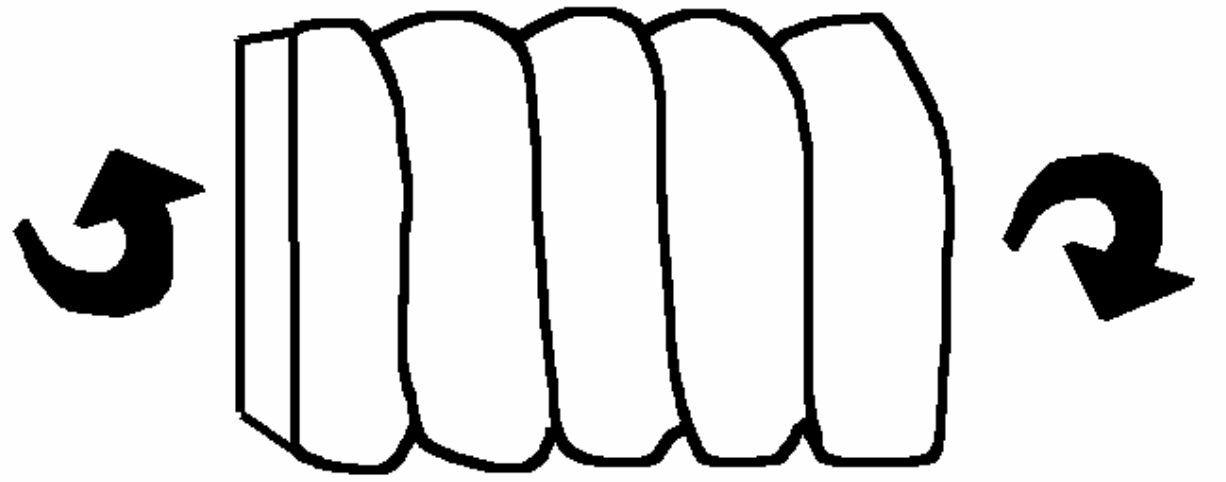
Negative pressure (stretching)

If you were to shake it vigorously at one end, you would shortly feel it shaking at the other end.



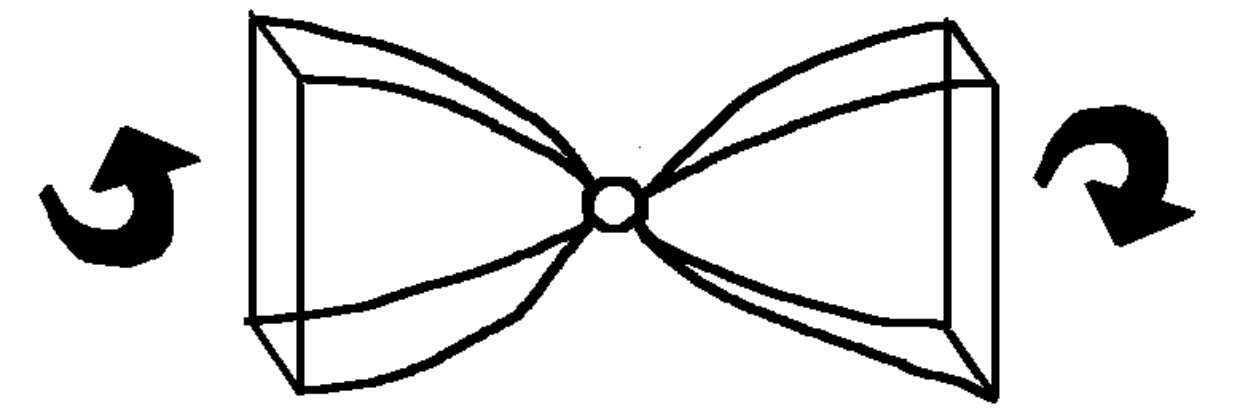
Waves

If you were to twist the ends of the brick in opposite directions a few times, you would feel the material resist that twisting, but the average ambient pressure would remain roughly the same.



Despite twisting, bether pressure is unaffected but the elastic resistance to the twisting increases

Continue to twist and you will eventually get a knot in the middle of our rubber brick.

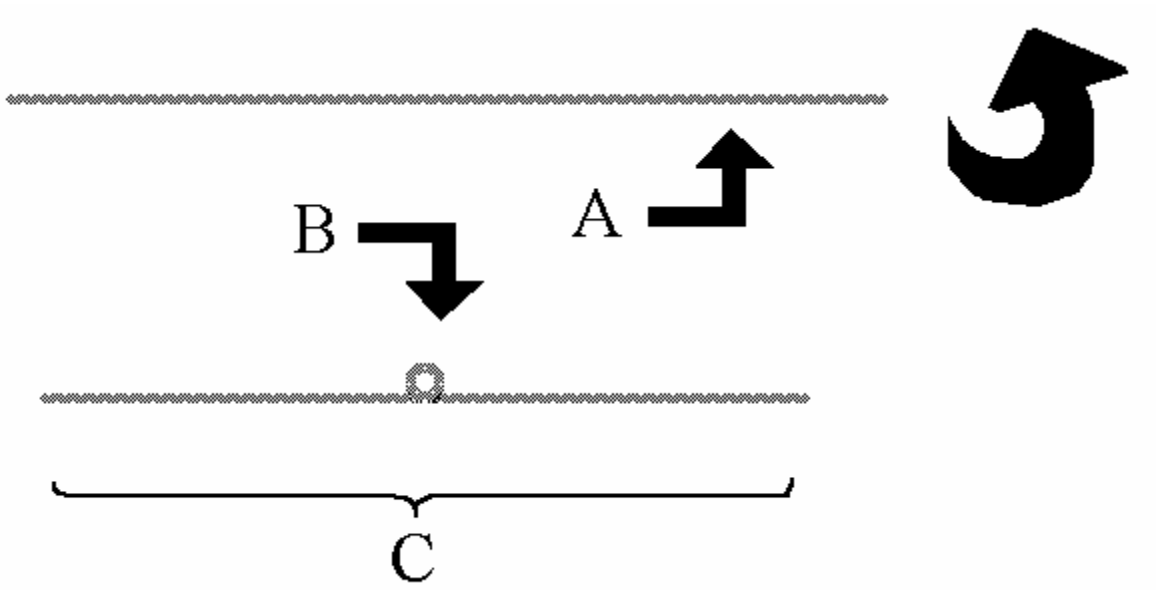


Knot

The limited actions just described demonstrate the essence of bether, and that's about all you can do with bether. Not a lot of options, but luckily for us, that's all it needs to do in order for everything around us to exist. We're going to call this science "Betherdynamics".

PARTICLES (1)

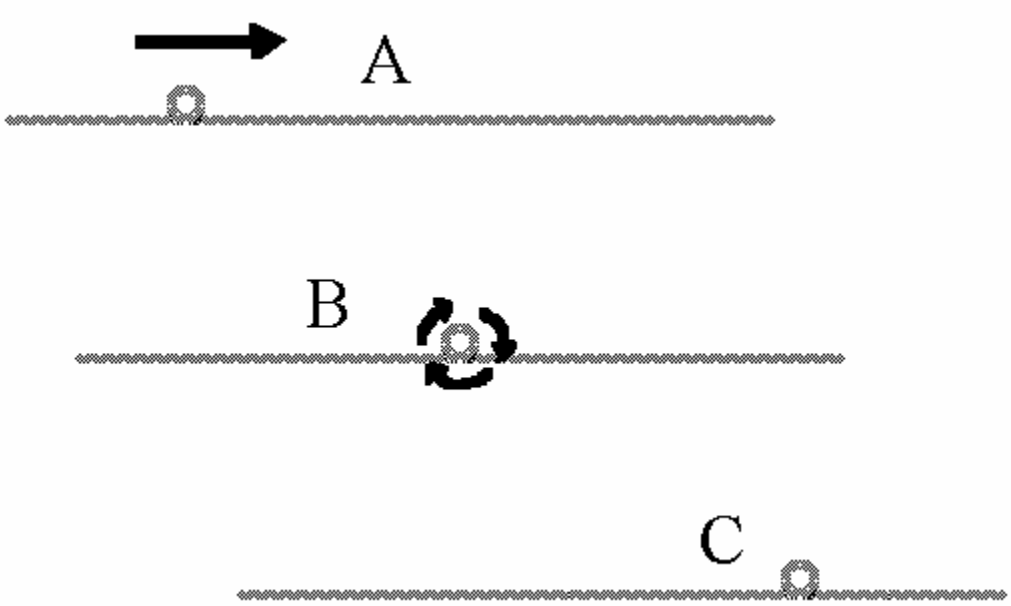
Let's start with the twisting option: if you were to take an arm's length of finely-braided rope, stretch it out between your two hands, and then start twisting the rope by repeatedly rolling your right fist forwards and then re-grabbing the rope so as to continue twisting it forwards, you would eventually twist the rope so far that it would be forced to somewhere "kink" into a loop in order to relieve some of the strain that the twisting has caused. Once the loop had formed, you would notice that the rope was now slightly shorter in length between your hands since some of the rope would be gathered in the loop.



A: Continuously twisting this rope…
B: …causes a loop to eventually form
C: Overall length is shorter

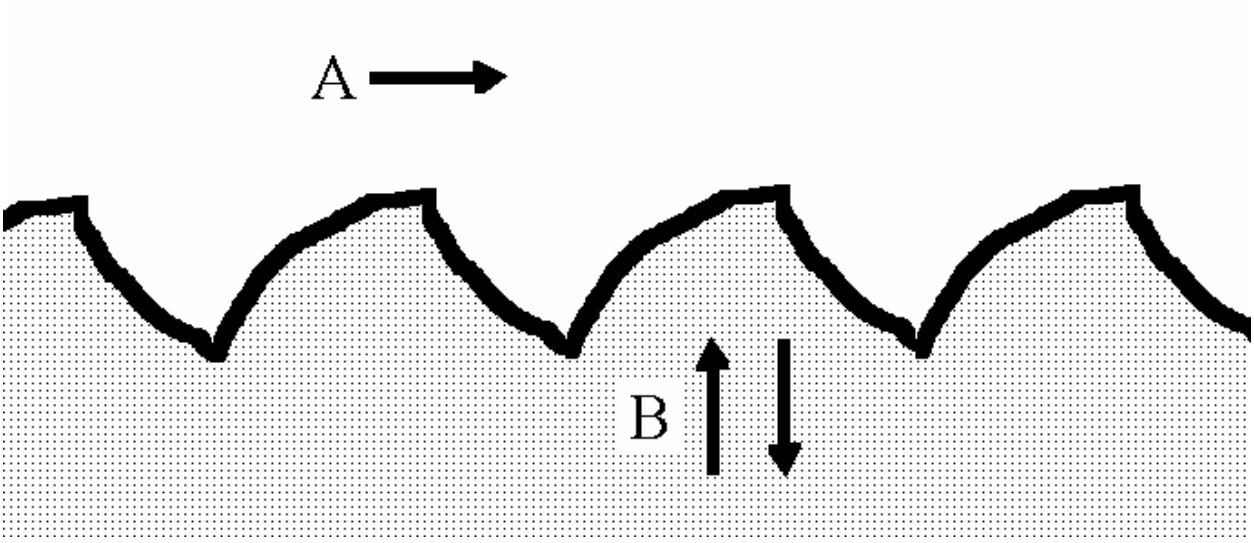
If you continued to twist the rope, it would form yet even more of these loops, relieving the twisting strain and shortening the overall span of the rope. The same thing happens with our bether. If you were able to "grab" a length of bether (hypothetically speaking of course) and had the strength to continuously twist it, it would also eventually form a loop in the attempt to alleviate the strain of the twisting on our bether. This single loop that forms is a simple "particle". This is not an analogy; particles are nothing more than bether that is all twisted into itself, just like our rope's loop.

Once a loop (particle) has formed in our rope, the twisting strain is greatly reduced on the remainder of the rope because the loop uses most of that force to form itself. Now, let's move that loop back and forth along the rope by gently pushing on it. You will see the loop maintains its shape, but the rope material flows through the loop as the loop moves along the rope.



A: Pushing the loop
B: The rope flows through the loop
C: The loop maintains its shape

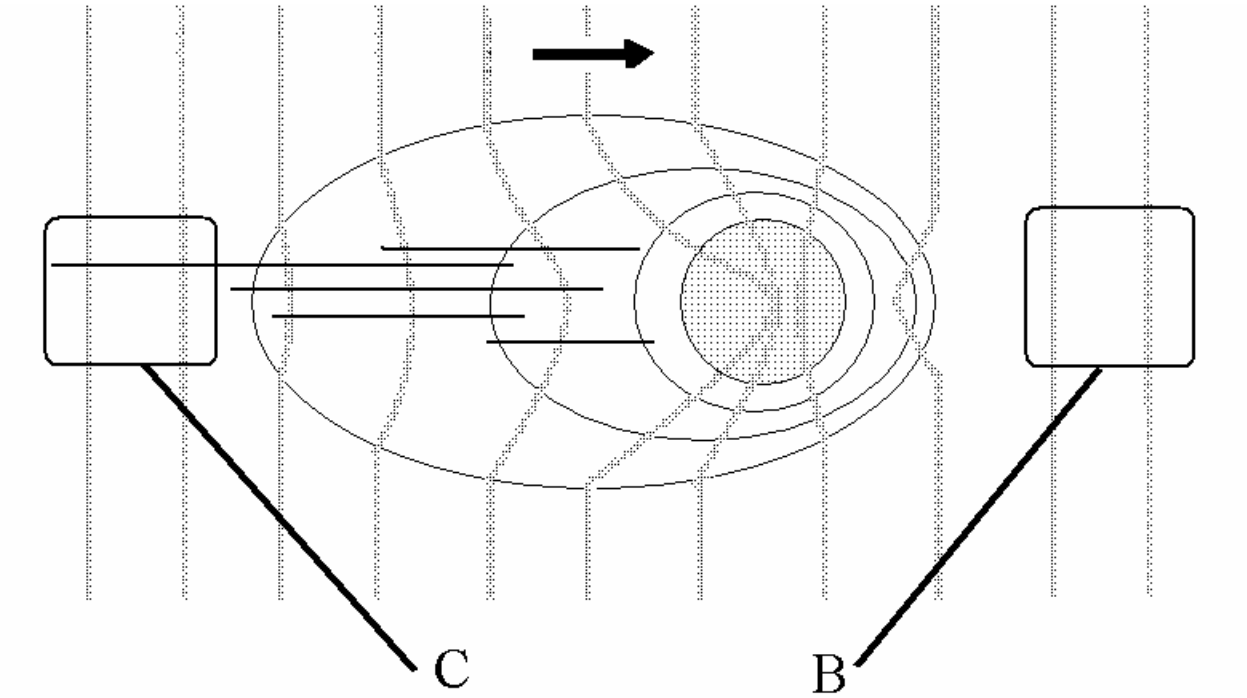
This is the same mechanism for moving particles in bether. The particle is nothing more than twisted bether, and for a particle to move in bether, it simply allows bether to flow through it, maintaining its shape as it moves along. The difference with bether though is that there is no resistance for a particle to flow through it, unlike in our rope model where there is subtle friction that resists the ability of the loop in a rope to move freely. A more practical real-world model of a particle moving through bether might be a wave in water moving effortlessly horizontally, giving the impression of lateral movement when the water is actually moving up and down in a pattern that results in the apparently moving wave shape.



A: Waves apparently moving horizontally
B: Water really only moves up and down

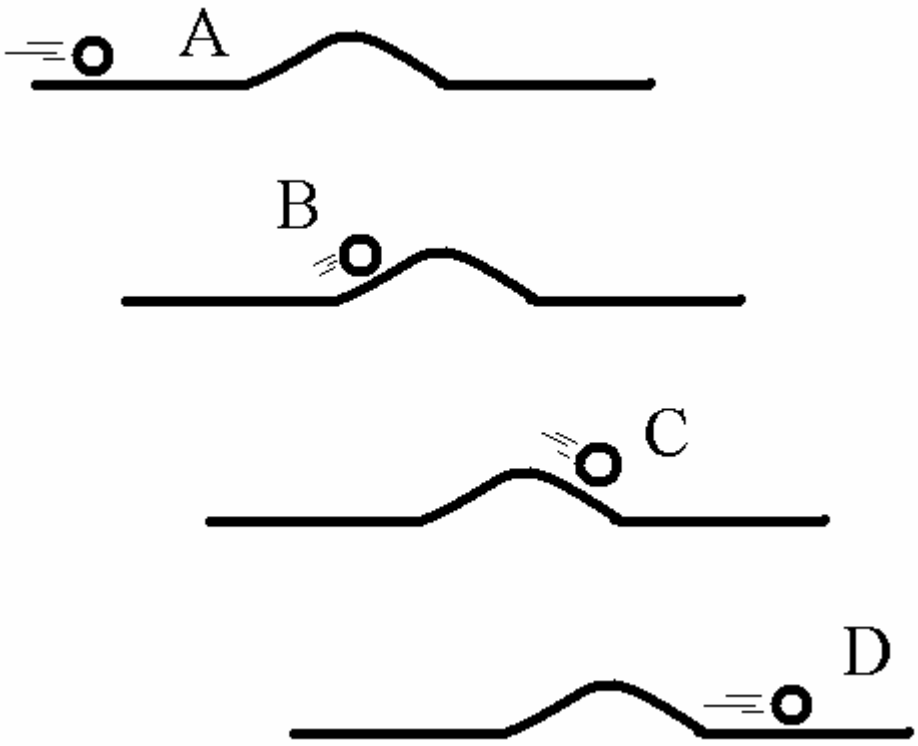
By the same token, a particle will allow bether to flow through it so that the particle's "shape" is transported to another location in bether. The bether itself does not move from its original location, just the location of the particle's shape moves.

Because of the important property of bether's "homogeneity", a particle can freely move about but will be unable to detect its own movements through the bether since being perfectly still and moving at extreme velocities both afford absolutely no friction to the particle. Essentially, bether can be treated as if it has no velocity relative to any particle, no matter how fast the particle may be thought of as moving. A particle moving through bether experiences no friction because the energy taken from the particle to warp the bether into the particle's shape is returned to the particle after the particle shape has passed through, leaving the bether in its original condition.



Particle speeding through bether
B: Bether is left in exactly the same position before…
C: …and after a particle passes through it, therefore, no energy is lost and no friction is experienced

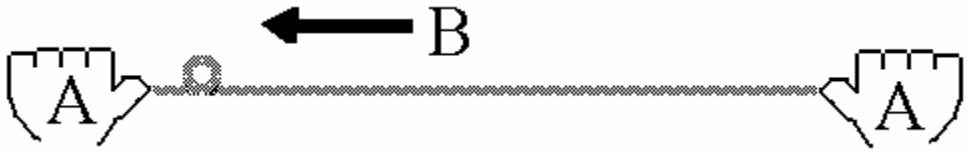
We can make an analogy with a ball rolling along at a certain speed, then losing speed as it rolls up a small hill, and accelerating while rolling down the other side, to finally resume its original velocity.



A: Ball rolling at full speed…
B: …loses speed going uphill…
C: …then regains speed going down the other side…
D: …to continue on at its original speed

The homogenous, soft, massless, transparent rubber model of bether will still allow for Albert Einstein's General and Special Relativity but also allows for some other interesting insights.

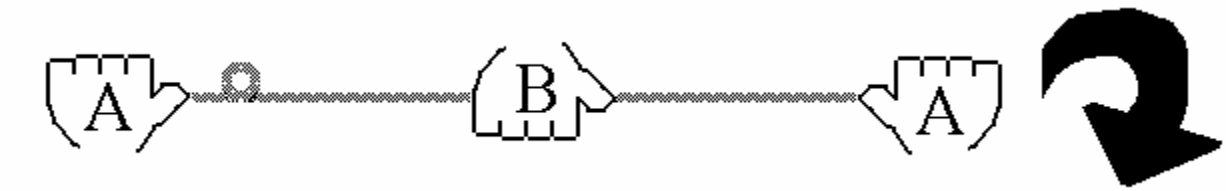
Next let's move our loop nearly to the left end of our rope.



A: Person holding rope
B: Push loop to the left

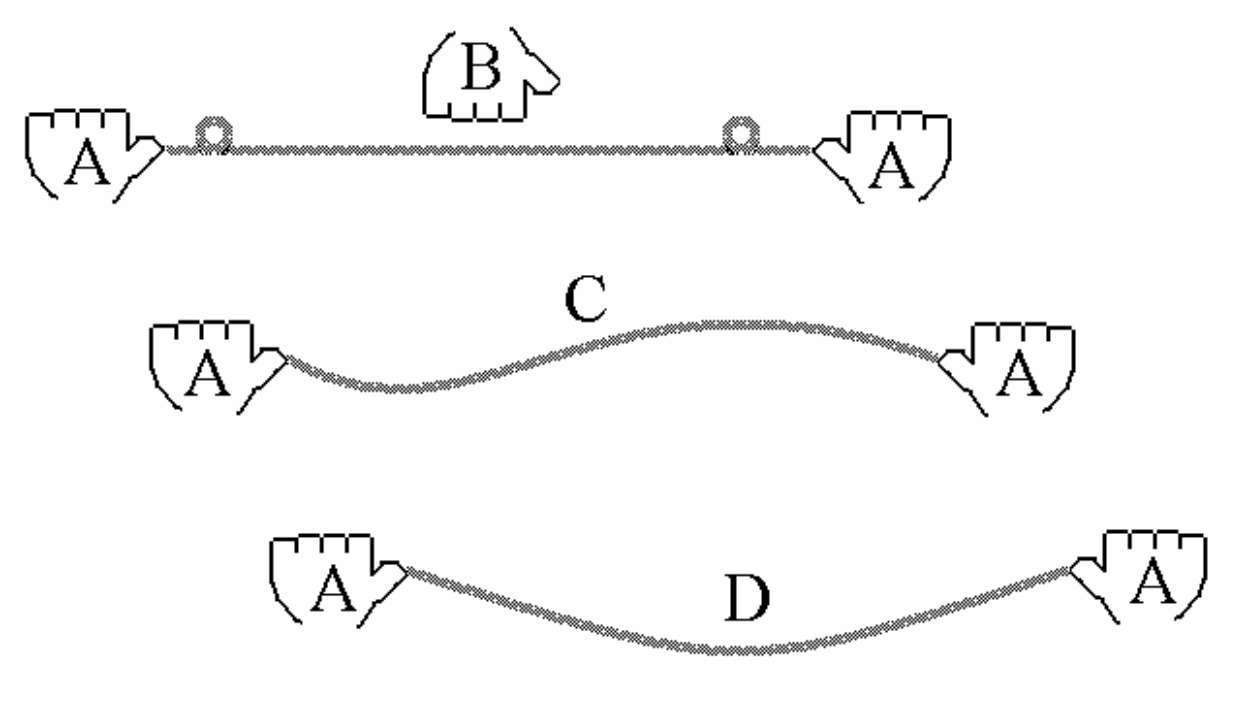
Have another person (person B) hold onto the rope in the middle in such a way that the loop is isolated in one half between person B's hand and your left hand.

Now with your right hand, twist the rope much like you did the first time to form the first loop, except this time, rotate the rope in the opposite direction by rolling your right fist backward repeatedly.



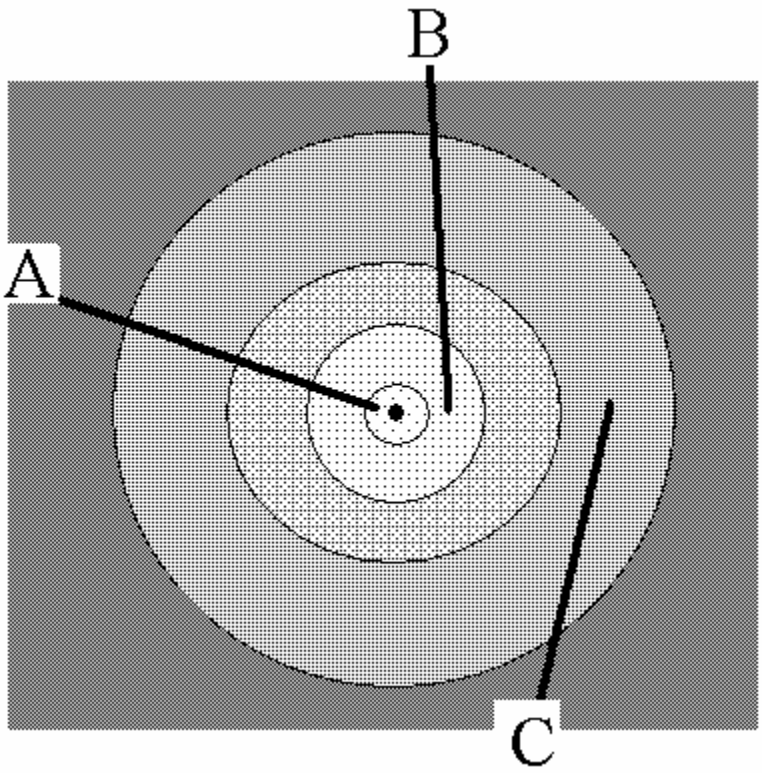
After enough twisting, you should have formed a second loop in the right half of the rope between person B's hand and your right hand.

You should notice that the second loop that you just formed has the opposite twist as the first loop does. This is analogous to an anti-particle, meaning that anti-particles are nothing more than twisted bether that is twisted in the direction opposite to normal particles. Allow person B to now let go of the rope; the two loops instantly unravel each other and leave the rope dangling slightly between your two hands since the rope material that was contained within the loops has now been returned to the length of the rope.



A: Person holding rope
B: Second Person lets go of rope
C: The loops unravel each other
D: The rope is left dangling

One failing of our rope example is that as you twist, the twisting strain is evenly distributed along the entire length of the rope. This fails to reproduce what really happens to our bether. When bether is twisted into a particle, it pulls on surrounding bether in a spherical fashion. This distributes the stretching evenly over the surface of any chosen spherical radius from the particle, but as the radius increases, the intensity of the stretching decreases given the increasing surface area within which the effects of the stretching are spread out.



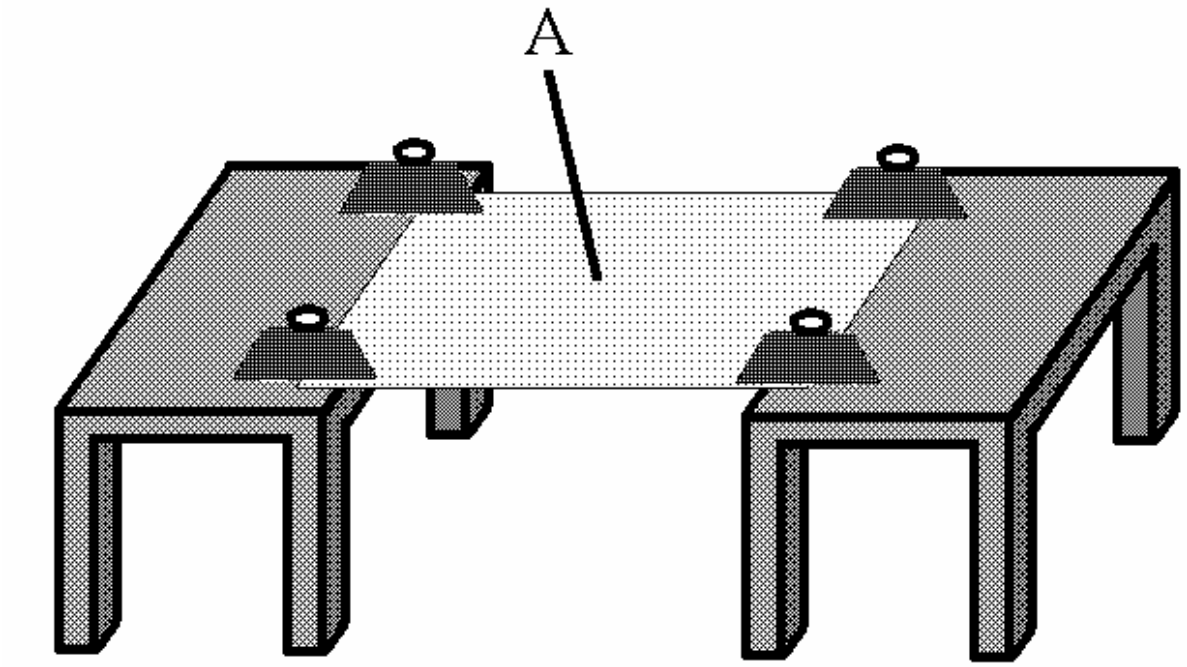
A: Particle
B: Very stretched bether
C: Less stretched bether

As you get further and further away from a particle, the effect of it stretching its surrounding bether diminishes rapidly. Bether resists being stretched, much like a spring does, but unfortunately for bether, it can't unravel particles at will to relieve this stretching, just like the rope is unable to unloop itself while you are still holding the ends, and so bether is constantly under this stretching tension in the vicinity of particles.

At this point you must surely be asking yourself what the infrastructure of atomic particles could possibly have to do with your happiness, or even with your life in any way. Of course it may seem rather obscure now but as you progress through this book, you will realize that each step we take builds upon the previous one, and eventually we will reach a point of something recognizably human. But for now, please bear with the essentials and I hope I don't lose you to boredom.

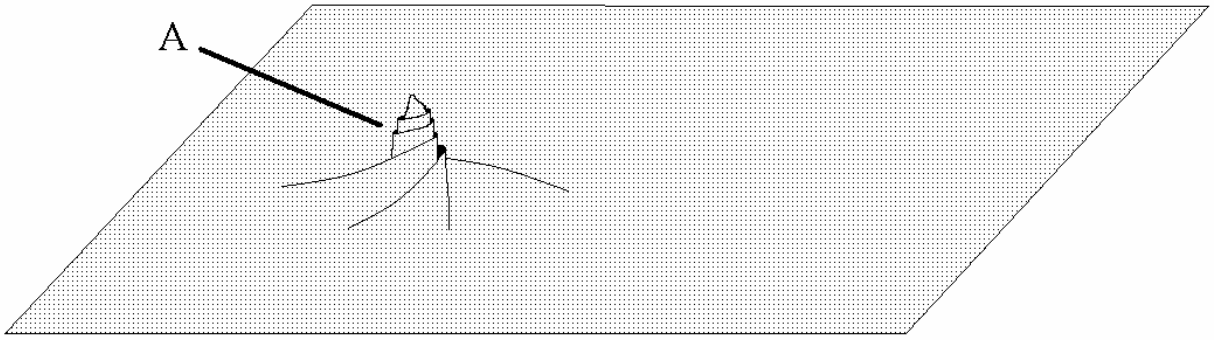
GRAVITY

So around every particle is a stretched region of bether since most of the adjacent bether is now tightly wrapped up in the twisted core of the particle, stretching the remaining bether around it. How does a particle's immediately surrounding bether being stretched affect you? Well for one, it keeps you on Earth…that's right, this is the seed of gravity. What exactly is gravity? Let's create another model to help explain that. Between two tables, lay out a blanket to exactly span the distance between the tables and place heavy objects on the blanket corners to keep the blanket taut and fully extended, but not stretched. In our model, the blanket represents a slice of bether.



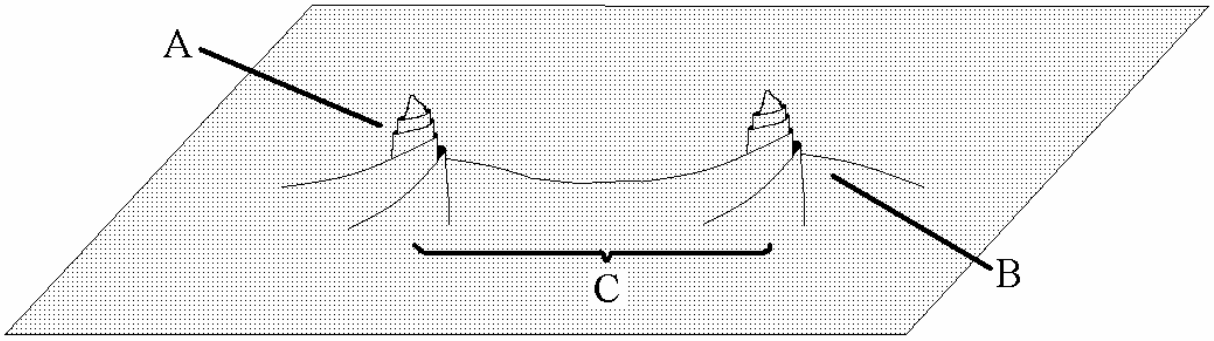
A: Blanket suspended between two tables

Now grab a small section of the blanket just left of the center with your hand and twist it until you have created a tight twist in the blanket. You should feel the blanket resist the twisting and also notice that it shows visible lines of stress fanning out from the twist point. This is our particle; and his name is "Bart".



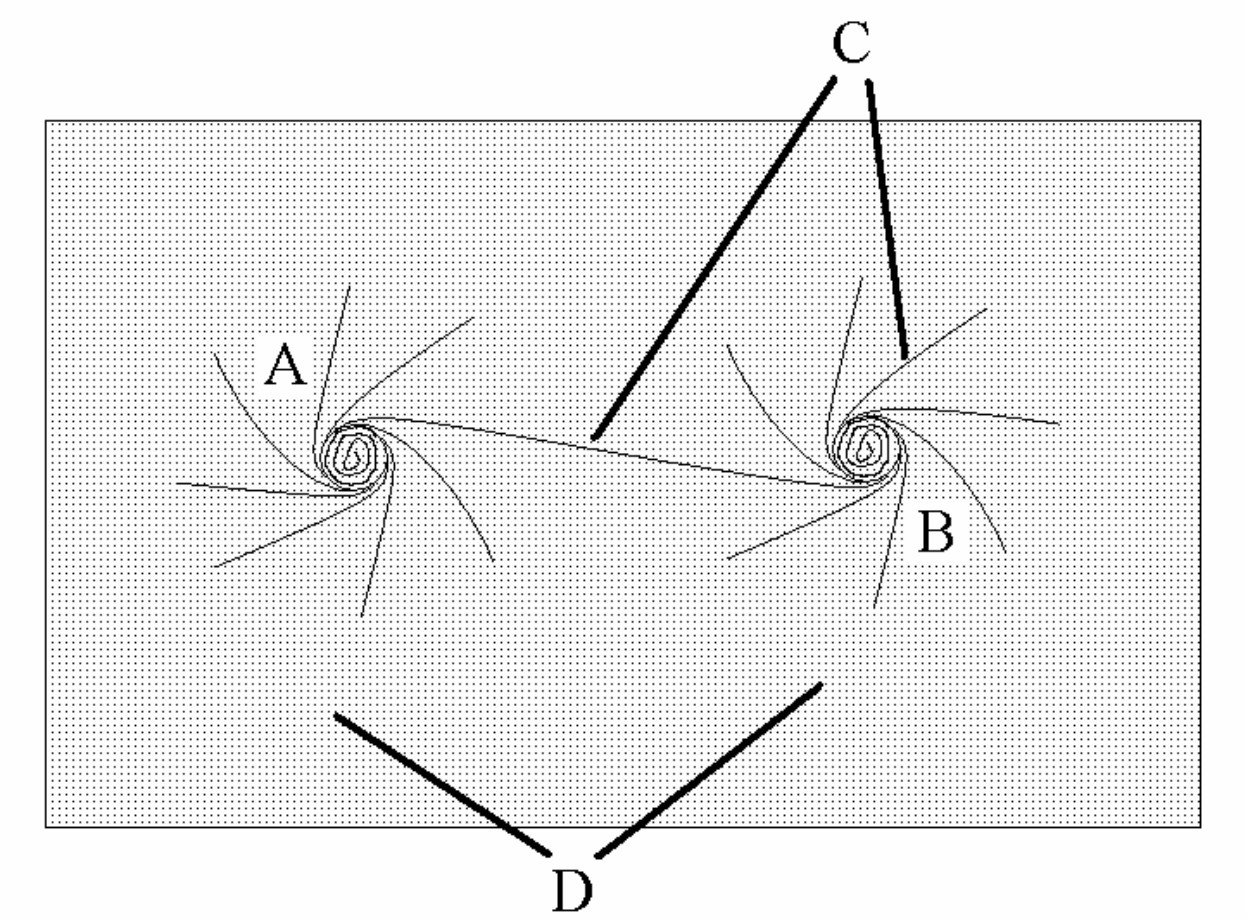
A: Bart

Now Bart is having a grand old time just sitting around by himself, but on another section of the blanket, let's twist another particle into existence, calling this one "Angel". Let's say two "units" of distance separate Bart and Angel.



A: Bart
B: Angel
C: 2 arbitrary units of length apart

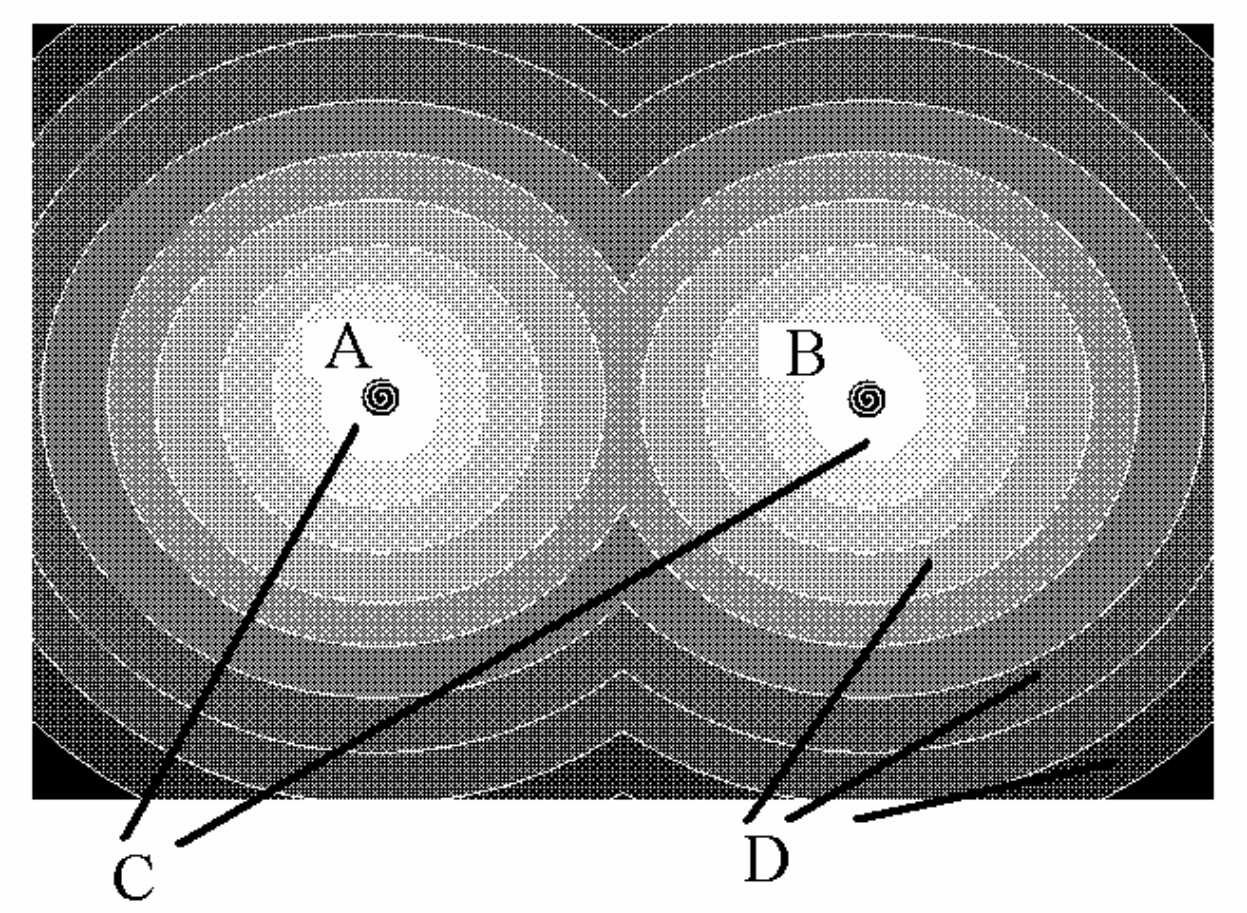
By twisting these particles loops into our blanket, you will see the fabric stretch in the immediate vicinity of the particles. You may notice that the amount of stretching that each section of blanket endures varies from location to location about the blanket, but you should also notice that the stretching on the blanket is greatest on the line directly between the two particles (if not then twist both the particles harder until the stretching effects they exert on the blanket overlap each other).



Top view of blanket
A: Bart
B: Angel
C: Plenty of stretching
D: Very little stretching

This demonstrates that our bether is significantly more stretched on the line directly between Bart and Angel compared to other equidistant regions around each particle.

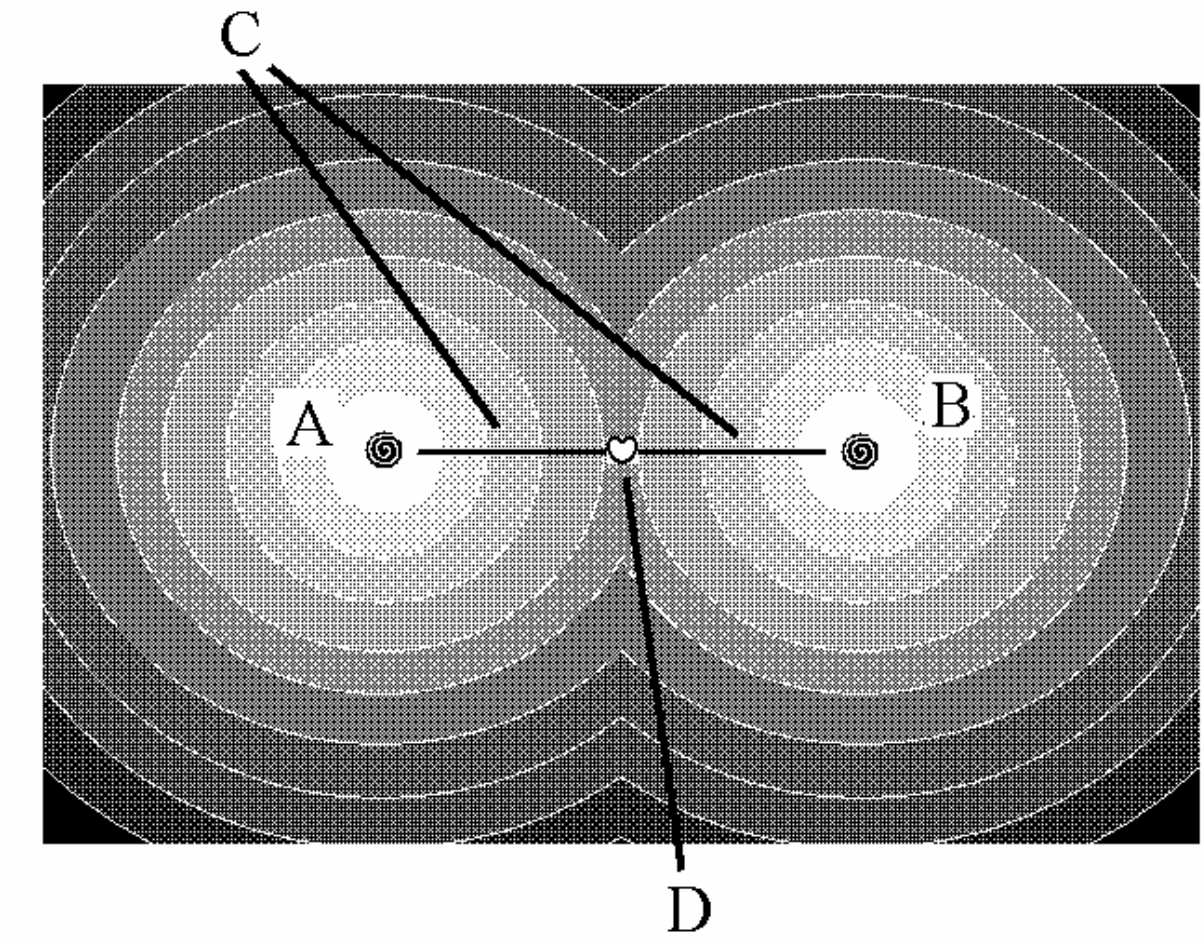
Next, we're going to paint the outer edges of the blanket black but as we paint closer to either Bart or Angel we'll use a lighter and lighter shade until they are each immediately surrounded by a small white circle. What you'll see when we're finished is the two particles surrounded by color bands that get lighter the closer you get to either particle.



Bether Stretching Chart
A: Bart
B: Angel
C: Most stretched
D: Decreasing stretching

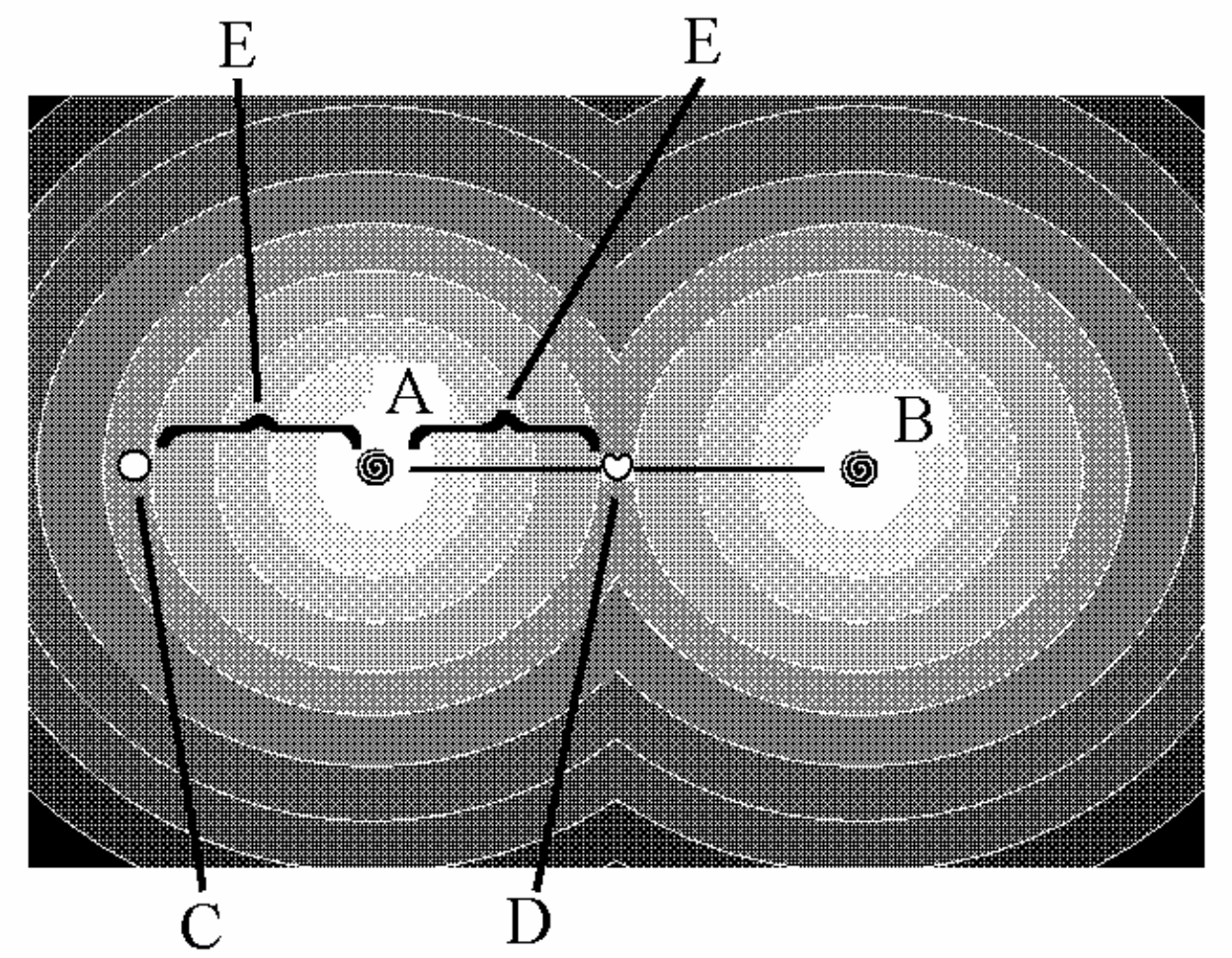
In the end, we will have created a modestly inaccurate but informational bether stretching chart. The lighter the color, the more our bether is stretched at that location.

Next let's draw a straight line from Bart to Angel and we'll call this the "courtship" line. Then we'll mark the point on the blanket located exactly halfway between Bart and Angel and we'll call this the "love" spot.



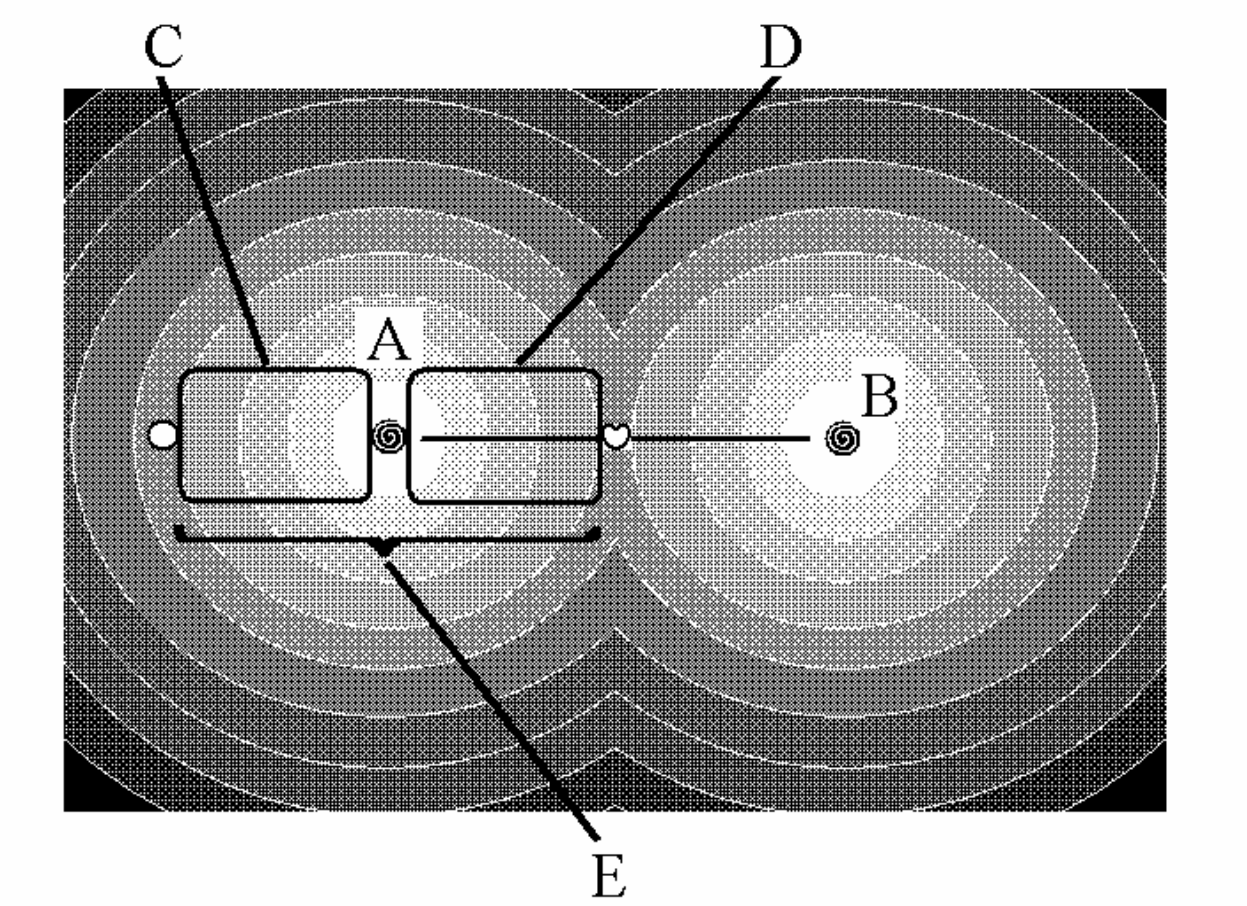
A: Bart
B: Angel
C: Courtship line
D: Love Spot

You should see that the love spot is located on the darkest colored band of any band that the courtship line intersects between Bart and Angel. Now if you were to measure the distance to the love spot from Bart, it would be 1 “unit” since Bart and Angel are two units apart. If you were to then pick the spot in bether that is exactly 1 unit on the other side of Bart (call this the “hunter” spot),



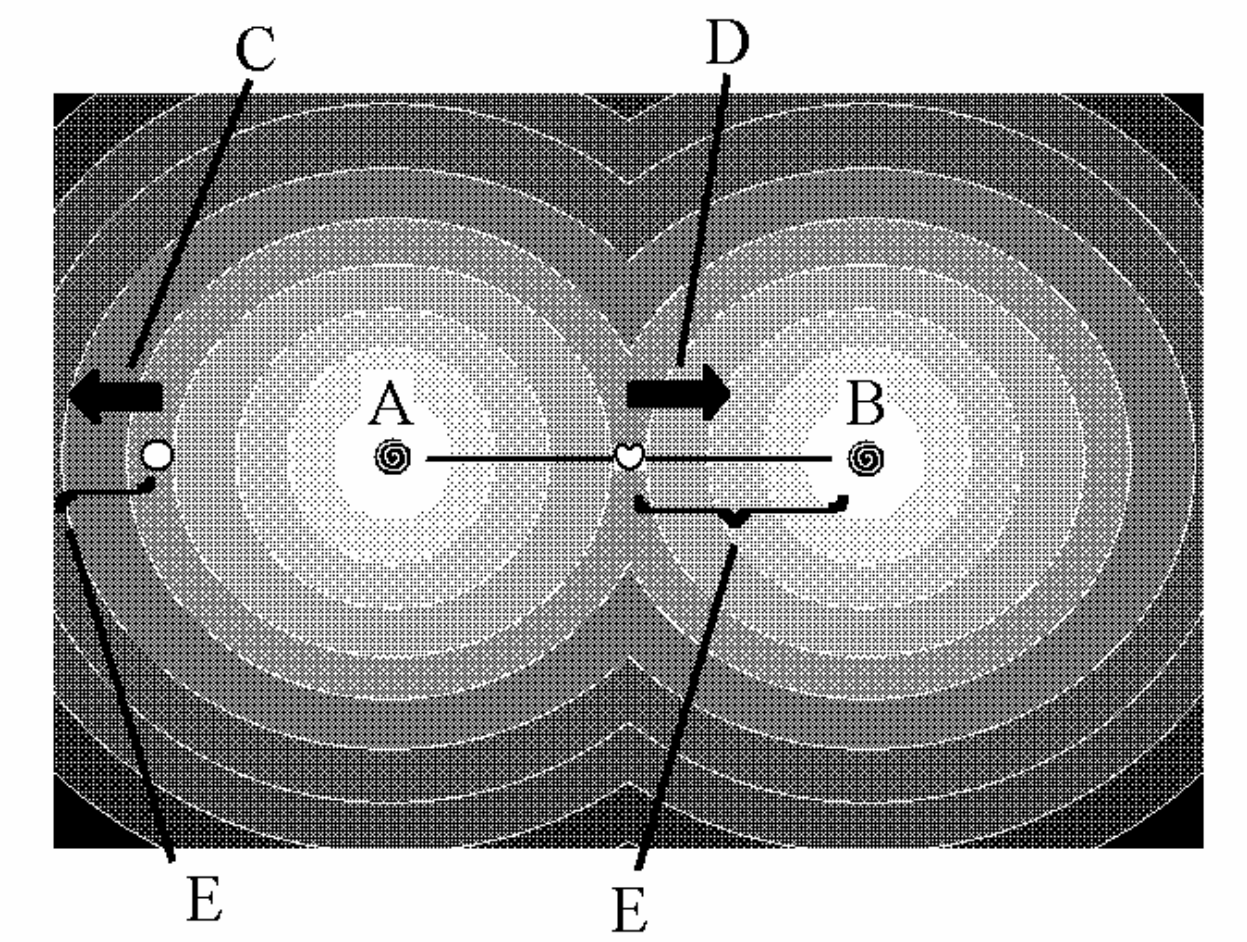
A: Bart
B: Angel
C: Hunter spot
D: Love spot
E: One unit of distance

you would see that the color bands separating Bart and the love spot perfectly mirror the colors separating Bart and the hunter spot.



A: Bart
B: Angel
C: (Hunter – Bart) stretching band mirrors…
D: …(Bart – Love) stretching bands
E: Stretching is balanced on both sides of Bart

There is a perfect balance of Bart's surrounding bether within this radius; however, if you were to compare the colors any further past the love spot from Bart, and the colors any further past the hunter spot from Bart, it's a quite different story. It seems Angel's presence has increased the stretching of bether on the other side of the love spot, whereas the stretching of bether past the hunter spot continues to decrease.

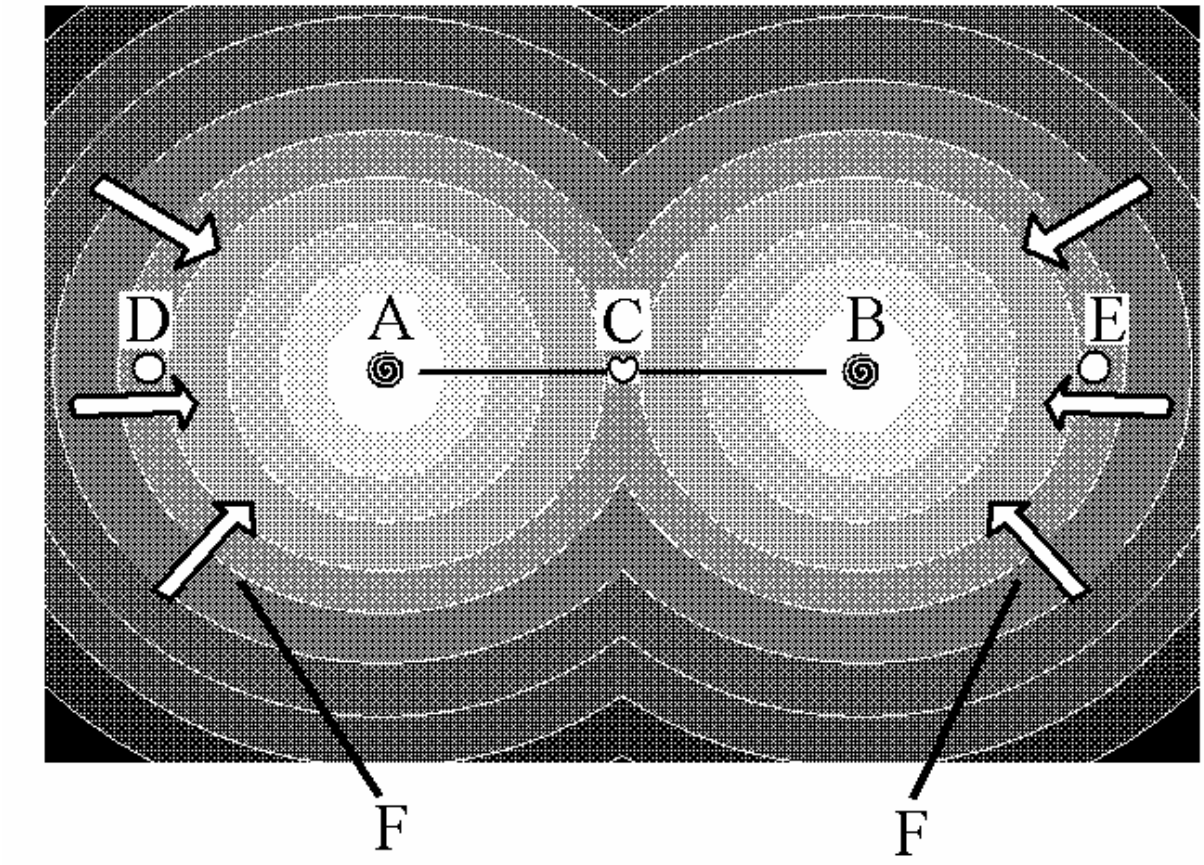


A: Bart
B: Angel
C: Stretching decreasing (bands getting darker)
D: Stretching increasing (bands getting lighter)
E: Stretching is not evenly balanced

This imbalance of stretched bether between the outer and inner regions of stretched bether is what causes Bart to “gravitate” towards Angel, as in being “pinched” by the contracting bether on the outside of the hunter spot since this action is not countered by an equally contracting region of bether past the love spot. The movement, however, is not limited to Bart since Angel likewise has a “gatherer” spot 1 unit away from her on the side of her opposite the love spot. She too has contracting bether outside the gatherer spot that pinches her towards Bart.

Bart and Angel’s movement towards each other is powered by the fact that the closer these particles are together, the less overall bether

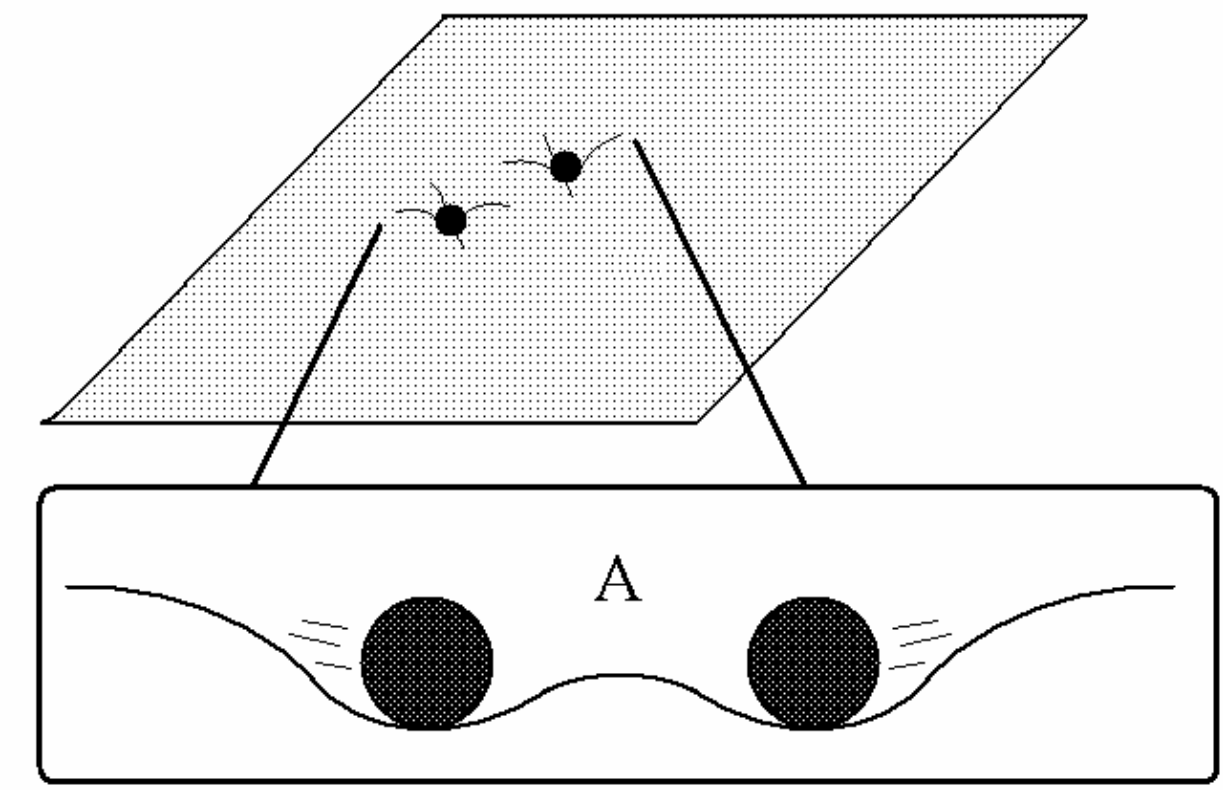
stretching they collectively exert due to their overlapping stretching regions (color bands).



A: Bart
B: Angel
C: Love spot
D: Hunter spot
E: Gatherer spot
F: Stretched bether resists being stretched. The closer Bart and Angel are together, the less combined stretching they exert on this overall region of bether and therefore are “elastically” pinched together, allowing the bether around them to relax somewhat

To analogize in a slightly different way with our blanket, place two heavy balls onto the surface in near enough proximity so you can see the blanket stretch slightly between them. The modest hill of blanket material that lies between them, pales in comparison to the much more pronounced hills outside of them, and hence they are forced to “fall”

together where the overall stretching stress of the blanket will be less than when they were separated.

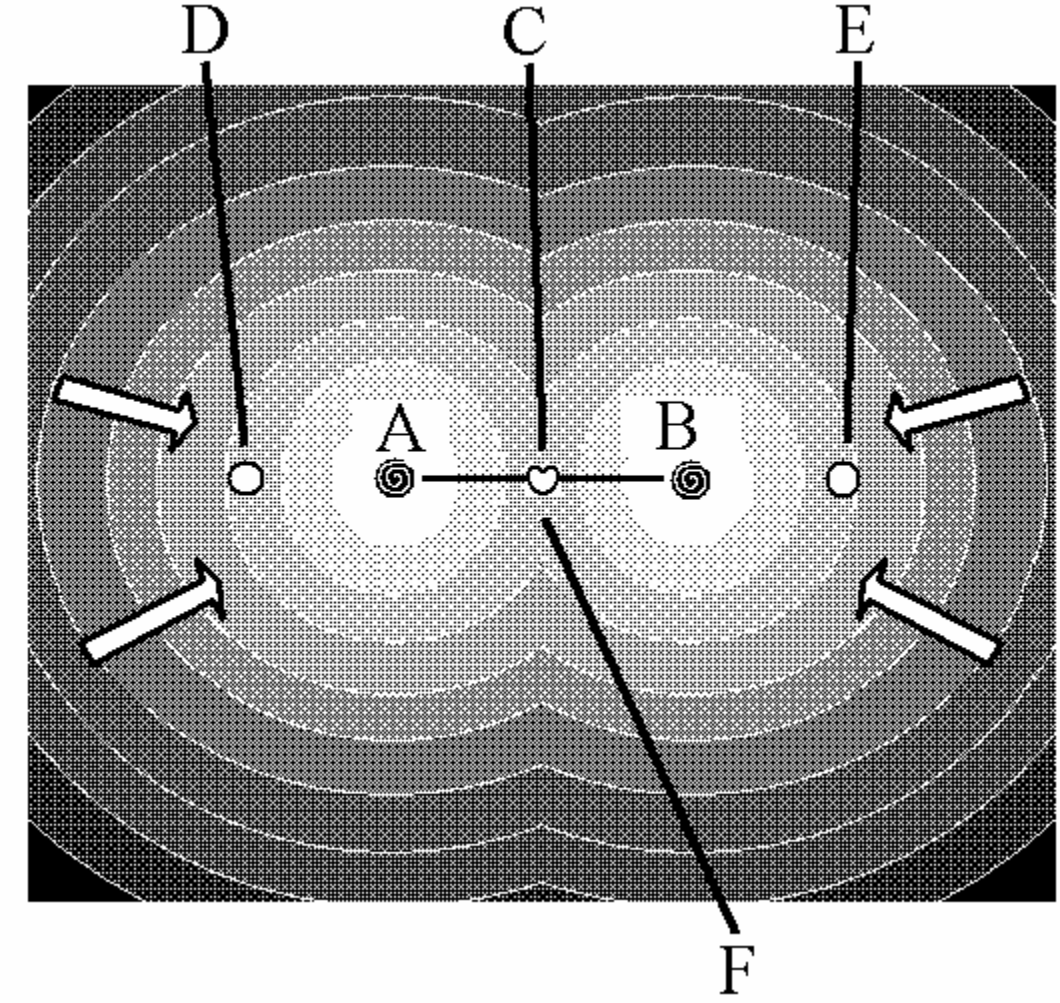


A: Balls roll together

This is very similar to how bether works; the contraction of the bether in the larger region outside of any objects, overpowers the contracting ability of the smaller region of bether between these objects, and since the closer any objects are together, the less overall bether-stretching they collectively exert, they are thus pushed together into as close proximity as possible.

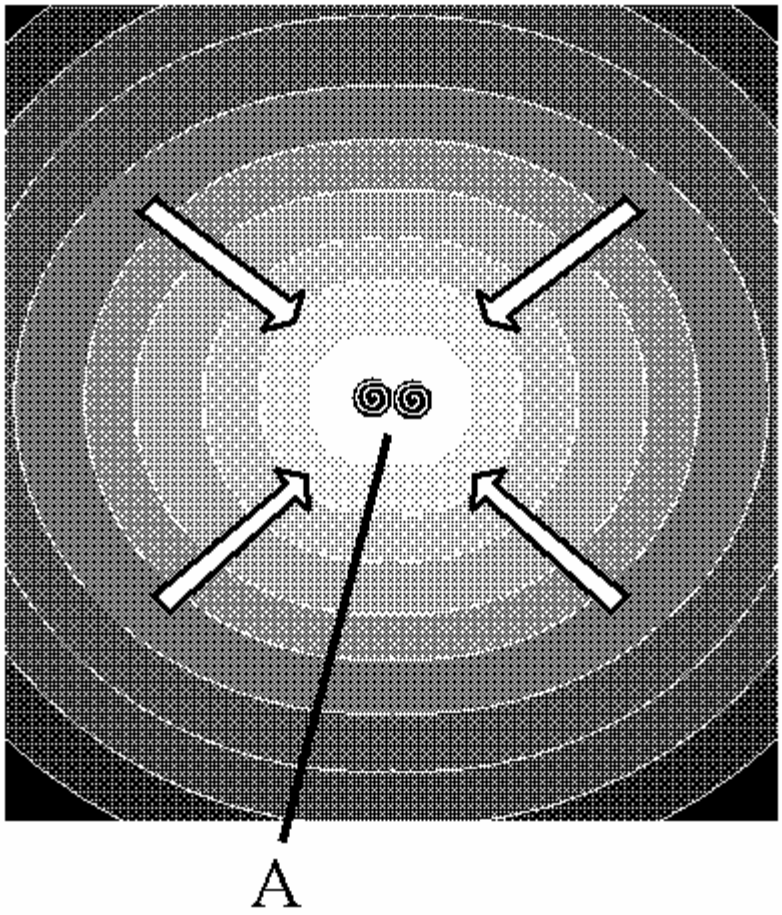
With Bart and Angel, the perception is that they are “attracted” to each other, when really they are “repulsed” inward towards each other by the contracting bether outside both of them. As they move closer to each other, the pushing effects of gravity become increasingly more profound due to the exponentially increasing difference between the stretching between them and that outside of them. So we see them

approach one another, with the hunter and gatherer spots rapidly closing in behind them,



A: Bart
B: Angel
C: Love spot
D: Hunter spot
E: Gatherer spot
F: Bart and Angel accelerate towards each other

until finally they come into direct contact at the love spot,



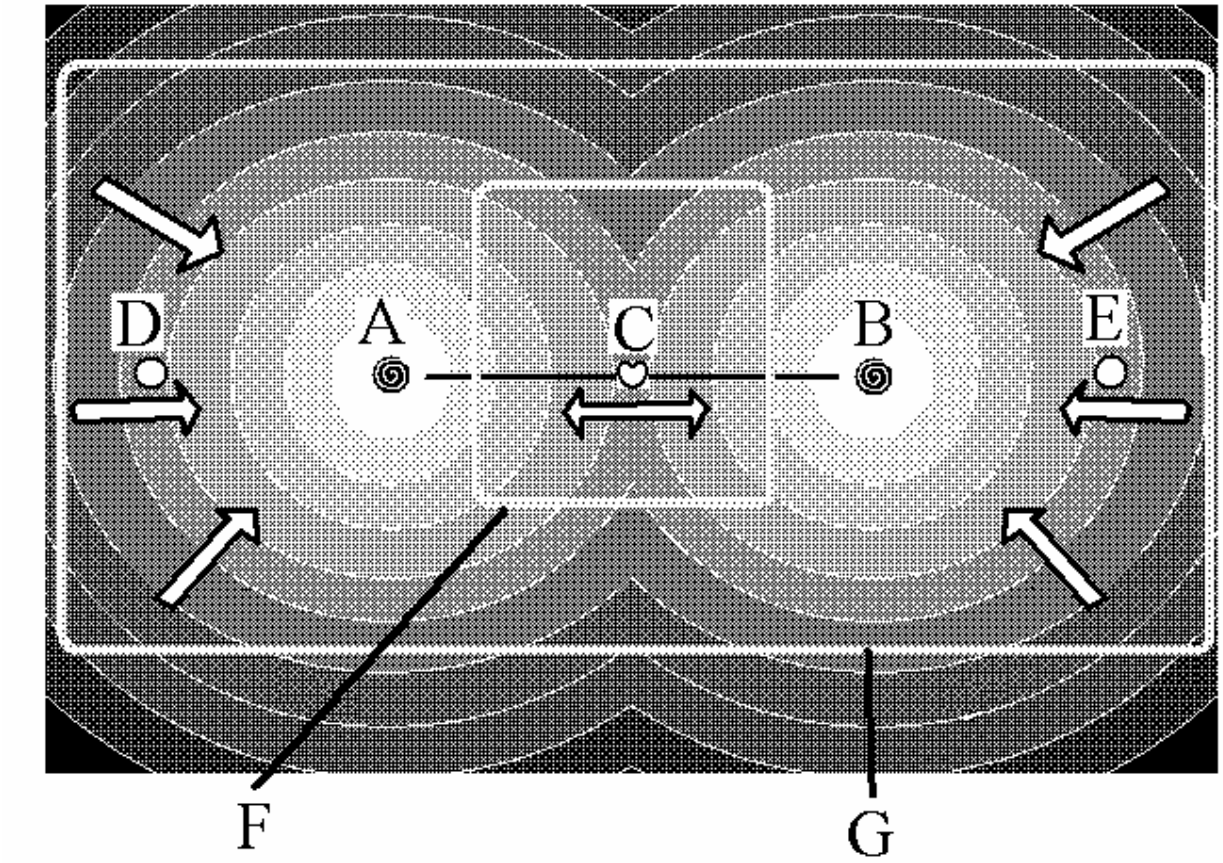
A: Bartangel

thereby alleviating the greatest possible amount of combined stretching tension on our bether.

Bether acts like our blanket that is stretched between two tables: it's not stretched when left alone, but push up or down on it and it will elastically resist that tension. Particles are pushed together where their combined bether stretching exerts less stretching overall, much like the way tiny bubbles underwater join together to form larger bubbles that overall occupy less volume than all the original smaller bubbles did. This gravity mechanism works no matter how far apart the particles are since enough stretch circles can be drawn to always intersect at some love spot, no matter how slight the bether stretching may be at that point.

To summarize gravity: our two adjacent particles at rest are separated by a section of stretched bether (along the courtship line) that seeks to contract itself by pushing the two particles apart. It alone

however cannot compensate for the much larger volume of stretched bether surrounding both particles that would also like to contract, and so the outside bether overwhelms the inside to push the two particles toward each other.

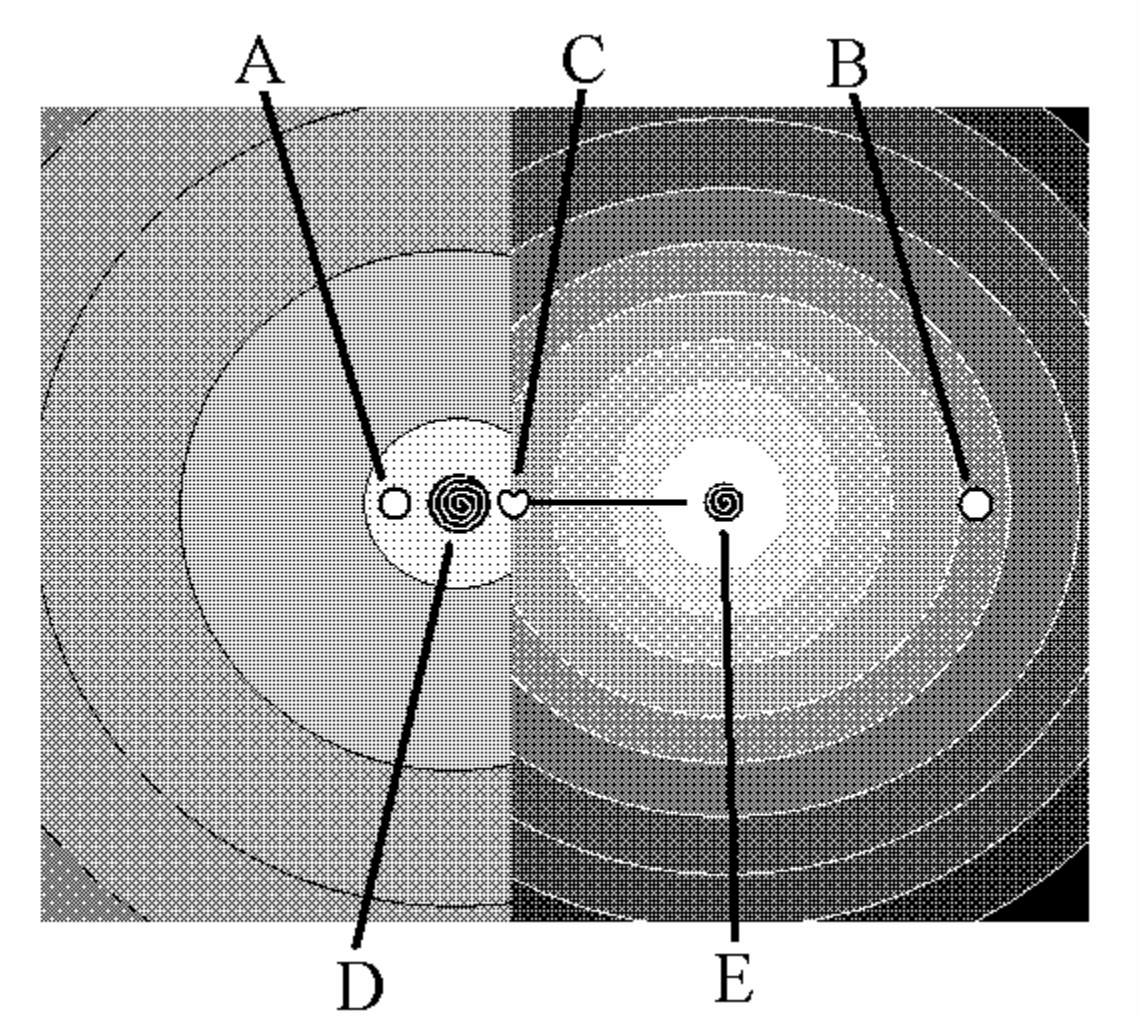


A: Bart
B: Angel
C: Love spot
D: Hunter spot
E: Gatherer spot
F: The smaller region of stretched bether between Bart and Angel would like to contract…
G: …but it is overwhelmed by the contraction of the much larger volume of stretched bether that surrounds both particles

As the particles move closer together, their individual bether stretching efforts merge (circles crossing) and as they approach one another they exert less combined stretching overall, allowing bether on the outside of them to continue contracting. The closer the particles are

when they move together, the more exponentially the amount of stretching is relieved. The net gain in the contraction of stretched bether as particles move toward each other is what elastically propels the particles together; this is better known as the force of gravity.

What has just been described is one of the universe's most fundamental forces that pressures individual particles to join together to make bigger things. When you get enough electron, proton, and neutron particles together, you can create atoms. Group atoms together and you get what are called molecules. Simpler molecules group into larger molecules. Lots of molecules lead to gases, solids, rocks, creatures, planets, stars, and so on. Why are large bodies like planets attracted to each other? Because larger objects operate as the sum of their parts. It's just as easy to apply the Bart and Angel analogy to a pair of planets, or even to people being stuck to Earth. The location of the love spot changes its relative position between two objects in a ratio respective to the masses being considered, but the mechanism holds true for any particles, or groups thereof.



A: Hunter spot
B: Gatherer spot
C: Love spot
D: Larger mass
E: Smaller mass

Some scientists subscribe to the concept of a graviton, or a particle that causes the force of gravity. This is an attempt to atomize gravity and is not supported by our theory. Nobody wants gravitons at their love spot.

Here's a brief explanation of the concept of "sum of parts". You may have noticed the commonalities in our universe of smaller systems combining to make similar larger systems. A good example is how electrons rotate around the nucleus of an atom and similarly the planets revolve around the sun. Another example could be the layout of our body's circulatory system being very comparable to the layout of a town's streets. This is no coincidence. There are efficient designs and inefficient designs, and through the laws of probability, efficient systems will tend to surface over time, on any scale. Call it an optimized balancing of forces.

All grouped particles are simultaneously under the same forces as individual particles and statistically their individual properties can be "lumped" together to operate as a single entity and still benefit from the efficiencies of the same systems used to describe smaller processes; like gravity acts the same on any object, whether it be a particle or a planet. Whatever systems work to balance forces of small individual particles, most likely will also be very efficient at balancing forces in a large composite form. Therefore, larger bodies tend to operate like the "sum of their parts" and hence we see repetition of these efficient systems over larger and larger scales.

PARTICLES (2)

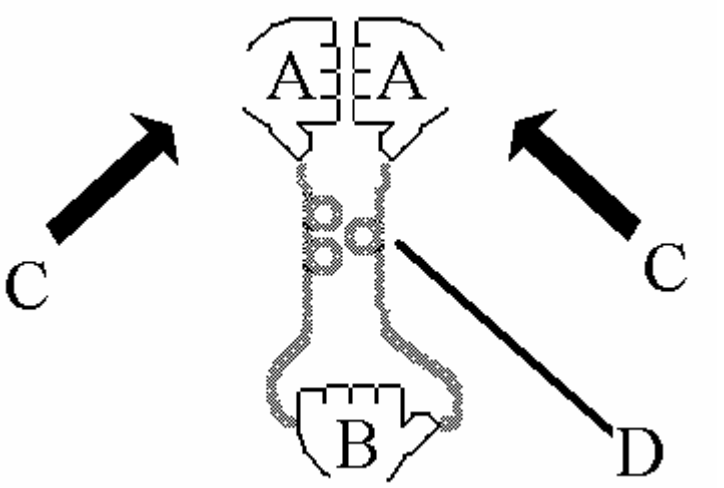
Are all atomic particles exactly the same? If not, how many different particles are possible? What keeps them from unraveling? There are many different types of particles known to us, and perhaps many more possible than have been so far discovered. Bether can be twisted into many distinct forms of particle but there are only certain particles that can exist; for example, all electron particles are exactly the same mass and size. It seems that bether, when twisted with the appropriate amount of force, will "snap" exactly into the category of particle that best matches the amount of twisting force that is being applied. Bether can absorb a certain degree of twisting without any particle being formed, but when it reaches a certain threshold, it snaps into a particle, just like our rope forms a loop after a prescribed number of twists. Bether has a propensity to only twist into specific particle types; for example, if it takes 2 units of bether twisting force to create particle A, and 3 units to create the next larger particle B, then applying 2.5 units of twist will result in a particle A being created from 2 of those units, with either motion or light being generated from the remaining extra half since there is no particle that exactly fits the 2.5 measure. This quanta-like property of bether is due to the many discrete stages of compression and

stretching plateaus that it exhibits, which effectively defines the size and nature of particle formation.

Some particles are formed from multiple loops of our twisted bether, similar to twisting our rope until we have many adjacent loops. Particles of this nature tend to remain intact only because the loops that compose it are all tangled and knotted together and won't allow each other to unravel; however, should you separate these loops, they would generally untwist each other and pop out of existence. As an example, protons and neutrons are composed of multiple loops, some of which cannot exist independently. To demonstrate with our rope example, you might twist a couple loops into it, push them to one side of the rope, have someone hold the rope in the middle and then you form the opposite loop on the other side by twisting the rope the opposite direction.

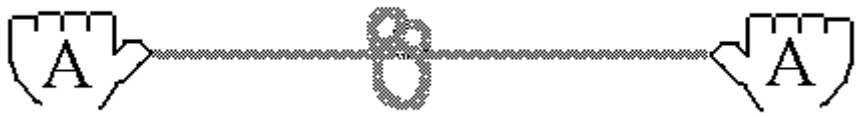
A: Person A's hands
B: Person B's hand

Then, without the other person letting go, bring the ends of the rope together in such a way that the loops can come into contact and get tangled together so they cannot unravel.



A: Person A's hands
B: Person B's hand
C: Bring hands together
D: Loops get knotted together

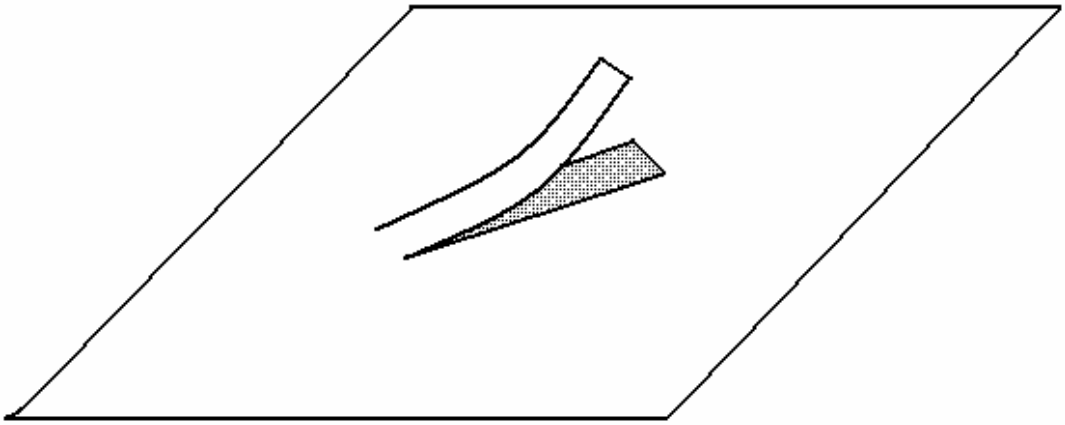
Allow the other person to release the rope and you then pull the ends apart again so as to stretch out the rope as much as it will give. It will be considerably shorter in length than when you started since a great deal of the rope is now all jumbled up in this knotted mess.



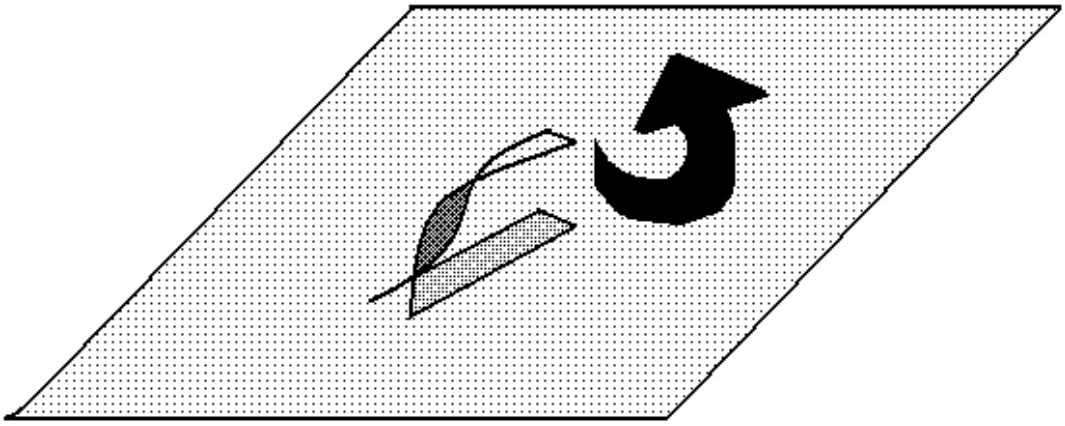
A: Person A's hands

This is an example of a particle composed of multiple loops.

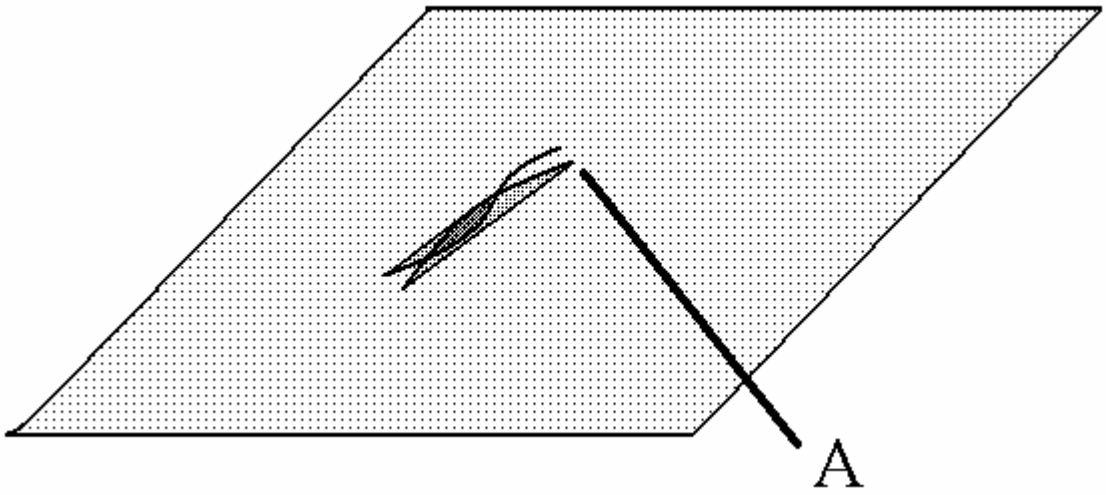
A particle in bether remains locked in its shape in much the same way that your hands will prevent the rope from untwisting itself to release a loop. In our blanket example, an analogy would be making two long parallel cuts from left to right in the center of the blanket, and then a third perpendicular cut to join the right ends of the original cuts, so that you have cut out a rectangular piece of blanket that is still attached on its left side.



Take the right hand side, rotate the end forward a few times,



and then re-attach the right end to the blanket where it was originally.



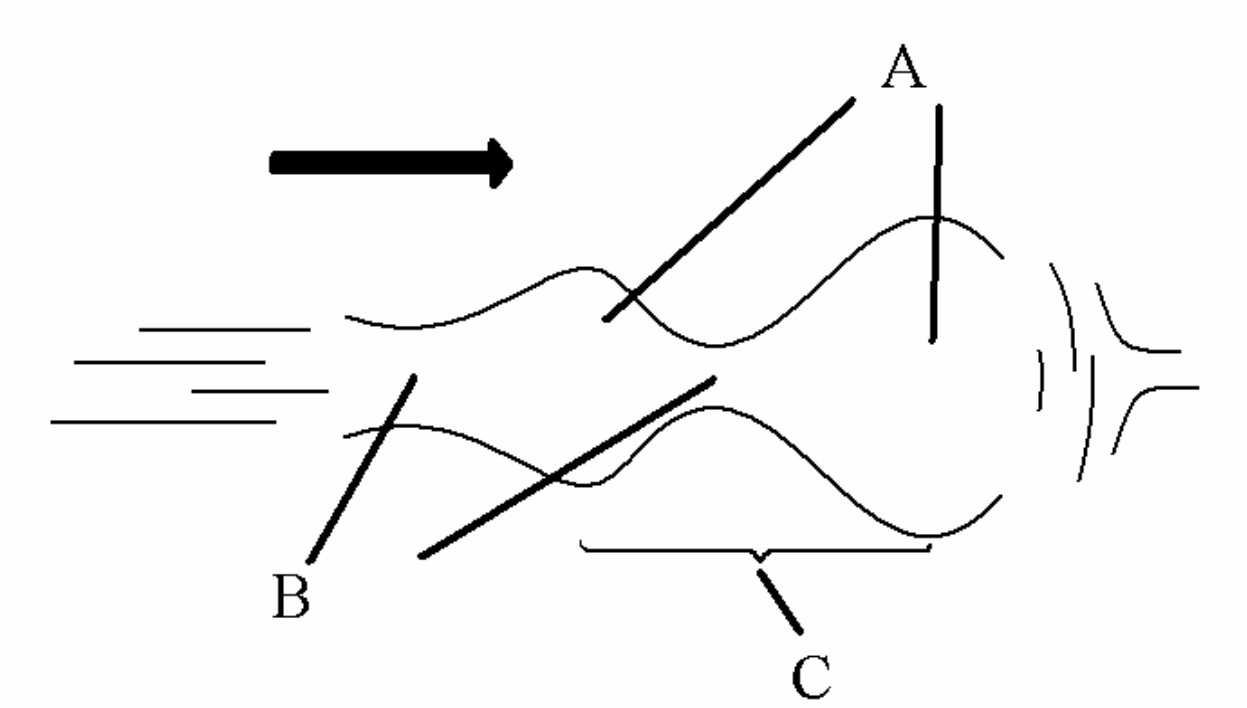
A: Re-attach twisted piece to blanket

You should have a permanently twisted spiral in your blanket now that has no way to release itself. It simply has nowhere to unravel to, and this simulates the effect of a particle that was twisted into existence during the chaos of the Big Bang.

Please note that this analogy is rather weak because it shows the blanket being cut. Bether, however, is immutable and cannot be cut, so the demonstrated effect of an end being twisted is only meant to show the twisting upon bether that occurs between a particle-anti-particle pair that has been split.

LIGHT

What is light? It's a wave in bether, much like a wave in water. A wave of light can be defined as a repeating pattern of high-pressure regions of bether followed by stretched bether. Light is a deceptively complicated thing in that the "color" that it may represent is a property of the number of waves per unit distance (frequency); and yet light has some properties of a particle without actually being a particle, and this pseudo-particle is called a "photon".

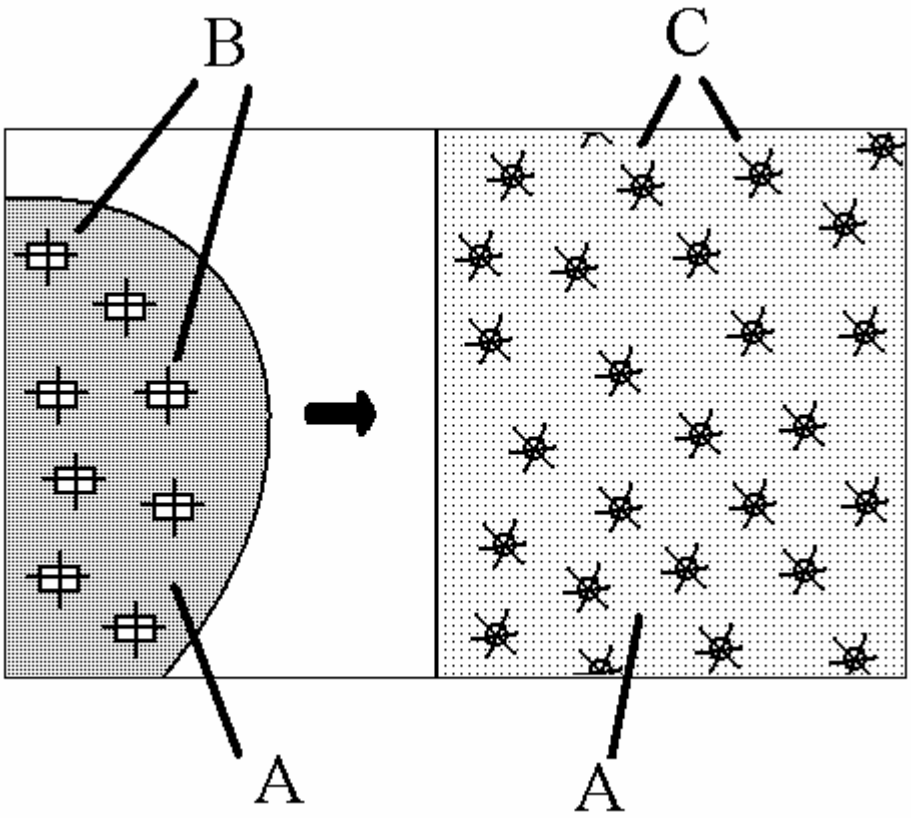


Photon moving through bether
A: High pressure bether
B: Stretched bether
C: Wavelength determines color

A photon's regions of varying bether pressure average out overall as a higher-pressure region of bether, relative to the near non-pressure of empty bether. This "wavicle" (wave-particle) can only exist at the speed of light and when it is absorbed (such as when it hits something), it disappears without a trace. We're going to use the term "light" rather liberally here to encompass all frequencies of waves in bether, though what we see as visible light is quite a small portion of the full spectrum of bether waves (e.g., radio waves, microwaves, X-rays, gamma rays, etc.). Light photons are not true particles and therefore the energy from light will fully dissipate upon reaching its target, leaving the original bether that formed its course intact. If you watch waves on the surface of water you will notice that once they crash onto shore, they no longer exist; the energy has been deposited in the form of throwing water on shore. Similarly for light, the recipient object absorbs all the energy and the photon is no more.

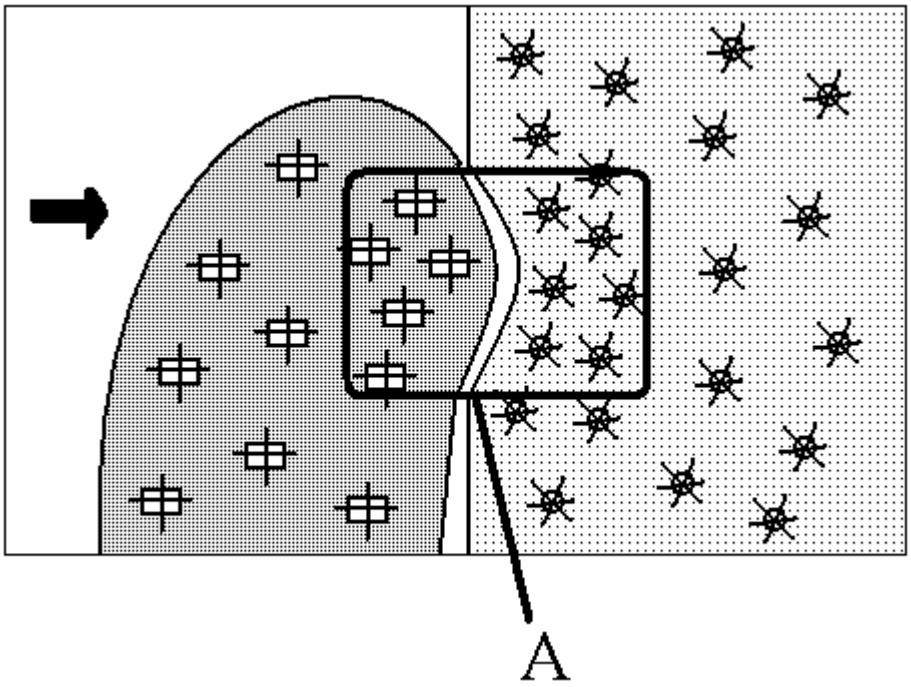
MASS

Light in the photon particle sense can be described as having zero mass since when it stops, it ceases to exist; however photons do have mass when they are moving. How bizarre. To explain this you need to know what mass is. If bether can frictionlessly flow through particles, bether being absolutely massless, and particles being entirely composed of bether, it should follow that pushing an object around would be effortless no matter how large, wouldn't it? Here's what happens:



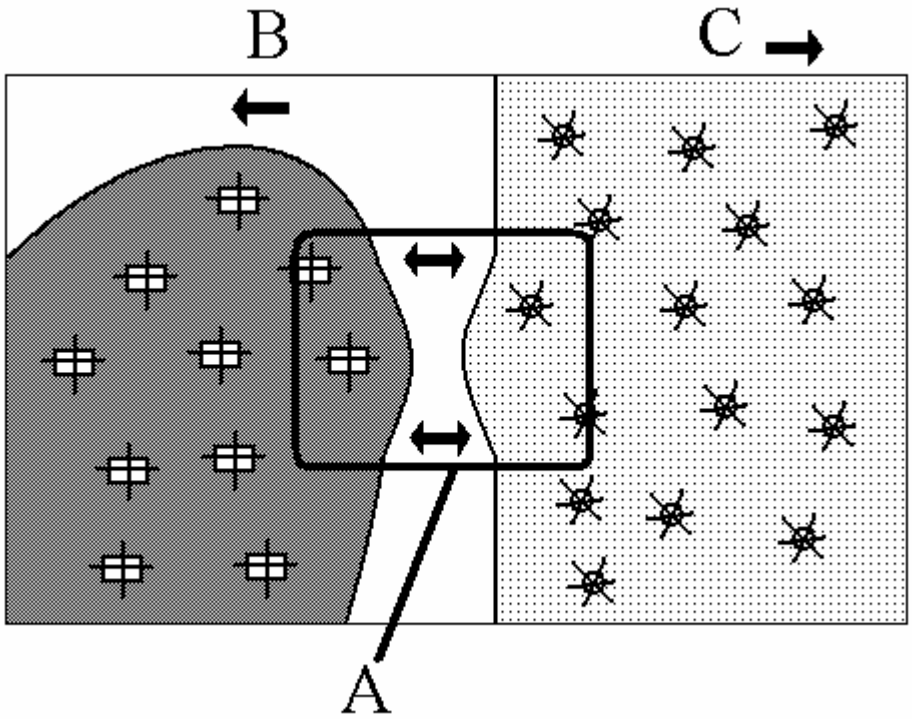
A: Thumb approaching object
B: Thumb particles
C: Object particles

the pressure that you apply to the object compresses its particles' shapes together somewhat



A: Particles get squeezed together

and those particles then spring back at you trying to get back to their equilibratory state once again, though now those particles have gained some momentum in the direction of the push.



A: Particles spring away from each other
B: Thumb rebounds
C: Object gains momentum

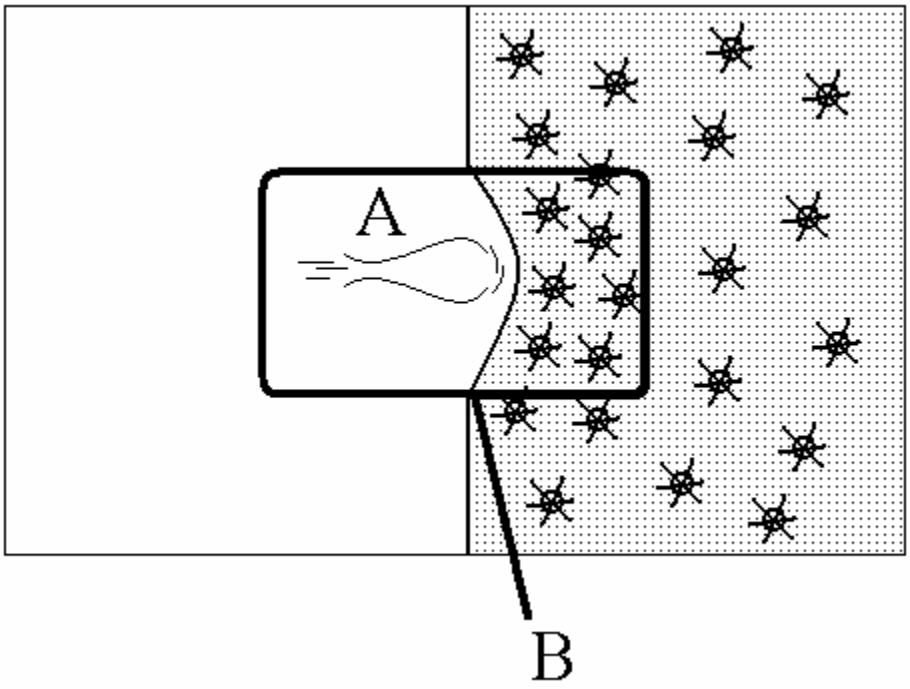
The springiness of the particles reacting to your original push by pushing back on you is the mass you feel when you apply pressure to an object. This also similarly occurs on much larger scales of entities because the same principles apply, as they are the sum of their parts.

Sure, that explains how a grouping of particles can react with spring-like resistance to pressure, but it doesn't explain how a single particle, say an electron, has mass. In order for the spring-like reaction of a larger object to occur, the individual particles themselves must still have mass. The explanation for an individual particle's mass is very challenging to grasp and is left for the next chapter, after the reader has been exposed to some fundamental relativity concepts.

PHOTONS

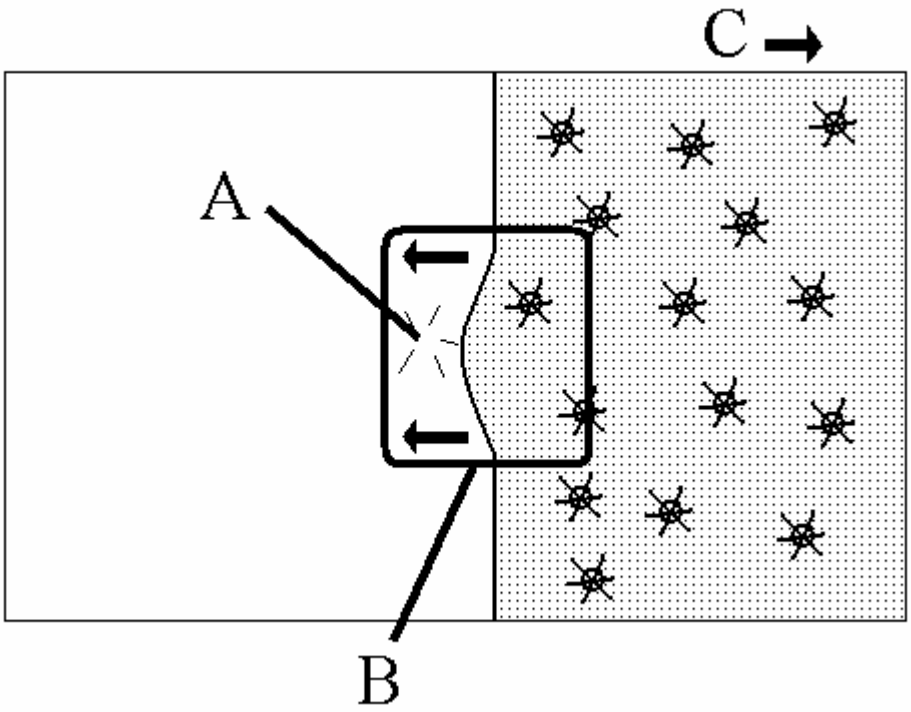
Back to light: light waves have no mass and photons have mass, and they are supposed to be the same thing. Confused? If light photons

have mass then when light hits something, that object should move somewhat, correct? It does. Photons do have a very small effective "mass"; however, it is measurable enough to observe movement on an object that is subjected to a light source. The effect of momentum being added to the object is caused by the wavefront of the light wave slamming into it



A: Photon hits object
B: Particles get squeezed together

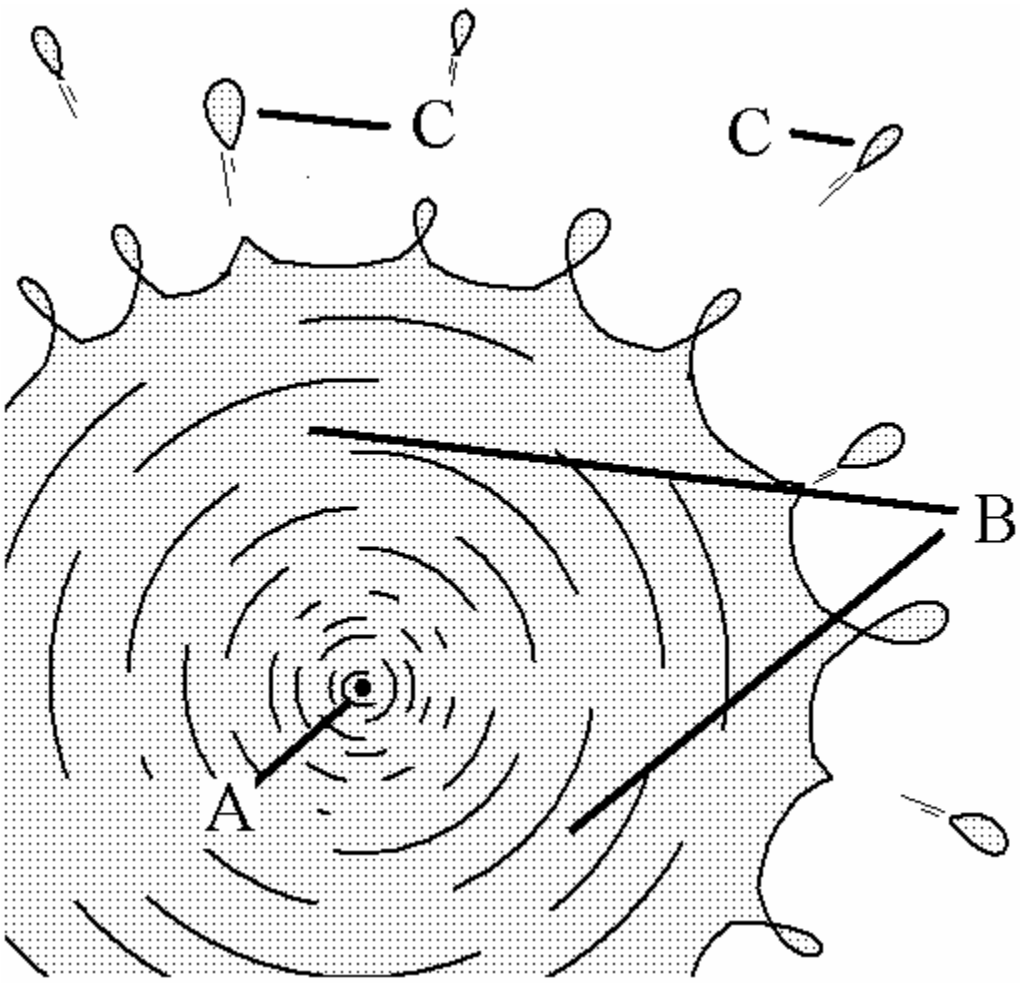
and the energy being absorbed by the particles of the object. The photon's "massless" energy is converted into the target object's momentum, giving the illusion of "mass". Though a photon isn't a genuine particle, the light wave still causes particles in the receiving object to be distorted (effectively they "surf" the light wave, being repelled by the anti-gravity effect of the net higher bether pressure contained in the photon) in the same way as they would if hit by a real particle; the recipient object's particles rebound back into shape after absorbing the energy of the photon's body of higher pressure bether.



A: Photon is absorbed or reflected
B: Object particles spring back
C: Object gains momentum

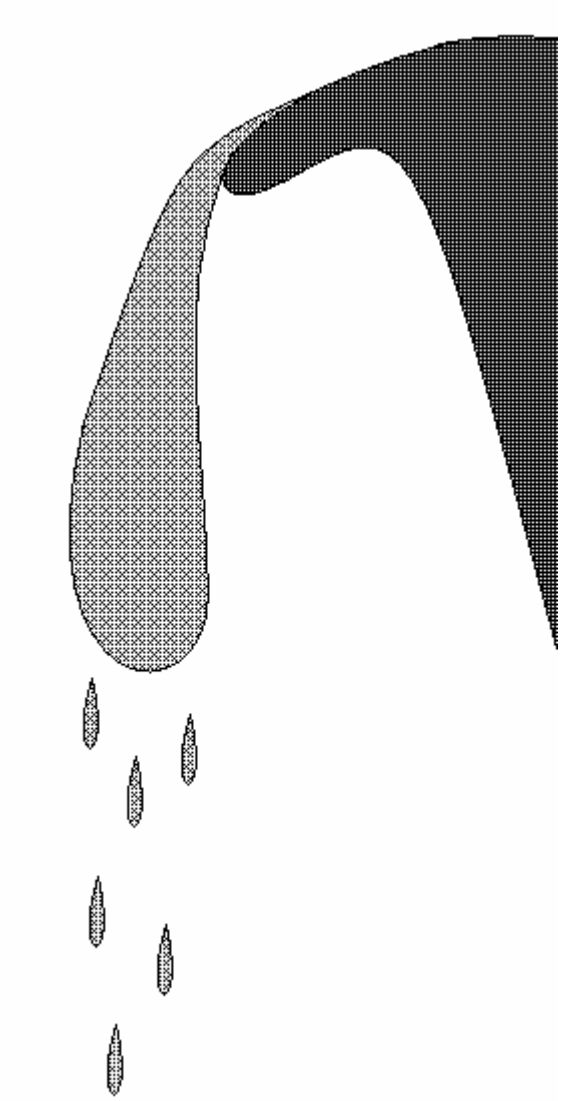
The net result is a miniscule amount of momentum being added to the object's particles, in exchange for the photon's terminated existence or reflection. This effect of light imparting movement to objects demonstrates how light can have the ability to move mass without being a bona fide particle. To say that moving light has mass is a little erroneous in the conventional sense of the definition of mass which implies that mass is a constant value for an entity. Rather, let's define light as massless pure energy, or more specifically, a pressure wave in bether with the ability to affect mass.

As for photon formation (which is light's ability to "particle-ize" its energy), it seems that the smallest possible unit of light as a wave will no longer evenly spread its energy. Instead, it will break off into a small chunk of light, maintaining the minimum amount of energy required to qualify for a photon.

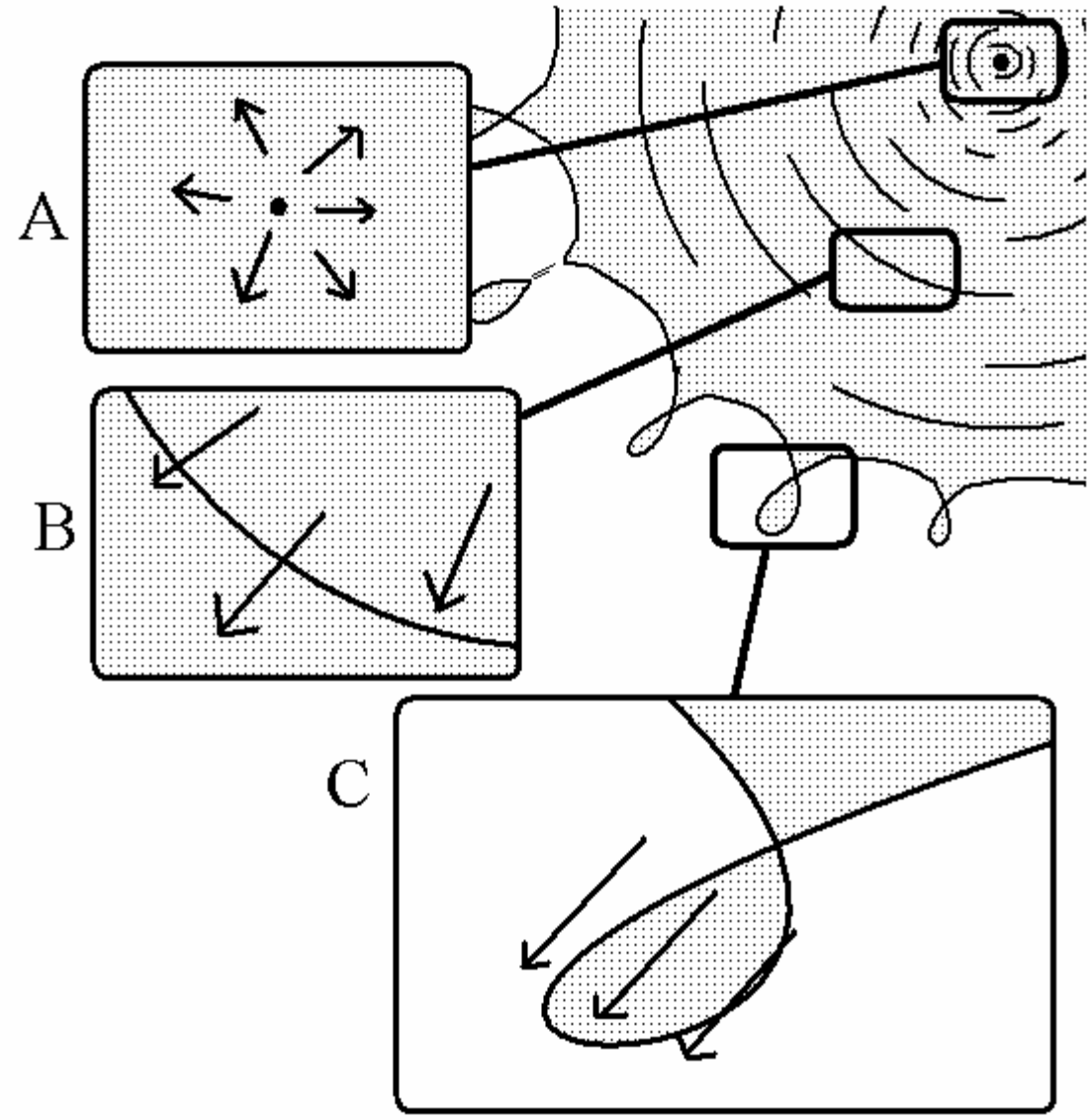


A: Light source
B: Light waves spreading out
C: Light wave photons

Photons are still waves in bether, but they will retain their net energy as they travel “particle-like” in a specific direction. This is much like the effect of pouring water from a container. The poured liquid will eventually become independent droplets.

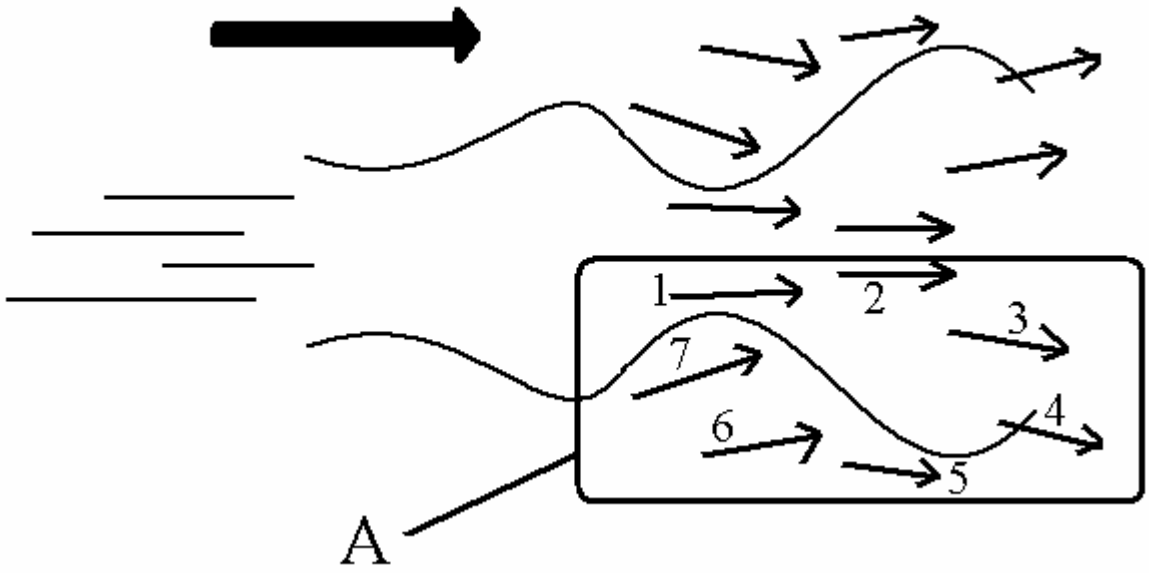


The water does not infinitely continue to divide into a fine mist but rather finally reduces to independent drops due to surface tension. For photons, the same thing occurs in that the wave energy will diverge evenly until there is not enough energy to continue diverging, resulting in individual “photon” wave particles that each will keep their sum of energy within themselves; call it a light wave surface tension. The point at which photons become separate wavicles occurs when most of the original light wave energy has diffused in all directions, and all that remains is a tiny wavelet of light energy that’s the size of a photon.



A: Light source – energy dissipates in all directions
B: Remaining energy is more aligned but is still dissipating
C: Finally a point is reached where the remaining energy is sufficiently aligned to maintain a constant energy level by not further dissipating, forming a photon

Once an independent photon is created, the remaining light energy that defines our newly-formed photon is now perpetually curved back into its own path by the stretched bether “trough” that follows the high bether-pressure wavefront of the photon, thereby constantly recapturing and maintaining the photon’s level of energy.

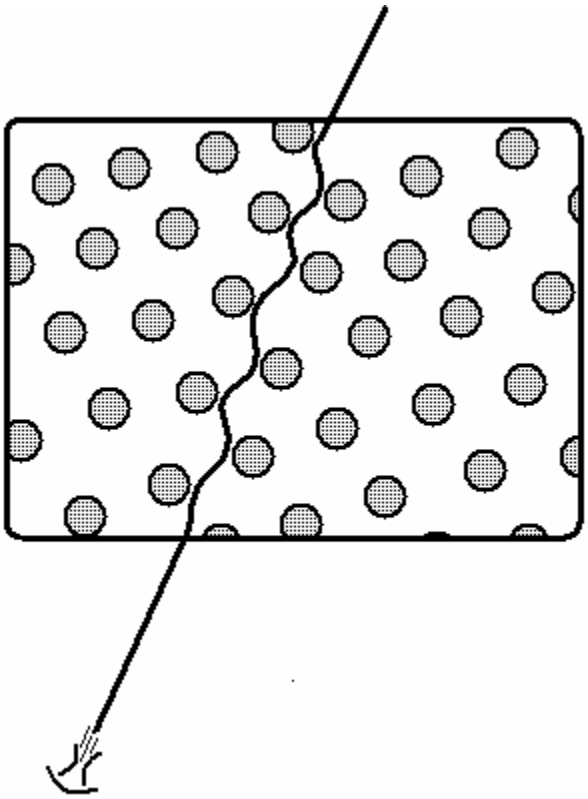


Photon moving through bether
A: Inside the photon, its energy quickly passes up through the stretched bether core, diverges out the high bether-pressure wavefront, and then curves back into the stretched bether region again, thereby maintaining its net energy

Mentioned earlier was the “soft, massless, transparent rubber” concept for bether theory and this concept of the nature of bether allows for regions of stretched and high-pressure bether. The historical, but eventually discounted, original “sea-like” theory of aether fails in that it would allow surrounding aether to flow into and equalize regions of stretched aether, destroying the mechanism of gravity in our model. Our newer rubber model also describes bether as particleless, which lends to the incredible sheer velocity of light, the velocity of any wave being a product of the density of the medium in which it is being transported. You may surmise that because the speed of light can be calculated as non-infinite, it suggests bether cannot possibly have an infinite density and instead must have a specific density that defines the maximum speed for light; but as will be demonstrated later, the speed of light can be considered effectively infinite as well.

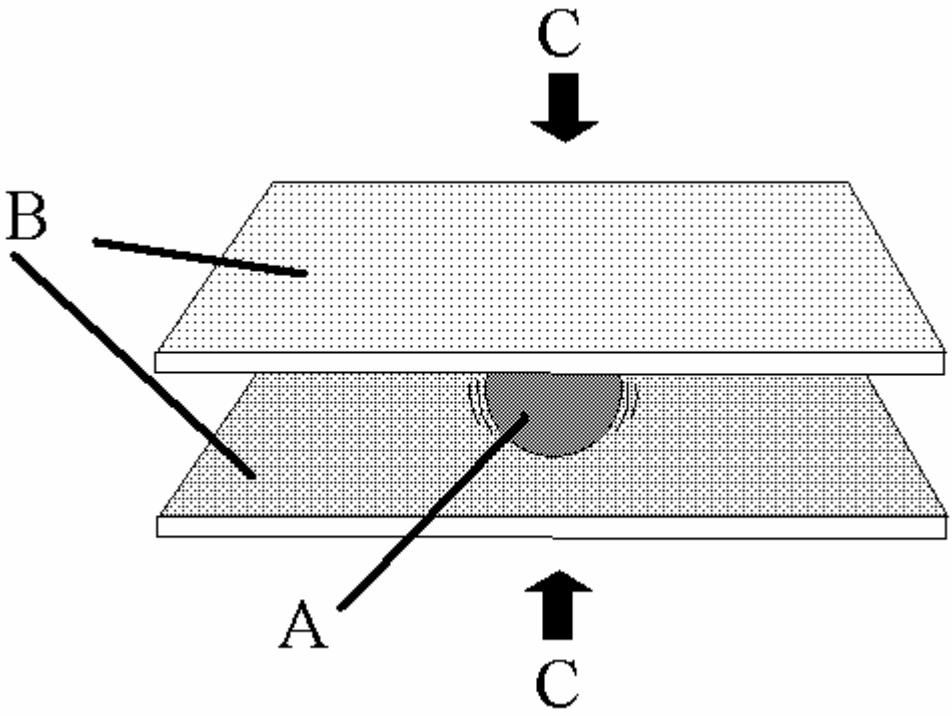
Why does light always travel at the speed of light? Well, it doesn’t when it passes through various densities of objects (such as glass or gases) because the degree of stretching of any given region of bether

changes relative to the proximity of particles, and hence the net distance that light must travel haphazardly through a transparent substance is farther, slowing down its apparent velocity (time is also slowed for the photon in the vicinity of particles, but we'll get into more details about that much later).



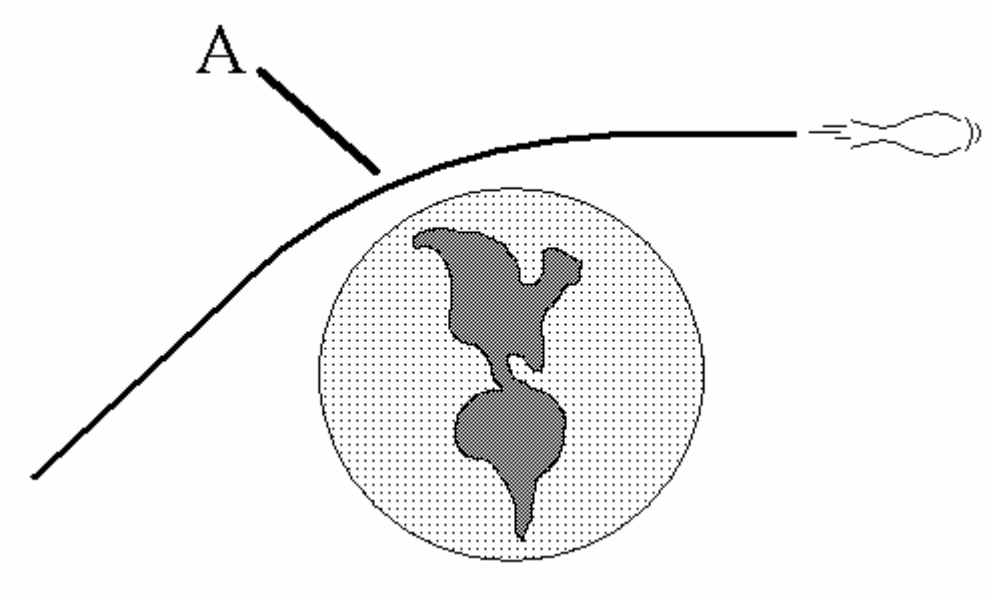
A photon's path through a transparent object results in a haphazard course as it passes in proximity to the object's atoms, meaning the photon must travel a greater distance than the width of the object

In an ideal region of completely open space, however, where there are no significant gravity or anti-gravity forces at work, light will always travel at the same speed. The phenomenal velocity of light is due to the fact that bether will squeeze high-pressure bether regions (light), and if a high-pressure distortion of bether (like a photon wave of light) was just sitting around, it would be precariously balanced in the bether, much like trying to keep a greased ball bearing centered between two flat greased plates that are being pressed together.



A: Precariously balanced greased ball-bearing
B: Greasy plates
C: Pressure

The bether will try to squeeze the photon back to normal bether pressure's relative neutrality, but it cannot since the photon is a region of high-pressure bether with nowhere for it to equalize to (just like you can't squeeze the ball bearing). Even just the slightest bether pressure misbalance around it, such as a gravity field (a region of stretched bether) from another object, would tip its balance and send it off in the direction of lesser bether pressure. Since it has no mass (it's just a wave), it instantly reaches top speed, which is light speed. Once a photon has a direction, it will continuously move at the speed of light in that direction, unless it comes across other regions of varying bether pressure, such as gravity fields, glass, etc., in which case it will tend to "fall" or bend towards relatively lower pressure or stretched regions of bether.



A: Photon's path is bent by gravity

ENERGY

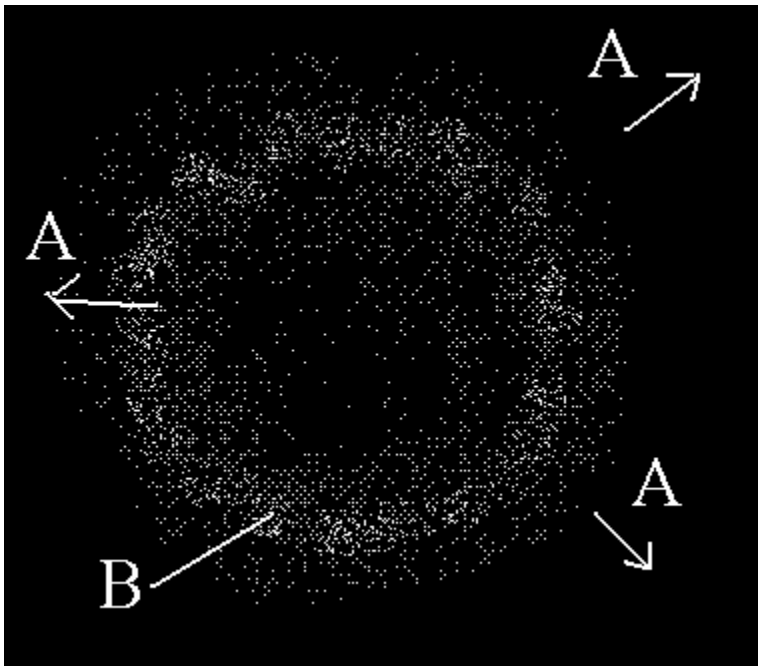
Now, on to "energy". Reflect for a moment on all the activity going on in our universe, planets spinning around stars, moons creating tides in oceans, creatures milling about, etc. It must have taken an incredible amount of energy to have started all this activity. Where did all this energy come from? First, let's figure out what energy is. Energy in the classical sense implies the ability to perform "work", but in its most fundamental form, energy is the attempt by bether to elastically balance and equalize the pushing or pulling that is imposed upon it. For example, light moving through bether is perfectly balanced energy flow; the bether that the photon flows through quickly returns to its original neutral state and so all the light energy transfers through it completely. Should this light hit a particle, the balance is upset and the energy that previously defined the photon of light has now changed into motion of the particle and the photon vanishes. The photon's energy may have changed forms but the total energy remains the same, and this universal rule is known as the law of Conservation of Energy.

There are countless other examples of energy (chemical (gasoline), electrical (lightning), potential (gravity), mechanical (spring), etc.) but

they all fundamentally break down to the same forces of balancing and equalization of bether. Our universe exhibits extraordinary examples of energy flow; it all had to start somewhere with all this energy being generated somehow, and that brings us to the moment just before the beginning of our universe…

BIG BANG

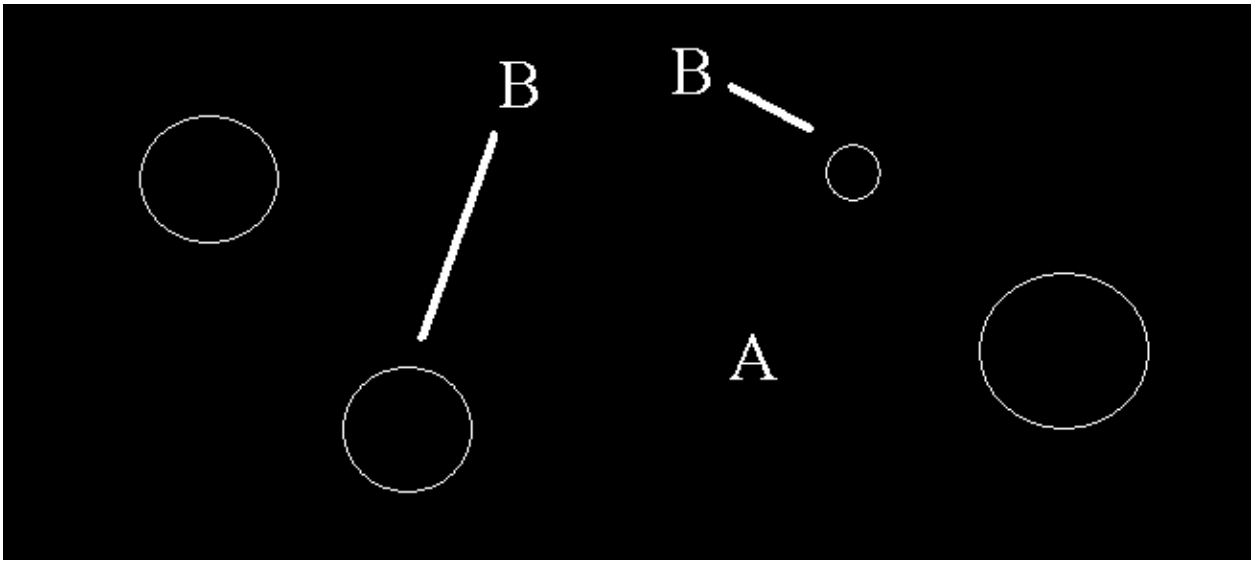
You've probably heard of the "Big Bang" theory. The Big Bang is a popular concept created by physicists to explain the dispersing of all observable matter in the universe as it appears to us on Earth.



Apparent dispersion of matter in the universe
A: Outward momentum
B: Example of where Earth might be

It seems that all the more distant visible entities in outer space are moving away from us in a pattern that would suggest all the particles in the universe were close together at some central location long, long ago. Scientists have extrapolated from that observation to arrive at a theory of our entire universe being created at that point in time as a result of an incomprehensibly large "bang".

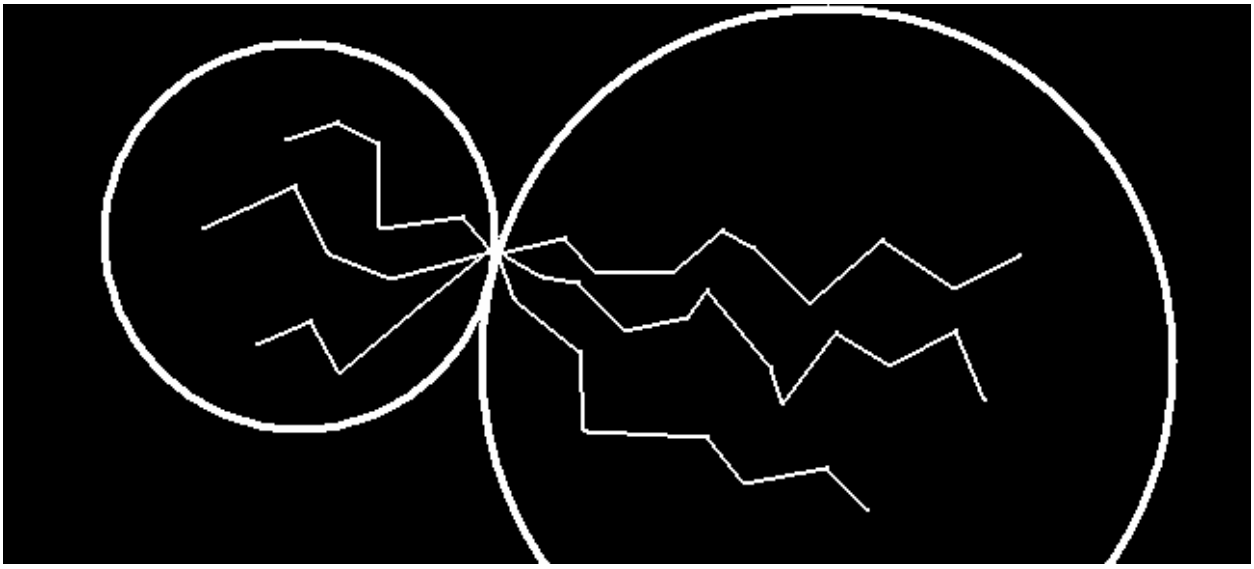
Let’s take it even one more step back before the Big Bang, to present an extrapolation of the “sum of parts” principle…. Before there was a universe as we know it, there were only a number of unimaginably large super-particles, many times larger than anything we know of within our current universe. These colossal entities are completely composed of tightly-compressed bether, and they float about in a great, vast, betherless emptiness which we’ll affectionately call “Infinity”.



A: Infinity
B: Super-particles

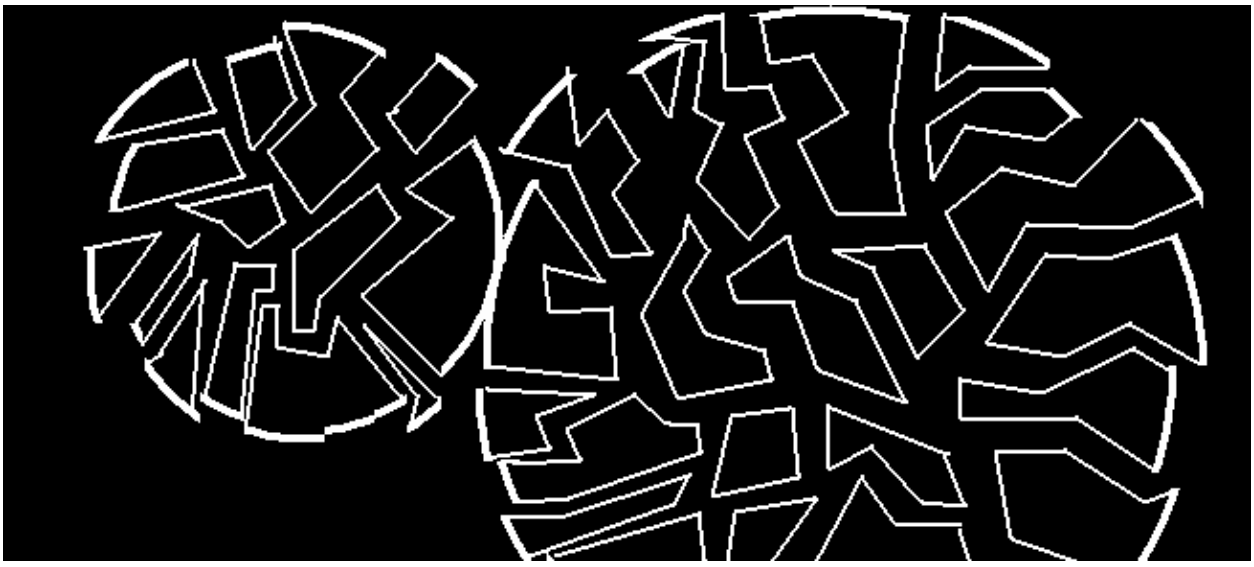
This great emptiness does not have any bether to fill in its void but it has within it many of these super-particles that may very well be the elementary building blocks of a hyper-universe.

Occasionally some of these super-particles slam into one another in an indefinably cataclysmic impact,



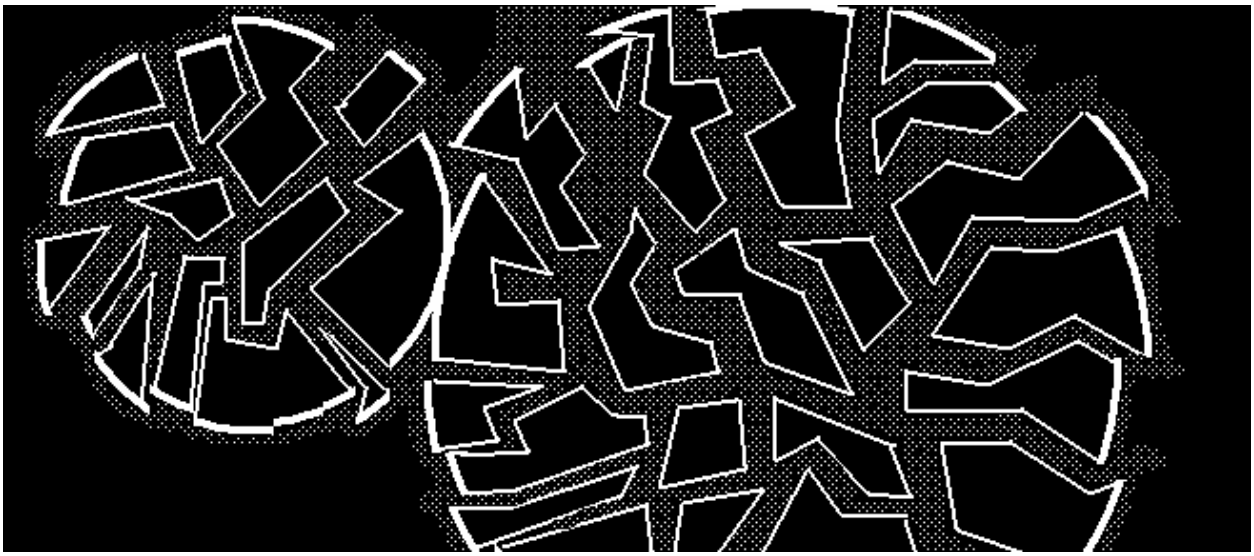
Super-particles collide

smashing the super-particles apart, as in how *our* universe was created when two particular super-particles collided. The impact of these super-particles (better known as the Big Bang) resulted in their "shattering" into a fine powder of tiny, irregular-shaped pieces. For ease of visualization, you may imagine these pieces to be of odd sizes and shapes, much like the results of smashing a large block of ice against a hard object.



Super-particles shatter

These pieces of super-particle material (which you'll remember are composed of nothing more than compressed bether), having been violently disturbed, lost their solidity and began rapidly expanding, transforming into its "uncompressed" form, filling in the gaps between the many broken super-particle pieces,

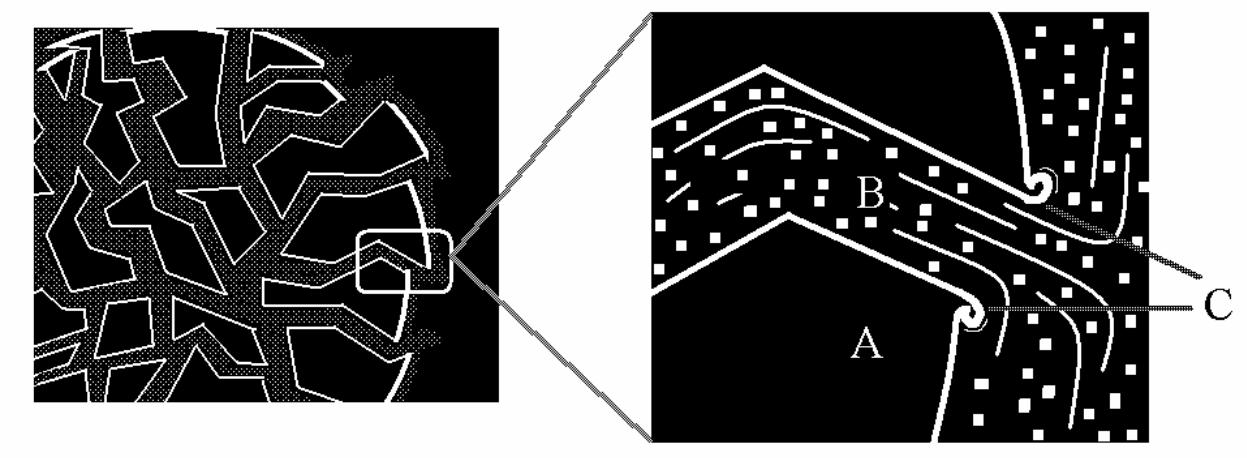


Pieces "melt" into uncompressed bether

as would happen when our hypothetical ice shards begin to melt. That's about as far as our ice analogy will take us, however, because bether has the resilient property of being "rubber-like" and so any expansion that occurs will be at the expense of stretching its neighboring regions, unlike water particles which can move away from their neighboring particles.

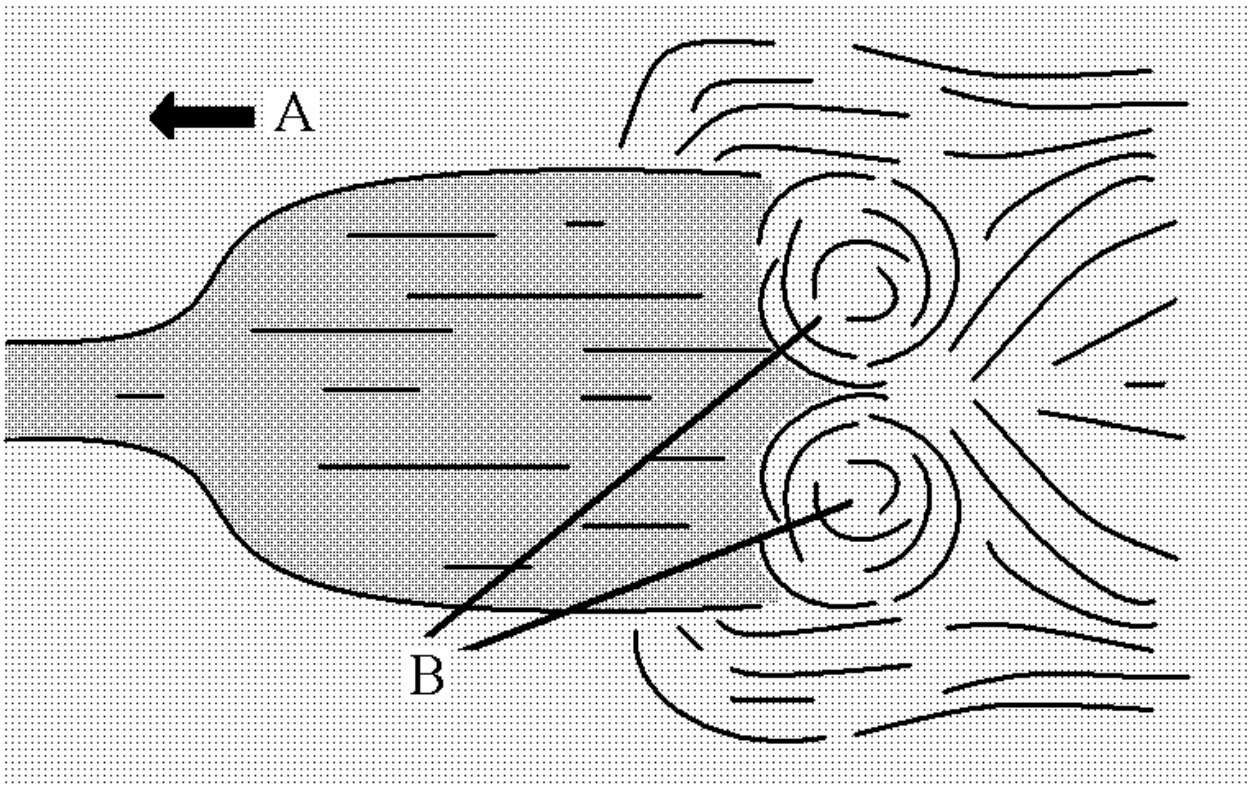
PARTICLES (3)

Something great happens now. This super-particle material, caught in the chaos of the collision, expands unequally and this causes uneven "distortions" of expanding bether such that rapidly expanding sections will pull and twist against more gradually expanding sections.



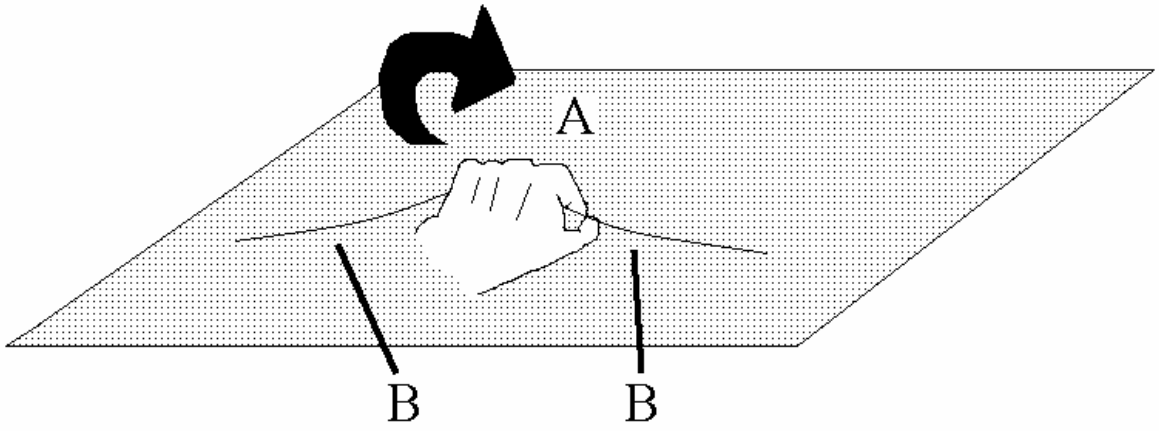
A: Compressed bether
B: Expanding bether
C: Bether being twisted by the expansion

This causes bether to violently stretch and distort along the edges of these expansions, causing some portions of the bether to twist, similar to the twin vortices that result from dragging a paddle through water.



A: Paddle being dragged through water
B: Twin vortices that form around the paddle

Again though, unlike water, bether cannot “flow” (in the true sense of the word) in order to equalize imbalances, and so the bether just continues to twist tighter and tighter as the adjacent bether continues expanding. A good analogy to explain this twisting would be for you to lay your hand palm-side down and flat in the middle of our suspended blanket. Slowly begin to grab the blanket by closing your fist. As you continue to close your fist, roll your hand forward by bending the wrist forward as well, until you have a tight grip of the blanket and your fist is rolled as much as possible.

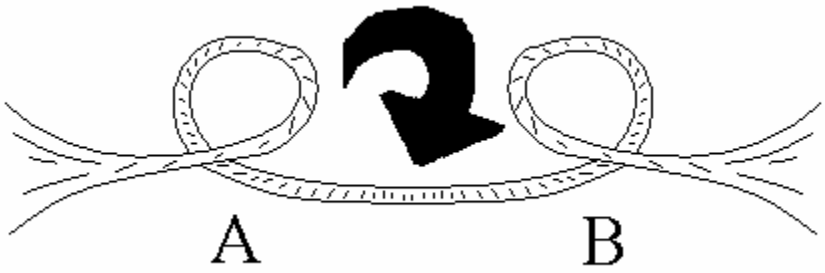


A: Rotate fist forward
B: Blanket forms opposite twists on sides

In this example, the top of your hand represents the region of rapidly expanding bether, and the blanket represents slowly expanding bether. As you rolled your fist, you formed a twist in the slower moving bether below. You will notice that the blanket’s twist on the left hand side of your fist is the exact opposite twist of the right hand side. These twists represent negative and positive magnetic charges respectively, a charge being a twist in bether, and “negative” being the opposite direction of twist to the “positive”.

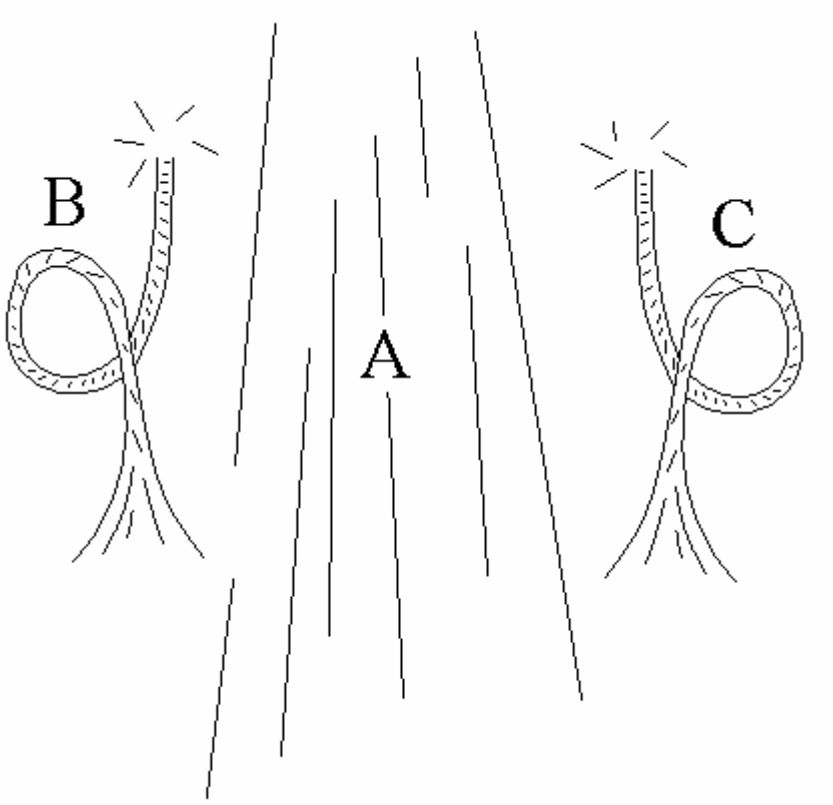
Most of the time that these charge pairs formed, they would just as quickly unravel (just as our blanket would unravel should you release your fist) but in some cases the pair twists would get wrapped around and jammed up against other neighboring twists, knotting themselves

together, and making it impossible for them to unravel normally (as in our earlier knotted ropes example). This is how some particles are formed—being the combined knotted mess of all these twists even though the twists themselves are not complete particles. In other cases the twisting on the expanding bether was so severe that "loops" were ultimately formed and now instead of just two charges, we ended up with a matter/anti-matter pair of particles.



A: Continuously twisting bether forms a particle…
B: …and anti-particle

These too would have a tendency to immediately annihilate (untwist) themselves, but with all the explosive bether-expanding going on, sometimes these particles were split apart by another section of rapidly expanding bether, and continued to exist independently,

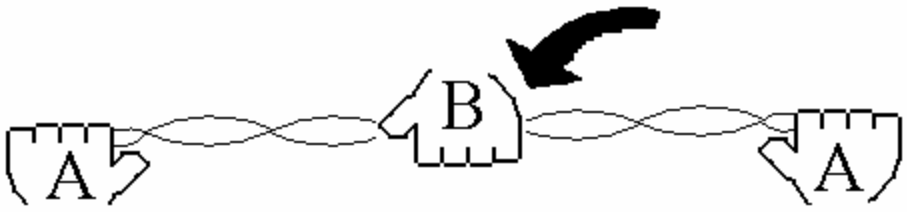


A: Jet of expanding bether splits the…
B: …matter/…
C: …anti-matter pair

unless they should happen to come across some other particle that is the opposite twist, in which case these two would then annihilate (unravel) each other. You can better imagine this splitting of particle-pairs if you hold a strip of belt between your hands,

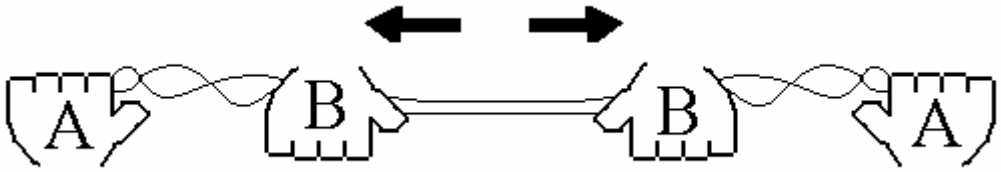
A: Person holding belt

then have someone repeatedly twist it in the center until a number of twists have been made,



A: Person holding belt
B: Another person putting some twists into the belt

and then that other person uses both their hands to create a flattened section between the opposing twists by pushing them apart.



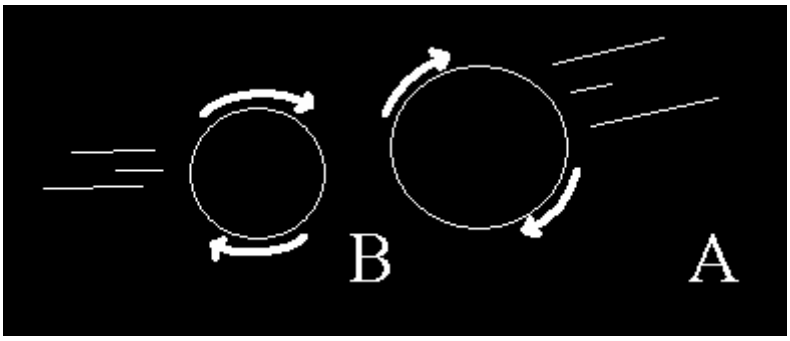
A: Person holding belt
B: By B separating their hands, they have effectively separated the twists, which simulates how charge-pairs, or even particle/anti-particle pairs can be split

And so our broken super-particle fragments continued to dissolve into uncompressed bether, creating and destroying particles, but very quickly the super-particle material was fully expanded into the uncompressed bether that defines the body of our universe, taking up colossally more volume than it did in the form of the original two compressed super-particles that spawned it. Now the few remaining matter and anti-matter particles (that were formed during the super-particles' expansion) continue to annihilate each other and expand yet more bether until ultimately there are no more free-floating anti-matter particles. Virtually all of the remaining anti-matter in the universe is knotted up in the cores of particles that are made up of multiple twists all knotted together, where other matter has a hard time getting to it, as we'll soon learn about.

The first few tumultuous moments of the Big Bang provided most of the matter creation that would ever take place in our universe.

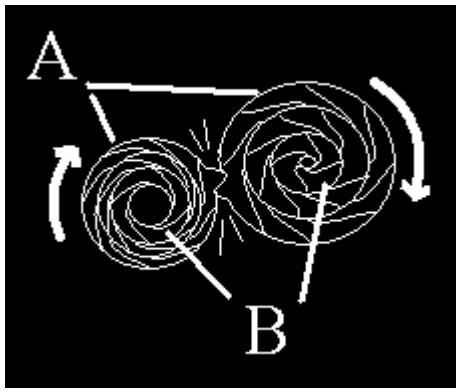
Virtually all of the sub-atomic particles that have ever existed or that currently exist in the universe, were created at this time, leaving just a relatively tiny quantity of remaining matter that was not annihilated; and it is from this remaining matter that "everything" in the universe is composed of. So how could there have been so much more matter created than anti-matter if they are supposed to form simultaneously? The answer lies in the "spin" of the original super-particles when they collided.

Before the Big Bang, all sections and depths of each spinning super-particle moved together as a single unified object.



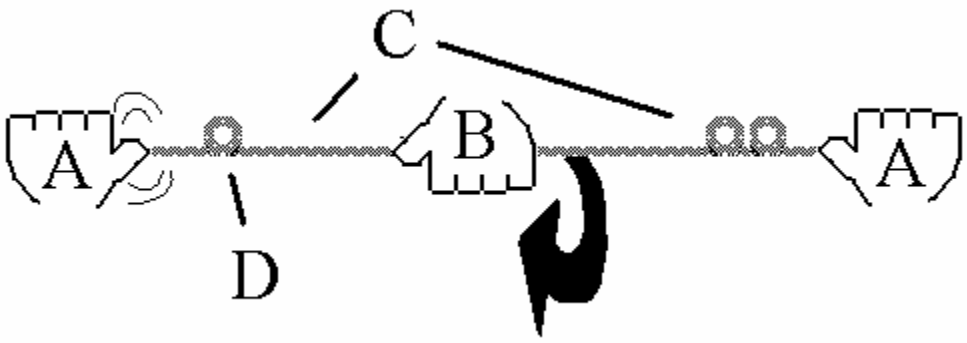
A: Infinity
B: Spinning super-particles approach each other

Once the impact occurred, however, the outer sections may immediately have lost some rotational velocity but the inner sections continued to rotate at full speed for at least a very short time longer, causing a drag to occur between various depths of the now shattered super-particles. This drag introduced a slight bias for which atomic particles were to be created because the shearing effect between these layers would create more particles that twist in one direction (which just happened to be matter) than would form from twisting in the opposite direction (anti-matter).



A: Upon impact, the super-particles would fragment. The pieces that were closest to the surface would be the first to slow their momentum,…
B: …closely followed by the inner fragments slowing their momentum in turn. Because of this disparity between the various bether fragments' momentums, particles that are formed from the resulting twisting of bether would be somewhat biased towards matter, versus anti-matter

A very weak rope analogy would be for person A to hold a rope at both ends, and then have a second person, B, twist it from the middle to form multiple loops between all the hands. But, as person B is twisting, A is letting his left hand's grip to slip somewhat, resulting in the loops on the right-hand side becoming more numerous than the left side.



A: Person holding rope
B: As B rotates their hand,…
C: …loops are eventually formed on both sides
D: Because A's left hand is allowing the rope to slip as B turns their hand, less loops are formed on the left side

There are many potential locations in our now multi-layered colliding super-particles that our hypothetical rope-ends could be

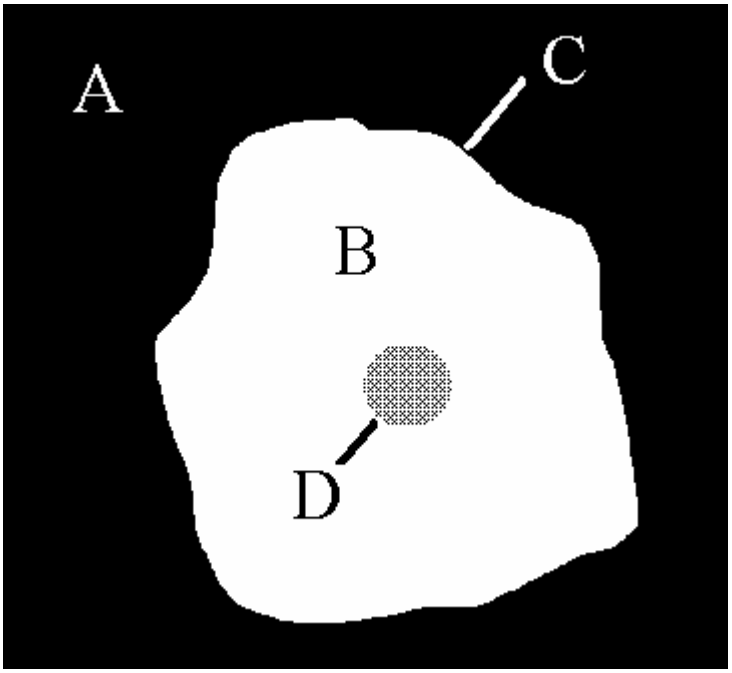
forming particles from, that would create these biased scenarios of greater matter creation over anti-matter. Though this bias would be miniscule in overall effect when compared to the vast majority of perfectly equal matter/anti-matter creations, it is this subtle bias that is directly responsible for the persistence of all the remaining matter in the universe, due to the absence of matching anti-matter.

UNIVERSE

What is the universe exactly? Our universe is this merged blob of expanded bether that existed previously in its compressed form as a pair of super-particles before they collided in the Big Bang. Our blob of universe still floats around in this infinite great nothing just as it did when it was compressed as super-particles, except now the combined expanded bether occupies a much larger volume than when it was two distinct super-particles.

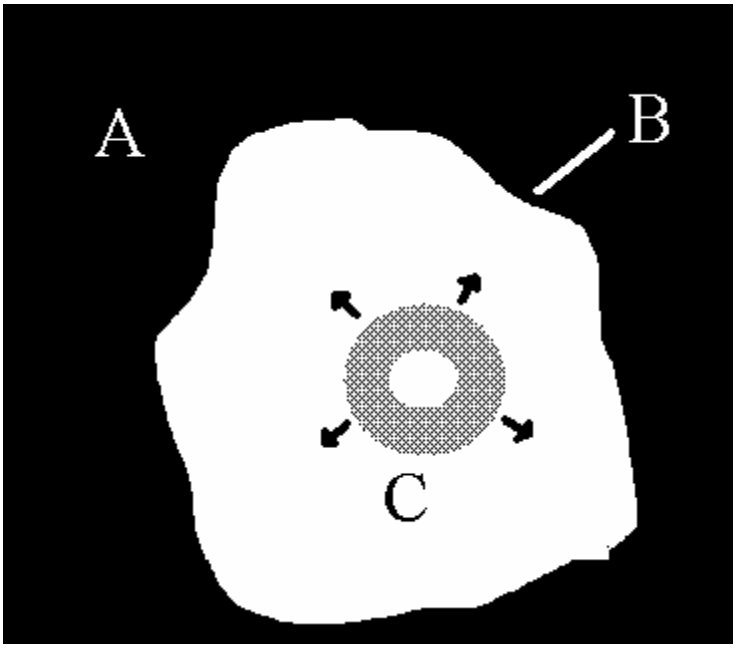
> The examples here assume that all of the original super-particle fragments contributed to our universe, but it is conceivable that some of the fragments were separated too far from our universe, hence they would form their own universes, not connected to ours.

Our universe had nearly completely finished rapidly expanding when the last matter/anti-matter particle annihilation took place during the first moments of the universe's creation so long ago. Once all the compressed bether was expanded and all the remaining exposed anti-matter/matter pairs were consumed through mutual annihilations, there was no more compressed bether to expand, and hence the universe's perimeter nearly stopped growing. The use of the word "nearly" will be explained later.



A: Infinity
B: Expanded bether that forms our universe
C: Perimeter of the universe
D: All particles that exist in the universe

One important aspect of the Big Bang expansion, and also the bether expansion from any particles that were annihilated, is that the expansion happened very quickly, faster than the speed of light. Expanding bether is not limited to the speed of light since only that which bether contains is restricted to the speed of light. When the universe was still rapidly decompressing, our blob of uncompressed bether was growing and expanding outward at an incredible rate, much faster than the newly created particles that were being dispersed by the blast of the expanding bether. This left the particles far behind the edge of our expanding universe and thus the resultant size of the universe is much greater than the radius of the particles it contains. However, after the universe finally consumed all the anti-matter and the bether finished rapidly expanding, the remaining matter particles within it still carried with them the momentum gained from the expired explosive force of our universe's birth.



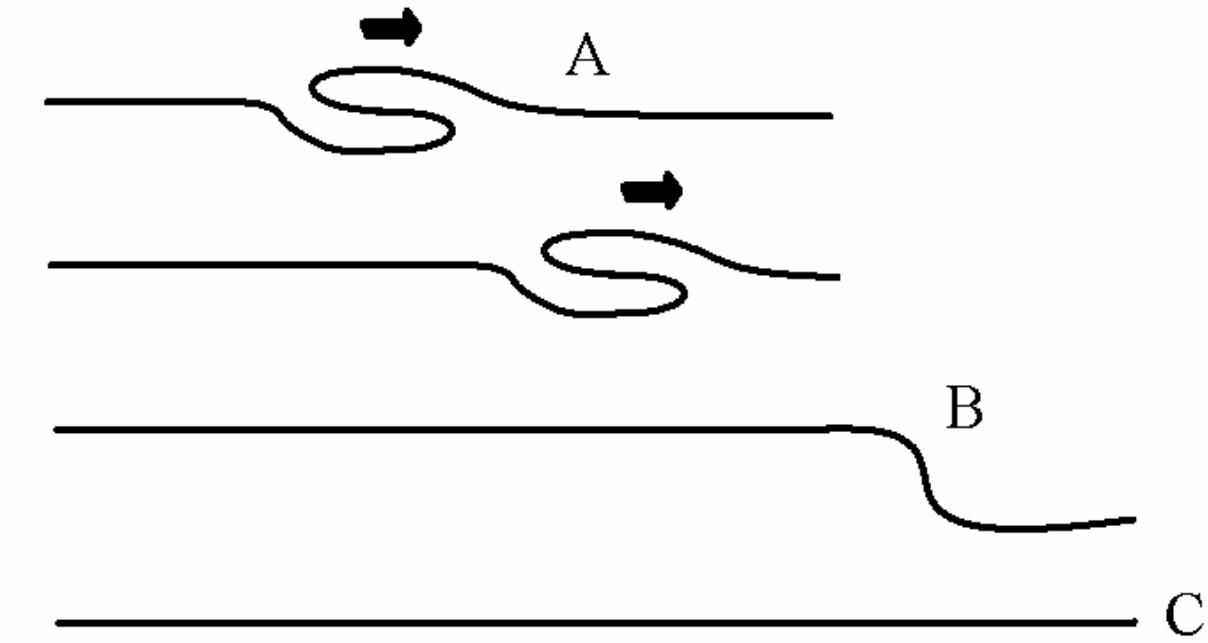
A: Infinity
B: Universe has nearly stopped expanding
C: Particles still have Big Bang momentum

The universe, as far as ultimate size of uncompressed bether is concerned, however, had almost finished expanding long ago.

It is common to mistakenly use the term “expansion of the universe” to apply to the observed spreading of matter contained within the universe, instead of implying the expanding universe’s perimeter. In that context, a more accurate description would be the “dispersion of matter”.

It is difficult to imagine what could happen should any particles reach the perimeter of the universe where bether ends and infinity begins. Such a particle could probably freely unravel as it attempted to move past the perimeter, thereby releasing the energy bound up in it, creating more expanded bether, with an explosion of energy which would quite possibly deflect the remainder of the body (assuming the particle to be part of a larger object) back away from the perimeter.

A particle reaching the perimeter of the universe is analogous to taking a fold of blanket, moving it by allowing the blanket to flow through it, to where the fold rolls off the end of the blanket and is forced to expand and release all its energy.

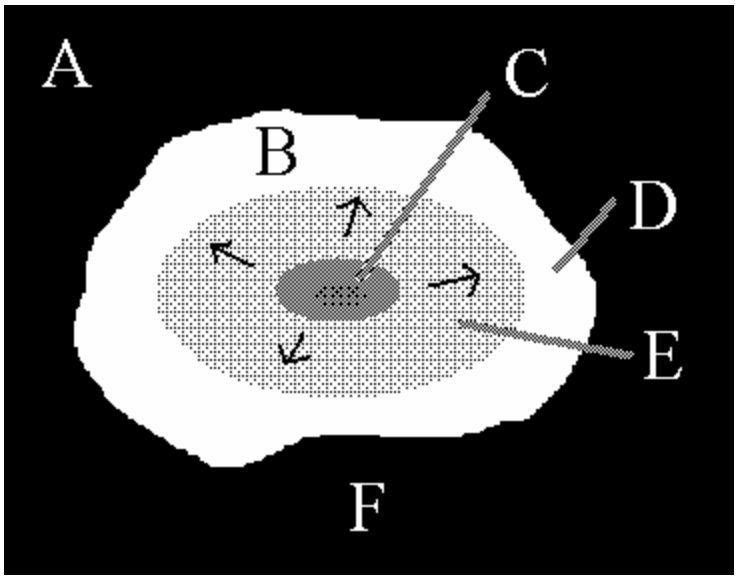


A: Fold (simulating a particle) moves toward blanket edge
B: Edge expands
C: Fold (particle) no longer exists

It would have the same net effect as a collision with the equivalent anti-matter body. What might happen before any particle finally makes it to the perimeter, however, is that the force of gravity could eventually slow down and stop the Big Bang-caused dispersion of these particles, forcing them to all start coming together again. Whether any particles do make it to the perimeter will depend on a few things: the size of the universe that was created in the Big Bang; the degrading outward momentum of these particles due to gravity; the outward pressure created by photon and particle radiation from light and particle-emanating stellar bodies; and the residual "anti-gravity" effect of the slightly higher-pressure bether at the universe's core.

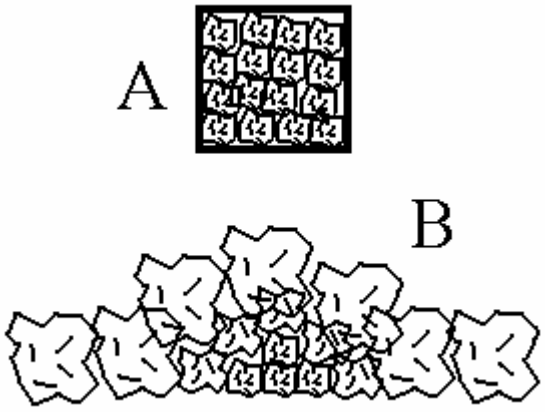
What is this anti-gravity core (commonly referred to as the "dark force", or "dark energy")? Let's review the point that the universe had almost finished expanding so long ago; almost, but not quite. The bether at the center of the universe (ground zero for the Big Bang) to this day is still under pressure to finish completely expanding, though not with the

ferocity of the first few moments of the Big Bang. This continuing expansion is caused by the residual bether pressure that is left over from the Big Bang and is slowly spreading the rest of the universe out in its attempt to equalize to zero pressure.



A: Infinity
B: Universe
C: Higher pressure core
D: Fully expanded bether at the perimeter
E: Matter being spread out by anti-gravity core
F: Since the Big Bang, bether continues to slowly spread out due to the yet-to-be-fully-expanded bether at the Big Bang's ground-zero

To analogize: if you were to tightly pack many wads of paper balls into a box to its maximum capacity (the compressed paper balls combine to represent a super-particle) and then to magically remove the box, allowing the previously-contained paper balls to expand freely, you would witness the balls on the edges expand the fastest, and notice that the paper balls in the center are the last to expand.

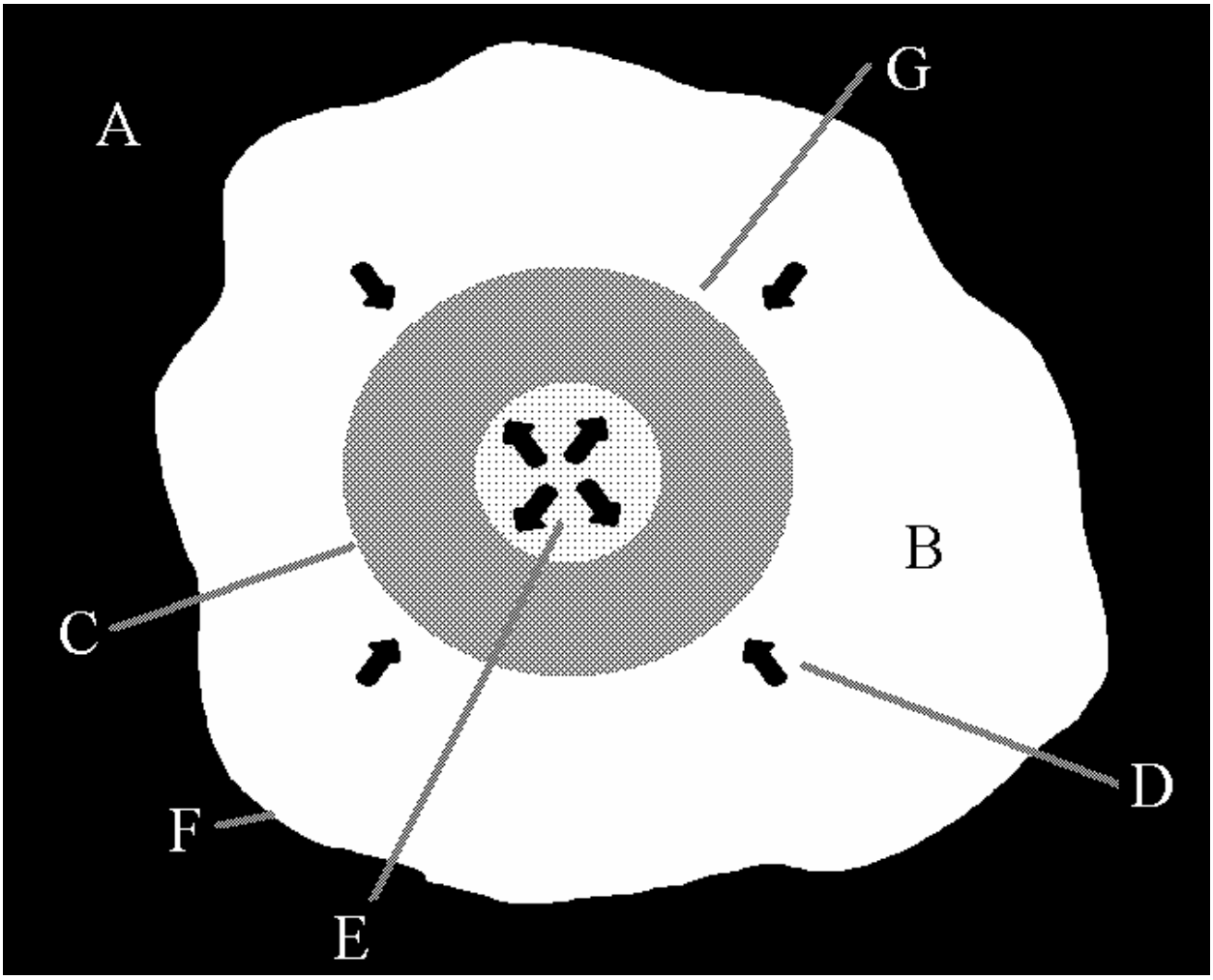


A: Fill a box with tightly packed balls of paper…
B: …and then remove the box. You should see the paper balls on the outside expand the quickest, while the buried ones expand slower due to the congestion. This is analogous to the expanding bether of our universe as it is today

This is the state of our current universe, with the center still trying to fully expand.

Even today, all matter continues to accelerate away from the center of the universe, being repulsed by the higher pressure, anti-gravity effect of the universe's core. It is also possible that the growing distances between these objects may be so great that the gravitational attraction of these objects to each other may not be enough to overcome the outward force of the photon and particle radiation generated by light-producing objects, further accelerating this dispersion.

This spreading of matter, however, can only continue until all light-emanating bodies in the universe expire and the universe's anti-gravity core equalizes its pressure to that of the perimeter; only then will gravity finally dominate to bring all particles in the universe back together once again.

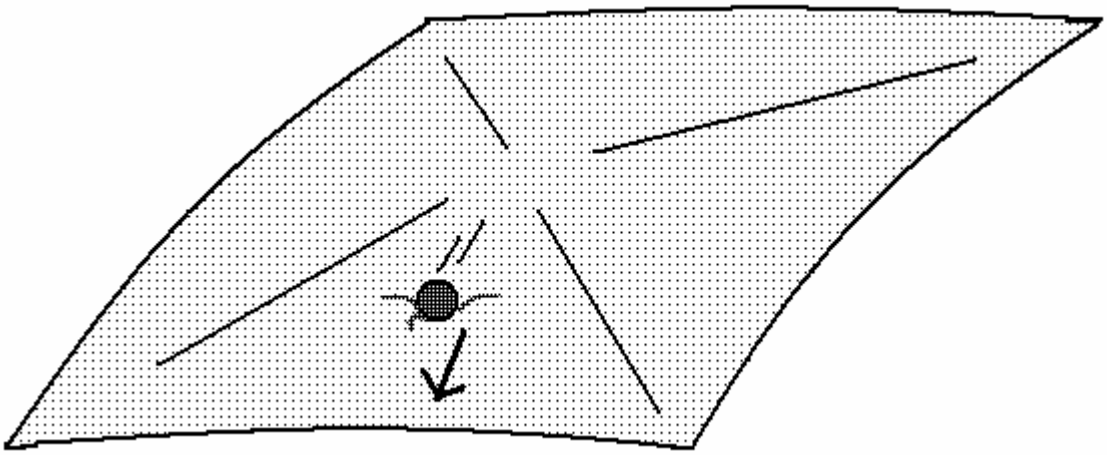


A: Infinity
B: Universe
C: Spreading matter (which includes everything from gases to galaxies)
D: Gravity fighting dispersion of matter
E: Anti-gravity core of the universe is slowly equalizing to that of its…
F: …perimeter
G: Dispersion of matter is fueled by momentum, radiation, and the anti-gravity core of the universe

You may ask yourself, how can gravity exist between bodies if they are under the influence of an anti-gravity field (a region of high-pressure bether)? It must be understood that the strength of the anti-gravity core is much weaker than the gravitational force that would bring together two nearby bodies. Therefore, even relatively distant objects would still feel the effects of gravity upon each other. It's only when you have vast distances separating bodies, with the anti-gravity field in

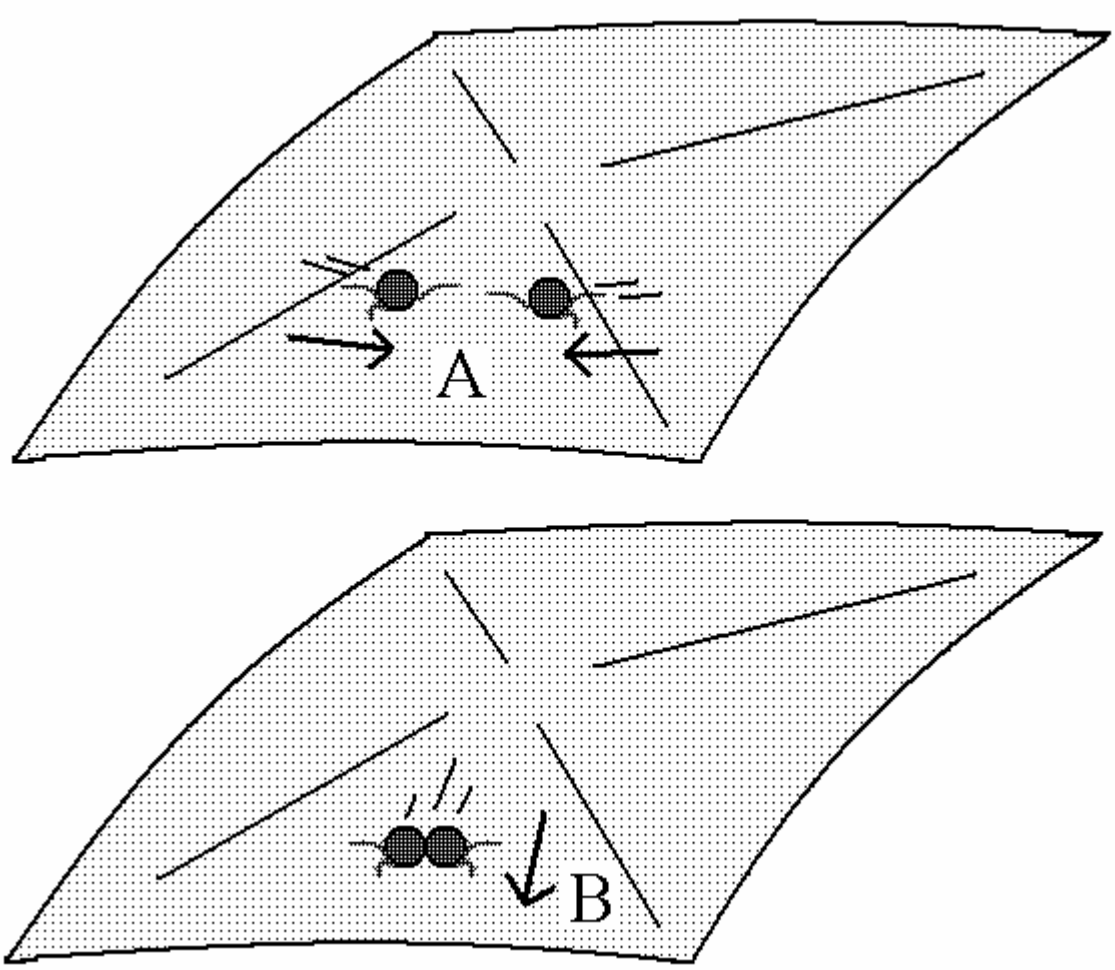
between, that you begin to see the effects of the anti-gravity core overpowering the force of the gravitational attraction between these bodies; such is the case when we consider bodies on the other side of the core of the universe relative to us.

To analogize again with our suspended blanket, imagine raising the center point of the blanket very slightly, such that if you were to place a weighty ball on its surface, the weight would tend to roll towards the closest edge.



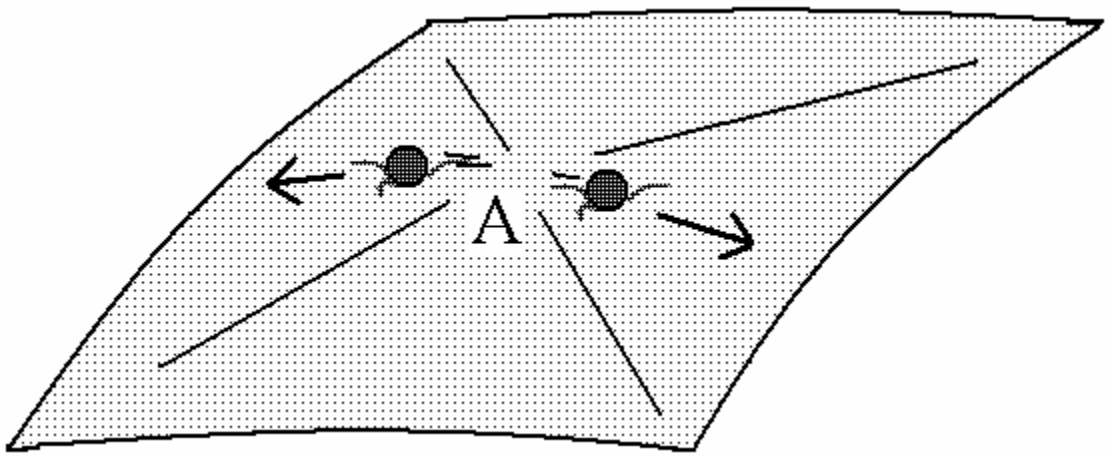
A weighted ball placed on the raised-center blanket, will eventually roll off the edge

Now if you were to place two round weights near each other on the blanket, they would roll towards each other (gravity), but would also roll slightly outwards at the same time. Once they came together, they would continue to stay together but would now roll off the blanket together.



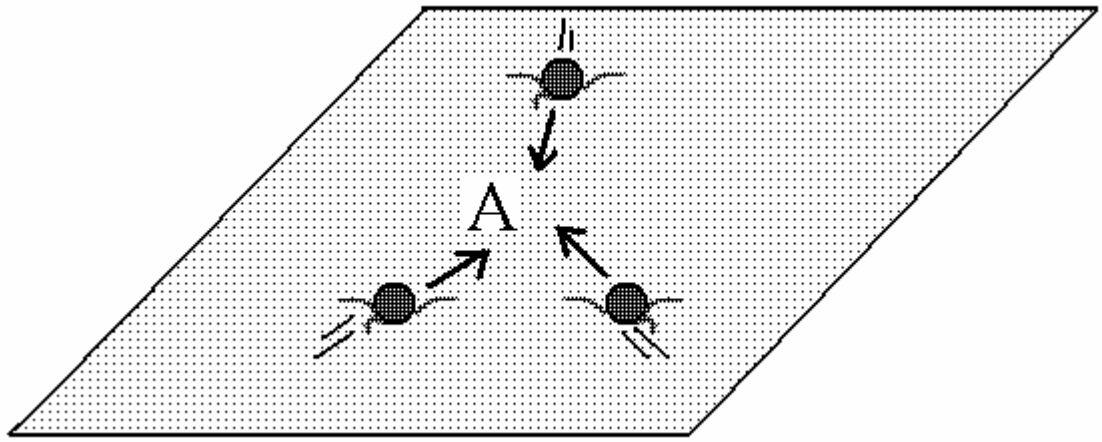
A: With two weights on the blanket, they are primarily under a large gravitational influence to come together
B: The more subtle anti-gravity is less influential than their mutual gravity, but it has enough influence to eventually push the weights off the blanket

If you had instead placed the two weights on opposite ends of the blanket, separated by the anti-gravity core, they would roll away from each other towards each weight's respective nearest edge.



A: Gravity is not strong enough between the weights to bring them together over top of the center of the anti-gravity field, and so the weights roll away from each other

When the universe core finally does equalize, the center of our blanket will no longer be raised and all weights placed on the blanket will roll together no matter where they are placed.



A: Once the anti-gravity core equalizes, gravity can now bring the distant objects back together

This infinity “nothing” outside of our universe cannot transmit light, has no matter, gravity, magnetism, energy, nor even a finite age; essentially it is completely devoid of anything that our universe defines for us with the advent of this “bether” material. Infinity only has absolute dimension and time, meaning that it solely defines how far

apart the contained super-particles or universes are, and how they move. We are helpless to escape our fishbowl universe or even catch a glimpse of what lies outside since we ourselves are entirely composed of bether and cannot exist without it. To attempt to "burst" through the perimeter intact is to not understand that all particles are just "shaped" bether, and that only the shape moves about (try to make a knot without a rope). The bether stays in its original location while the particle shape moves through it, like a wave moves on water.

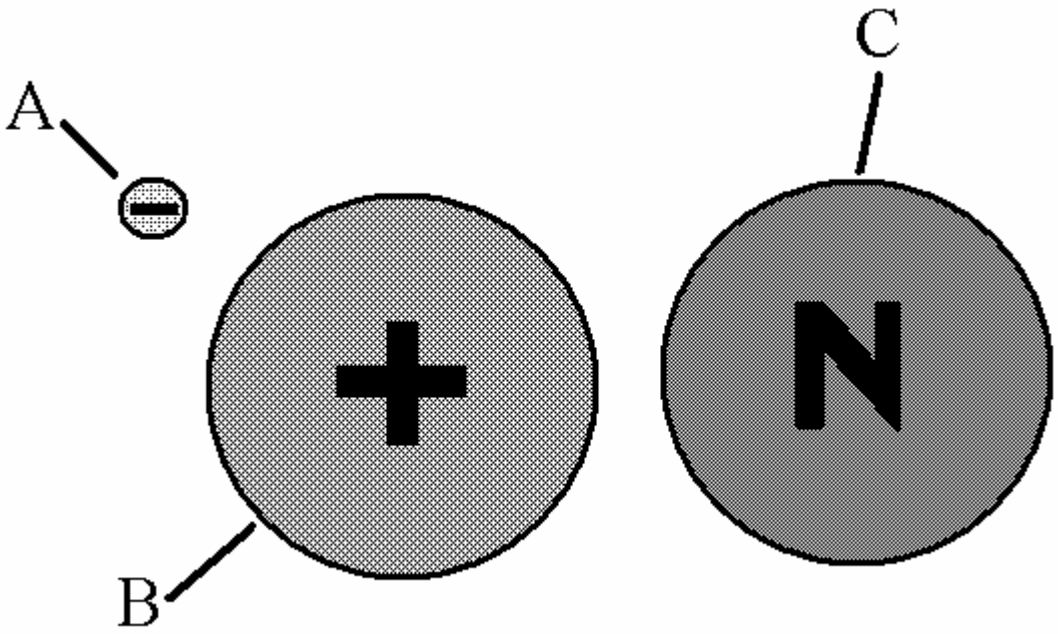
There might be billions of these universe blobs (expanded super-particles) like ours out there floating about in the infinite great nothing. Perhaps it is a rare event for a super-particle to come across another super-particle and result in a universe much like ours, but it is conceivable that there are other universes that we may never see unless perhaps we intersect with one and our universe blob "merges" with theirs.

All light from the stars will eventually reach the universe's perimeter to submit that energy to the great Infinity void where the energy is truly wasted, the only true violation of the universe's law of conservation of energy, ultimately meaning that our universe is getting colder and darker. Light reaching the perimeter of the universe is analogous to taking a flat blanket, shaking it once, observing the resultant wave traveling across the blanket from where you are holding it, to the other side where it rolls off the end with no residual energy left in the blanket. Other universes may also have stars but their light cannot cross the infinity void that is the great nothing outside of our universe and so we are limited to our night skies as they appear to us now.

You may have heard of various space wonders such as traveling through "wormholes" or visiting "parallel" universes. These concepts are founded upon observed quantum physics phenomena but, using a very logical "sum of parts" mentality, have been erroneously extrapolated into our much larger physical world. The "sum of parts" principle scales well for some basic force flow systems, but is not always applicable for magnifying properties of quantum mechanics to our scale. So, as interesting as these fantastical concepts are, they will remain fictional.

ATOMS

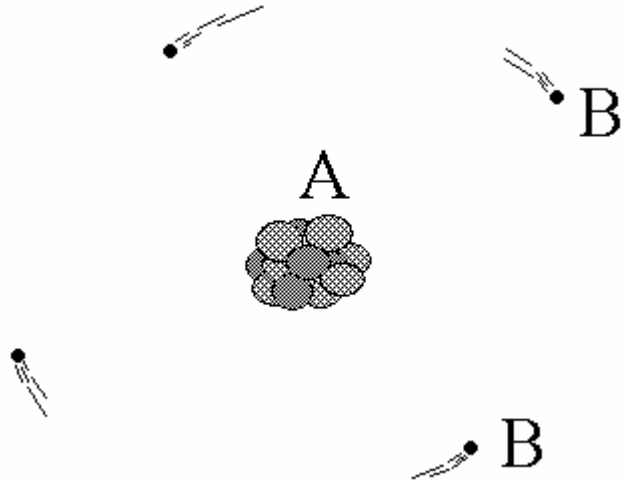
All this generalized talk about particles; let's be more specific. To borrow from conventional physics, let's now introduce some very common particles found in our universe: "protons" that have a net positive charge, "neutrons" that have balanced positive and negative charges rendering them neutral, and "electrons" that have a negative charge.



Common elementary particles (shown as spheres to simplify)
A: Electron
B: Proton
C: Neutron

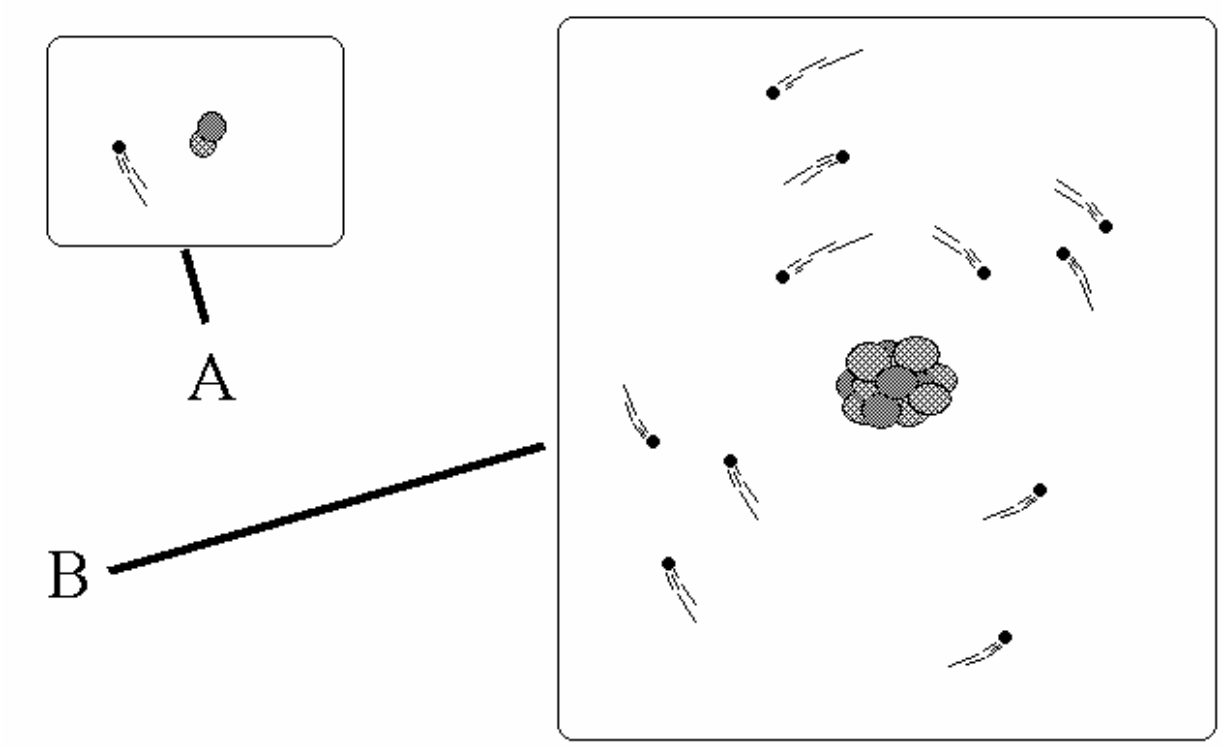
These are the elementary building blocks of most everything we know in the universe, and even the protons and neutrons themselves are composed of even smaller semi-particles and twists that cannot exist without being intertwined with their counterparts, so effectively we consider protons and neutrons to be whole particles. There are perhaps many other types of particles but because of the inherent stability of these three, they are the ones we mostly contend with as the universe stands today.

Now let's build something: an atom. The word "atom" means indivisible, or absolutely the smallest piece of anything. Despite that misnomer, it does indeed have smaller parts. Atoms are composed of protons and neutrons at the core (the "nucleus"), and have electrons orbiting around the nucleus in relatively large orbits.



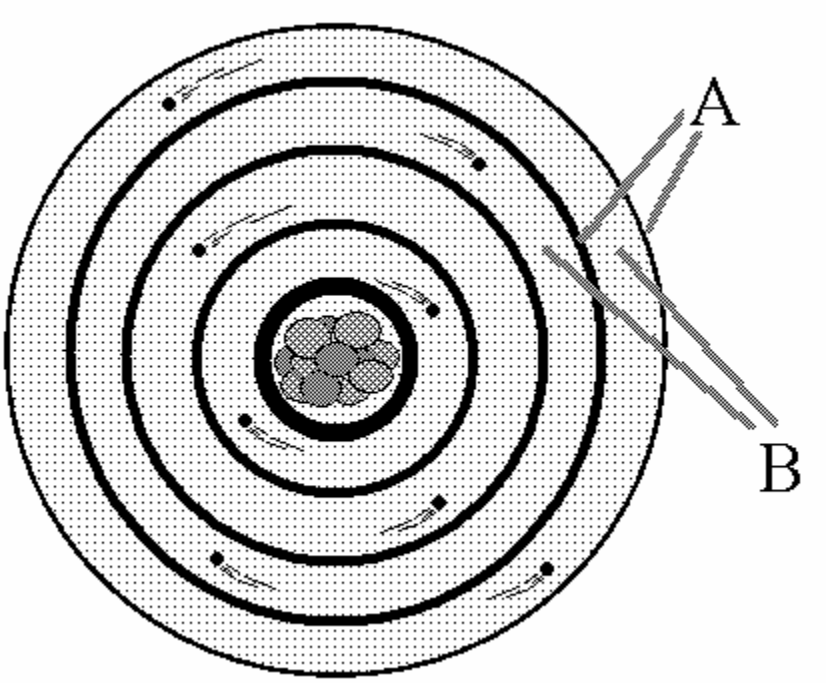
The Atom
A: Nucleus composed of Neutrons and Protons
B: Electrons orbit the Nucleus

By changing the count of each of these constituents of an atom, you create different types of atoms, everything from oxygen atoms to gold atoms.



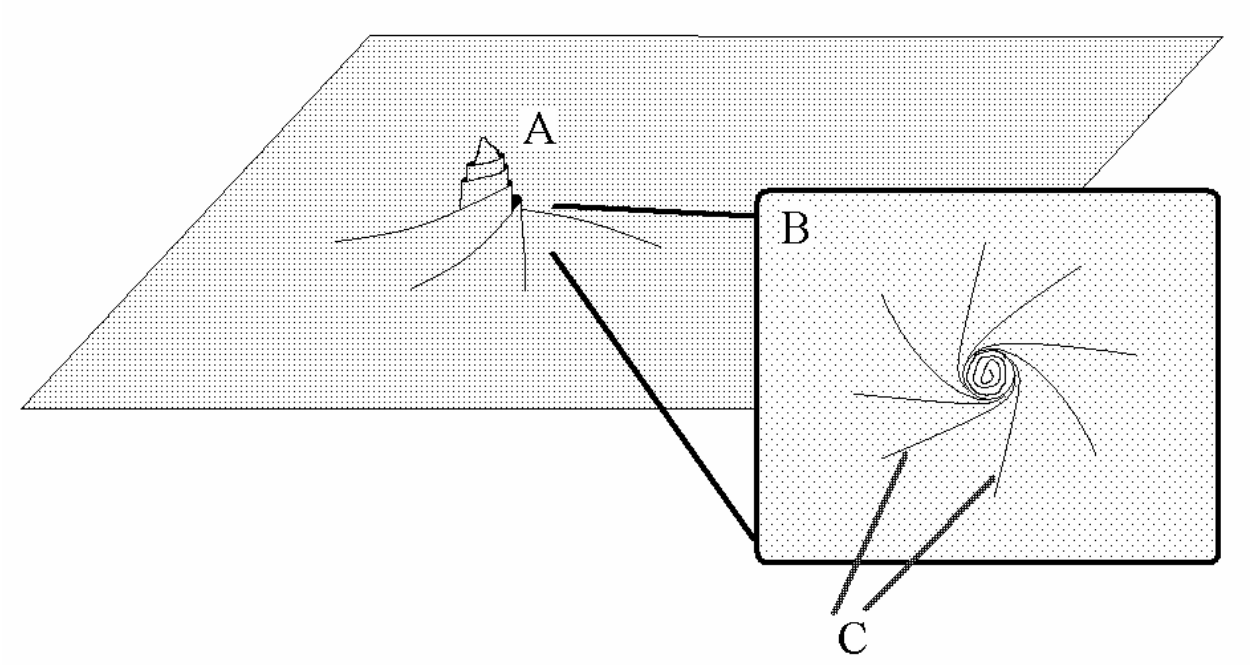
A: Simple Atom (e.g., Helium, Oxygen)
B: Heavier Atom (e.g., Gold, Lead)

Electrons orbit about the nucleus by sitting in the “ripples” (alternating high bether-pressure shells and stretched bether-material regions) that surround the nucleus of an atom, right down to the tiniest shell that contains and defines the nucleus, in which the protons and neutrons are encapsulated.



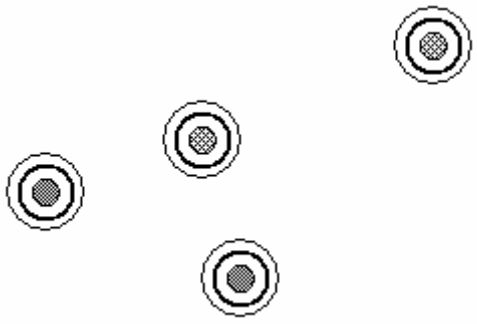
A: High bether-pressure shells
B: Negative bether-pressure region between shells

How do these atomic shells form? They are a by-product of the particles themselves. To explain, if you twist a section of blanket, you'll see the blanket buckle into "stress" lines that spiral outward along the blanket from the center where the twisting force is concentrated.



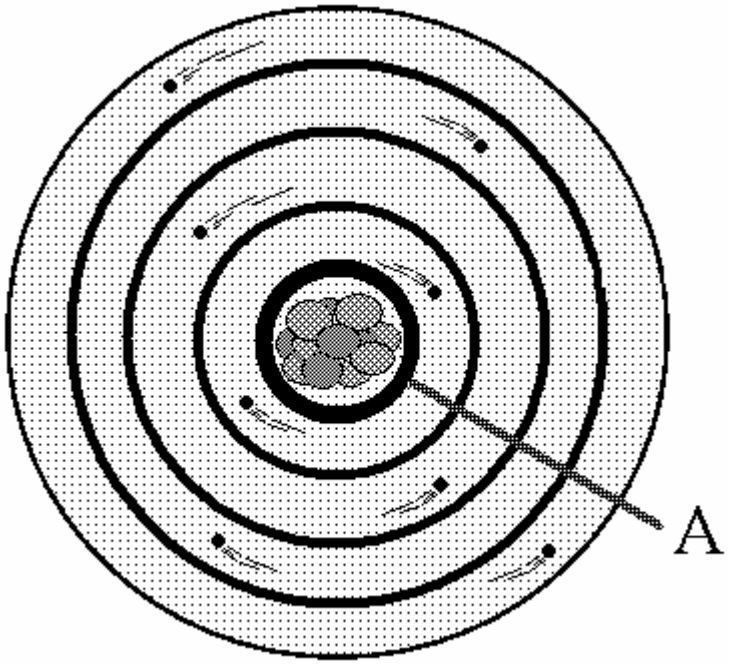
A: Blanket with twist
B: Top view
C: Stress lines

Likewise, since particles are nothing but twisted bether themselves, they generate similar stress lines; the three-dimensional manifestation of these stress lines is a series of spherical, increasing-radius, alternating shells of high pressure (anti-gravity) and stretched (hyper-gravity) bether that enclose the particle. These shells that form around all individual particles (e.g. protons, neutrons, electrons, etc.) are the exterior result of the radical interior twisting of bether that defines the particle.



Individual particles have tiny shells around them that are manifested from the bether twisting inside the particles themselves

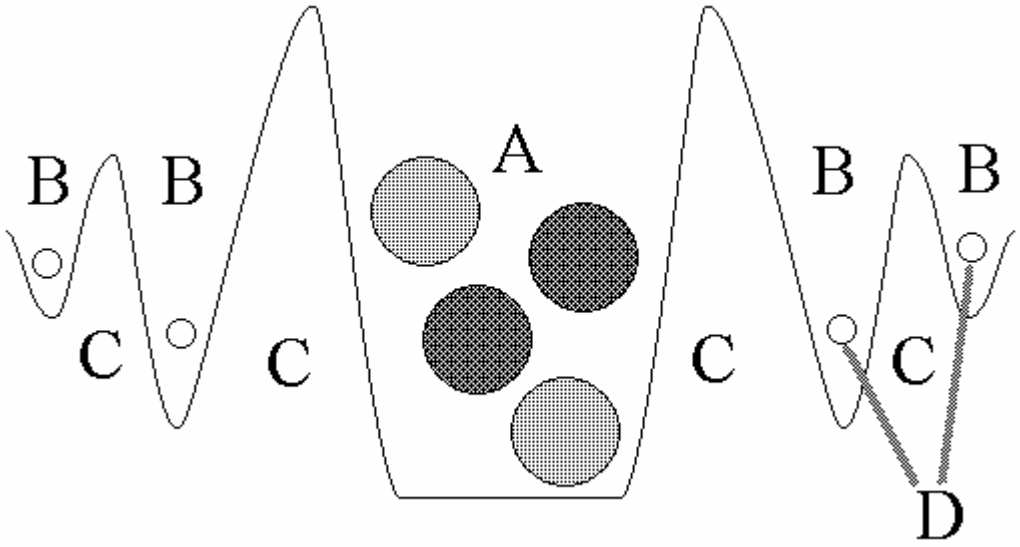
When these individual particles come into close proximity, such as in an atom, their individual shells overlap and combine in effect to act as a single and larger series of shells ("sum of parts" principle) which ultimately traps all the participating particles within these newly-consolidated shells. The independent shells of heavier particles (protons, neutrons) combine and the smallest high-pressure sphere forms the nucleus shell, within which these particles trap themselves.



A: Nucleus shell

These particles are also mostly responsible for forming the rest of the shells of lessening magnitude but increasing radius, that trap the electrons further out from the nucleus. The tiny electrons get caught in the outer shells, unable to break through the increasing-pressure bether (anti-gravity) shells nearer to the nucleus.

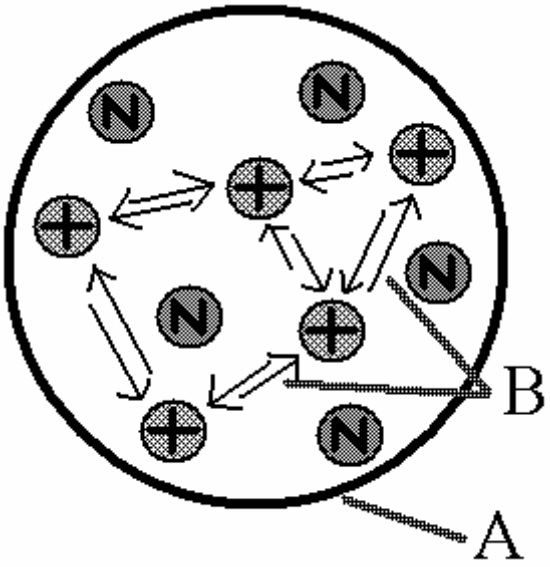
The term "shell" is misleading in that it can be confused with a real physical construct, but a shell is more accurately described as a region surrounding a particle, or group of particles, that is characterized by anti-gravity. So a particle resting directly on a shell wall would be considerably unbalanced and would likely be rapidly pushed into one of the hyper-gravity regions between shells.



To analogize atomic shells, the above diagram attempts to show a cutaway view of an atom. The nucleus is separated from the orbiting electrons by "hills" that represent the higher bether-pressure shells. It is very difficult for the nucleus particles to escape the first hill, but the electrons have an easier time breaking through the outer hills

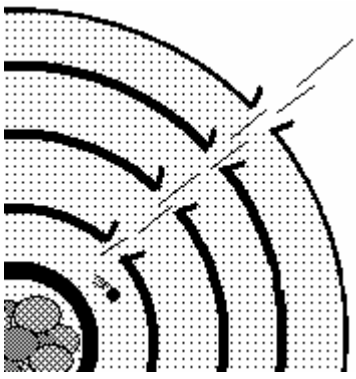
A: Nucleus
B: Stretched bether
C: High pressure bether
D: Electron

In an atom, though, generally there are many protons in the nucleus. You may ask why these positively charged protons don't push themselves apart since they all have the same charge, much like the same poles of two magnets would repel each other. The protons do actually try to push away from each other but their first anti-gravity shell, which has the greatest magnitude of bether pressure of all the shells, is a more powerful barrier than the magnetic repulsion of the positively charged particles can overcome, and that keeps the protons together despite their desire to push away from each other.



A: High bether-pressure nucleus shell keeps particles together
B: Positively-charged protons (+) pushing away from each other

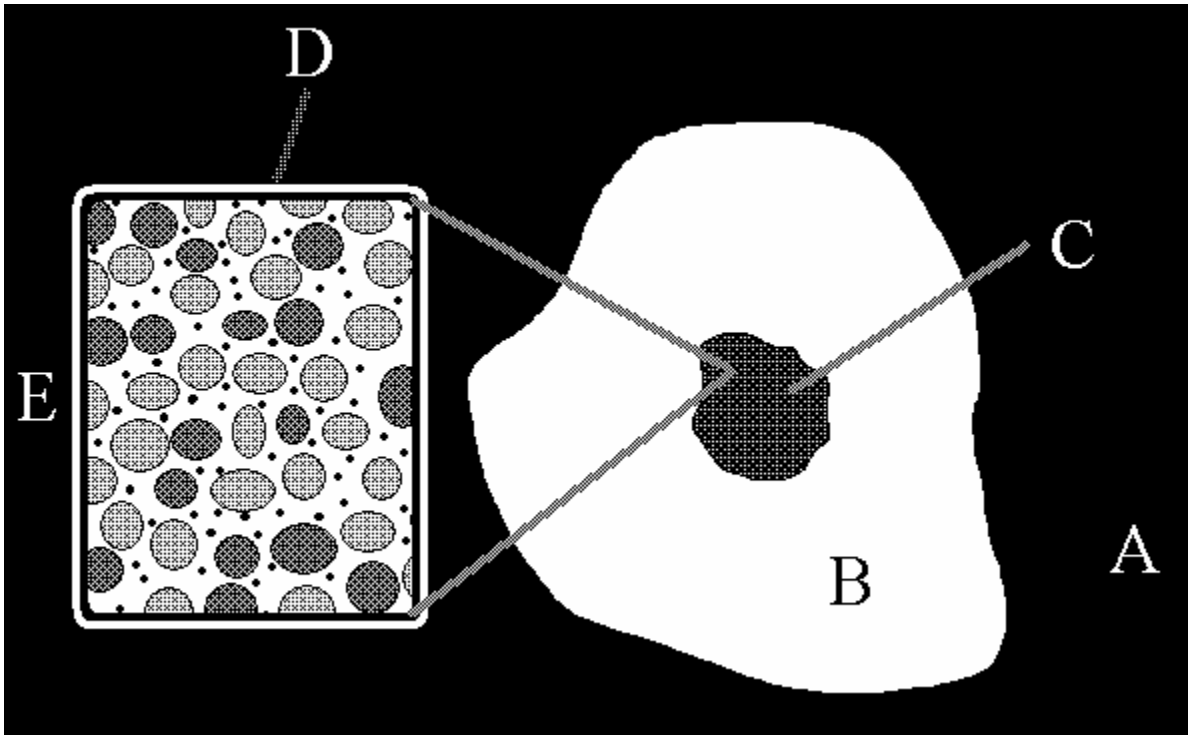
The magnitude of the pressure of these shells increases as you get closer to the nucleus. This means that the gravitationally and magnetically attracted electrons have a progressively more difficult challenge if they wish to get closer to the nucleus because they have an ever-increasing magnitude of higher shell pressures to penetrate on their way in; they finally reach a balancing point between the attraction of the positively charged nucleus, and the shell with high enough pressure to resist the electron passing through it.



Electron breaks through as many shells as it can overcome, until it reaches a shell with high enough bether pressure to prevent further penetration

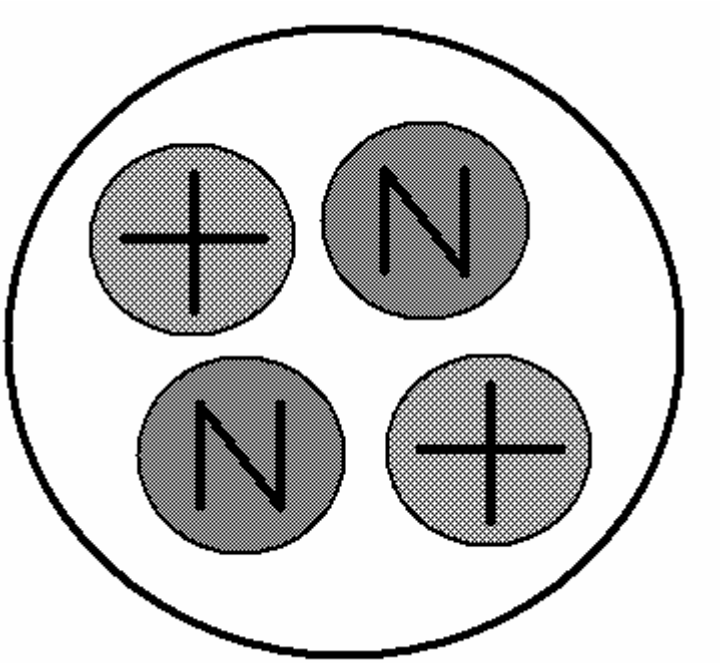
The very act of adding electrons to an atom increases the magnitude of these shells (electrons have their own ripples to contribute to the overall shells of the atom); therefore only a limited number of electrons can enter a shell before that particular shell will resist any further electrons entering, and any newly added electrons will now be trapped in the next higher shell.

What about neutrons and protons? It seems unlikely that these particles would ever naturally get close enough to become trapped in their collective nucleus in the first place, so how did these nucleuses form? To answer that, we have to once again go back to the birth of the universe. During the first few moments of the Big Bang when the super-particles were starting to expand and particle creation was taking place, these particles were in such incredibly close proximity together that effectively they were all part of one big nucleus. As the congestion of the Big Bang subsided and particles had more room to move, these clusters of particles decayed into the stable nucleuses of helium and hydrogen.



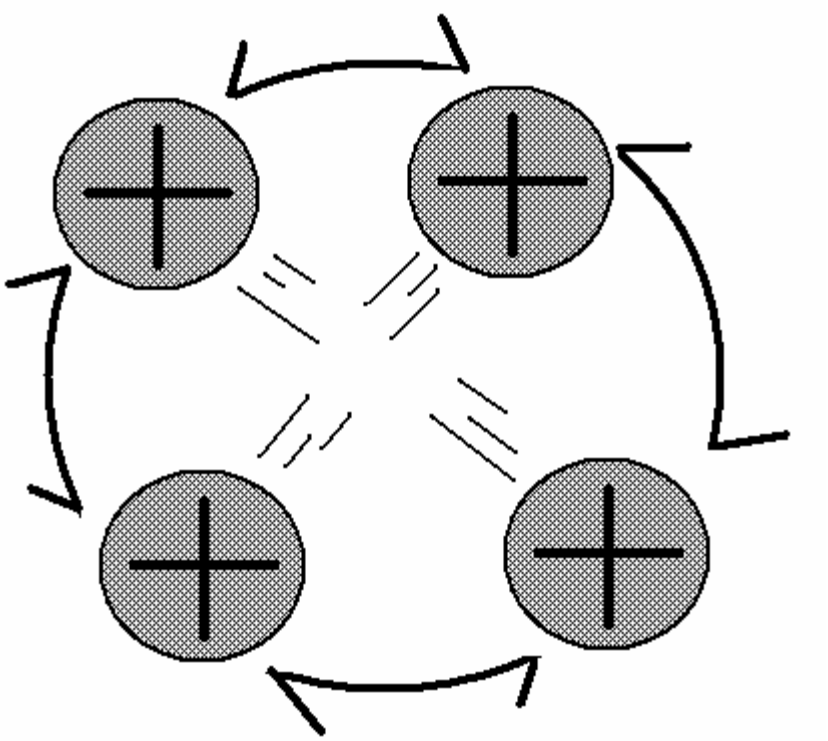
A: Infinity
B: Expanding universe
C: All matter
D: Just moments after the Big Bang, newly created particles were in very close proximity
E: Particles decay into smaller, more stable particles

Stable nucleuses simply means that the particles that form it remain in a given configuration, for example, if four particles, two being neutrons and two being protons, were adjacent when the congestion of the Big Bang subsided, this stable configuration would survive as an atomic nucleus, ready to capture into orbit any freelancing electrons that happened to be whizzing by.



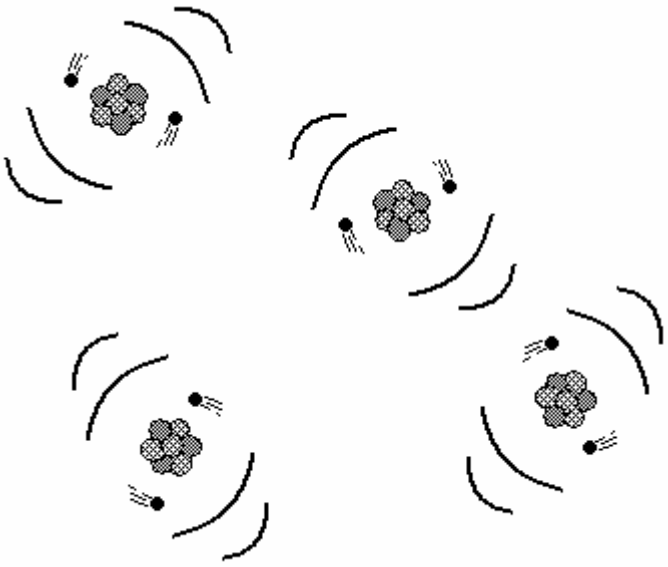
Stable nucleus

If instead four protons were adjacent when the congestion subsided, their combined magnetic repulsion (similar charges push away from each other like the same poles of a magnet do) would overcome the resistance of the nucleus shell (that they collectively create) to go their separate ways.



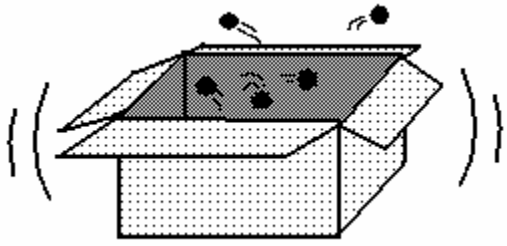
Unstable proton nucleus pushes apart because of their magnetic repulsion to each other

These particles that compose an atom do not themselves have a concept of “heat”, they simply exist, neither hot nor cold. What we perceive as heat is actually the vibrating of atoms against one another in an object.



Heat is nothing more than vibrating atoms

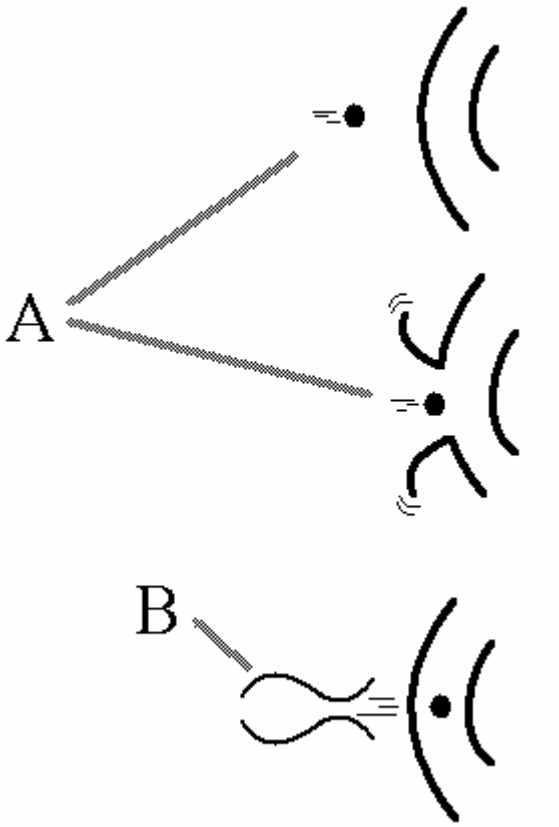
Imagine an open box partially filled with pebbles, the pebbles representing atoms. If the pebbles are still, this simulates cold. If you shake the box, the pebbles will bounce around against each other, and this is the same effect as the atoms in an object bouncing against each other. This is heat (not to imply that shaking an object will add heat to it, but just to describe how the particles move when they are heated).



Shake the box even more vigorously and the pebbles will also bang against each other more vigorously. This is extreme heat. Shake the box until it can no longer contain the pebbles and they spill out of the top. This simulates melting or sublimation.

With all these atoms banging around, sometimes an atom's electron will be knocked into a lower atomic shell, squeezing a photon

wave out of the atom because of the pressure increase that the electron forces onto the higher-pressure shell as it passes through.

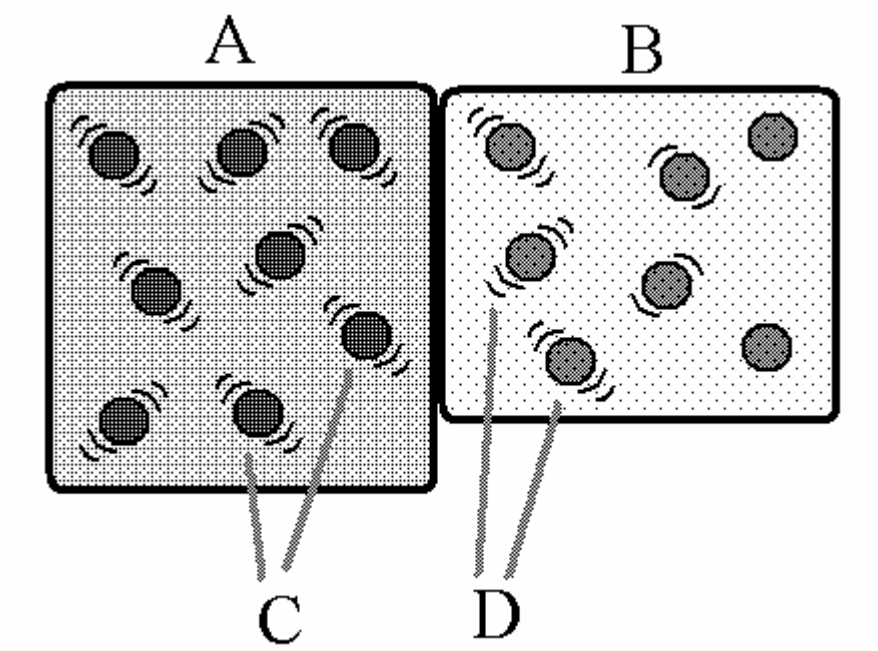


A: Electron passes through inner atomic shell…
B: …producing a photon

In this way, some of the energy of the colliding atoms is transformed into creating a photon (like the splash column that results from dropping a big rock in water) and if this photon can escape the object without being reabsorbed by another atom, the object will be a tiny fraction cooler overall. This is one of the ways by which an object cools, radiating photons; meaning that the average electron orbit size for all of the object's atoms overall, has been reduced. The object's atoms now require slightly less room than before, thereby reducing the intensity of the atoms' vibrations against each other.

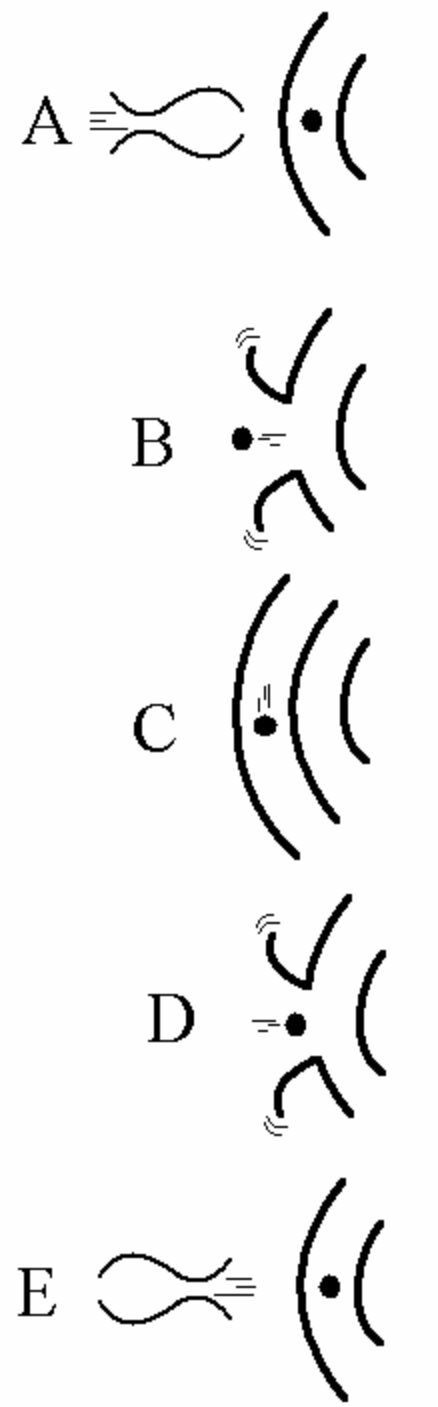
Another way an object cools is by direct contact with any other cooler object or substance. The hotter object's atoms will collide with

the atoms of the other object or substance and transfer some of its heat (vibrations) energy to it.



A: Hot object
B: Cold object
C: Hotter atoms transfer vibrations (heat) to…
D: …colder object's atoms

To explain heat radiation, you need to understand that at all times atoms are absorbing and releasing photons of light. The mechanism for this is the change in size of the orbits of the electrons around the atom's nucleus. When an atom absorbs a photon, one of its electrons increases its orbital radius around the nucleus by breaking through its outer shell into the next greater orbit, in order to contain the energy from the photon.



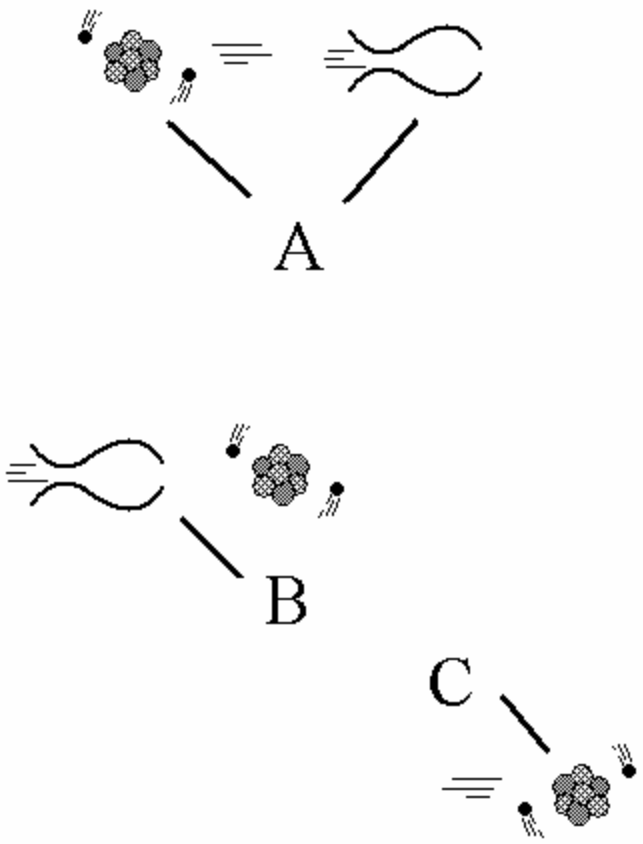
A: Photon approaches outer shells of atom
B: Photon is absorbed by forcing an electron into higher orbit
C: Electron is unstable in higher orbit
D: Eventually electron falls back through to lower shell…
E: …producing a photon

When an atom releases a photon, the electron will fall back through to its original shell, re-releasing the photon as it passes through the shell wall; the color of the resultant photon will have a wave frequency that is representative of the energy that the electron lost by falling into a lower orbit. It is by measuring this wave frequency that we can identify the type of source atom(s) for the different spectra of light that may emanate from any given object, such as light from the sun.

Atoms are constantly capturing and shooting photons around. If you wanted to add heat to something, you would either shoot photons at it (from a light source) so that the number of photons going into the object would outnumber the photons coming out of it, or touch it against something hotter (placing it in hot water). This raises the intensity of the atoms' vibrations against one another due to the increase in average electron orbit size for all the atoms of the object. A better way to think of this process is if every atom was a little bell and when they bang around they make little "noises" (photons). The warmer the object, the more intense the banging and the more photon noise you can notice.

If you wanted to remove heat instead, you would reduce the number of photons going into the object (e.g., the object is encased in ice) so that more photons escape the object than it absorbs and eventually the atoms will stop ringing photons. If no photons are added to an object, it will eventually release all of its heat energy in the form of photons, and through conduction of its heat energy to its environment, until it reaches "Absolute Zero" temperature. Absolute zero is the atomic state in which all the electrons are in their lowest orbits, no photons are being emitted, and the atoms are not vibrating against one another.

When an atom releases a photon, that atom is pushed in the opposite direction of the photon.



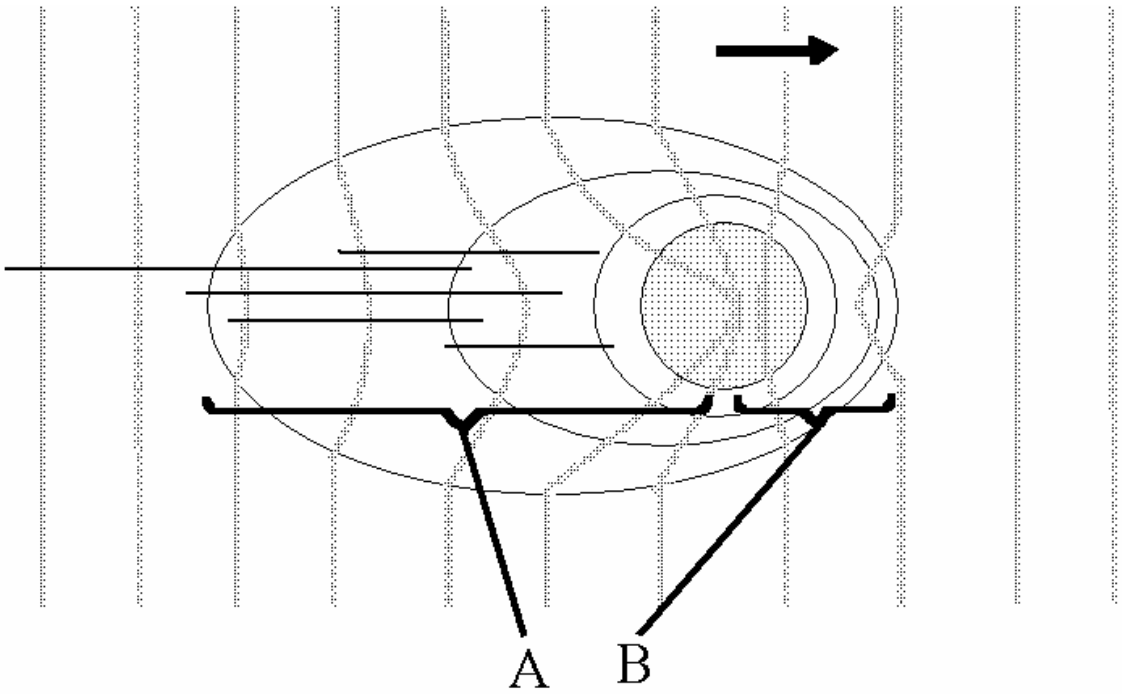
A: Atom gains momentum opposite the direction of the photon it produced,…
B: …whereas a photon being absorbed by an atom will…
C: …add momentum to that atom

This has a zero net effect on a larger object as a whole since all its atoms radiate photons collectively in all directions equally; however, a recipient object might only receive these photons on one side and it will gain momentum, however slight, from those photons.

MAGNETISM

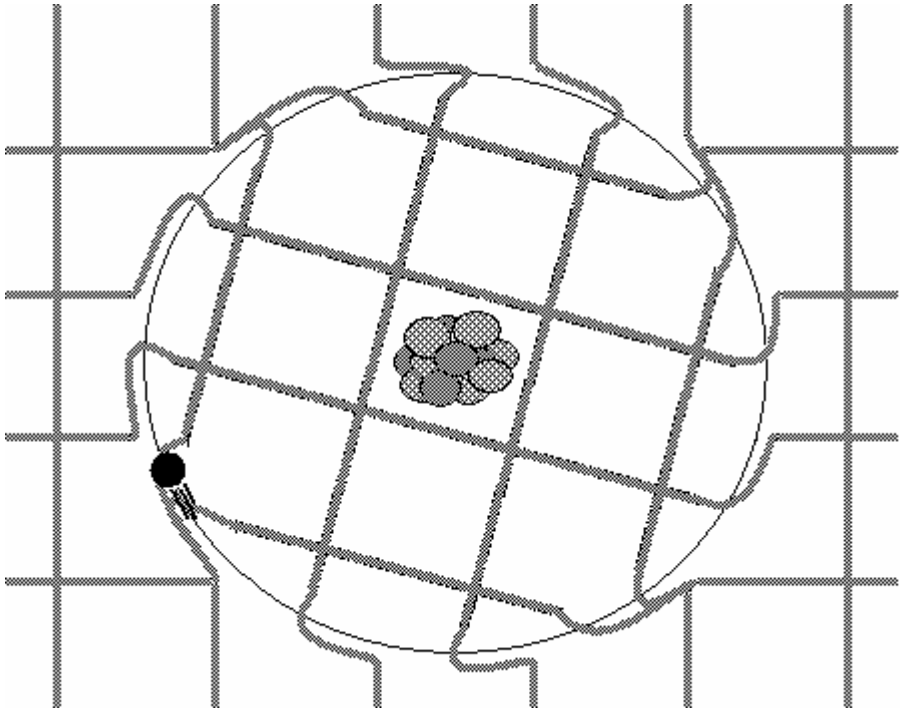
Some atoms can be magnetic. When electrons spin around the nucleus (or any particles moving through bether for that matter, but for our example we're going to focus on the electron), they cause a "drag" on the bether that they pass through. This is not to say that they experience friction, but rather the temporary displacement of the bether that their presence causes is not equally shaped in front and behind the

path of the electron (from a point of reference where the electron is moving; we'll get to that in more detail later). This causes a little bit of bether to stretch with the electron before more slowly returning to its original position.



Particle speeding through bether
The same amount of bether is displaced in front as it is behind, however,…
A: …bether behind the particle expands slower than the rate it was originally stretched…
B: …in front of the particle, hence bether is "dragged" somewhat behind the particle

The net energy used to displace the bether in front of the electron is perfectly balanced with the returned energy behind it so the electron does not lose any energy; however, because of the extremely small radius of atoms, the bether is constantly being pulled and stretched around the atom in the direction of the electrons' rotation.



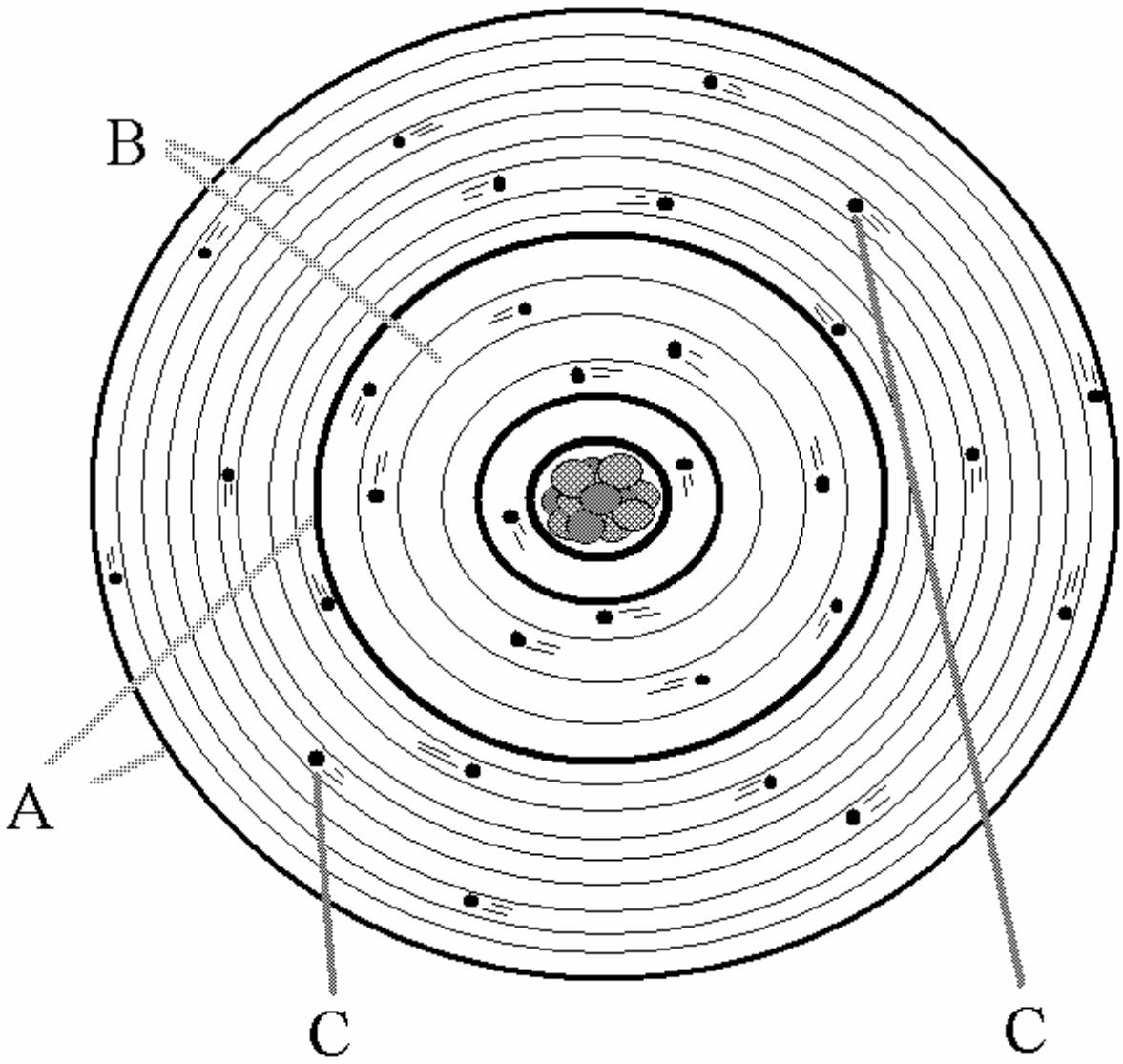
Electron “drag” causes the bether within its circumference to be somewhat twisted

You may be wondering what keeps these electrons moving in and between shells. Bether is constantly in a fluctuating state, in regards to its ambient pressure. At the resolution that we humans can physically sense the dynamics of bether (as in gravity, or light waves), it feels pretty consistent, but at the atomic level, there is a constant bombardment of alternating waves of high and low pressure bether (just like a buoy bobs around on a ceaseless ocean). There are magnetic fields (regions of twisted bether), as well, that the electrons are perpetually compelled to react to, keeping them actively seeking the best balancing point within their current shell.

It may seem that this dragging bether along with an electron might slow it down but everything is relative, meaning that if you were capable of rotating your point of observation to match that of the orbiting unpaired electrons around an atom (as absurd as that notion is), that atom would not be magnetic, relative to you, and the electron would also no longer be dragging any bether, relative to you. So, what may seem

like friction from one perspective, is frictionless from another. More on "frame of reference" is coming up.

Now for simpler atoms, the electrons will fill each shell's orbitals (an orbital is kind of like a subshell within a shell) in pairs, and each half of a pair opposes and cancels the effect of the other half's drag. Hence, the atom balances out to having no charge (neutral).

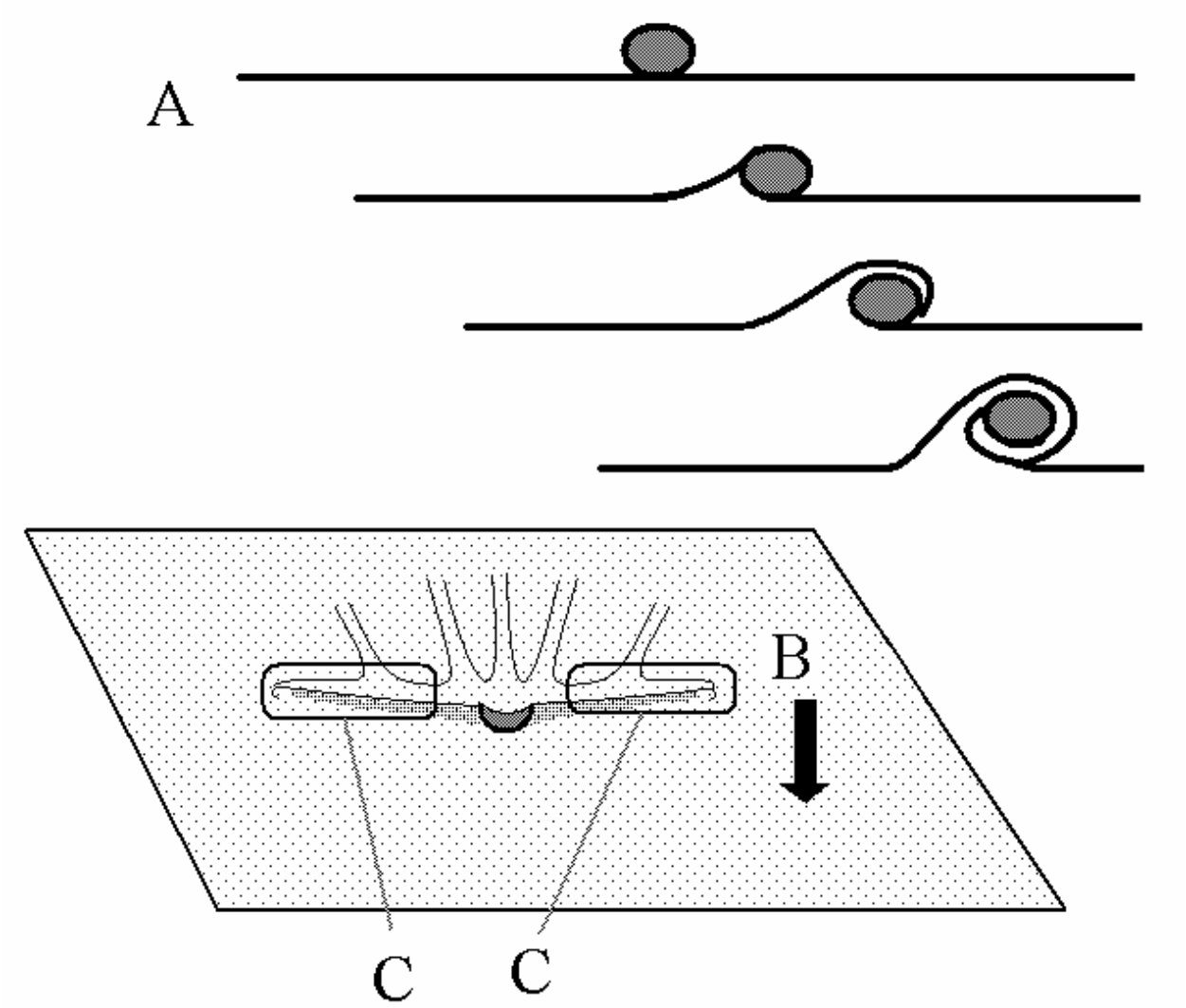


A: Shell
B: Orbital
C: Each orbital has a maximum of 2 electrons that orbit in opposite directions so as to counteract each other's bether drag

It should be noted that orbitals are not necessarily spherical but that some orbitals are discrete regions within a shell where an electron may be found. For our purposes, it will suffice to simplify their structure to spheres for clarity.

In the heavier elements however, electrons will not always fill in the shell's orbitals in pairs, and instead some orbitals will have just one electron. These solitary electrons are responsible for shifting the atom's balance from a non-charge state to a magnetic charge state since their bether-drag is not being counteracted by an opposing electron in their same orbital. The bether is forever chasing these solo electrons in the attempt to equalize the imbalance of bether pressure caused by the electron's drag. The net result of this chase is that a magnet is formed from the perpetually twisted bether in the atom. The more unpaired electrons you have that are orbiting in a common direction, generally the farther the bether will be twisted around the atom and hence the greater the magnetic charge.

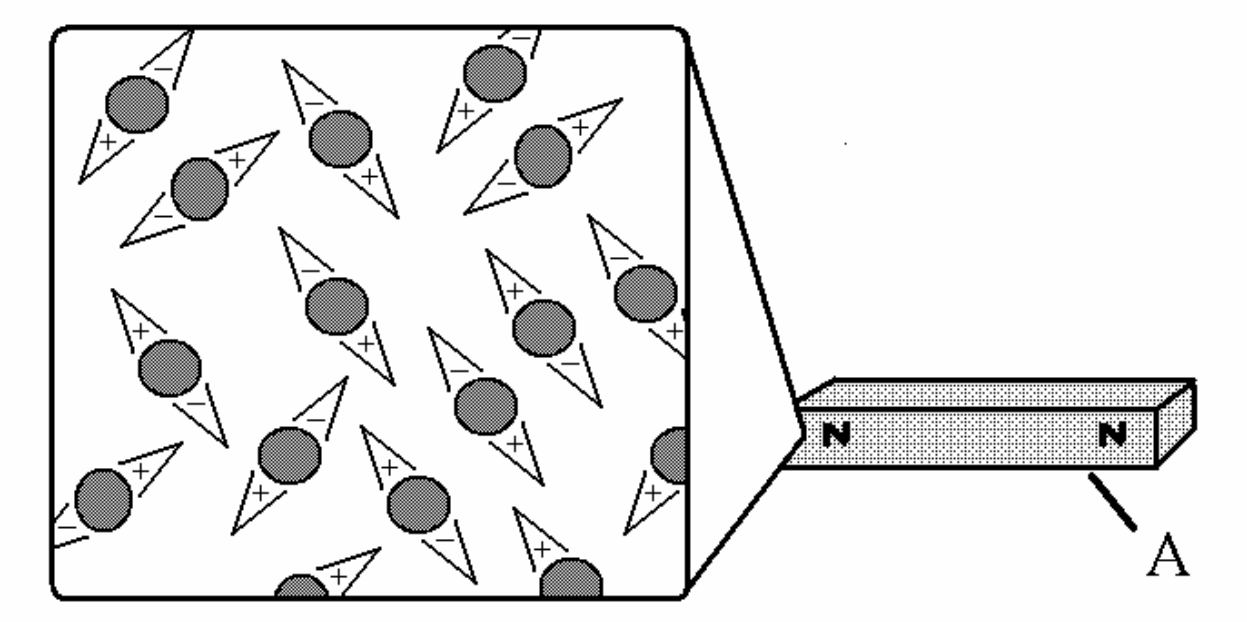
An analogy would be to place a ball on our blanket (the ball representing the entire atom) and then rolling it to wrap itself up in the blanket, forming opposing twists in the blanket on each side of the ball. This isn't to say that the blanket keeps getting twisted indefinitely around the ball, but that eventually the blanket will not stretch any further and the ball will just spin inside the wrap of blanket.



A: Blanket wraps around the ball much like bether wraps around atoms with unpaired electrons
B: Ball rolls in this direction
C: Blanket wrapping the ball forms opposite twists on each side of it. This demonstrates how bether is twisted to form negative and positive charges, hence a magnet

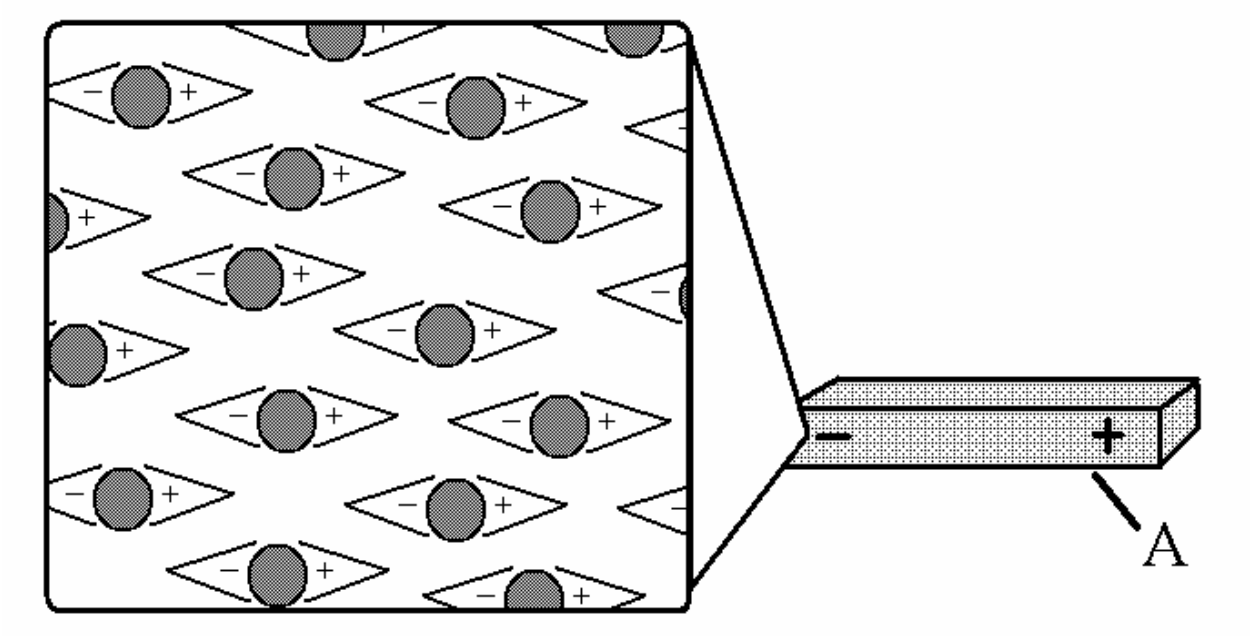
This example simulates how an electron's drag within an atom can wrap bether around the atom. Put gagillions of magnetic atoms together into an object with the majority of these atoms all aligned in the same direction, and you will now have a large "sum of parts" magnet as all these atoms combine their bether twisting efforts into one large twist that wraps the entire object.

The atoms of most metals have a large number of electrons orbiting about their nucleuses and this makes them natural candidates for being magnets; however, in solid metal, the atoms are mostly jammed all together haphazardly and are pointing in all directions, fighting each other for their individual preferred magnetic orientations.



A: Magnetically neutral object (e.g., an iron bar)
Disarrayed magnetic atoms cancel the magnetic effects of each other on a large scale

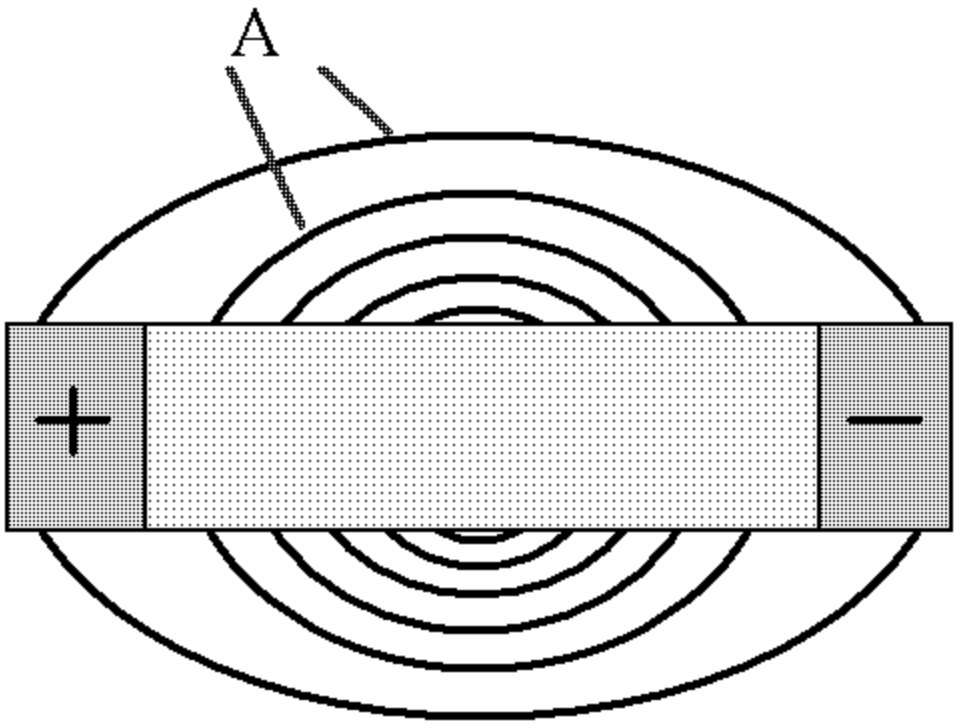
Some metals, however, were formed in high temperatures where the metal was molten for a long enough period of time that the magnetic pull of the earth aligned the atoms before the metal had a chance to cool and solidify. When these metallic pieces cooled, their atoms remained aligned, locked in position, and as a whole became a large powerful natural magnet with all the atoms pointing together in a common direction.



A: Magnetized object (e.g., a magnetic iron bar)
Symmetrically aligned magnetic atoms create a large magnetic object overall

Natural magnets will attract non-magnetized metals since the magnetic field is strong enough to force some of the non-magnetized metal's particles to break their position and rotate into proper orientation (negative facing positive), and this passes on a little bit of that magnetism from the magnet to the other metal.

Around anything magnetic exists invisible "force" lines

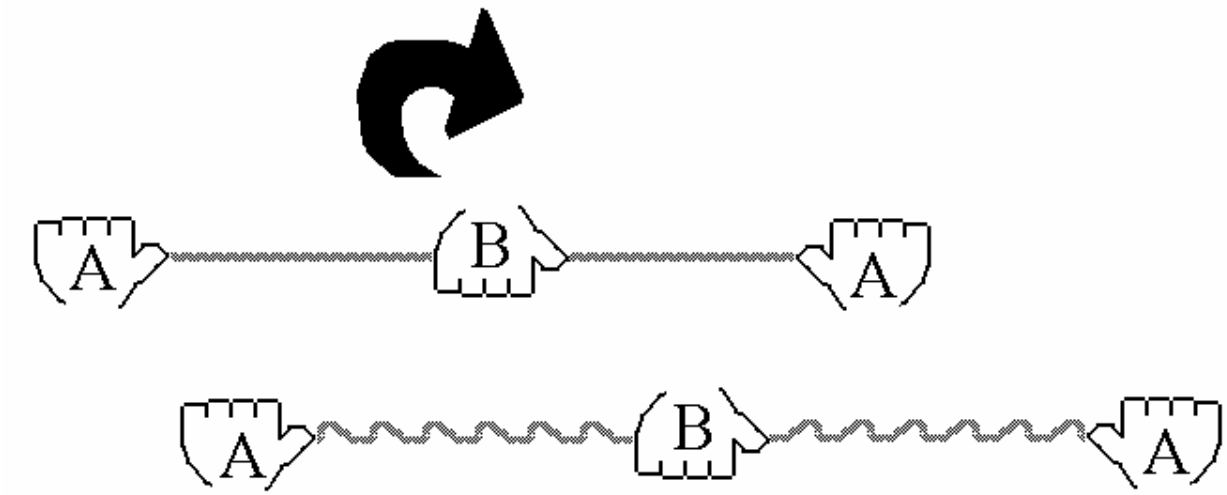


A: Force lines are formed around magnets

caused by the layers of wrapped bether that surround a magnet, like our previous blanket-wrapping analogy. What differentiates magnetized from non-magnetized metal is that a magnet simply has a significant number of its atoms aligned so that these atoms collectively twist bether around the object, all in the same direction; and it does this on such a scale that we can actually see it with our own eyes. This effect of magnetism can be observed by placing a magnet under a piece of paper and then spreading metal filings on the paper. The metal filings will be attracted to the regions of strongest magnetic pull, which are between the layers of overlapped bether that wrap the magnet.

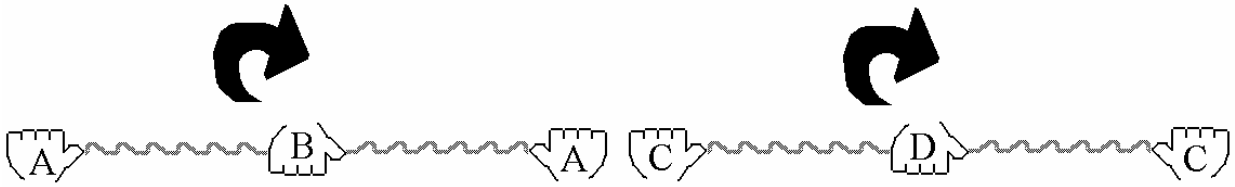
So how exactly does a magnet attract or repel other objects? Using our rope again, hold it stretched between your two hands, then have another person grab it in the middle and start twisting it by rolling their fist backwards so that the halves of the rope start forming opposite twists. They shouldn't twist so far as to create loops (particles) but just enough to add significant twisting strain to our rope. Their twisting action simulates the effect of unpaired electrons orbiting around an

atom, and the rope demonstrates the twisting that the bether around the atom endures because of the electrons' motion.



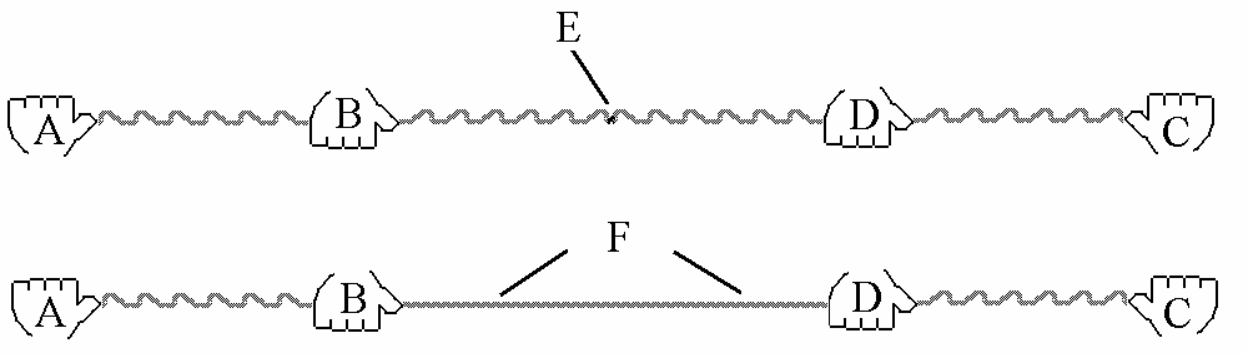
A: Person A holding the rope at both ends
B: Person B rotates hand to add twisting strain to rope

Now you have a magnet, or at least the simulated effect of forming a magnet from bether. Note that the rope does not shorten in length as it would if you continued to twist until a loop formed. Now get a couple more people to do exactly the same thing but with another rope, and now you have two "rope" magnets.



A: Person A holding the rope at both ends
B: Person B twisting rope
C: Person C holding an identical rope to person A's
D: Person D twisting rope identically to person B

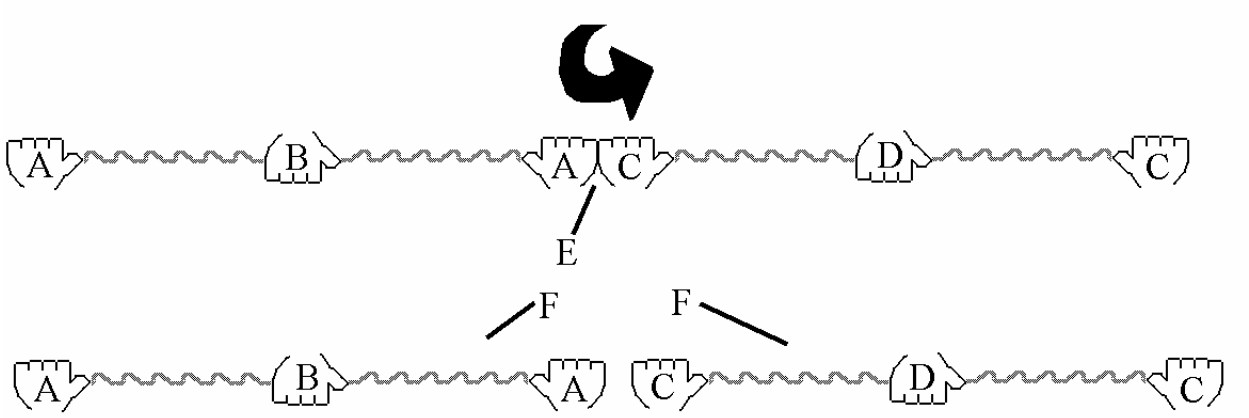
Take the end of the rope in your right hand and attach it to the end of the rope in the left hand of the person holding the ends of the other rope, and then both of you let go of the newly attached ends.



E: Attach ends of twisted ropes
F: Since they are opposite twists (charges, poles, etc.) they unwind themselves, relieving the twisting strain

The rope section between the middle pair of hands immediately unwinds itself, releasing all the twisting strain that was applied there. This is the same as what happens when you bring opposing ends of magnetically charged atoms together (remember, charges are simply twists of bether); they unwind each other's adjacent charge. The closer the magnets are together, the greater the relief to the twisted bether, and so the magnets are elastically pulled together with great force as the bether untwists—unlike gravity, which pinches things together from outside.

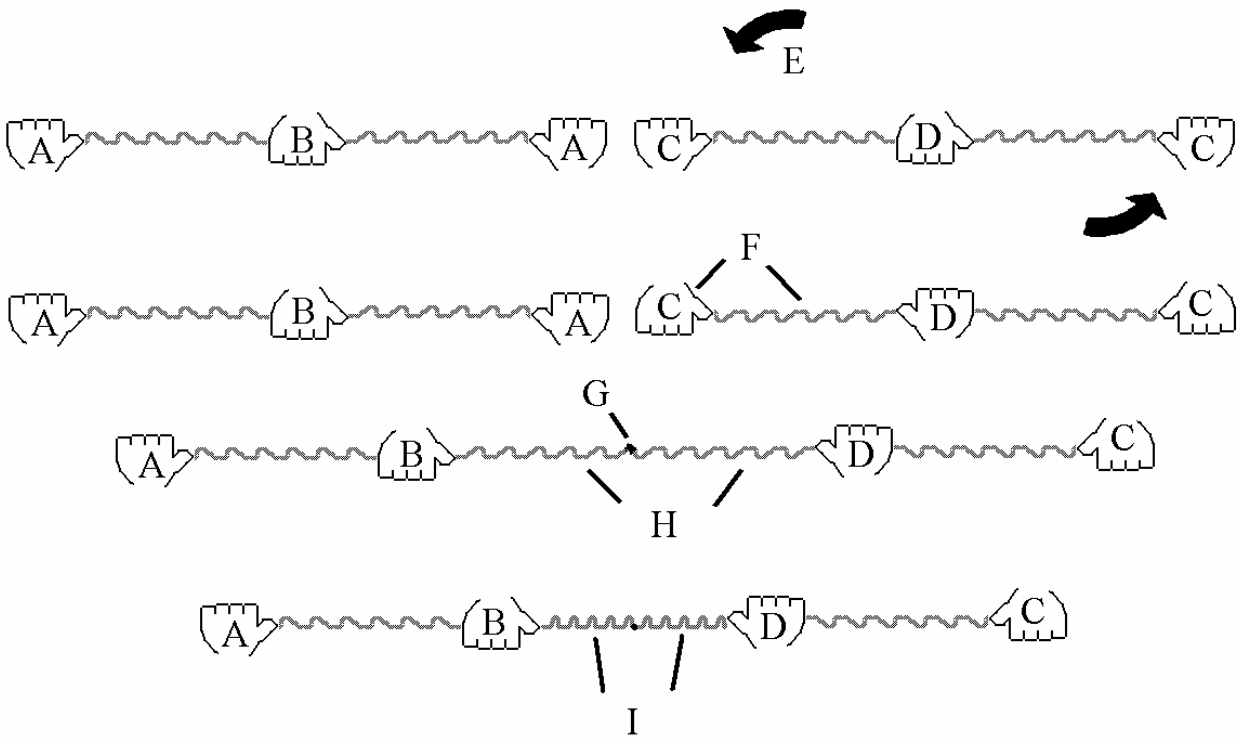
To continue where we left off, now the two attached ropes as a whole act like a single larger magnet due to the fact that the two hands that added the twisting to each individual rope now combine in their twisting efforts. To parallel this to our magnetic atoms, bringing the oppositely charged ends of these atoms together will combine the bether twisting effects of the unpaired electrons of both atoms, essentially creating a larger unified magnetic field. Unlike our rope, however, it is impossible with bether to separate the attached ends to end up with a single charge (a monopole) on each side because once the magnetic charges (the ropes) are separated again, they each reform into individual bipolar magnets since there no longer is a proximal opposing charge to counter the twisted bether (magnetic field) that forms on both sides of a magnetic atom. So to emulate this in our rope example, return the hands that were removed and as the ropes are separated, re-twist them to re-form the original charges.



E: Re-twist the rope, then…
F: …separate the ends. This simulates the effects on bether from pulling magnets apart

This simulates the resistance that you feel when pulling real magnets apart, which is the bether resisting the re-twisting motion.

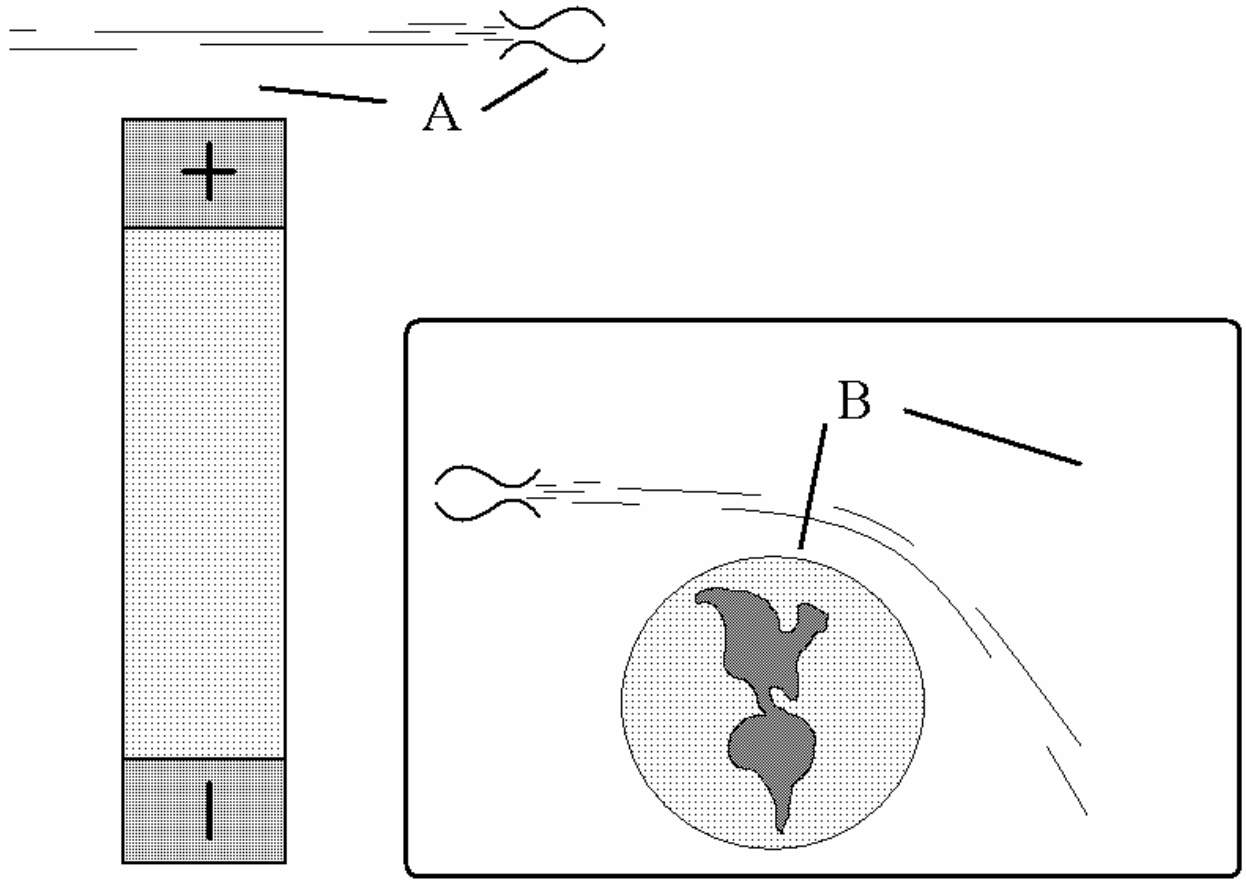
The exact opposite happens should you bring similar magnetic poles together. The closer you bring them, the more the bether has to contain the same number of twists within a decreasing distance; these twists being the same direction, they can't unwind each other.



E: Person C rotates the entire length of the rope, such that the opposite hand is now adjacent to the end of Person A's rope
F: Hands and twists are now opposite
G: Attach the ends
H: Ropes can't unwind because twists are in same direction (same charges)
I: Sliding B and D's hands together along the rope will shorten the length of rope between them but not the number of twists. The closer the hands are together, the more the twisting strain increases on this section of rope, which resists the action of bringing the hands together. This simulates how bether resists being twisted. When two same-charged magnetic ends of atoms (or objects) are brought together, bether will try to push them apart to relieve the twisting strain being imposed by the charges

Ultimately, with enough strength, the magnets could be forced into direct contact with each other and this would provide the greatest amount of bether twisting resistance, better known as magnetic repulsion. Bether can provide powerful resistance to being so twisted, and the instant the magnets are released from their forced proximity, the twisted bether immediately acts like a spring, pushing the two magnets apart.

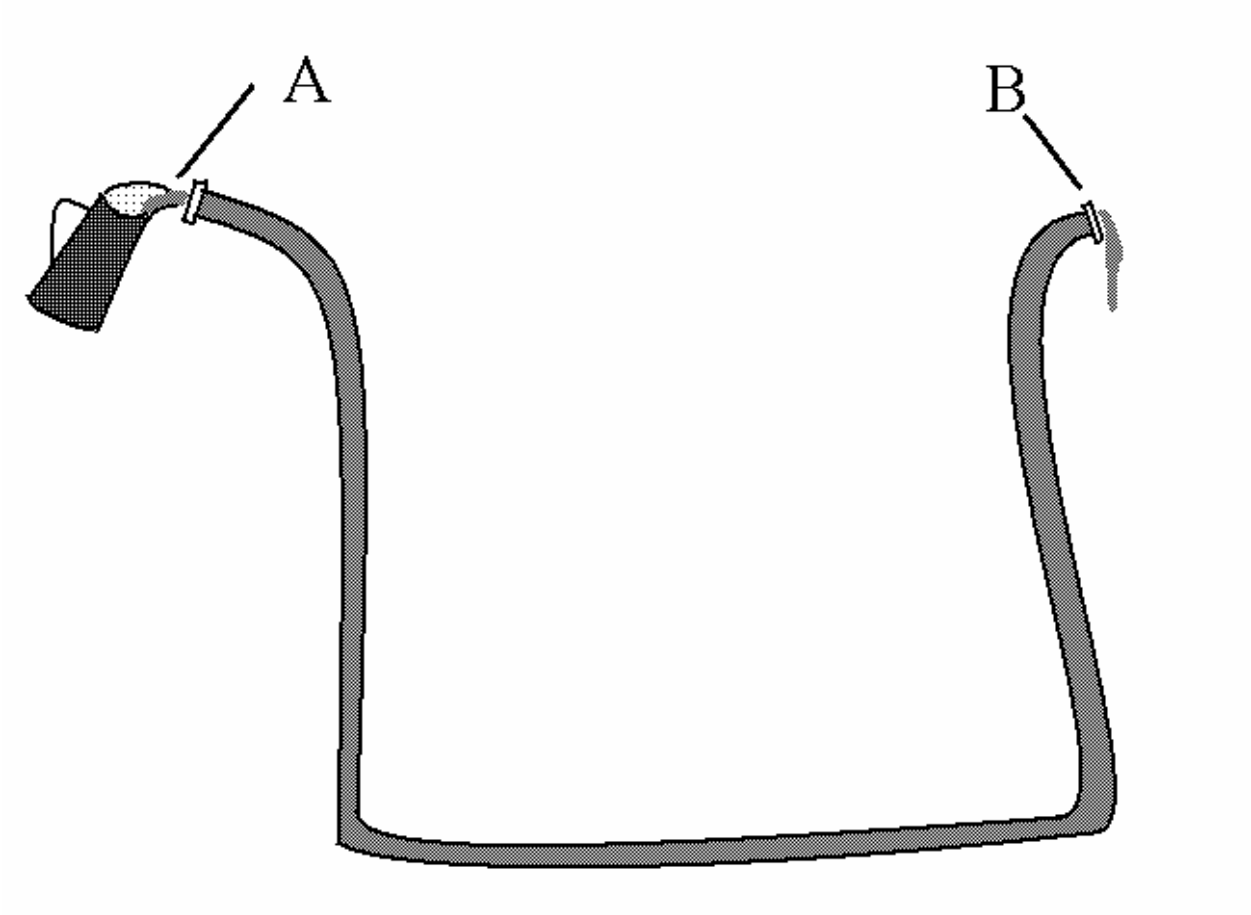
Photons are largely unaffected by magnetic fields because although the bether is twisted, it still occupies the same volume as if it weren't forming a magnetic field, and therefore it's still the same average pressure as untwisted bether. It's only when photons go through a gravitational field where the bether is actually stretched, like the gravity field that surrounds an object, that photons will pursue the path of least pressure towards the most stretched bether. This gives observers the impression that the photon was attracted by the object when in fact it was pinched toward the object by the higher pressure bether on the outer side of its path.



A: Photon unaffected by magnetic field since the average bether density in the magnetic field has not changed, despite it being twisted
B: Photon pushed towards object as it passes between the object and the less stretched bether on the outside of its path

ELECTRICITY

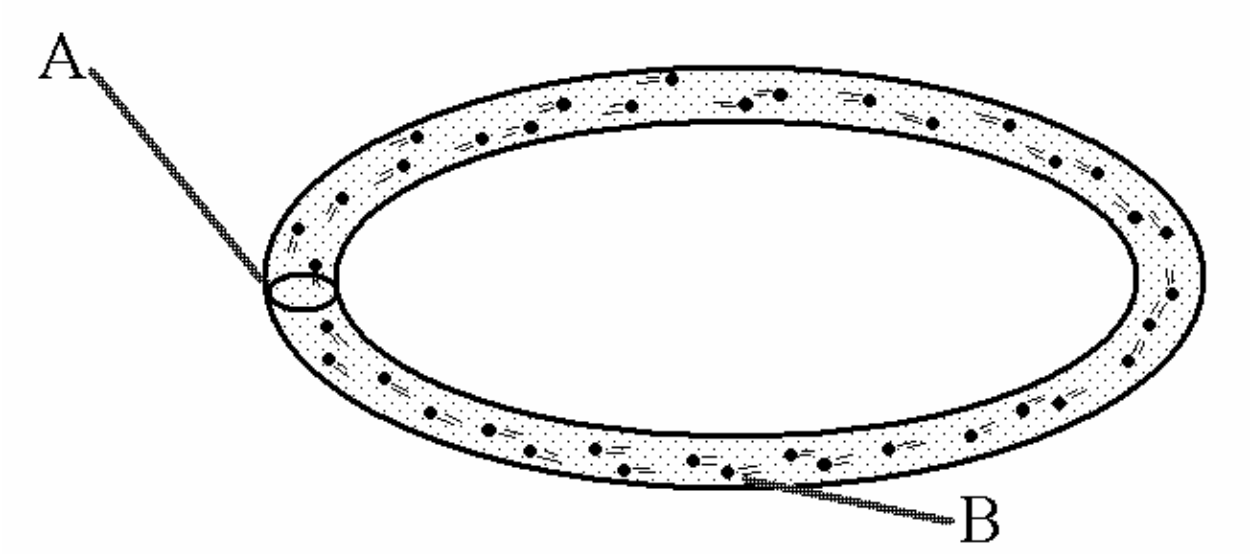
What is electricity? It's very simple really, flowing electrons. We already know that atoms have electrons orbiting around them, and metal atoms tend to have more electrons than most other types of atoms. This makes them ideal candidates for ready supply of flowing electrons, since they have so many available in the atoms' weaker outer shells. Now if you had a length of metal wire, you would have plenty of atoms down the length, conveniently filling our wire with their orbiting electrons. To make an analogy, imagine instead a hose that is already filled with water, the hose representing the wire and the water it contains representing all the electrons contained in the wire. If you were to add water to one end of the hose, immediately the water at the other end would start to flow out.



A: Adding water to a hose that is already full of water…
B: …will push water out the other end. This is similar to electrons pushing other electrons through a wire

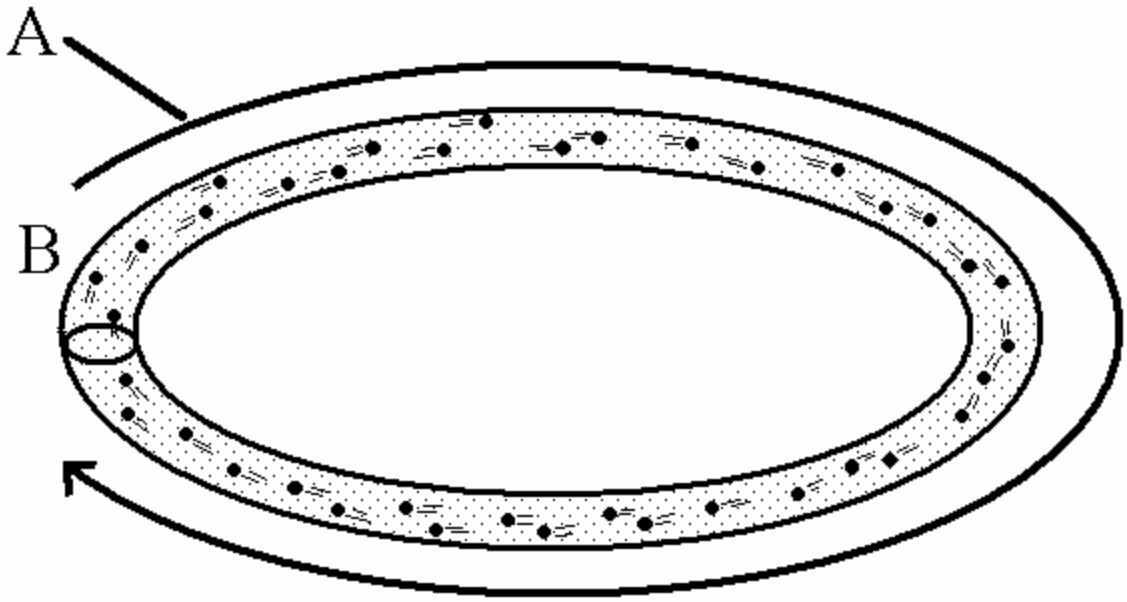
This isn't to say that the water travels the length of the hose instantly, but the pressure that was added to one end of the hose travels almost instantly (actually at nearly the speed of sound in water) to the other end, where the only reaction could be for the water already present at that end to flow out.

Likewise, with our wire, pushing electrons on one end will force the rest of the electrons to jump from atom to atom until they come out the other end. Unlike the water in our hose, however, electrons cannot fall out of a wire into thin air because the atoms that make up air have a hard time accepting more electrons. Therefore a loop must be formed with the wire so the end electrons have somewhere to go, and that is back into the other end of the wire.



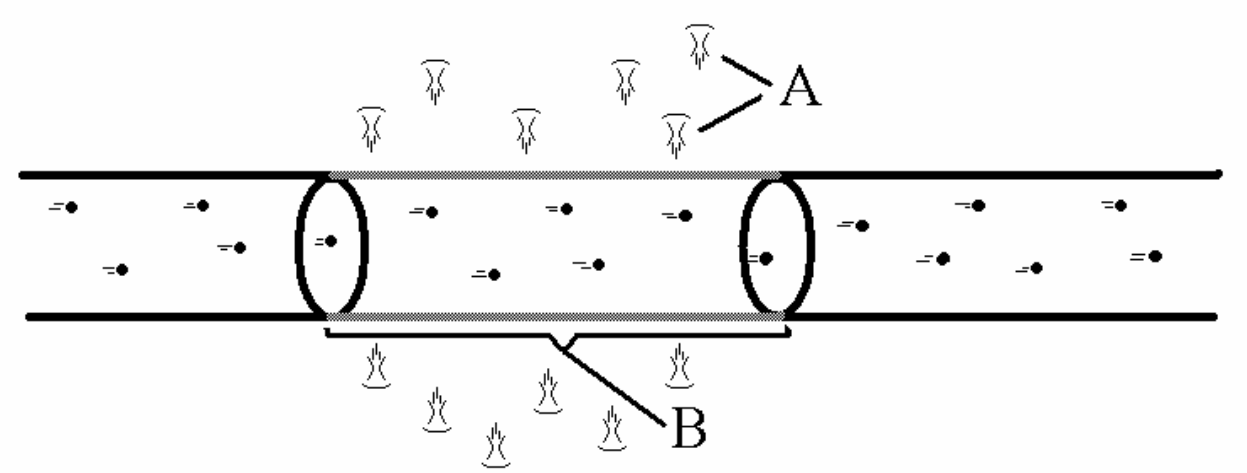
A: Attach ends of wire so the electrons have somewhere to go
B: Pushing on some of the electrons will transfer that pressure along all the electrons in the wire, resulting in the electrons “flowing” through the wire

By pushing electrons through a wire, you create pressure on the electrons and this pressure is called “voltage”. The electrons themselves travel very slowly but the pressure that they are put under travels like a wave very quickly down the entire length of the wire at almost the speed of light.



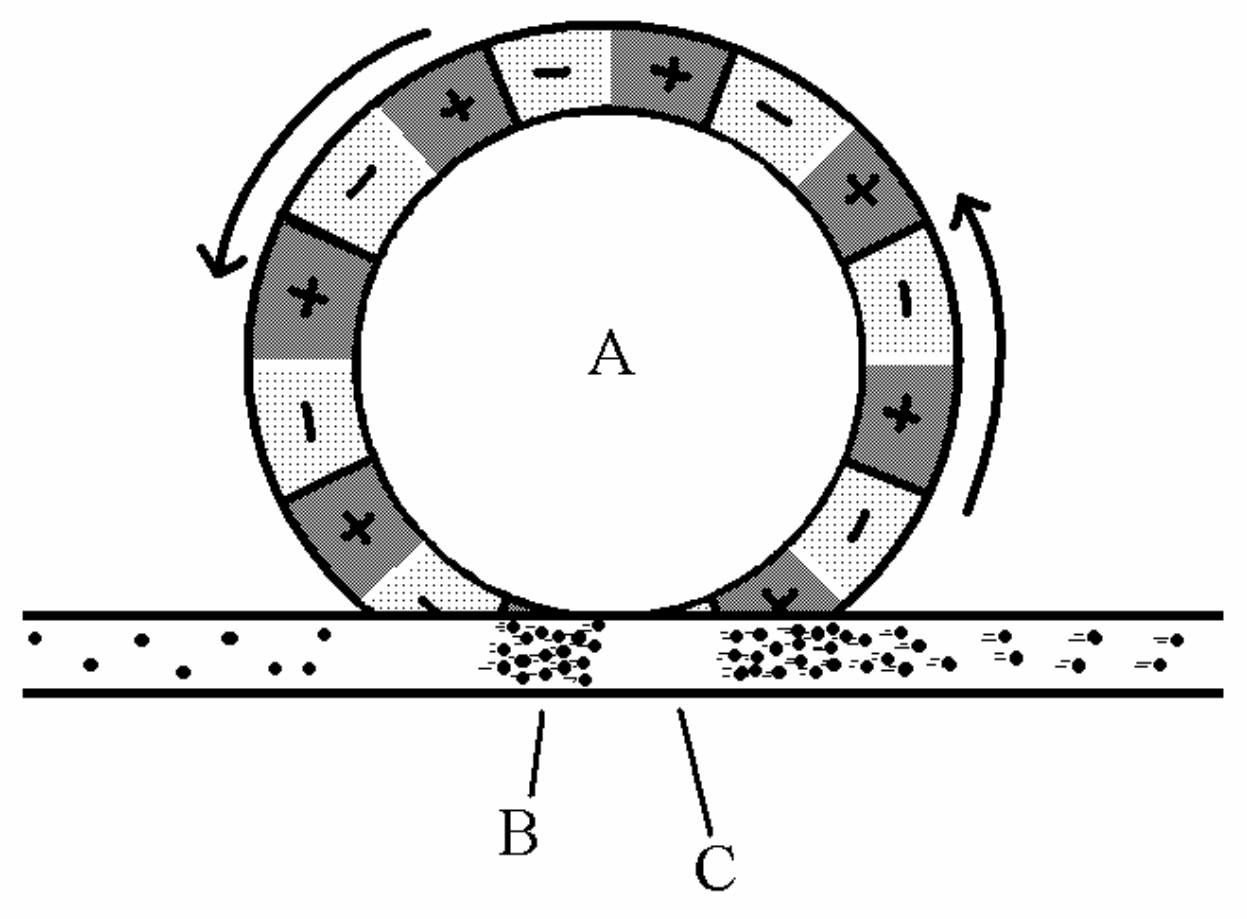
A: Electron pressure (voltage) wavefront travels nearly at speed of light so that almost instantly, all electrons start moving together
B: Electrons themselves move very slowly

This is similar to slowly pulling on an outstretched chain; pulling on the first link will quickly result in the movement of the last link no matter how many links away it may be. Metal wire generally provides very little resistance to the flow of electrons, but there are many other elements that provide a great deal of resistance. When electrons are forced through these resistant elements, the elements tend to get very hot because of the release of photons that results from all the electrons being squeezed through. Some elements get so hot that they produce a bright light, which is one of the most basic uses of electricity.



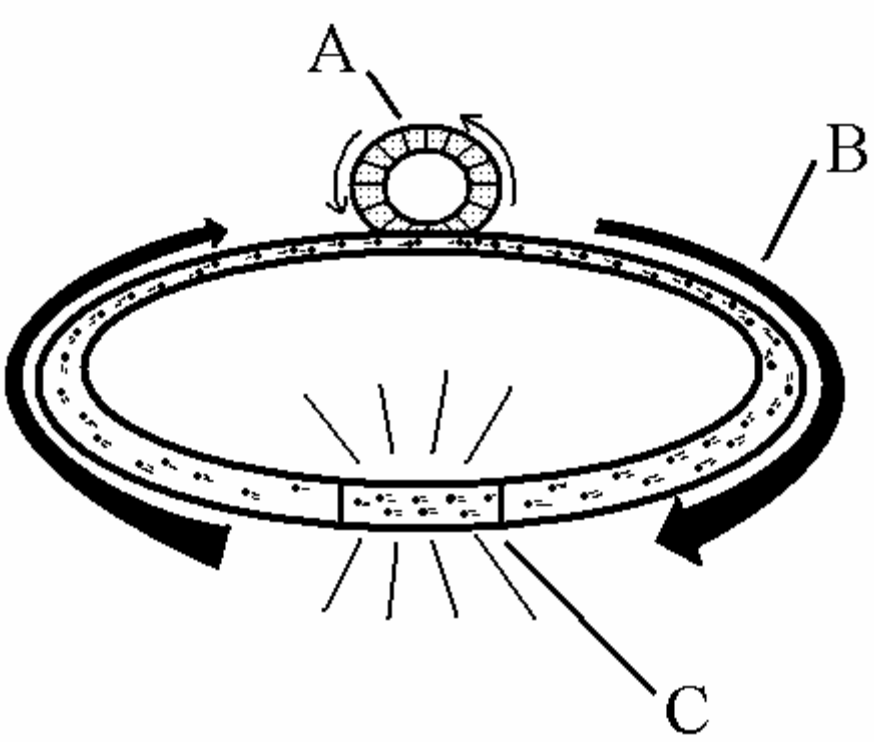
Certain elements (like tungsten) provide great atomic resistance to electron flow and they release light photons when electrons are forced through them
A: Photons
B: Tungsten

How do we generate this pressure that causes electrons to flow? By passing magnet fields over a wire in series (- + - + - +, etc.), we can use the drag of the magnetic fields to attract and move the electrons in a wire so that they force the movement of all the rest of the electrons down the length of the wire.



A: Wheel of magnets
B: Electrons are attracted to positive (+) ends of the magnets,…
C: …and repelled by negative (-) ends. By rotating the magnet wheel, one can move the electrons through the wire, much like a paddle wheel moves water

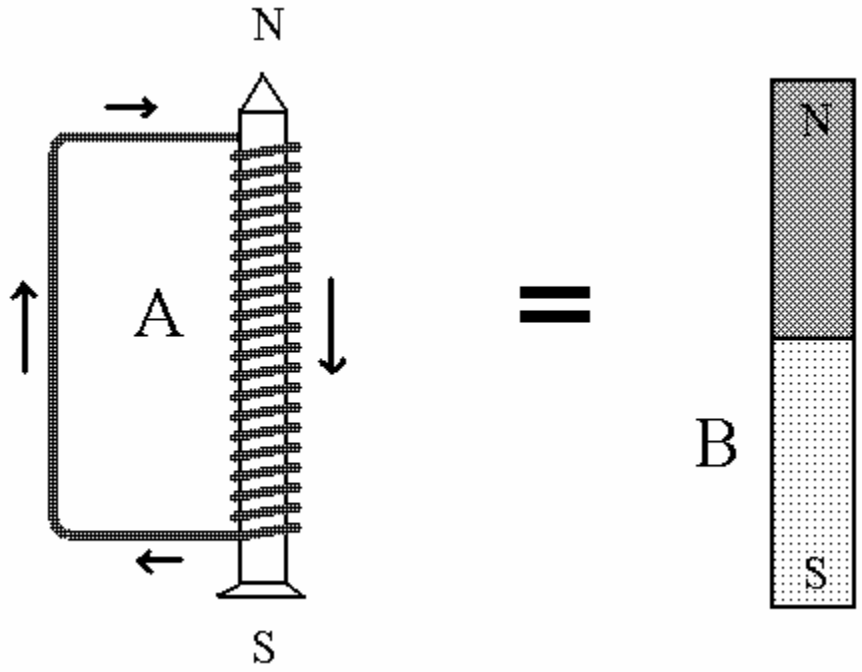
By assembling a circle of wire with a small section of high-resistance wire and a rotating disc of alternating polarity magnets that pass over another section of the wire, you can effectively create an electrical system that transforms the rotational energy of the disc into visible light energy.



A: By turning magnet wheel…
B: …electrons are magnetically pushed through the wire…
C: …and they are forced through a high-resistance element, producing light

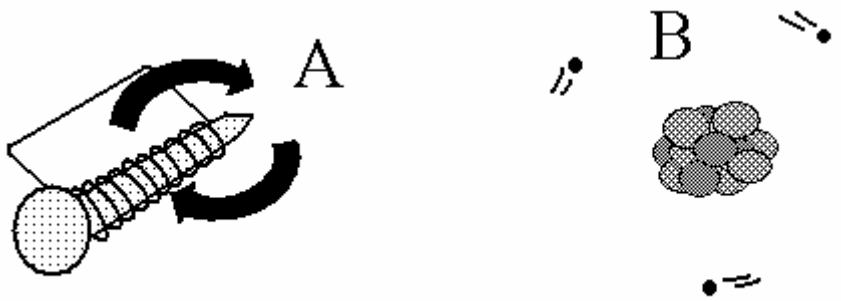
ELECTROMAGNETISM

Our next step is to understand electromagnetism. Electromagnets are created when electricity is conducted through a coil of wire.



A: Electrons flowing in a wire coil will create an electro-magnet…
B: …similar to a natural magnet

What you are creating with the coil is the same effect as with electrons orbiting certain types of atoms, making those atoms magnetic. Naturally occurring magnetic objects (like a magnetic iron bar) have a majority of their atoms aligned to give the collective sum of parts effect that combines the magnetic properties of individual atoms, resulting in a larger magnet overall. Electromagnets have electrons going through the wire in gigantic circles (relative to the size of an electron's normal orbit), creating an effect like that of a gigantic magnetic atom with its electrons orbiting in huge loops. This twists bether around the electromagnet and creates a large magnet much like a natural magnet.

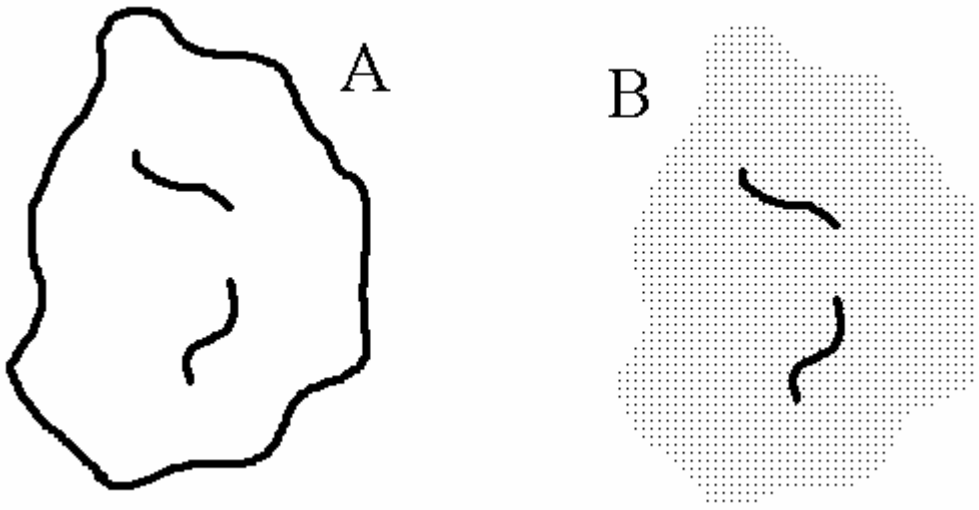


A: Electrons travel through the coil in what can be described as giant orbits around the core…
B: …much in the way unpaired electrons in an atom can make the atom magnetic

If you reverse the direction of the electrons, the bether will be forced to twist in the opposite direction around the coil, reversing the polarity of the electromagnet. Once the electron flow is stopped, the electromagnet no longer has electrons flowing in circles and the coil ceases to be a magnet.

DENSITY

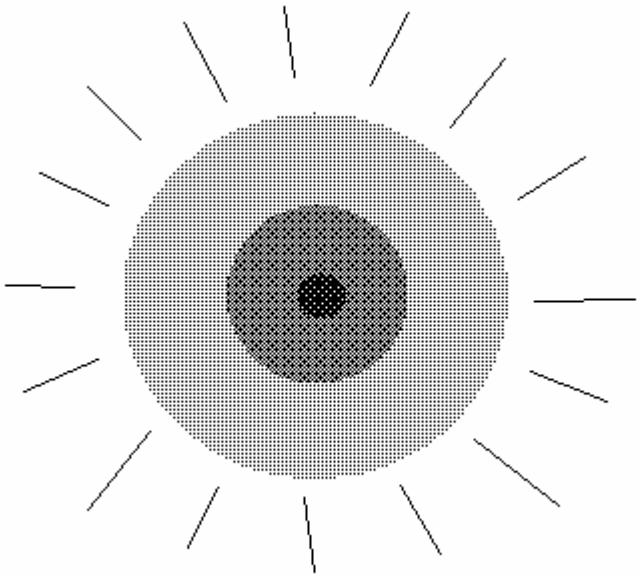
So here we have a universe with a pile of particles in it that are all gravitationally "repulsed" into each other, with the observation of gravity and magnetism being strong empirical evidence for the existence of bether. Over time, huge collections of particles form anything from tiny rocks to giant stars. If you were to look closely at a fist-sized rock, you might think that it was perfectly solid. Looking closer though with the help of technology, you could see that the atoms of that rock are relatively very far apart, and that it is mostly empty space.



A: We see the rock like this…
B: …but atomically, it is more like this

The shells that surround an atom can keep its neighboring particles apart at relatively great distances, and any heat (vibrating) that the atoms exhibit will further push them apart. A better analogy for the rock would be to describe it like a sponge (albeit, a very hard sponge). Though we lack the physical strength to squeeze the rock into a smaller size, it is possible for the same amount of rock material to be squeezed into a much smaller size, just like you can squeeze a sponge into a much smaller size. Imagine having the power to squeeze the rock so hard that you squeeze it down to the size of a fingernail, then to the diameter of a hair, and then even further! It's still the same amount of rock material, but now you have crushed all the atoms together to take up most of that empty space that used to be between the atoms. Amazingly, despite the new incredibly tiny size of the rock, it still has exactly the same weight/mass as it did when it was the size of a fist.

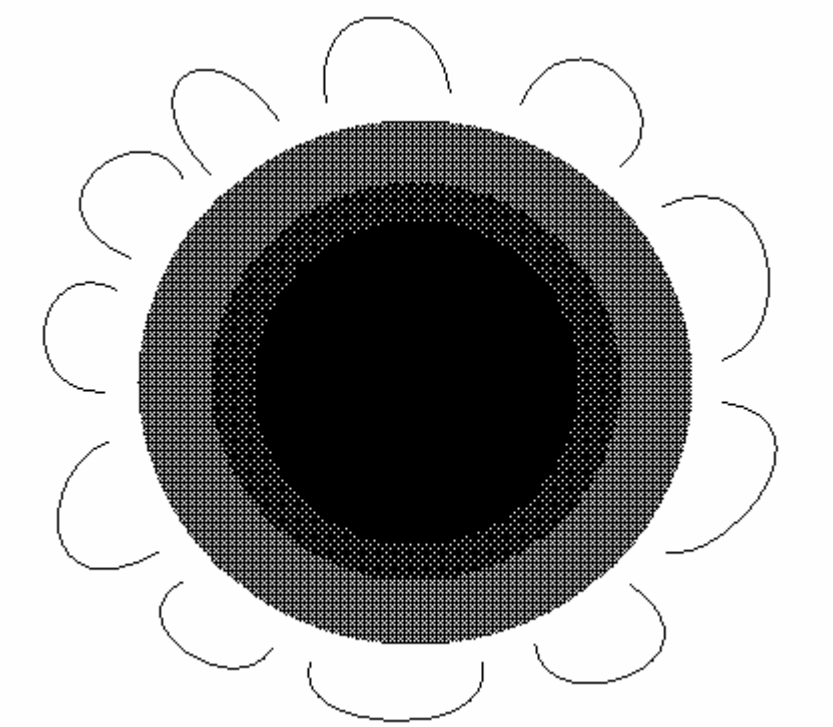
The point of the squished rock example is to explain that what may appear as a solid object is still mostly empty space. Even the Earth itself is very low density with plenty of open bether between all of its atoms. We have other objects in the universe that are much larger, like our sun or other stars, where there are so many particles rammed together that the gravitational pressure on the particles in the middle is so great that they become crushed together, just like our spongy rock example.



Particles at the core of large bodies (like the sun) are squeezed very close together due to the intense gravitational pressure from all the particles

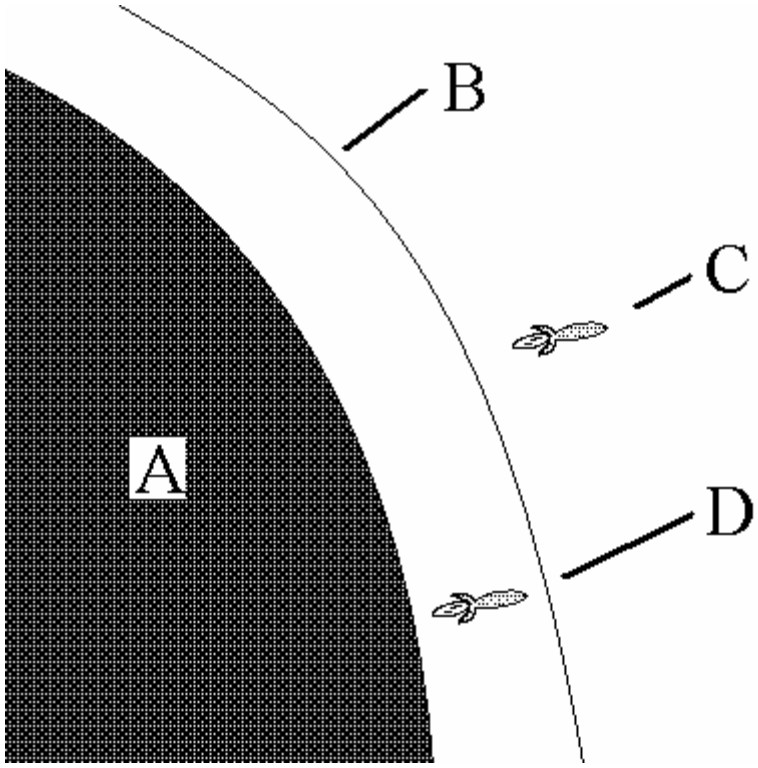
BLACK HOLES

If enough particles get together to form very large objects, much larger than our sun, the center of these giant objects becomes very densely packed and strange things begin to happen, ultimately forming a "Black Hole". A black hole is a very dense star and is the ultimate example of particles being tightly clustered together. The concept of a black hole is that enough particles cluster together into a very dense object to create a gravity well so strong that any light emitted from it actually bends sharply enough to come full circle back into the star; essentially no light can escape the star and the star appears black to outside observers.



A “black hole” has so many particles that the core is incredibly densely packed, and the intense gravity forces the light that leaves the surface to bend back into the star. For this reason, black holes cannot be seen

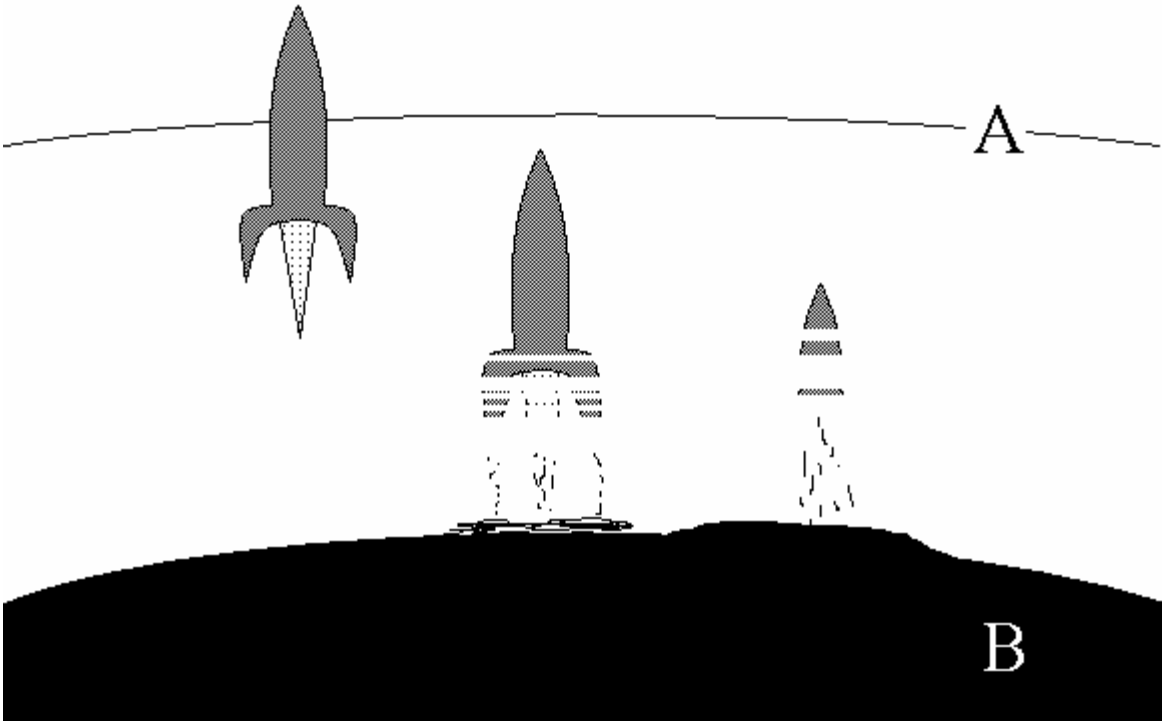
Black holes suck in bether, literally. Their masses have become so large that they create a region called a Schwarzschild radius, which is essentially a metaphysical sphere that closely surrounds the black hole. This is the point of no return for a black hole; if you are closer to the black hole than this radius, you cannot escape. This happens because below this altitude above a black hole, bether is flowing at the speed of light down to the surface of the black hole where it is accumulating in sheets and particles, adding to the mass of the black hole, and further strengthening the pull of its gravity. Imagine yourself running on an inclined belt where every step you take simply rolls the belt towards you without allowing you to move forward. This is the same effect of trying to get back out of the Schwarzschild radius; the bether is coming at you too fast (the speed of light) for you to be able to pull yourself out.



A: Black hole
B: Schwarzschild radius
C: Above the Schwarzschild radius, escape from a black hole is possible
D: Below it, no matter how fast one may try to accelerate, one cannot escape the black hole's grasp and will eventually be crushed to the surface

It is impossible to move at or faster than the speed of light (explained later) and since for you to remain at the Schwarzschild radius would mean that you would have to travel at the speed of light just to stay put, you will eventually lose ground and fall to your most certain demise. You most likely wouldn't even make it to the surface of the black hole before the monstrously exponentiating gravity ripped you apart atom by atom (called "spaghettification"). Lovely. Good thing black holes are hard to come by, at least in our immediate area of the universe, so don't worry about our planet getting sucked into one any time soon. Anything that does get sucked into a black hole, however, suffers "loss of information", which essentially means all the particles get crushed beyond recognition and configuration, everything down to

the protons, neutrons, and electrons, until finally you end up with super-particle material, which is pure compressed bether.



Anything entering a black hole will be ripped apart by the intense gravity long before it gets to the surface, suffering complete loss of information (order)
A: Schwarzschild radius
B: Black hole

CLOSING

The universe is a strange place; definitely not hospitable for us Earth-dependant humans. Up to this point you may have quickly incorporated some of the presented concepts because you were able to correlate them to real-world examples and experiences. Analogies are a powerful tool when attempting to betray the secrets of observable

phenomena, but our next section is another step beyond, to where there are few parallels.

Chapter 2 - Ubiquity

If you thought the last chapter was difficult, this chapter may prove much more seriously challenging. Some of the greatest minds that ever lived struggled to develop, accept, and fully understand the following material, so if you find yourself losing steam, feel no shame in skipping ahead. This chapter is here merely to provide non-fictional and yet nearly magical material with the sole intent of fostering your interest in some of the most bizarre aspects of our universe

TIME

Time. It may seem to be one of the simplest concepts we have. It is simply a measure of the rate of change, and our understanding of it is built into our psyche from countless past generations that relied upon time unfolding at a predictable and constant rate. This is where some of the most difficult knowledge in the universe lays hidden, prejudiced by our intuition. Nature takes that which we believe to be absolute and once again provides a fluidity to the apparently rigid: the fluidity of the rate of time. Much as visible light, radio, X-rays, microwaves, etc., are all different frequencies of the same phenomena (waves in bether), time itself has flavors too.

PERCEIVED TIME

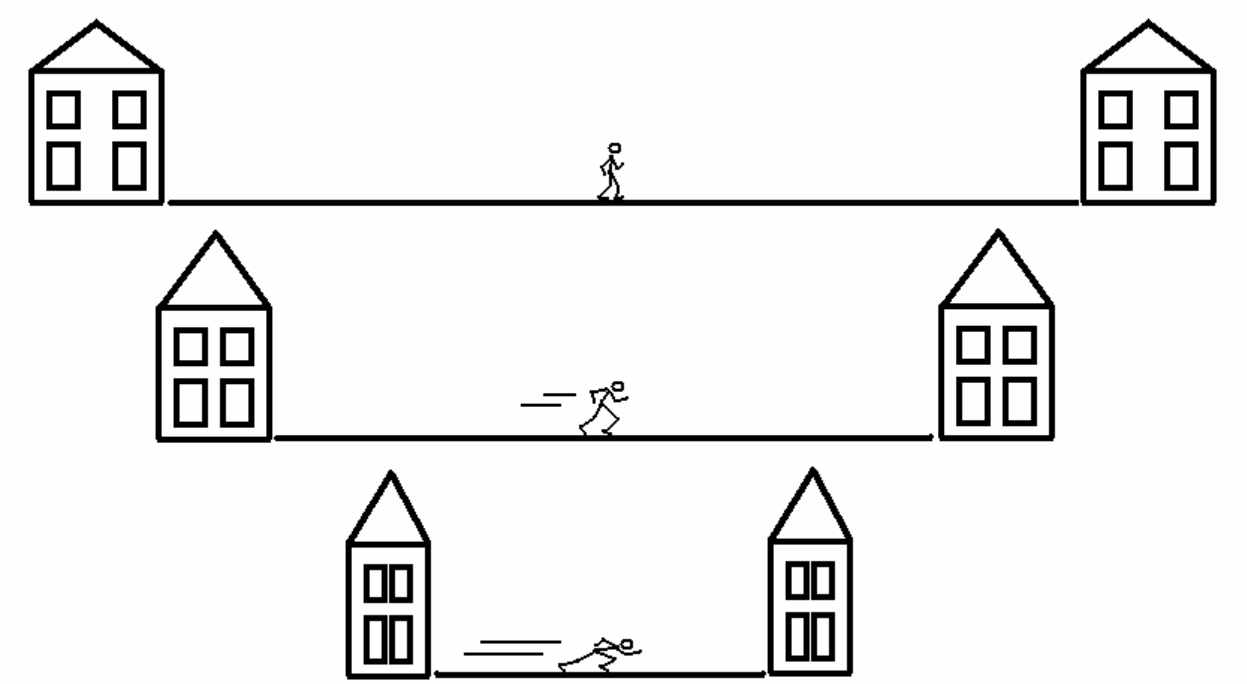
The rate of time can be approached from a couple angles, absolute time passage as observed by a clock, or from the observer's psychologically biased perception of time passage. Perceived time is the number of “instants” an observer will have per absolute unit time. We humans are probably limited to just a few instants per second because of the amount of time it takes to process environmental information in our large brains. Perceived time is most easily explained by our human perception of “time passes when you’re having fun” which attempts to

validate the apparent rapid transition of time during periods of enjoyment, contrasted to the stretching of time during periods of boredom. It seems that when we are positively stimulated, our awareness is distracted from paying attention to the time passing, and the result is that for a given number of perceived instants, more absolute time has passed. The actual rate of time itself is unaffected, but our awareness of time passing is greatly affected; thus, for your personal time flow, the rate of time varies depending on your mood. This is a very real alteration in time flow for an observer.

To take the analogy to a large contrast, imagine the time flow that a common housefly might perceive. Its perceived rate of time would be much slower than it is for a human, flies having a much simpler but faster nervous system overall due to their tiny size. Flies perceive many more instants than we do in a given absolute time frame, and so they perceive our world as if it were in slow motion compared to how we see it. They may only live a very short while compared to us humans, but to them it feels like a lifetime.

ABSOLUTE TIME

Now let's discuss absolute time; or is there such a thing? Imagine if you will, a fantastical universe where the faster you travel, the closer your destination becomes, not just because you are getting there faster, but that the distance between your start and end point is actually *shorter*.



The greater the relative velocity, the shorter the distances become

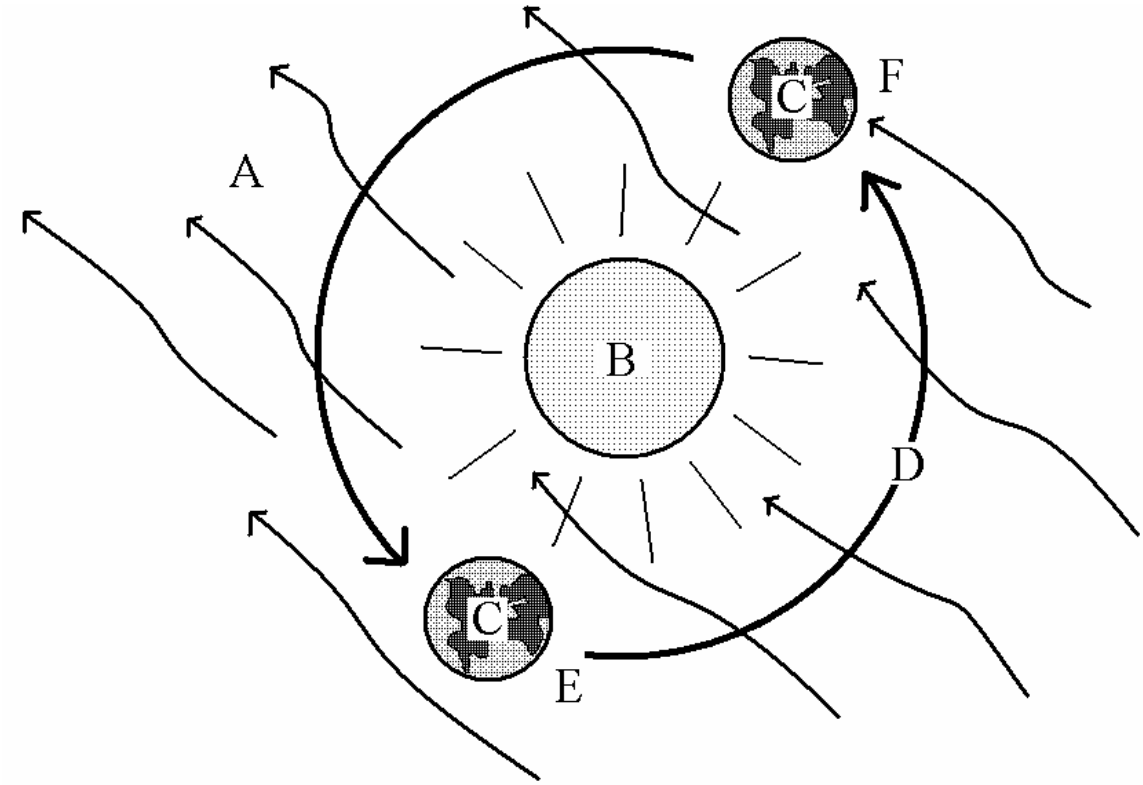
Makes for a pretty bizarre universe, doesn't it? Well, imagine no longer because this is how our universe actually works. Ouch! How ridiculous that notion is. How could this possibly be true? Oh, but it is.

For the most part, this effect goes unnoticed because of the relatively tiny velocities that we deal with in most of our lives. However, as you begin dealing with velocities that approach the speed of light, this effect becomes much more pronounced, with bizarre ramifications that are instinctually counter-intuitive and seem to provide an endless series of paradoxes. Our next section attempts to explain how time and distance are intertwined to produce this effect, but first we have to discuss more about the speed of light.

BETHER

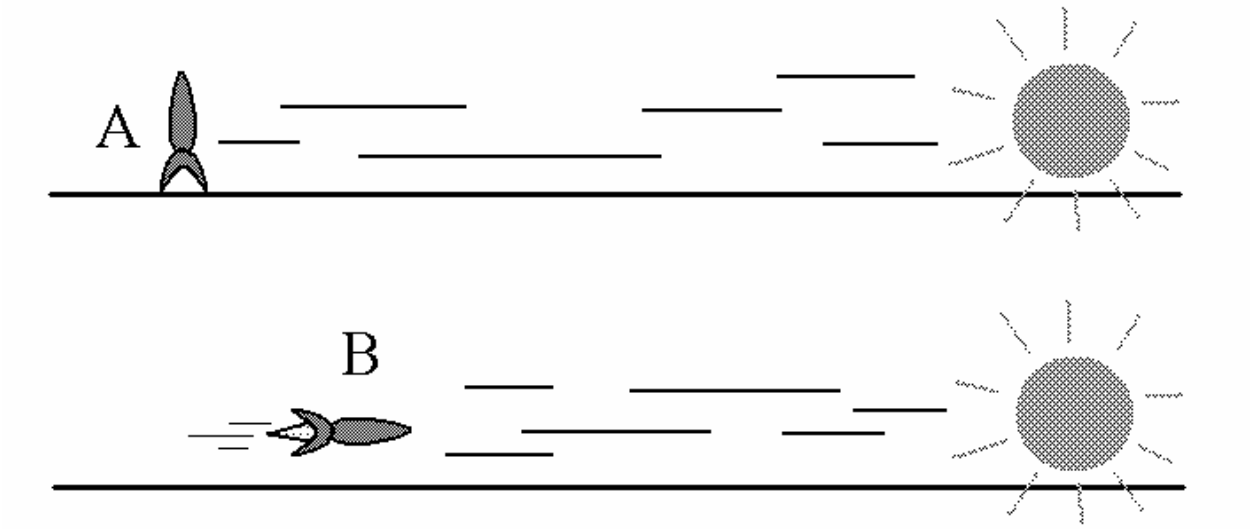
Some time ago, an experiment was performed (Michelson-Morley) that attempted to prove the existence of aether as it was theorized to be with sea-like characteristics, very unlike the homogenous bether that we described earlier in this book. Their theory was that as Earth orbits the Sun, we should encounter aether “drag” such that any observed light

should vary in velocity depending upon which direction our planet was moving through the aether around the Sun.



A: Aether
B: Sun
C: Earth
D: Orbit path
E: Against aether flow
F: With aether flow
If aether existed, it was believed that the flow of aether as detected on Earth should be in the opposite direction when Earth is on the other half of its solar orbit. This would seem to imply that the speed of light should be likewise affected by the relative velocity of the Earth

What they found was that light *always* traveled at the same speed, regardless of the direction the Earth was moving, or the velocity of the light source.



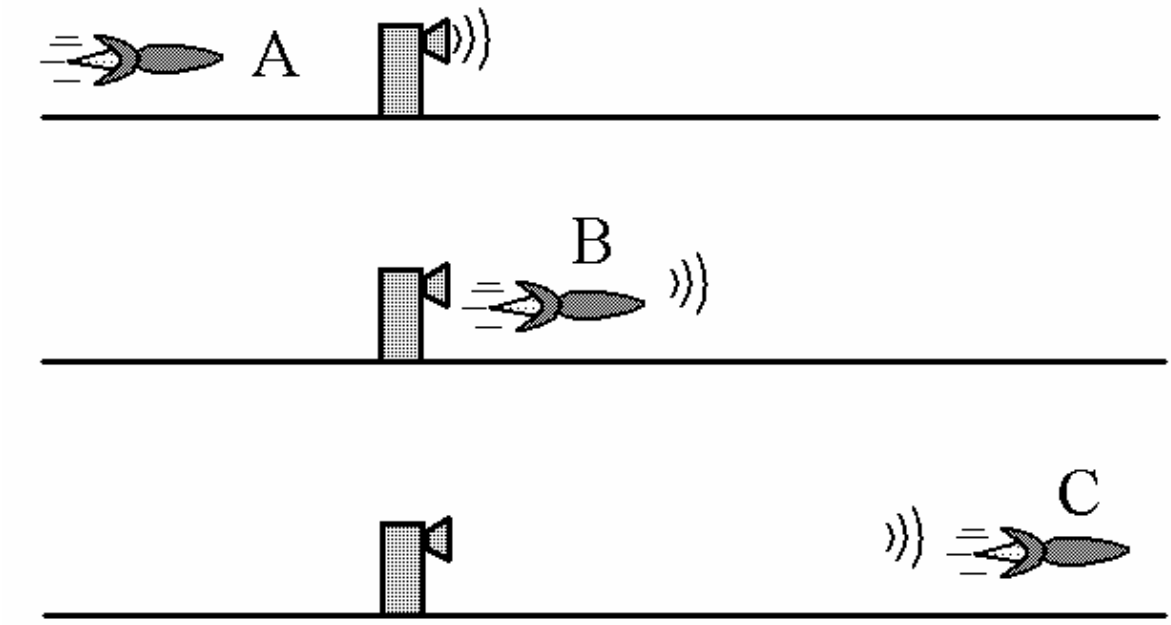
A: At rest…
B: …or while moving, any light that reaches the observer is always measured to be traveling at the speed of light, no matter how fast the observer is moving relative to the light source

This was a surprising result since they expected light waves to operate much like sound waves operating in a medium. Sound waves vary in velocity depending on the velocity of the air that carries that sound. Not so for light. Despite the fact that light is a wave, it will always be measured to travel at the universal speed of light, and from this observation, scientists have concluded that since light always traveled at the same speed from any point of observation, there cannot be any aether in which it propagates or else the speed of observed light would depend on the flow of aether as the Earth moved through it; a logical but perhaps hasty conclusion. Bether is definitely real, just not with the sea-like properties they originally assumed. The experiment's observations of the speed of light, however, were correct. Light is always observed at the same velocity. Simple enough, but what that little fact reveals has lead to a plethora of controversy and confusion.

SPEED OF LIGHT (1)

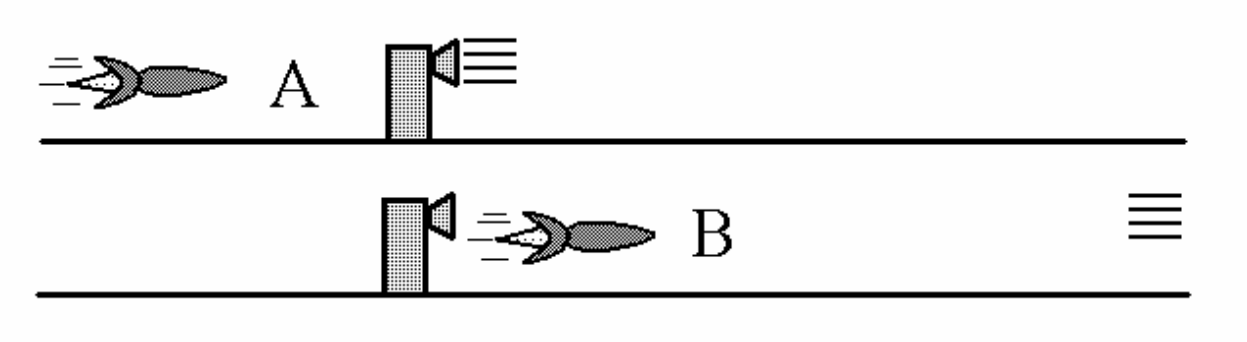
By accepting that the speed of light is immutable no matter which point of observation is chosen, certain other aspects of reality are now forced to behave strangely in order to compensate for light's

stubbornness. One example of these strange side effects is how it becomes impossible to travel faster than the speed of light. No matter how much you accelerate, you can never move faster than the speed of light. In contrast, it's possible to move faster than the speed of sound,



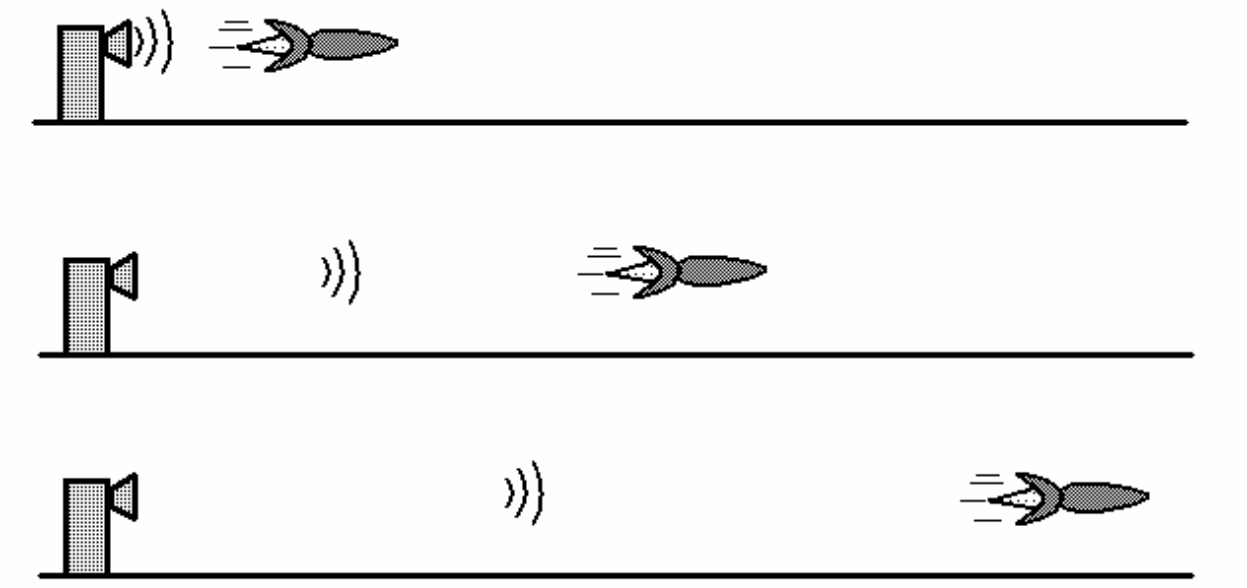
A: Sound is emitted
B: Supersonic vessel approaches…
C: …then overtakes the sound wave

but as the Michelson-Morley experiment proved, you will always observe light to travel at the same speed no matter how fast you go and so you cannot "pass" light from any given light source.



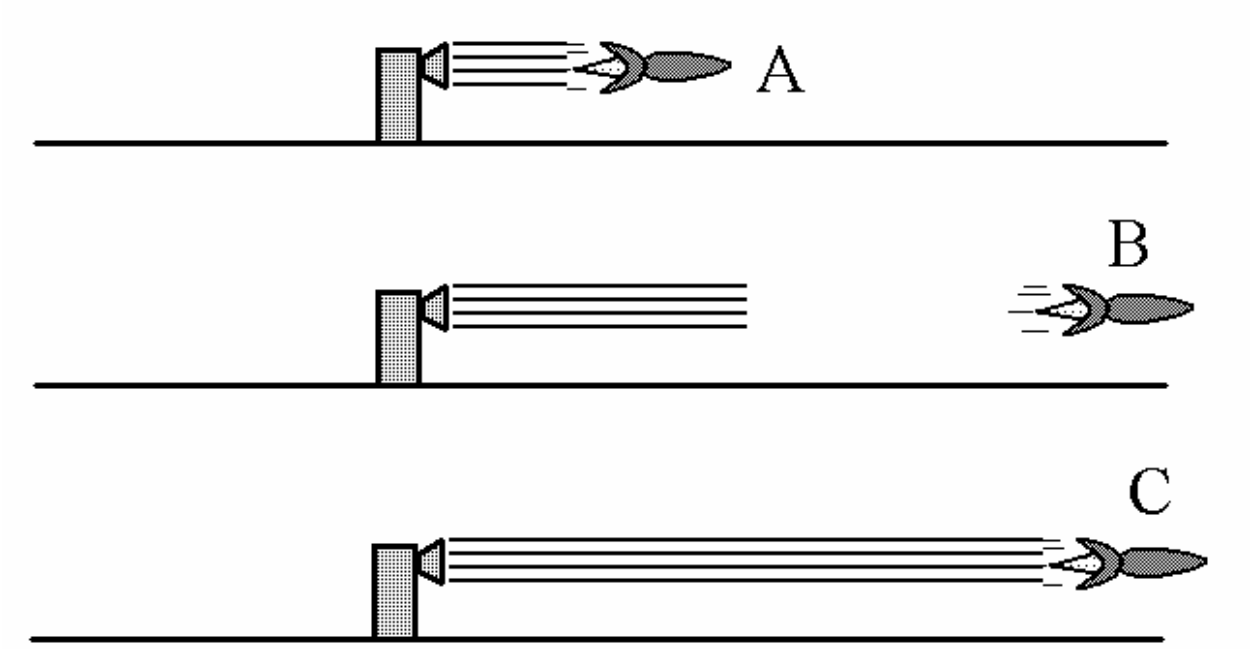
A: Light is emitted
B: Vessel cannot ever catch the light wave because the light will always be moving away from it at the speed of light relative to the vessel, no matter how fast the vessel travels

This consequential fact in turn means that you cannot move fast enough away from a light source or object to avoid having its light reach you. Again to contrast, it's possible to move fast enough to get away from a source of sound so as to avoid ever hearing it,



It is possible for a supersonic vessel to outrun a sound wave

but once you "see" an object or light source, you will always see it no matter how fast you move away from it.



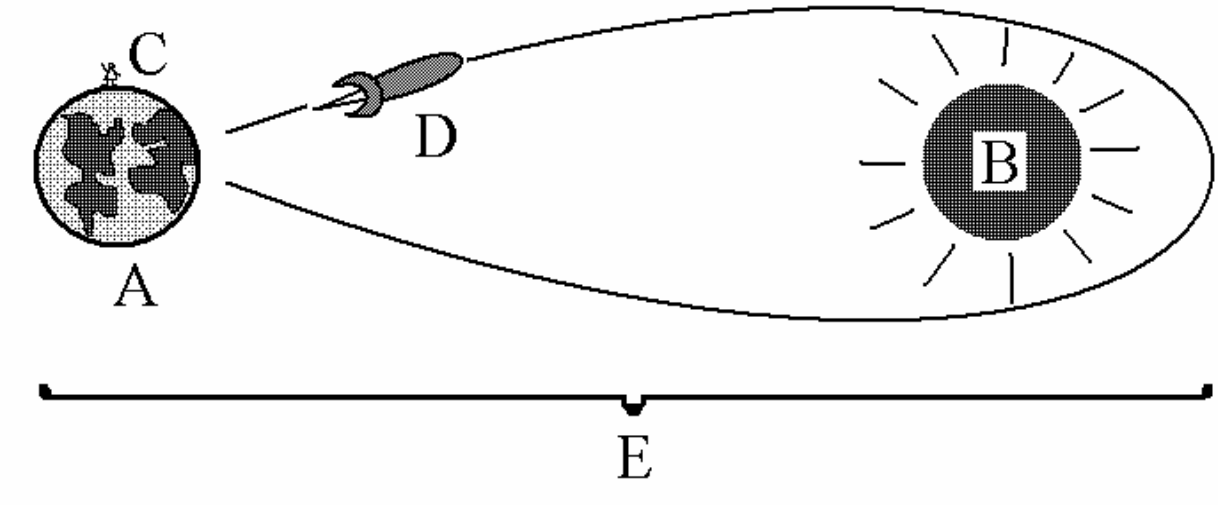
A: The vessel can “see” the light from the source
B: It will be impossible to outrun the lightwave so that light no longer reaches the vessel; the illustration here demonstrates this unattainable scenario
C: In reality, it can never get away from the emitted light, as accurately depicted here

This second consequential fact forces upon us the trickiest and most confusing ramification of the immutable speed of light: if it’s possible to continuously accelerate indefinitely, and yet not ever be able to outpace the light from an object, then something else must give; and the only variables left are time and distance. But aren’t these immutable as well? Be ready to stretch your mind.

TIME DILATION

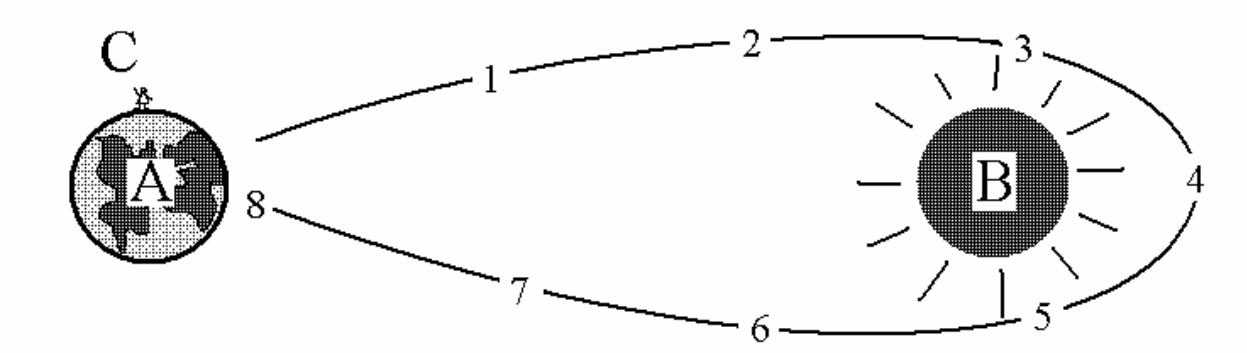
Absolute time. It’s actually an oxymoron. Time may be the most difficult property of the universe to understand once you begin to appreciate that the rate of time is not consistent between two points of observation that are moving relative to each other. This effect is called “time dilation”. For example, let’s introduce our heroes, Buck and Lala. Buck and Lala are on Earth. Buck decides he’s going to take a round-trip to Alpha Centauri (our nearest star beyond the solar system, four

light-years away; a light-year being defined as the distance light will travel in one year) and back. So, he hops into his near light-speed capable space vessel, synchronizes his clock with Lala's, and then begins his journey.



A: Earth
B: Alpha Centauri
C: Lala
D: Buck
E: 4 light years of distance

Lala wants to observe Buck's flight but she doesn't want to be confused by what she "sees", as opposed to where Buck really is at any given moment, so she has obtained the speed specifications of the space vessel to be able to approximate where Buck would be at any given moment during his journey.



A: Earth
B: Alpha Centauri
C: Lala
This map represents Buck's expected position for 8 years in Lala's timeline

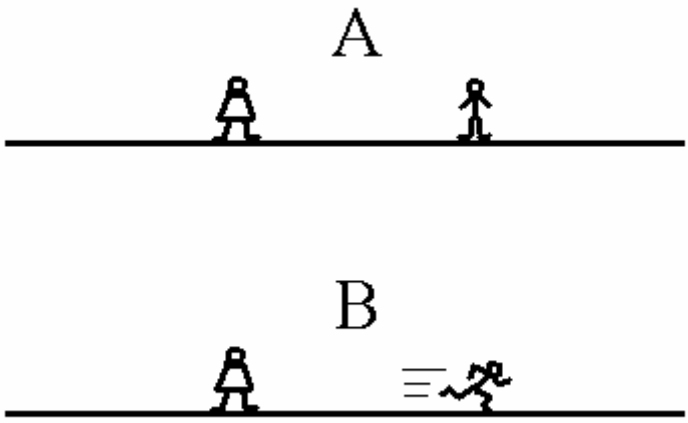
Why should where he actually is be any different from what she sees through a telescope? Light latency. It takes considerable time for Buck's image to travel this great distance back to her and by the time Lala receives the light that forms Buck's image from one location, Buck has traveled much farther along in his journey. She can never accurately see where he "currently" is because his image is significantly delayed in reaching her, and so she must rely upon her clock and the map of his journey to know where Buck is at any given time.

For just over 8 years, Lala faithfully plots Buck's adventure and finally Buck returns safely to Earth. Lala rushes out to meet Buck as he steps down from the space vessel, only to be shocked to discover that Buck barely looks a day older than when he left! Buck is shocked to discover that Lala has aged considerably! How is this possible? Is it possible? What is described here are the results of time dilation, and it works like this: when you accelerate, you change what is called your "frame of reference".

FRAME OF REFERENCE

Your frame of reference could best be described as if you were the center of the universe and everything else was considered relative to your point of observation. Every single thing in the universe that has a zero velocity (including angular) relative to yourself is in the same frame

of reference as you are. The only thing that distinguishes objects in one frame of reference from objects in another is the relative velocity of those objects.

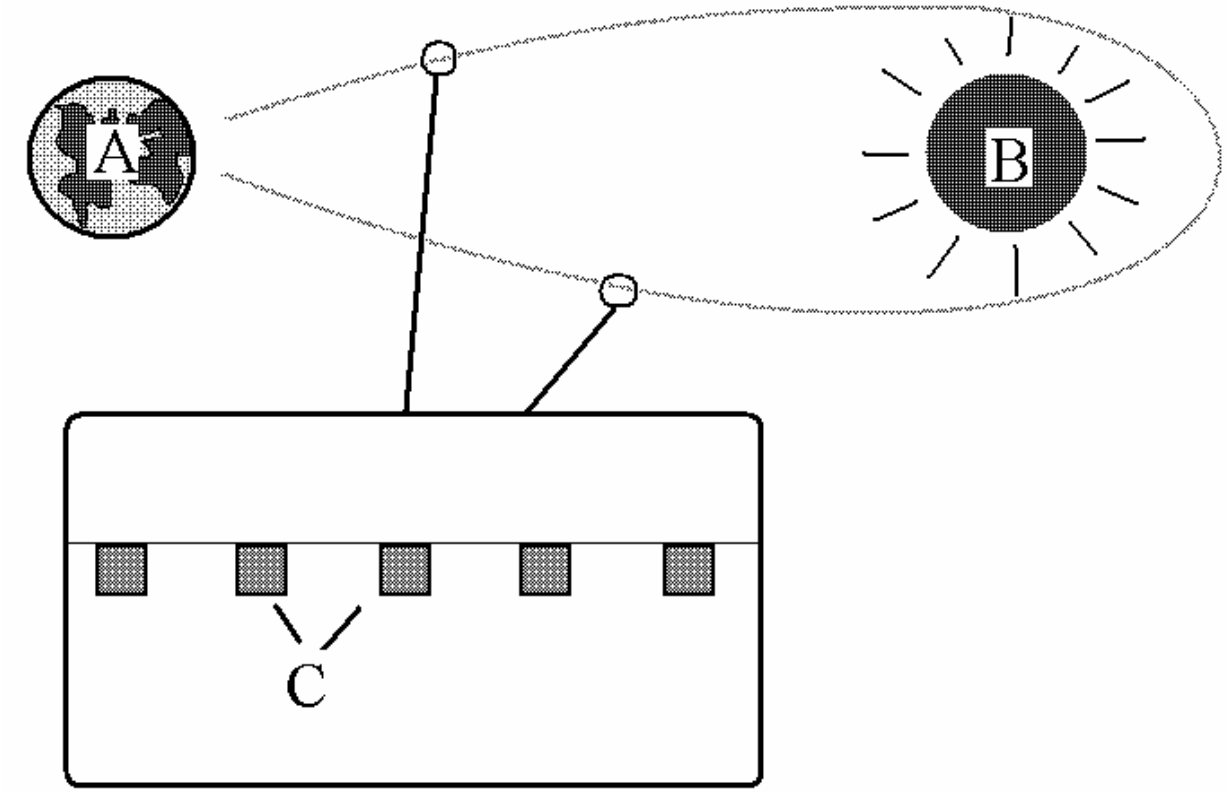


A: No relative velocity. Same frame of reference
B: Some relative velocity. They are now in their own separate frames of reference

For example, when Buck left the Earth, he accelerated to nearly the speed of light, and by doing so, he changed his frame of reference from Lala's. They were both originally in the same reference frame before he began his journey because they were not moving relative to each other. Now that Buck is moving relative to Lala, they each have their own distinct reference frames. The significance of the reference frame has everything to do with the flow of time, and this is where it gets ugly. Buck, by accelerating, has changed his reference frame from Lala's, and as a consequence, his time becomes dilated relative to Lala's. What does dilated time mean exactly? Explained in detail later.

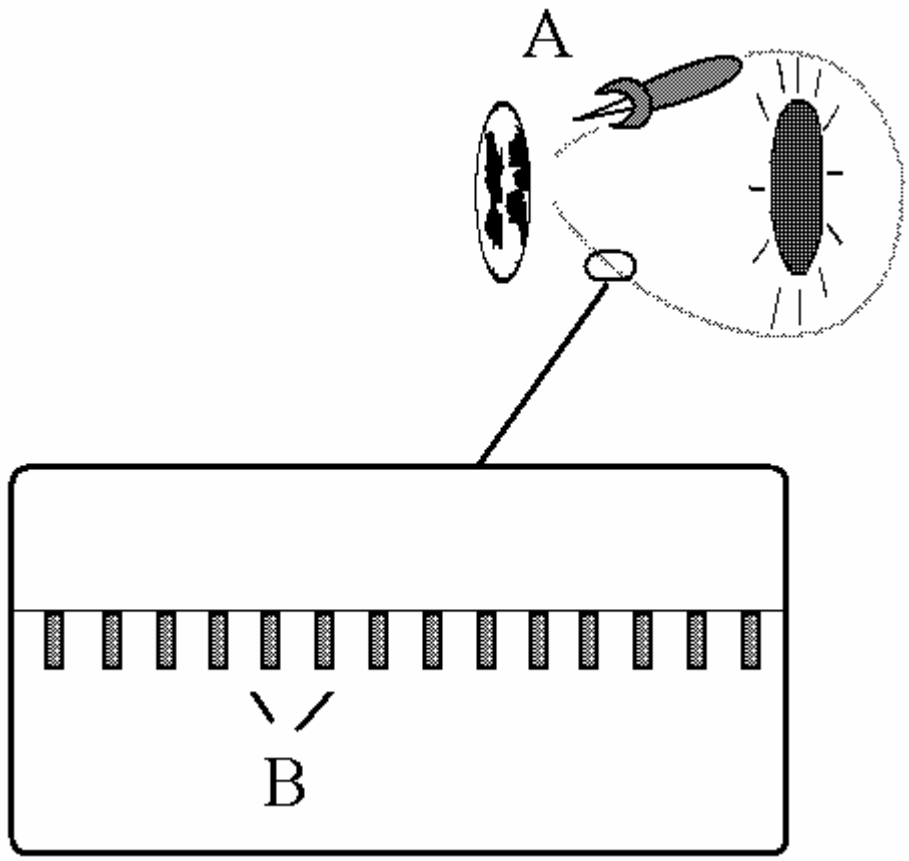
Let's start with Lala's reference frame. Everything in the universe that is not moving relative to Lala is in her reference frame; for the purposes of this example, this includes the Earth and also Alpha Centauri. If you were to stretch out a very long string from the Earth to Alpha Centauri and mark off individual light-second intervals (the distance that light travels in one second) with flags, the flags would be a considerable distance apart from each other along the string. The flags

represent a time interval scale for the speed of light such that if, for example, a photon of light left Alpha Centauri towards Earth, the string of flags that joins Alpha Centauri to Earth will sequentially map where the photon would be at each successive second during its entire journey.



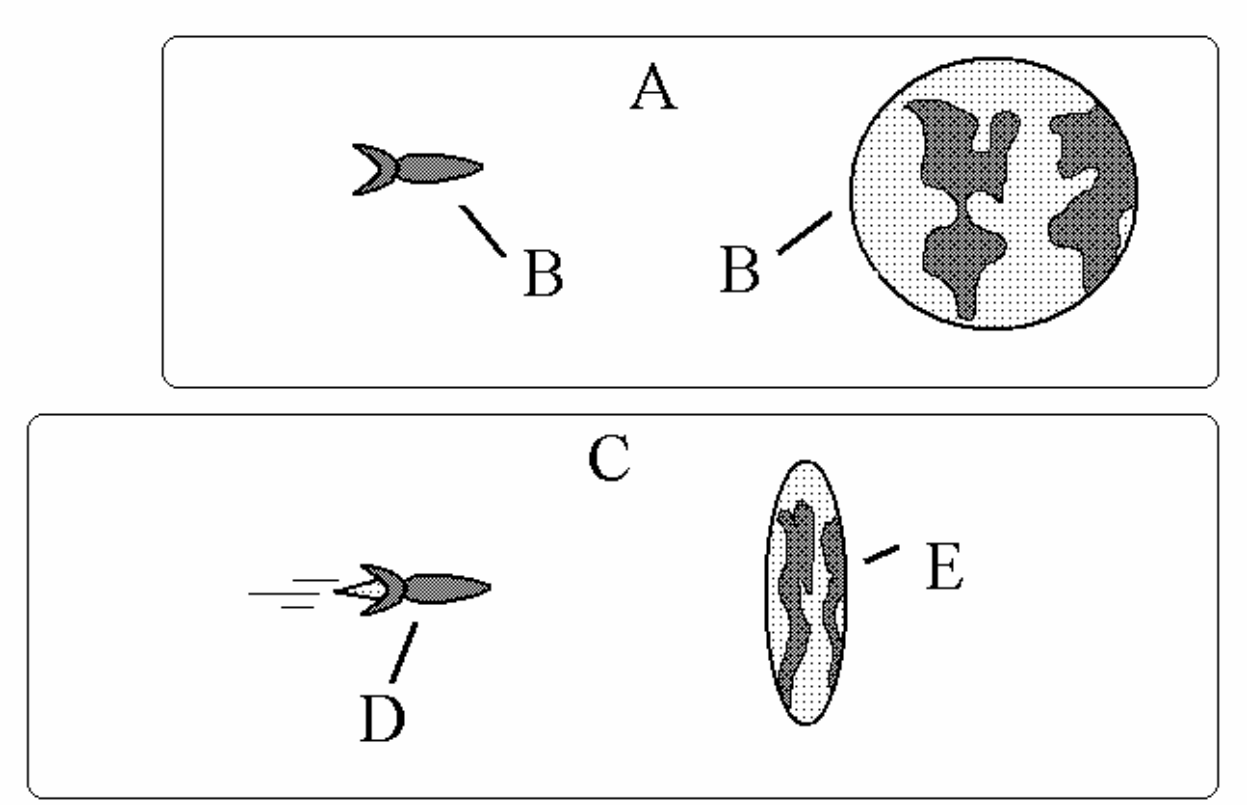
A: Earth
B: Alpha Centauri
C: Flags placed at 1 light-second intervals

Let's review Buck's journey: Buck takes off and follows the path of the flagged string towards Alpha Centauri at nearly the speed of light (relative to Lala's reference frame). Because of his new velocity, Buck's time dilates, and Lala's flags now appear less than one light second apart. In fact, in one of his seconds, he passes a large number of her flags. This isn't to say that he is moving faster than the speed of light, but instead her flags now appear much closer together from his point of view. His view of Alpha Centauri is also now greatly magnified as if it were much closer to him, similar to looking through a telescope.



A: Buck views everything in Lala's frame of reference as compressed. He does not see himself compress
B: Flags appear compressed to Buck

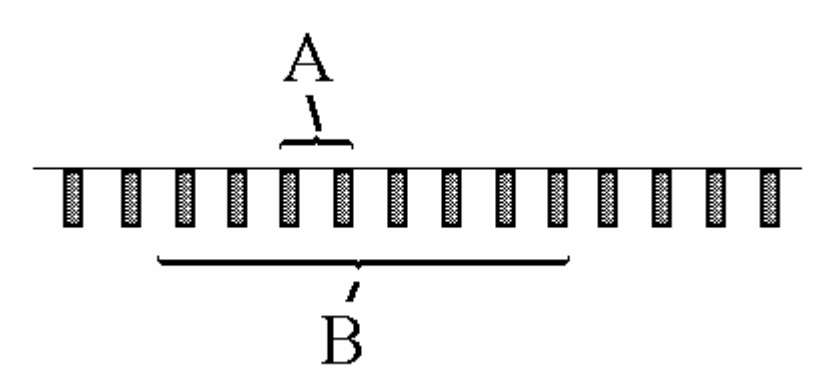
This isn't merely an optical effect, however, since it is possible for Bart to accelerate so close to the speed of light (relative to Lala's reference frame), and cause his time to dilate so much, that the distance between him and Alpha Centauri shrinks considerably and he can cross now that distance in but a few short moments, according to his space vessel's clock. This distance compression is a direct manifestation of the inability to surpass the speed of light. In order for Buck not to break the rule of the unsurpassable speed of light, both time and distance of objects not in his frame of reference must physically "contract" lengthwise in order to compensate for his great velocity. This contraction is called the "Lorentz" contraction.



A: Not moving
B: Both objects in same reference frame
C: Moving at near the speed of light
D: Observer is now in new frame of reference
E: Other frame of reference is very Lorentz contracted

The speed of light can't change, so everything else has to accommodate it, and therefore from his perspective, everything in Lala's frame of reference appears squished and is physically closer to him. This flexibility of both time and distance is how reality compensates in order to prevent him from being able to surpass the speed of light relative to Lala.

Buck might believe that he is going faster than the speed of light because he passes so many of her light-second flags per second, but actually the distances between the flags have shrunk in his frame of reference so that in one of his light-seconds of distance, there are many of Lala's flags.

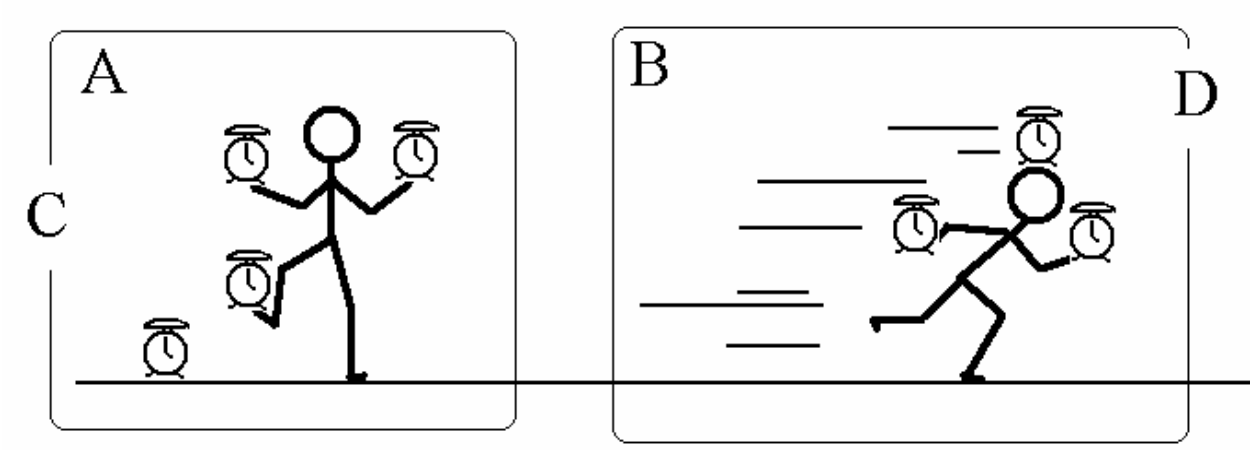


View of Lala's flags from Buck's frame of reference
A: One of Lala's light-seconds
B: One of Buck's light-seconds

Ultimately, he still cannot go faster than the speed of light in his own reference frame, and the more he accelerates, the more contracted everything of hers appears to him.

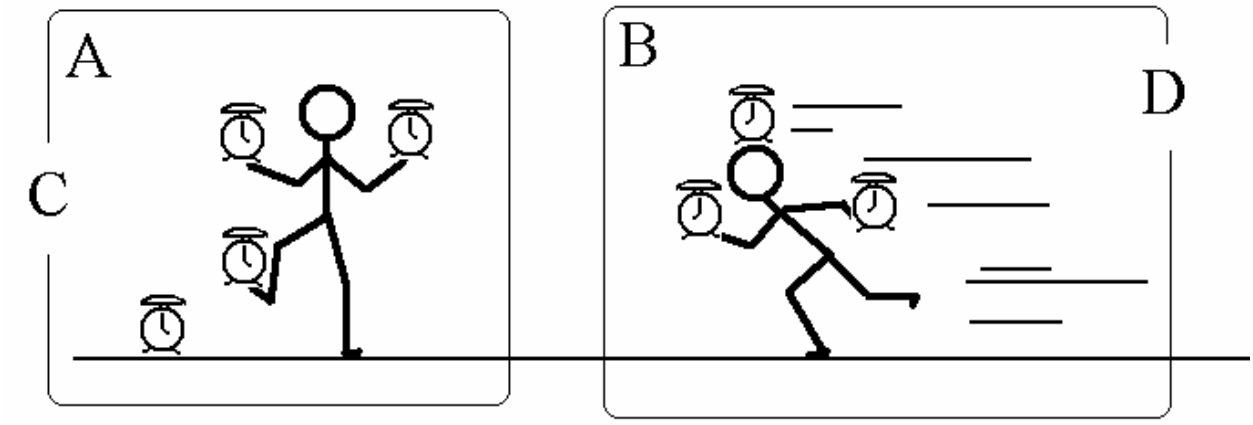
SPEED OF TIME

Light's unique property of always traveling at the speed of light from any point of observation has everything to do with the rate of flow of time. Time flows at the same rate equally at all points of observation that are within the same frame of reference, meaning that holding a clock at arm's length in any direction will always yield the same rate of time passage. However, observing a clock that has a velocity relative to yourself, it will appear to run slower than your own clock if the other clock is moving away from you,



A: Frame 1
B: Frame 2
All clocks within the same frame of reference will flow at the same rate of time as each other. Because they are moving apart at great velocity, each observer will witness the clocks in the other observer's frame to be running at a slower rate
C: Sees frame 2's clocks running slower
D: Sees frame 1's clocks running slower

and faster than your own clock if the other clock is moving toward you.



A: Frame 1
B: Frame 2
In this example, the observers are rapidly approaching each other, and they will see the other frame's clocks running faster than their own
C: Sees frame 2's clocks running faster
D: Sees frame 1's clocks running faster

Explained in more detail later.

The definition of time we're using is the measurement of the "rate of change" of anything in the universe from one state of existence, to another. Change in any form cannot happen without time passing and the fastest that change can occur is at the maximum rate of time flow itself, or rather the rate at which bether can propagate change. This means that light, which represents the fastest form of change in the universe, can only happen at the fastest that time will allow it. The rate of time is the ultimate parameter that determines the speed of light, no matter how fast the source of that light may be moving relative to your point of observation.

The rate of time flow is the product of bether pressure itself, and the higher the relative pressure, the faster time (change) flows in that region when compared to a region of less bether pressure, much like denser objects transmit sound faster. For example, clocks run slower on the surface of Earth, than they do in orbit above Earth, because bether is relatively more stretched in the stronger gravity field on Earth's surface. Combining this concept of the rate of time being intrinsic to bether pressure, with our previous examples of time dilation due to velocity, also implies that an observer witnessing an object at rest that switches to another frame of reference (e.g., the observer throws a ball) such that it switches to another frame of reference, reduces that object's relative ambient bether pressure (at its velocity), as measured by the observer.

Your measured observation of the speed of any light can only ever be from your reference frame and therefore will always move at the same universal speed of light, which is the speed of time, and because of bether's perfect homogeneity, time always flows equally in all directions from your point of observation, and from within all other points of observation, but never at the same rate between different frames of reference. Simple? Well, don't worry if it doesn't sit right with you, our minds are not well-equipped to conceive of reality in this way, and even with a clear mathematical understanding of the physics behind it, it's difficult for anyone to intuitively grasp this property of nature.

It should be noted that gravity as well travels at the speed of light/time. If you were to pop a particle into existence, its presence could only be felt by another object after the

necessary period of time for that gravity field to propagate at the speed of time.

It is because of bether's homogeneity that the rate of time cannot be distorted in any given direction for a single reference frame, and it will always flow equally in all directions in said frame of reference, even though different frames of reference can experience different rates of time flow relative to each other, as it did in our Buck and Lala example. This simple observation that light always travels at the speed of light has mistakenly led many to the belief that aether must not exist (in any form), for if it did, as it was understood in the fluid-like model, then the effect of the observer moving through aether should affect the observer's measurement of the speed of light. But the fundamental speed of light is not a product of the density of bether (which can be considered infinitely dense), but rather a consequence of the rate of time, and the rate of time is always constant for everything in an observer's frame of reference.

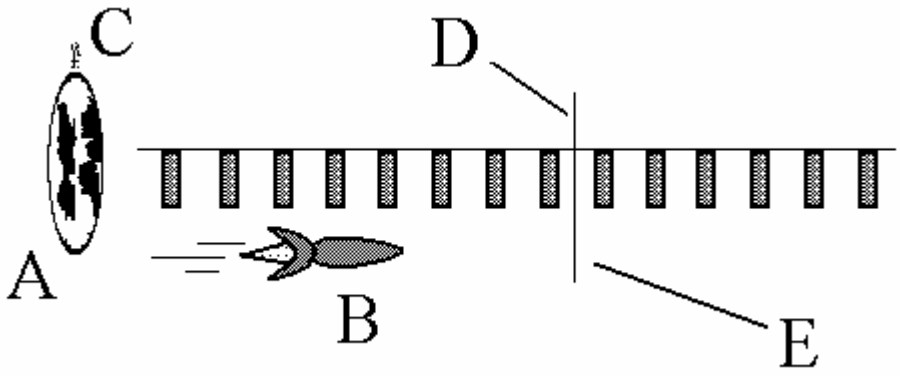
LORENTZ CONTRACTION

Back to our example; what takes Buck many seconds to accomplish from Lala's perspective, now happens in much less than a second from Buck's perspective. Buck's measure of distance of anything in his reference frame is still the same for him; his arm is still an arm's length, his vessel is still the same length; but now he sees Alpha Centauri to be much closer and he is able to get to it in a very short amount of time, compared to the amount of time that Lala would measure. He quickly crosses this short distance, and back, and in the end, he has only covered a small fraction of the distance that Lala witnessed him cover in her own non-contracted view of his journey; however, she still had to wait eight Lala-years for him to complete his journey.

Why does this contraction of Buck's journey happen? When you dilate your time by increasing your velocity relative to another frame of reference, you are expanding your time intervals relative to those of the other frame of reference, effectively slowing your rate of time flow.

This effect cannot be witnessed by you from within your own frame of reference but it is betrayed by the contracting of time zones in the other frames of reference; which we can see, for example, in Lala's string of flags when the distances between the flags shorten significantly, from Buck's perspective. Distances only remain constant for objects within the same reference frame. The greater the relative velocity between two reference frames, the more dilated the observer's time intervals become, and the shorter the other reference frame's distances appear along the axis in the direction of travel.

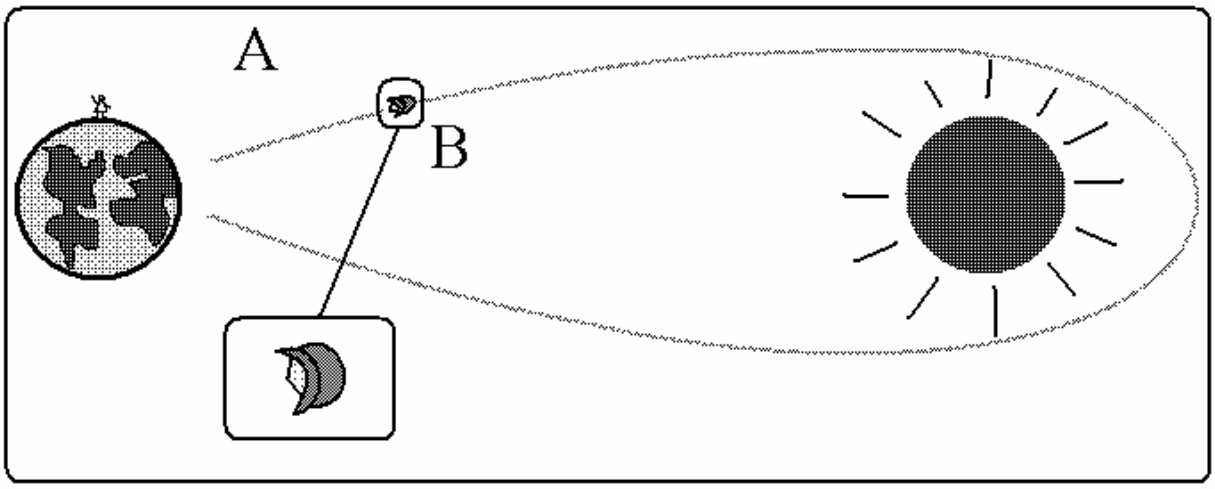
For example, if Buck were to look ahead at a segment of string between the next third and fourth flags, he would know that Lala would calculate him reaching that absolute position in approximately three seconds from his current absolute position. He, however, will pass that exact same section in less than one of his seconds because that spot is much closer to him due to his time and distance being dilated relative to Lala's.

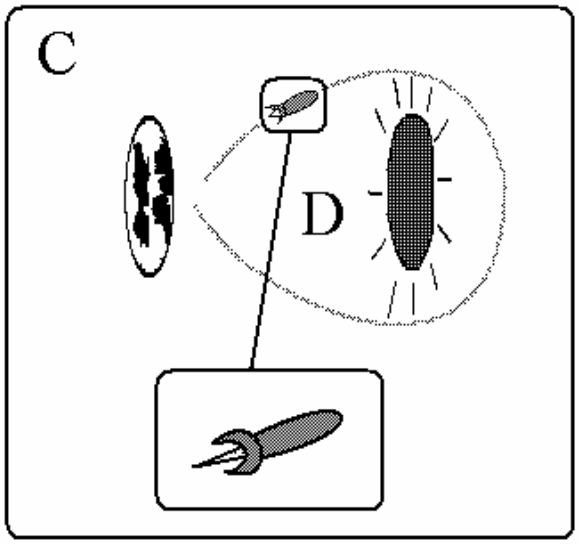


Buck's view of this scenario
A: Earth
B: Buck
C: Lala
D: Lala will calculate Buck to be at this line approx 3 of her seconds later, from within her frame of reference
E: Buck will reach that same line in much less than a second of his time, from within his frame of reference

Are you ready for the bizarre part? You might have been able to warp this into your mind so far but you also might be assuming that Lala witnesses Buck's vessel to be much greater in length in order to

accommodate Buck's perceptions of distance. Not so. As much as Buck sees everything in Lala's frame dilated and compressed, Lala also witnesses anything in Buck's frame as dilated and compressed, and so she sees Buck like a squashed bug, many times shorter than the actual length of his original vessel's specifications.



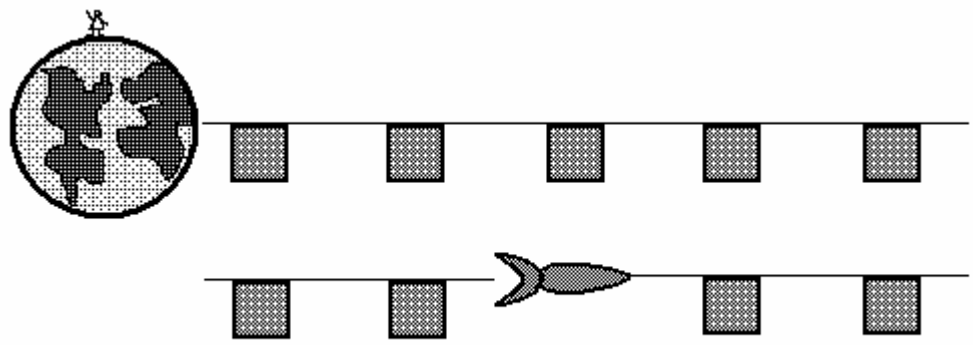


A: Lala's view of this scenario
B: Buck appears squished, according to Lala
C: Buck's view of the same scenario
D: Everything in Lala's frame of reference appears Lorentz contracted to him

How can this be true? How can both apparently different perspectives exist and yet they are both of the same scenario? Also, why are distances affected by time dilation?

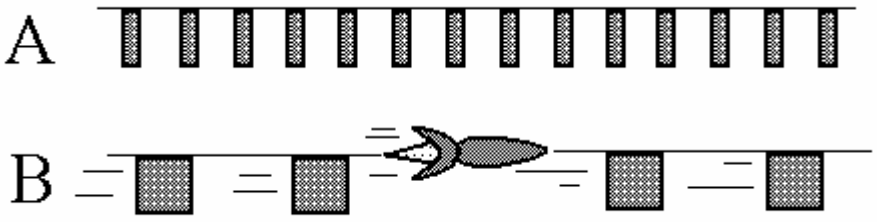
This Lorentz contraction is not simply the perceived effects of Doppler-shifted light, there is a bona fide physical difference in length that is measurable from different frames of reference, even when taking into consideration the latency of light propagation. It is not an illusion. To understand the secret of this effect, it's necessary to understand not just where things are but "when" things are. If everything is in the same reference frame, then it becomes easy to define "when" things happen since every object is operating at the same rate of time. This all changes when there is relative velocity involved. At velocities well below light-speed, such as most anything we normally have to deal with in our daily lives, the effects of time dilation are negligible and Newtonian physics for the most part can suffice for highly accurate spatial calculations; however, as you approach near light-speed relative velocities, the effects of time dilation exponentiate and rapidly increase in influence upon observations.

Let's use our example to further explain. From Buck's perspective, the flags on the string represent one light-second markers in Lala's time flow. Imagine now that he had similar strings of flags attached to and extending from the front and back of his vessel that marked one light-second increments and his flags were measured out to match Lala's flag string before he started his journey.



Before Buck starts his journey, he has a similar string of flags attached to his ship, with each flag matching a corresponding 1 light-second flag of Lala's

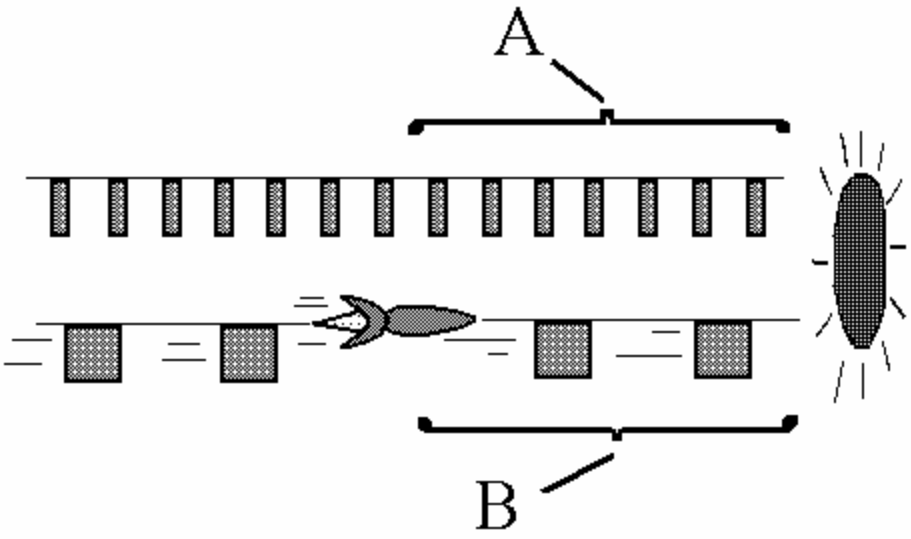
That string would move with him and, from Buck's perspective, would not suffer from time dilation compression in his reference frame because the string is not moving relative to his vessel. Once Buck gets going and his time dilates relative to Lala's, his perception of her time intervals becomes compressed closer together, so since her flags are placed at one light-second intervals, they too move closer together so that they match Buck's view of Lala's compressed one-second intervals. This means that just a few seconds of Buck's time will encompass potentially thousands of Lala's seconds.



A: Lala's flags
B: Buck's flags
As Buck and his string of flags travel along at near light-speed, his view of Lala's flags compresses, but his flags remain unaffected in his perspective. Buck sees that many of Lala's light-second distances fit within one of his light-seconds

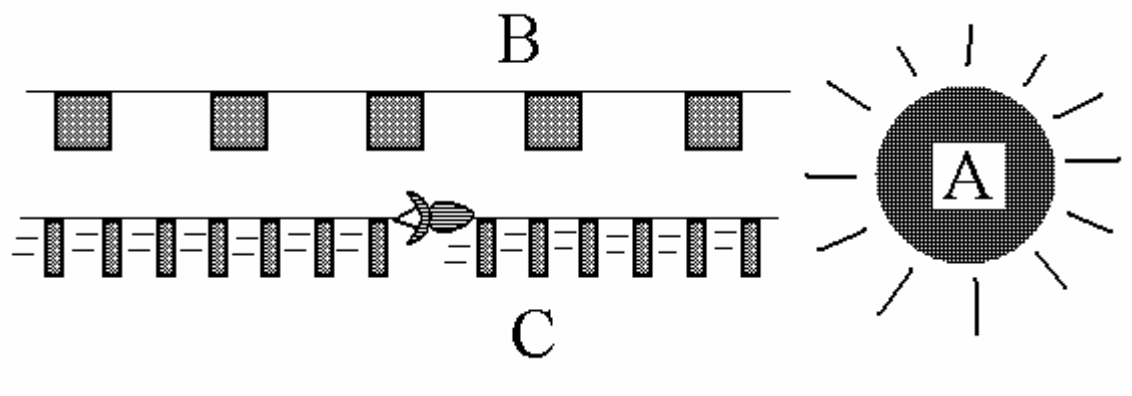
If there are roughly a million of Lala's flags remaining till Buck reaches Alpha Centauri, then in Buck's perception, there might only be a few

hundred of his own non-contracted flags spanning the equivalent distance to Alpha Centauri, meaning the star is now much closer to his vessel than the millions of Lala's light-second flags would seem to indicate.



A: It will take much more time according to what Lala's light-second flags would seem to indicate for Buck to reach Alpha Centauri…
B: …than it will according to Buck's flags; from Buck's perspective

Buck's observation of Lala's flag string appears compressed and this demonstrates the effects of the Lorentz contraction from Buck's perspective. Likewise, Lala's observation of Buck's flags attached to his vessel would show them as compressed as well since he will be Lorentz contracted from her perspective.

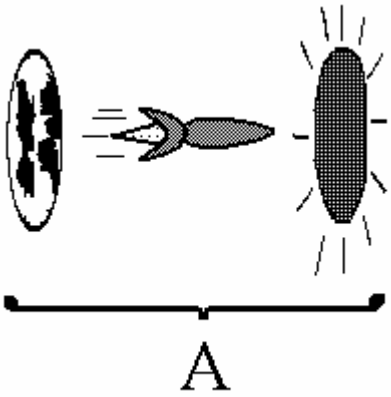


A: Alpha Centauri
B: Lala still sees her flags as uncompressed…
C: …and she sees the compressed Buck with his compressed flags

The only factor that the time dilation and Lorentz contraction effect considers is relative velocity. True, it takes acceleration to change reference frames, but the instigator of that acceleration is not afforded a unique position in the whole scenario and hence both frames of reference will witness the other to exhibit Lorentz contraction.

LIGHT LATENCY

So why does Buck age only a few minutes when Lala ages many years if both suffer the Lorentz contraction from each other's perspective? The answer is that Buck is the only one who observes Lorentz contraction of the distance *between* Earth and Alpha Centauri because he is moving rapidly against Lala's reference frame, and ultimately he has only a very contracted distance to travel.

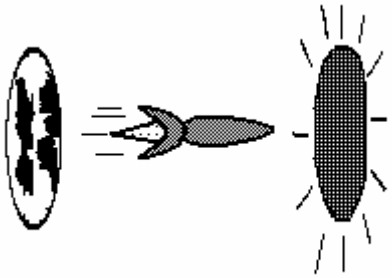


A: In Buck's perspective, he has a much shorter distance to cover to get to Alpha Centauri than the original non-contracted 4 light years

But in Lala's perspective, she still sees the Earth and Alpha Centauri to be the full four light-years apart since they have no velocity relative to her, and so the Lorentz contracted Buck that she sees still has to cover the full four light years.

A: Though Lala sees…
B: …Buck as compressed, he still has to travel the full 4 light years between…
C: …Earth and…
D: …Alpha Centauri that she sees from her perspective

But why does so much of her time pass when Buck is supposed to see her clock run slower than his? True, for the outbound portion of his trip, he would witness Lala's clock to run slower, but this is mostly a product of light latency and is not an accurate reflection of Lala's rate of time.

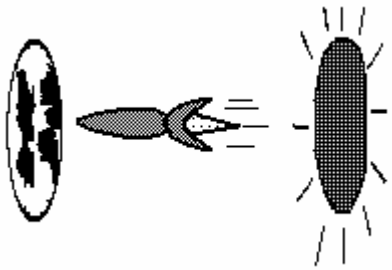


Buck “sees” Lala’s clock running slow during the outbound portion of his journey

Despite what Buck “sees” of Lala’s clock, her clock is actually running, on average, much faster than his, and so, on average, many of her seconds pass during a single one of his seconds. Once he gets to Alpha Centauri and begins to turn around, he will witness the Earth expand away and then re-contract again once he is back up to full speed for the return portion of his journey.

A: Earth
B: Alpha Centauri
C: Buck
During the turn-around phase (full stop and then full re-acceleration) of his journey, Buck will see Lala’s frame of reference expand, and then re-contract. Her rate of time will briefly match his at the single instant of full stop during his turn-around, but as he reaches full speed toward Earth, he will “see” her rate of time now appear to flow much faster than his

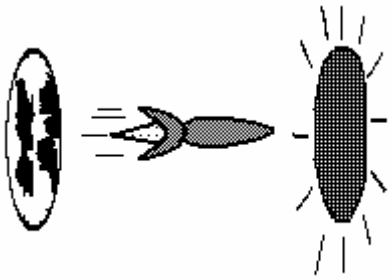
Now he sees her time rapidly transpiring, effectively playing “catch-up” for all that time that she was supposed to have advanced,



Buck “sees” Lala’s clock running fast during the return portion of his journey

until he finally arrives at Earth and Lala has measured just over eight years of time passing, compared to Buck only measuring a few days of his time passing during the entire journey.

How do the measurements change if you were to correct for light latency in Buck’s observations? Well, as in the previous example, during the outbound portion of the trip, Buck would see Lala and the Earth contracted closer to him, and her clock running slower. Now he can calculate backwards in time to when that light was emitted and he arrives at the conclusion that her time is actually running slower than his.



Buck “calculates” Lala’s time to be running much slower than his

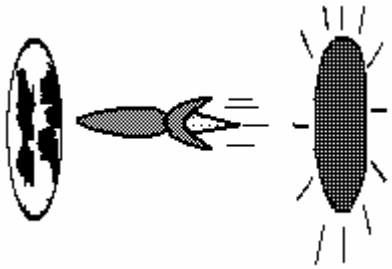
But didn’t we just say that her time is running faster than his? Yes, on average, meaning that once Buck re-enters her frame of reference (which happens briefly during his turn-around at Alpha Centauri), he calculates her timeflow to peak astronomically for the duration of his deceleration.

To be specific, he calculates her timeflow to flow very slowly during the voyage to Alpha Centauri, but during the deceleration phase of his turn-around, he calculates her time flow to rapidly “catch up”, to a

total of just over four years' worth of time as he comes to a complete stop. Now, for the return journey, pretty much the same thing happens but in reverse order: first, for his brief acceleration phase leaving Alpha Centauri, he will calculate Lala's time to flow rapidly ahead till nearly another four years' worth of time have elapsed, at which point he'll be at full speed,

A: Earth
B: Alpha Centauri
C: Buck
During the turn-around phase (full stop and then full re-acceleration) of his journey, Buck will "calculate" Lala's time to flow very rapidly forward such that very nearly 8 years of her time will transpire in the few seconds that he perceives during his turn-around.

and then for the rest of the journey home, he will again calculate her time to be flowing very slowly,



For the return portion of the journey, Buck will "calculate" Lala's time to once again be flowing very slowly

such that when he finally stops at Earth, she will have aged just over eight years, and he'll have aged just a few days. This very complicated phenomenon of having two distinct perspectives for the exact same scenario will be explained in greater detail later (with a barn).

SPEED OF LIGHT (2)

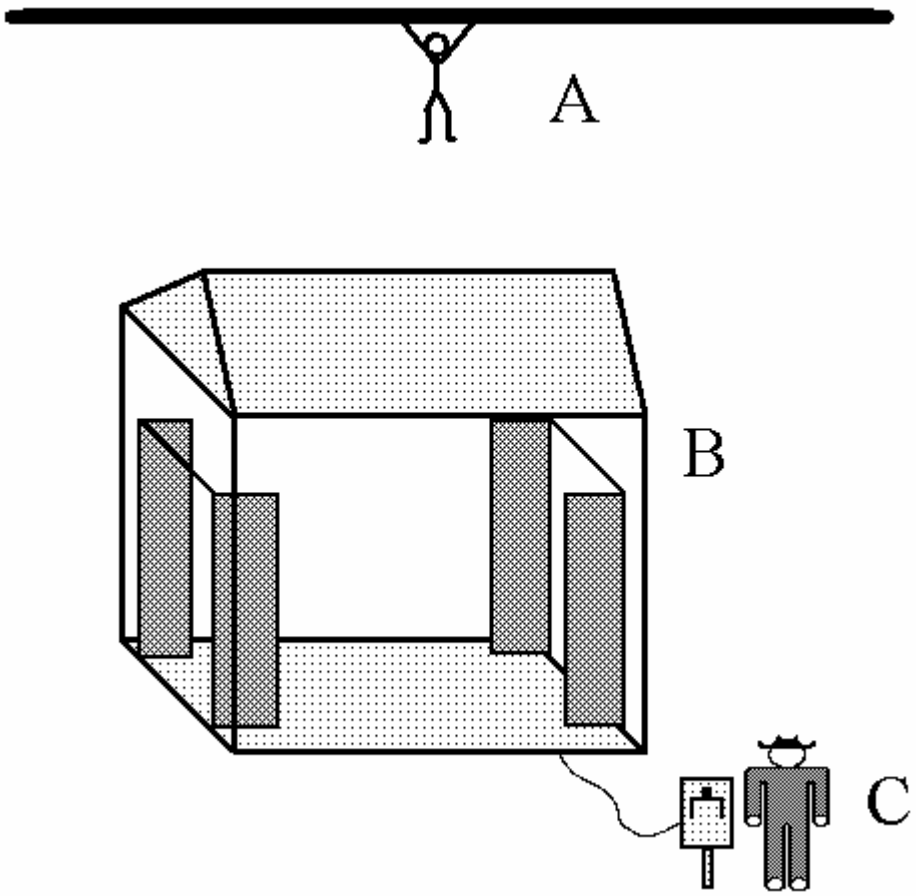
You may have heard that it is impossible to travel faster than the speed of light, when instead it may be more accurate to state that you cannot travel faster than the speed of light relative to any object. It is confusing to combine the notions of not being able to surpass the speed of light, and yet being able to accelerate indefinitely, allowing you to cross vast, contracted, super-light distances from other frames of reference, in just a few of your seconds. It's just that as you approach the speed of light relative to some object, your rate of time will exponentially dilate and distances will exponentially contract in order to prevent you from surpassing the speed of light relative to any given object, from your perspective. You can continue accelerating indefinitely but your time will also continue to dilate indefinitely and the Lorentz contraction of distance will eventually close any distances to near zero (much like Buck's perception of Lala's flag string compressed in distance, instead of Buck perceiving himself being able to cover distance faster than the speed of light.)

An interesting notion that can be mathematically derived is that as you approach the speed of light relative to another frame of reference, time would continue to dilate until your time eventually stopped; if it were possible to exceed the speed of light, you would then start moving backwards in time. If you were to do this, then as soon as you have crossed the threshold and start moving back in time, you would undo the action of surpassing the speed of light in the first place and end up back where you started, trying to get past the speed of light. This is the barrier imposed by the rate of time, and effectively light speed can never be obtained relative to another object, even with an infinite amount of acceleration; time would simply stop for that point of observation.

TIME DISPLACEMENT

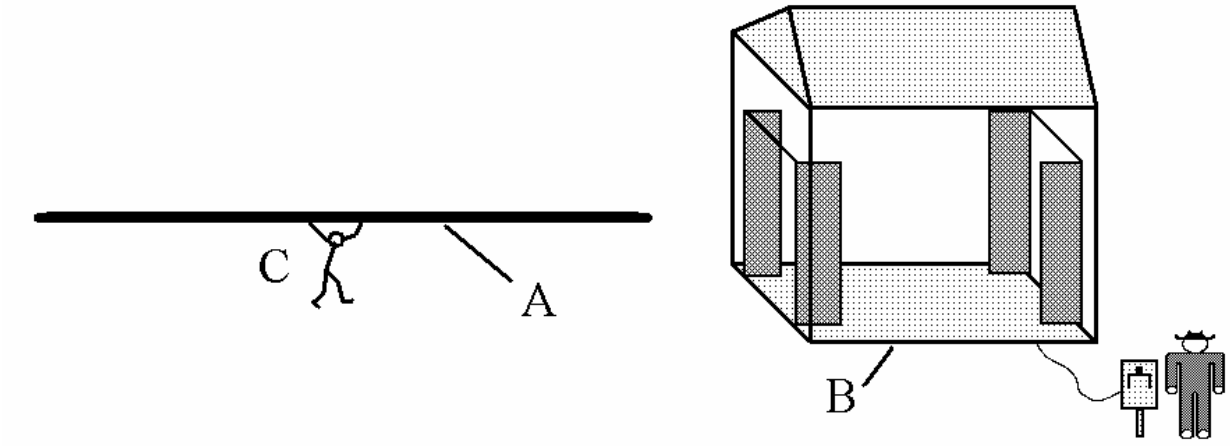
Let's try to make the effects of time dilation clear; the Lorentz contraction is not merely an optical illusion, the contraction really does affect the physical measurements of the objects being observed. A

classic example is the barn-pole scenario. In this story we have a runner carrying a long pole, and a barn with a front and back door that are both operated by a single open/close switch controlled by a farmer.



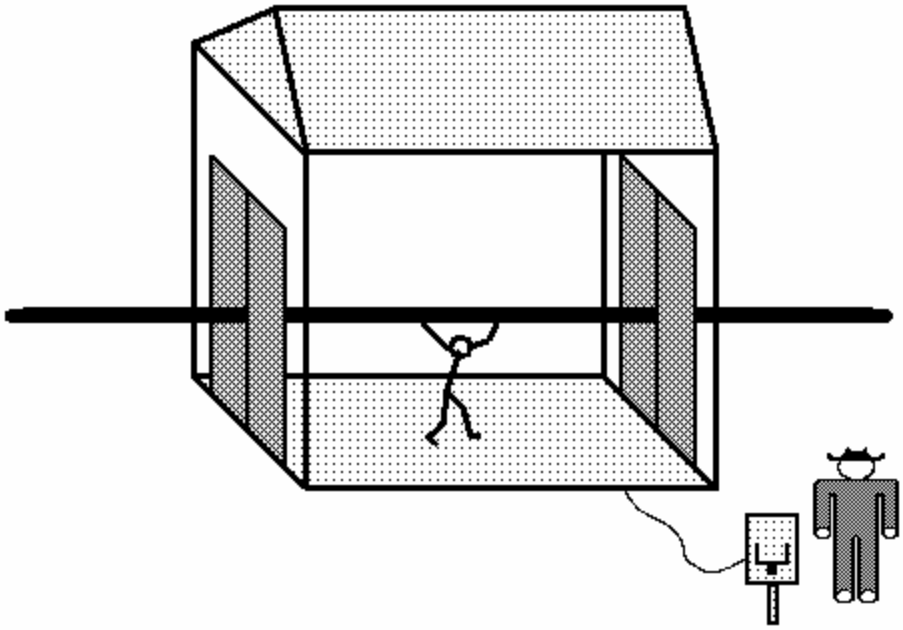
A: Our runner
B: Barn
C: Farmer

The runner will attempt to run through the barn while carrying the pole with him. The goal here is for the farmer to briefly close the barn doors with the runner and pole completely inside, and then to immediately re-open the doors to let the runner emerge from the other side with the pole intact. The problem is, though, that the pole is 20 units in length and the barn is only 10 units in length. Despite this obvious hurdle, the runner takes a very slow practice walk through the open barn and attempts to have the farmer close the doors when he is completely inside.



A: Pole is 20 units long
B: Barn is 10 units long
C: Runner takes a practice walk through the barn

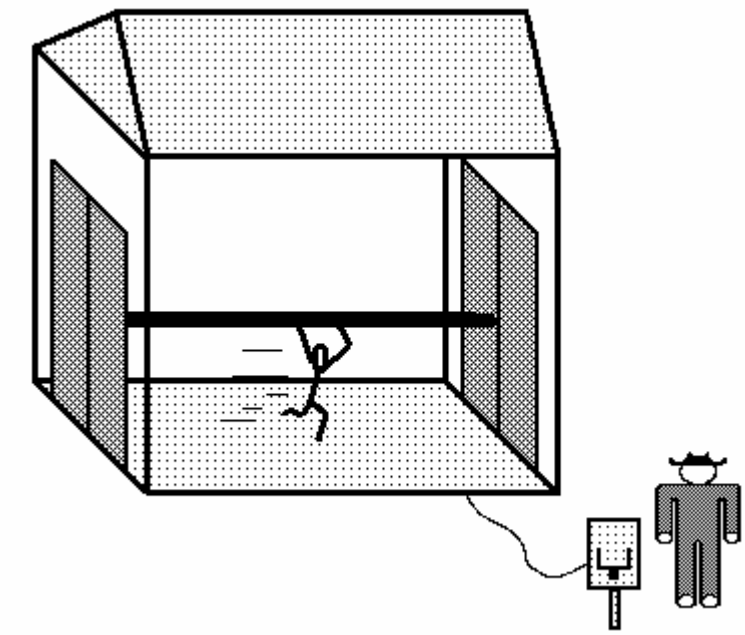
As expected, this attempt fails; both doors close on the pole, leaving the pole sticking out of both ends.



When the runner attempts to walk through the barn, the pole doesn't fit inside and the farmer closes the doors on the ends of the pole

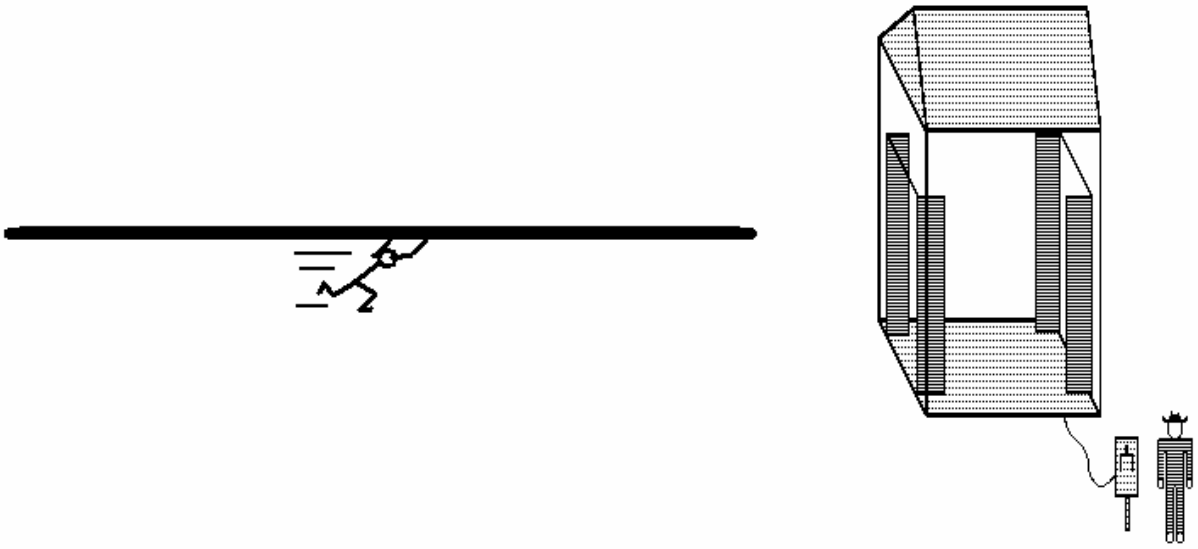
The runner however has heard of the Lorentz contraction and tells the farmer to once again try to briefly close the doors while he is running

through the barn. This time through, the runner runs extremely fast, nearly at the speed of light, and once again enters the open barn. The farmer is amazed! The runner and the pole both appear contracted to him and the pole now appears to only be 10 units long! He flips the switch as the runner reaches the middle of the barn, both doors close briefly, completely encapsulating the runner and pole, then the doors snap back open and the runner zooms out of the other side unscathed.



Running at near light-speed, the pole and runner are sufficiently Lorentz contracted to very briefly allow the farmer to completely capture the runner inside the barn. He then re-opens the doors to let the runner escape out the back or else the runner will have a nasty collision with the rear door

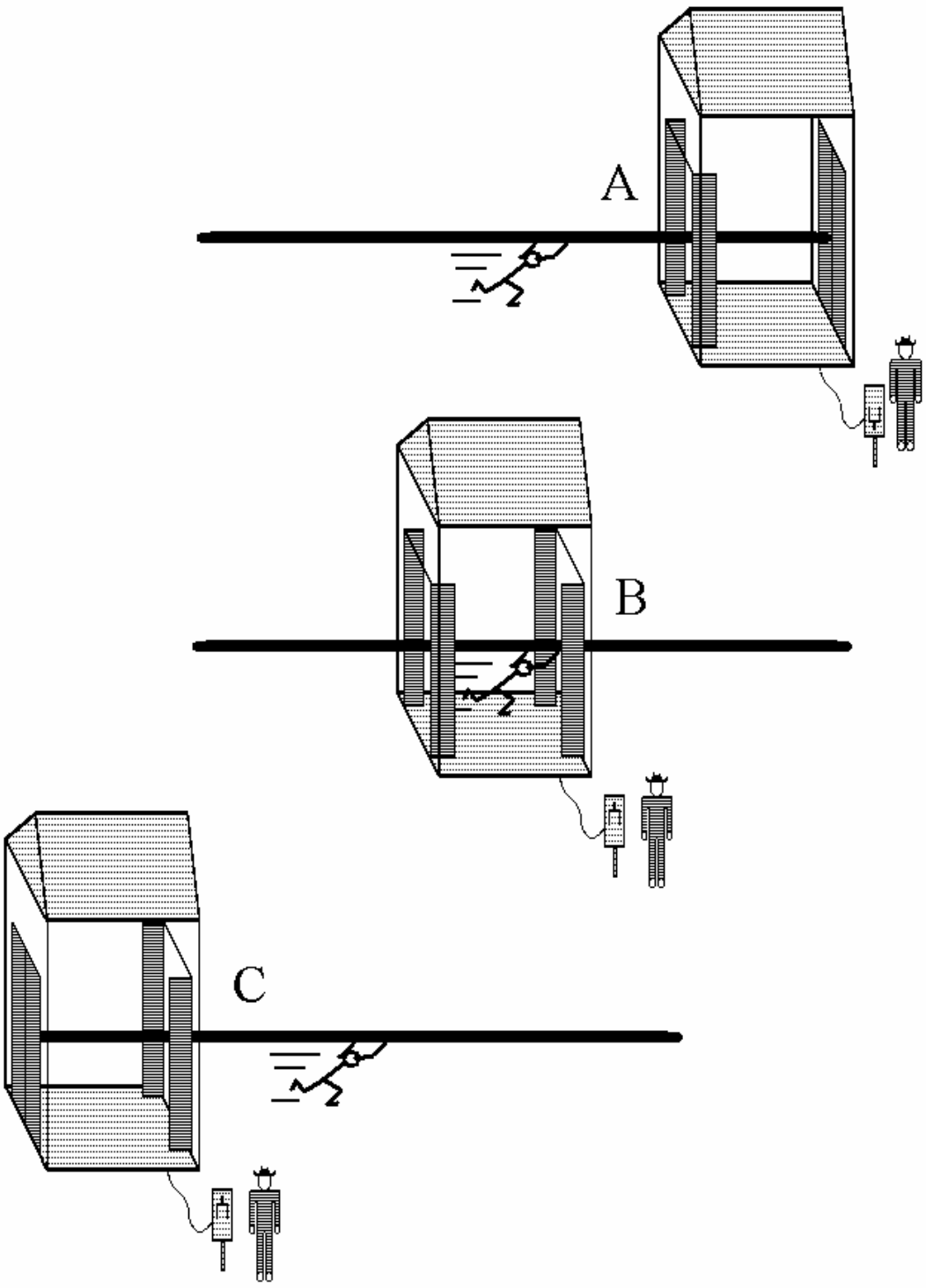
This is how real the Lorentz contraction is: a true physical effect. But there's another side to this story: if the farmer sees the runner contracted, then what happens from the runner's perspective? The runner must likewise witness the barn as contracted since the Lorentz contraction applies to both points of observation. So how can this work? If the runner still sees his pole as 20 units and he sees the barn now contracted down to 5 units, how can the farmer possibly trap the pole in the barn; it's the exact same scenario from two different frames of reference?



This is the same scenario, but from the runner's perspective. Notice that the barn is now Lorentz contracted and the runner is normal length. How is it possible that the runner and pole can completely fit inside the barn from the farmer's perspective, and not even come close to fitting in the barn from his own perspective?

The answer is quite simple, but very difficult to digest: even though the farmer witnesses the doors closing at the same time, the runner witnesses each door closing at a different time.

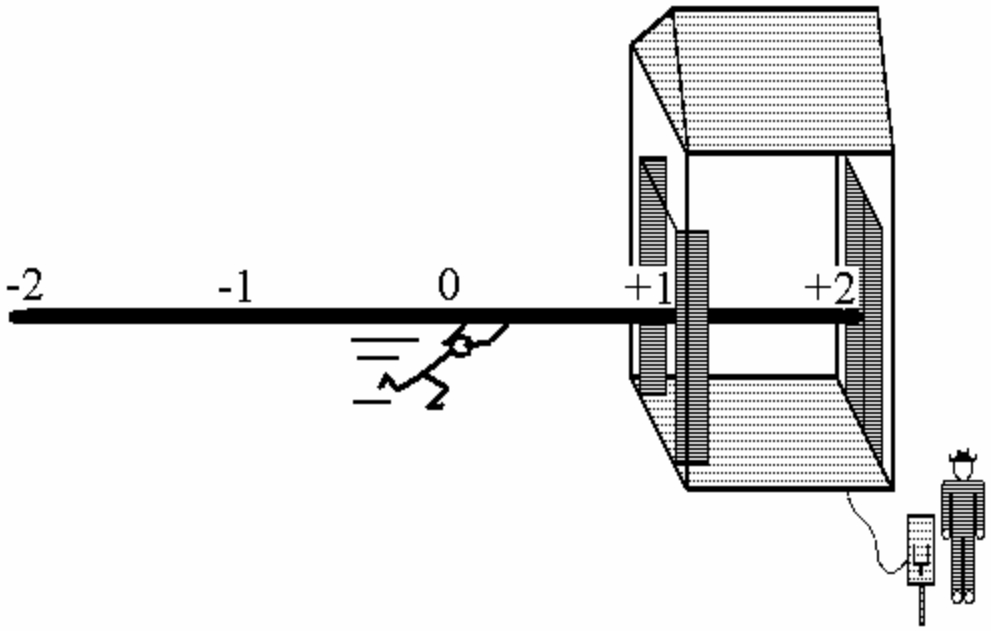
From the runner's frame of reference, as the front end of the pole enters the barn and reaches the back of it, the rear door will shut and then open, and he continues to pass through the barn. He then reaches the point at which the back end of the pole lines up with the front door of the barn and then the front door will close and re-open and the runner continues out the back of the barn.



A: From the runner's perspective, as he enters the barn, the rear door will close first...
B: …then re-open. He continues through the barn…
C: …until the pole completely passes through the front door, at which point the front door now closes and then re-opens

Two different interpretations of the same scenario and neither is more "correct" than the other. This is how both versions can co-exist because of the flexibility of "when" things are happening in each frame of reference.

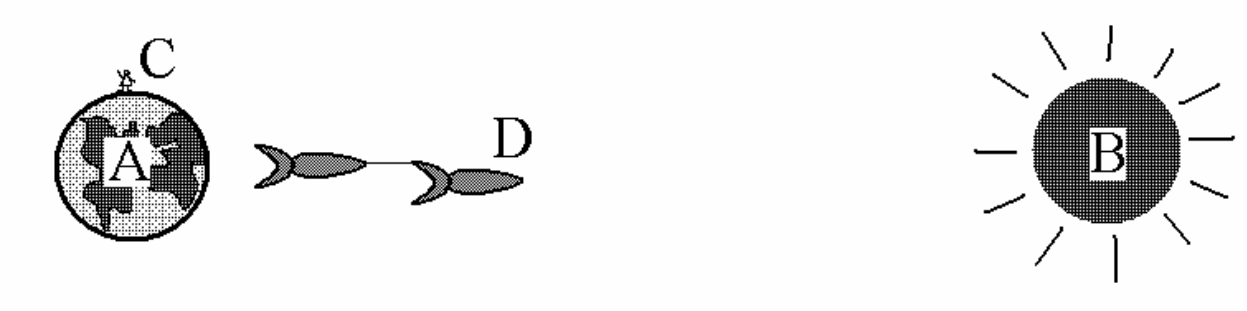
To relate back to our time dilation example, you'll remember that Buck's flag string did not contract relative to himself, but Lala's flag string contracted considerably from his perspective. Likewise, in our runner's frame of reference, the pole does not contract, but in order for this to all make sense, the front tip of the pole has to be further ahead in the farmer's timeline than the runner is, and the back tip of the pole must be further behind in the farmer's timeline than the runner is. This means that from the runner's frame of reference, the front tip will experience the farmer's moment in time when the switch is flipped, before the runner does, then the runner himself will experience the farmer's switch flipping moment, followed by the rear tip finally experiencing that exact same time when the switch was flipped. We're going to call this effect the "relativistic spatial time displacement". The runner will witness the pole interacting with the barn's frame of reference as if things were happening in a distinct sequence, instead of simultaneously as the farmer would witness it from his frame of reference.



The numbers represent how many units of time that each section of the pole is either ahead or behind in the farmer's frame of reference. The front tip is 2 time units further ahead than the runner according to the farmer's timeline, and the rear tip is 2 time units behind the runner. This means the doors will open in a sequence from the runner's perspective

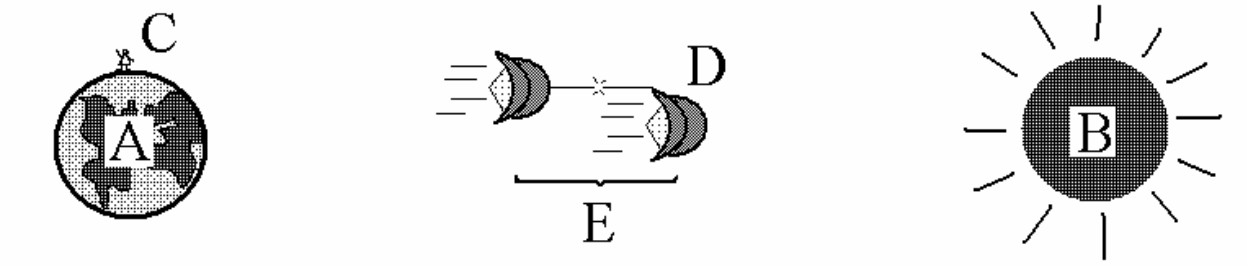
MASS

Would you believe that the Lorentz contraction is also responsible for "mass"? The point was raised earlier that if bether is to be considered massless, as in our model, then how can a particle (which is completely composed of bether) have mass? Let's try to explain this with our heroes Buck and Lala again. Our new scenario has the rear of Buck's space vessel attached by a thin thread to the front of another vessel of exactly the same specifications as his own. The intent is to have both vessels start from zero velocity just above Earth, then both vessels would accelerate equally together towards Alpha Centauri whilst Lala observed them from Earth.



A: Earth
B: Alpha Centauri
C: Lala
D: Buck
Buck prepares to accelerate in tandem with the second vessel attached by a thread

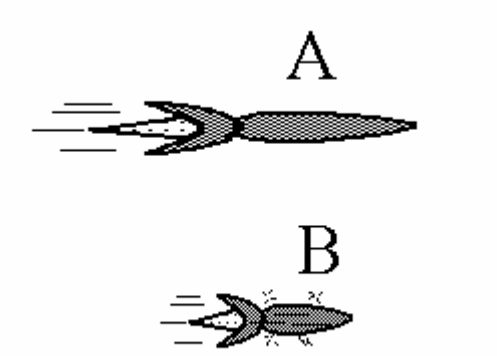
Your first intuition might lead you to believe that they should accelerate in tandem without any problems, but remember that as they approach the speed of light, their individual vessels begin to contract, according to Lala's point of observation. Despite the fact that Lala sees the "center of mass" points of each vessel retain their relative distance to each other, the vessels themselves will appear contracted to Lala, hence the thread that joins them must span a greater distance than when the vessels were at rest.



A: Earth
B: Alpha Centauri
C: Lala
D: Buck
E: From Lala's perspective, the distance between the centers of mass for each vessel remains the same, but the string is stretched until it breaks due to the contraction of the length of the vessels

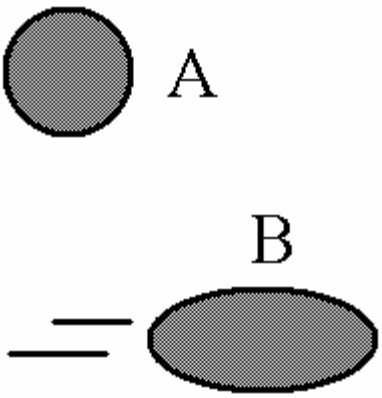
Eventually the thread between them is strained to the point of breaking. Hmm, that would seem to suggest that perhaps the vessels

themselves must endure some strain of stretching since the rear and front parts of the vessel could also effectively be considered two distinct points that are connected to each other by the body of the vessel. Yes, this is true. As Buck's vessel accelerates, or any object for that matter, it is being stretched in the direction of acceleration.



A: If Buck's vessel were made of stretchable material, he would observe his own vessel stretching as he accelerated (assuming that the acceleration was evenly applied to all particles of his vessel
B: Being that his vessel is rigid however, it is forced to bear this stretching strain during acceleration, much as if it were being pulled from both ends

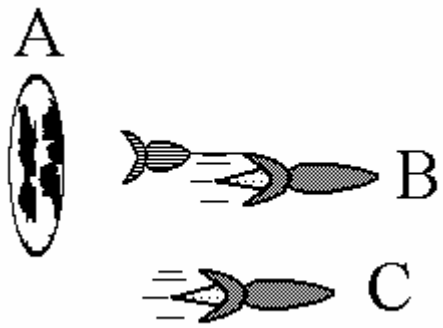
This happens to anything that is accelerated, even individual atomic particles. So when you accelerate an individual particle, for example, it is being stretched as it moves through many new frames of reference, and the elastic resistance to the stretching of bether is the force you feel pushing back, otherwise known as "mass".



A: Particle at rest, or a constant velocity
B: Particle being accelerated. The particle resists acceleration due to the stretching that the accelerating imposes

SIMULTANEITY

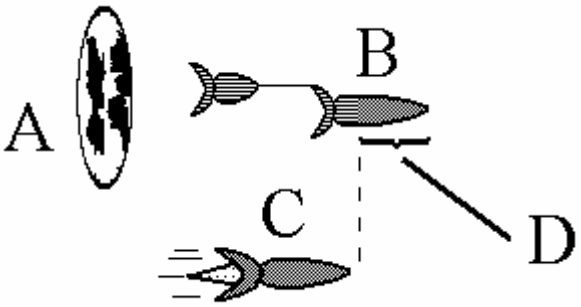
Why does this stretching happen? Well, as in our barn example, it's easy to be fooled by events that appear to be happening at the same time in one frame of reference. Even though Lala witnessed both of Buck's vessels leaving at the same time, any other point of observation that is not in her frame of reference (such as a third vessel moving at high velocity) would see Buck and the second vessel begin their accelerations at different times,



Third Observer Perspective
A: Earth
B: Buck
C: Third observer
As in our barn-pole example, an observer from a third frame of reference, traveling in the same direction as Buck, would witness Buck's vessel starting to accelerate before the second vessel moves

and this would mean that the distance between them would not remain constant. This is due to the fact that by the very nature of accelerating, they are constantly changing frames of reference and are no longer bound by the simultaneity of the original frame of reference. In other words, Buck's vessel and his second vessel leave the frame of reference in which they started simultaneously, and enter other frames of reference in which one started before the other (like our barn doors closing at different times), resulting in their changing relative distance.

This phenomenon also applies to a single vessel, where one end of the vessel begins accelerating before the other end of the vessel begins, depending on the chosen frame of reference.

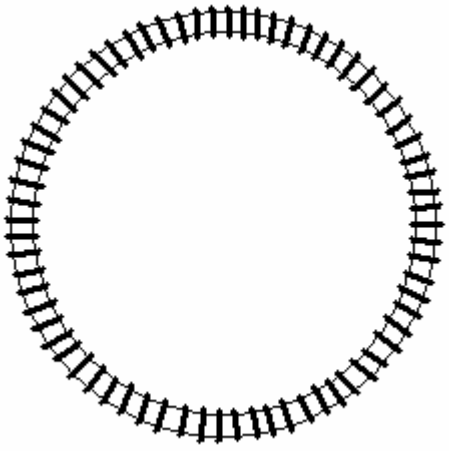


Third Observer Perspective
A: Earth
B: Buck
C: Third observer
D: In this same scenario, which is a split second prior to the depiction in the previous diagram, the third observer would witness the front of Buck's vessel starting to accelerate before the rear of that same vessel begins accelerating

So you see, there is no such thing as truly "simultaneous" events in all frames of reference, and with this fact it is impossible to have a scenario where equal acceleration can be applied to two points such that they will maintain their respective distances apart. This imposes stretching on anything that attempts to maintain a rigid distance apart while accelerating, no matter which frame of reference is chosen; this is even the case if we choose the original frame of reference where the initiation of accelerations were synchronized.

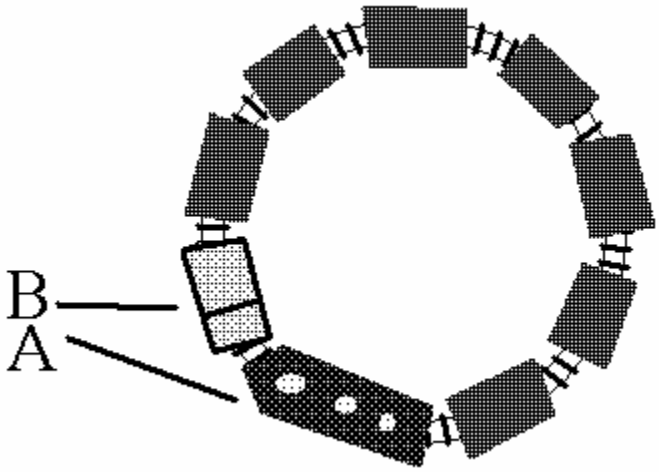
ANGULAR CONTRACTION

And if you thought what we've learned so far was tough to swallow, let's just introduce one more paradox to finish up with time dilation. Image a train track that forms a giant loop,



Track to nowhere

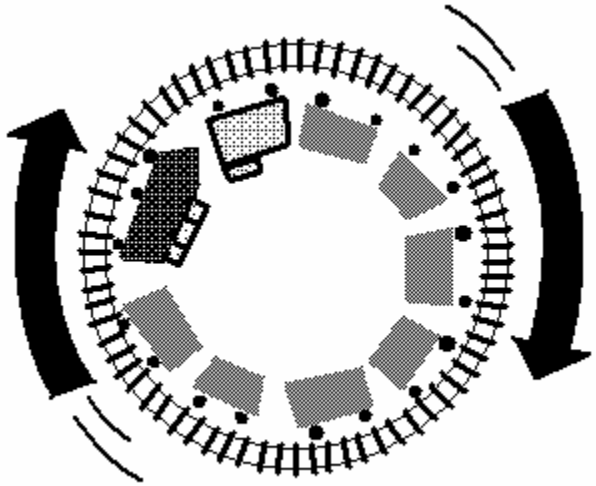
and on this track is a train that has enough cars attached to it that there are cars covering every section of track, until the back of the caboose meets up and is attached to the front of the train, forming a giant train-car loop.



Train completely encircles the track, joining the…
A: …front of the engine to the…
B: …rear of the caboose

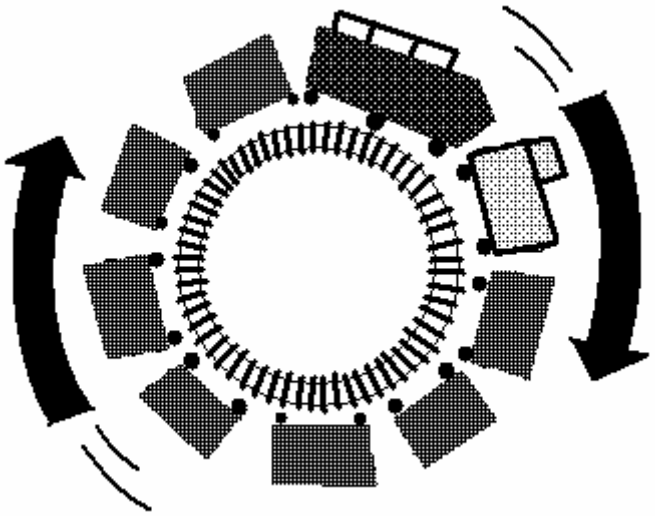
Now the train starts to move in a circle along the tracks, faster and faster, until it gets to near light-speed. By our Lorentz contraction rule, someone who is standing beside the track should witness the train cars becoming shorter and shorter, effectively shortening the overall length of the train, and hence shortening the diameter of the circle that it forms.

The track, being motionless, is not shrinking and conceivably the train should derail inwards as the train's overall length shrinks and its circular diameter likewise shrinks.



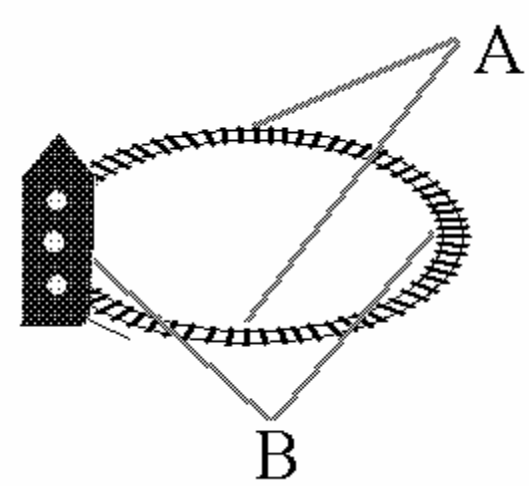
The train continuously accelerates around the circle. As it approaches the speed of light, by our Lorentz contraction we might predict that the circumference of the train will shrink to the point that it is smaller than the circular track that it sits on, causing it to eventually derail inwards

From the perspective of the train's engineer, however, it would seem the opposite is true. He is motionless relative to the train but the track is moving very quickly relative to him. He should see the track contracting instead of the train and by his reasoning the track's diameter should eventually shrink to the point that the train would derail outwards.



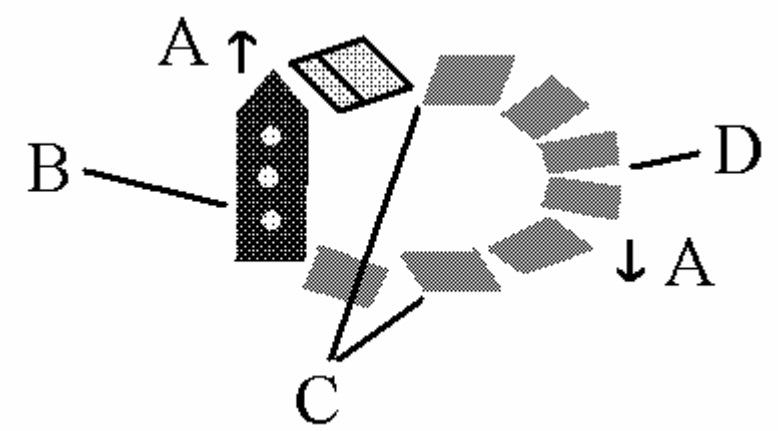
From the train engineer's perspective, as the train approaches the speed of light, the track it sits on should suffer from Lorentz contraction and the engineer might expect the shortening track's radius to shrink, forcing the train to derail outwards

What is the actual result? The train will derail inwards. The first perspective from the non-moving bystander is correct: the train will contract and derail itself. The second perspective presented, that of the train's engineer, is not quite accurate since the relative velocity between him and each independent car is unique. His perception of the track will indeed be contracted and overall it would appear to him like a squashed circle, having two points of large contraction (under him and on the opposite side of the track) and two points of zero lengthwise contraction (a quarter of the track's diameter ahead and behind him) where the width of the track is reduced but the length is normal.



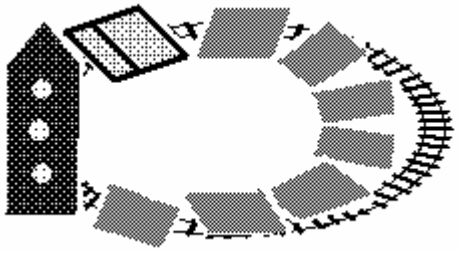
Engineer's perspective of the track
A: No lengthwise contraction
B: Large contraction

The individual cars however would range from not being contracted (those cars nearest to him), to extremely contracted (on the opposite side of the track), having only one point of no contraction (himself), two points of some contraction (a quarter of the train's diameter ahead of and behind him), and one point of extreme contraction (the opposite side of the train circle). For example, the car on the opposite side of the track from the engineer is moving at a very great velocity relative to him. Despite the fact that the distance to the opposite car from the engineer never changes, their individual momentums are in the opposite direction of each other and therein lies the relative velocity needed for the engineer to observe contraction of the other cars.



Each car must be considered independently when determining its position and degree of contraction, relative to the engineer
A: Momentum
B: No contraction
C: Some contraction
D: Extreme contraction

The average amount of contraction that the engineer witnesses in the train will be more than the average amount of contraction he witnesses in the track; so his perceived length of the train would still be shorter than his perceived length of the track, and therefore the train would derail inwards.



Overlaying our contracted train on the contracted track will reveal that the train is overall more contracted

CLOSURE

These are some of the most bizarre and challenging concepts that nature has confronted us with. It may make it easier to accept if you understand that we are always witnessing the "interpretation" of reality

through the influences on bether from that which it contains. We never actually “see” the real thing, nor is there is a universal “center” of it all from which to gauge everything else, for anything’s true nature is subject to the ramifications of the relative point of observation that we choose to view it from, and from the magical contortions of reality that bether delivers to that point of observation.

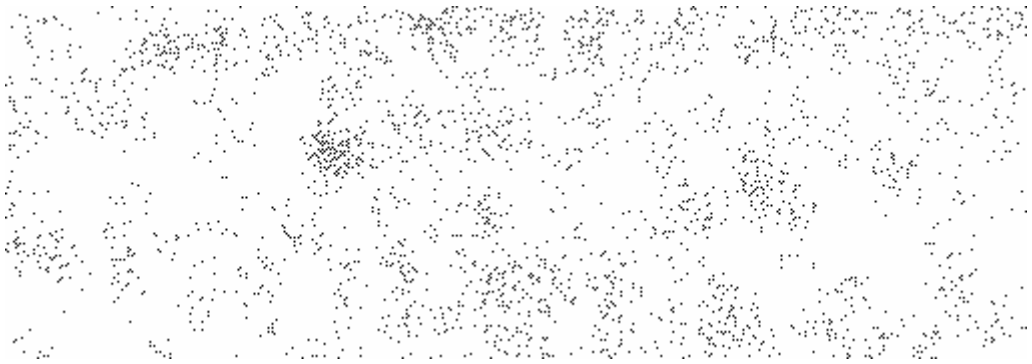
The vast majority of remaining physics topics are well covered in an endless list of textbooks and so we’ll not continue on this rampage of explanation. The goal was merely to build a foundation for the reader by which you can follow the progression from our universe’s humble beginning to where we are going next.

Chapter 3 - Manifestation

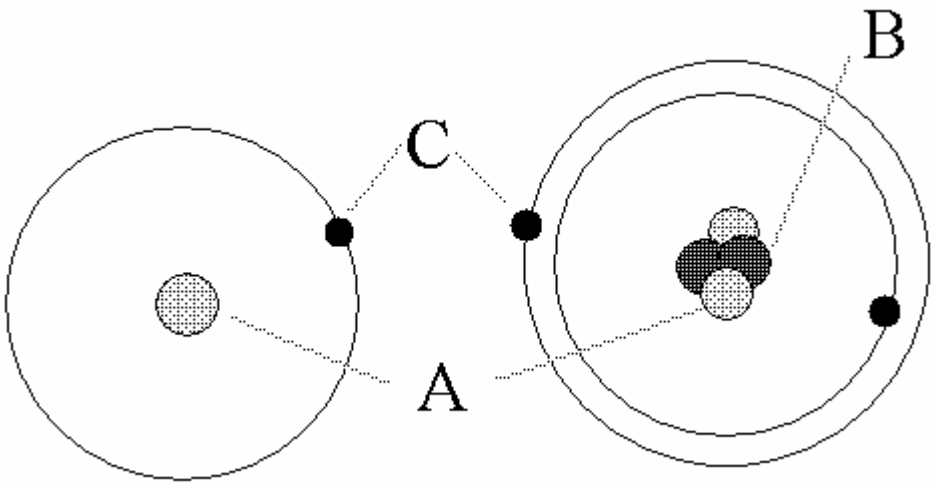
CREATION

The next step we're going to take is to describe how "we" came to fit into this universe. It is a long evolutionary process to start from simple atoms and end up with the forms of life we see around us today. With some patience however, this chapter will take you through the many simple and plausible evolutionary steps that fill out the details of how we came to be.

DNA (deoxyribonucleic acid) is probably not your favorite acronym. What is it? It's the atomic blueprints for making you. Where did it come from? Phenomenal question, and for the answer, we have to step back in time to the beginning of our universe. In the first few seconds of the Big Bang, virtually all matter in the universe was created. It didn't take long for these very crowded particles to spread out and within minutes after the Big Bang, there were an unimaginable number of particles just strewn all about in the universe.

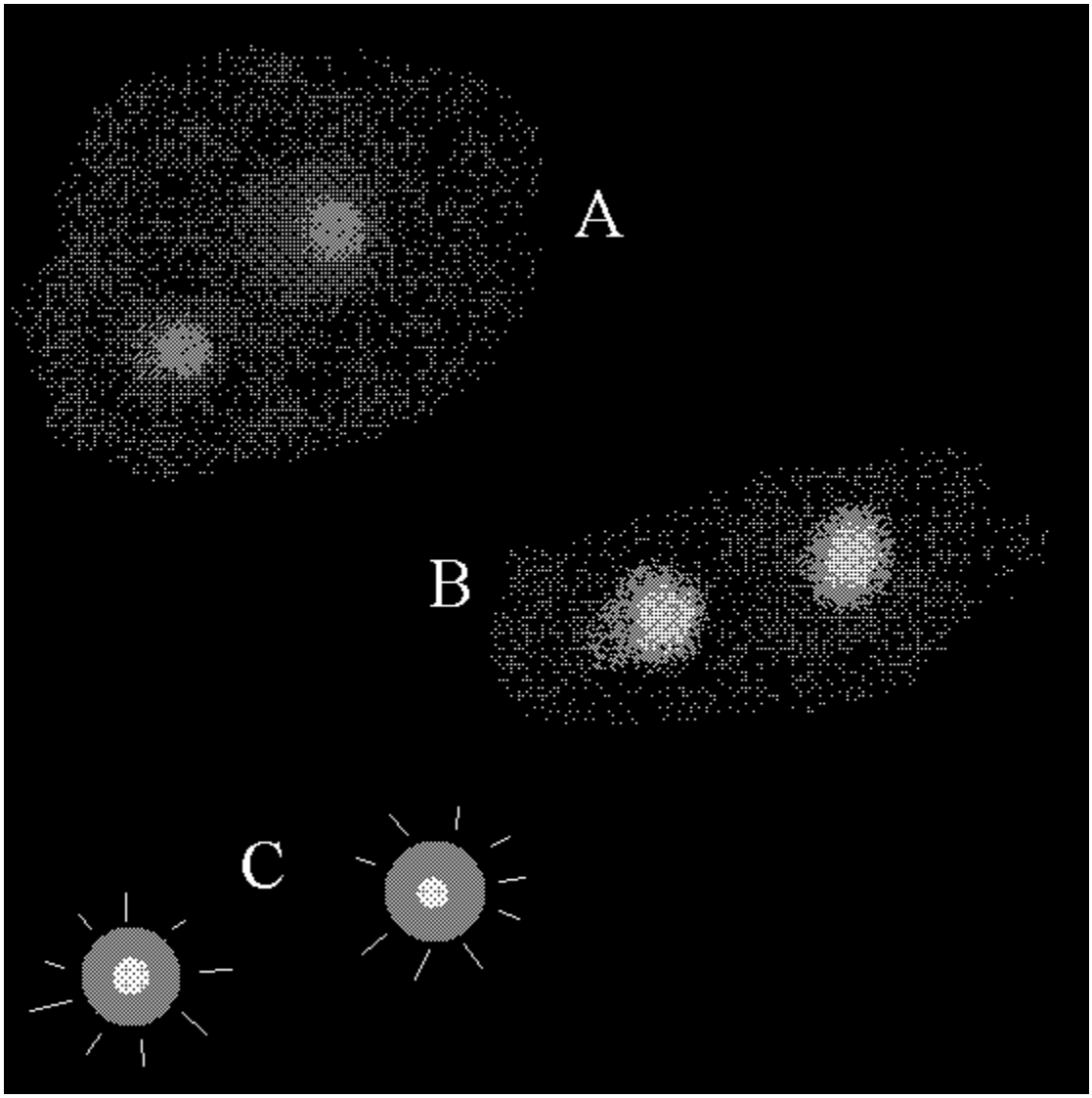


Over time, these very young and unstable particles decayed into smaller, more stable particles. These more stable particles were influenced to come together through the mechanisms of magnetism and gravity, and so formed the atoms of simple elements such as helium and hydrogen gases.



Simple Atoms – Hydrogen and Helium
A: Proton
B: Neutron
C: Electron

These gas particles continued to group together into larger and larger gaseous clouds until eventually there were enough gas particles clustered in a huge ball (approaching the size of our sun) to create a formidable gravity. This considerable gravity of all the gas particles squeezing together began crushing the gas atoms at the core of the ball, to the point where those crushed gas atoms began releasing photons of light.

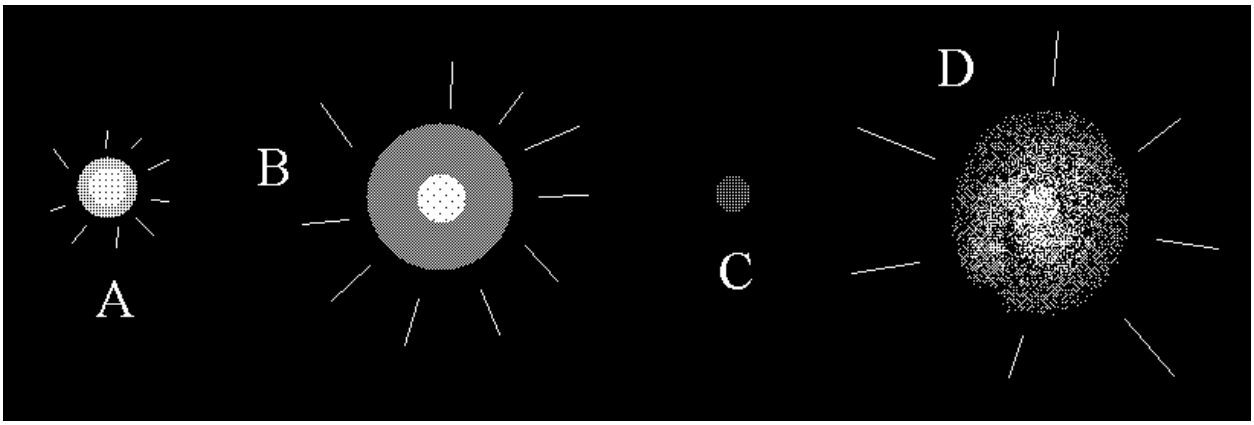


A: Particles and atoms start clustering together
B: forming denser and denser cores
C: until light producing stars are formed

This is how the first stars formed in our young universe.

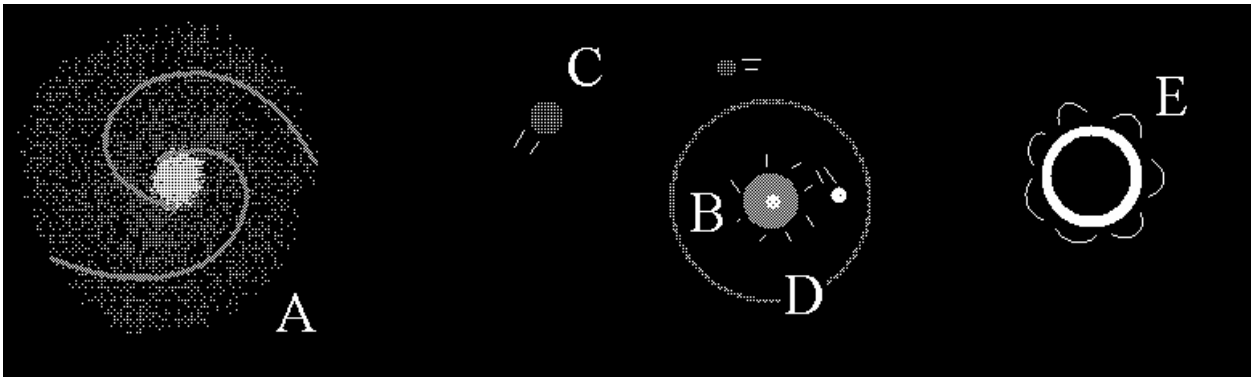
Gas particle by gas particle, the stars continued to grow until they eventually became so large that they began to crush their helium and hydrogen centers, forming all kinds of heavier elements (oxygen, aluminum, iron, etc.). After a considerable amount of time, these original stars began dying (running out of light energy, becoming super-dense) and eventually their surfaces collapsed inward, not having any more fuel to keep them buoyed outwards. The resultant cataclysmic

implosions sometimes created a high enough concentration of heat at the core to create a super-nova explosion that blasted apart the dead star, releasing all these heavier core elements out into the universe.



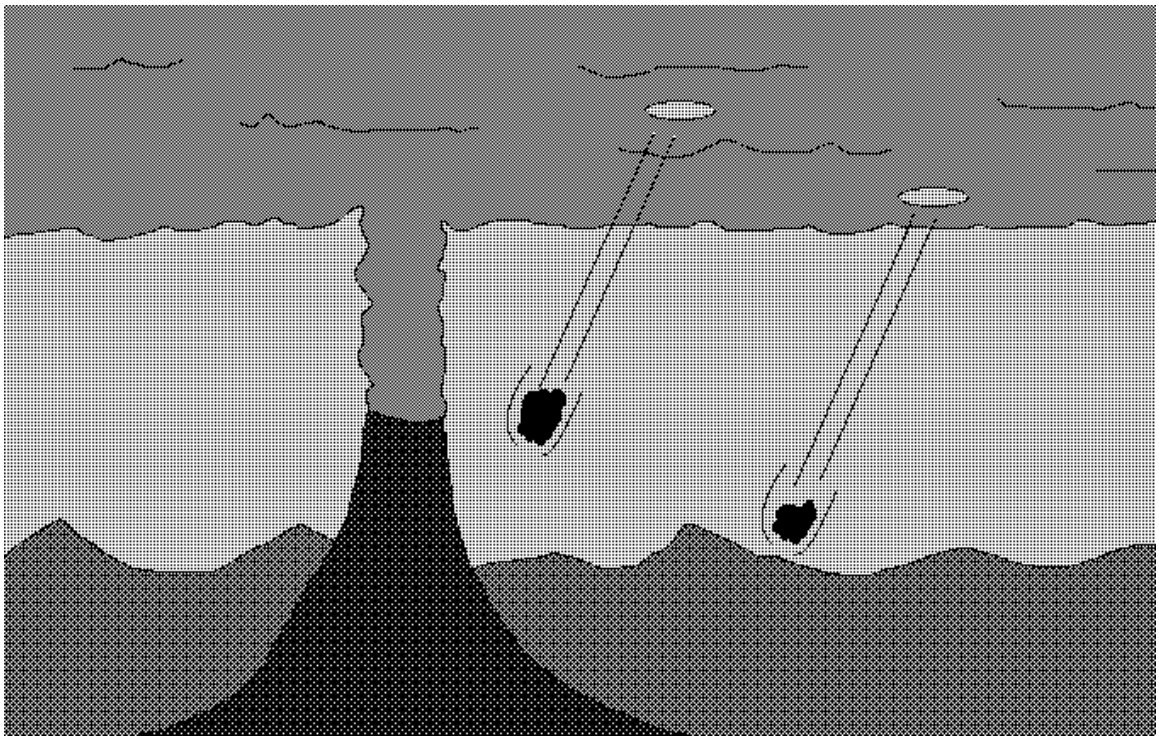
A: As a star ages, its core increases in density
B: During the last portion of a star's life, it will grow very large as the core reaches very high temperatures, forcing the star to expand…
C: …and eventually to burn out, allowing the star to collapse in on itself. Either a dense core would remain…
D: …or if the star had enough mass, the collapsing star would reach such a high temperature that its dense core would explode as a super-nova

We begin to see those heavier element core pieces gravitationally coming together to form asteroids, asteroids clumping together and forming planets, some of these growing bodies becoming so huge that once again they become stars, and some even reaching the size of black holes.



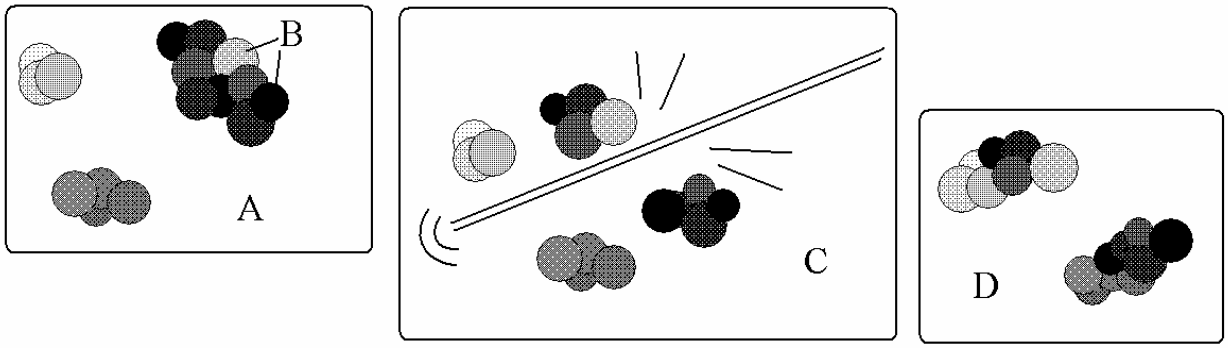
A: Once again the particles come together but this time there are heavy elements in the mix. Eventually…
B: …new stars form from the gathering particles, but now they have…
C: …planets and…
D: …asteroids orbiting them that formed from the heavier elements
E: If enough heavy elements come together, the mass would be so great that the resulting star would have enough gravity to prevent its own light from escaping, creating a black hole

More particles, atoms, molecules, asteroids, and comets than you can possibly imagine all gravitated or collided together to form our planet Earth, with just about every conceivable type of atom or molecule in the mix. When our planet was young it was volatile, with volcanoes, earthquakes, meteorites, and a poisonous atmosphere most likely consisting of several gases that would kill any modern-day creature in short order.



This atmosphere was thin and fragile and offered little protection for the Earth's surface from powerful cosmic radiation, unlike our current atmosphere that largely protects us from these powerful energy flows.

One of the side effects of high-energy cosmic radiation (gamma rays, X-rays, etc.) is that when they hit molecules, they sometimes break the molecule apart into smaller molecules or atoms, and then these pieces may form into other molecules.



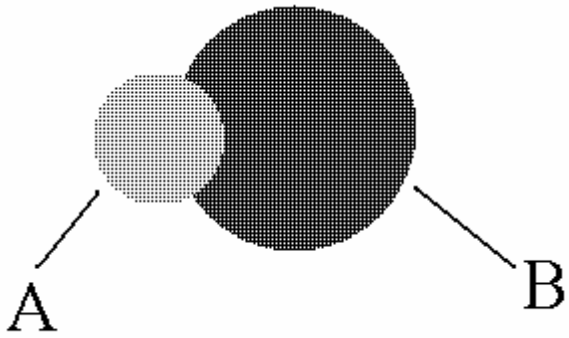
A: Three molecules
B: Individual atoms that compose molecules
C: High energy radiation (e.g., Gamma, X-Ray, etc.) splits a molecule
D: New molecules can form from the pieces

This continuous process of smashing apart molecules and reconfiguring them forms a countless number of random configurations of molecules. Most molecules that are formed this way are pretty innocuous clumps of atoms, but some are a little different.

BUILDING BLOCKS

The most primitive mechanism to differentiate sterile clumps of atoms from what we understand as the seeds of life would be the ability of a molecule to copy itself. The persistence of cosmic radiation pouring down on our unprotected Earth's surface and oceans makes it a viable generator to power the random mixing of particles needed to put together the complicated molecules that seed life. Essentially, the radiation kept churning up the soup of atoms and molecules in our ocean until finally a combination of atoms resulted in what are called "nucleotide" molecules, or the most basic building blocks of life. Individually each of these building blocks is just another innocent molecule but they have special bonding characteristics that make them important to the evolution of life.

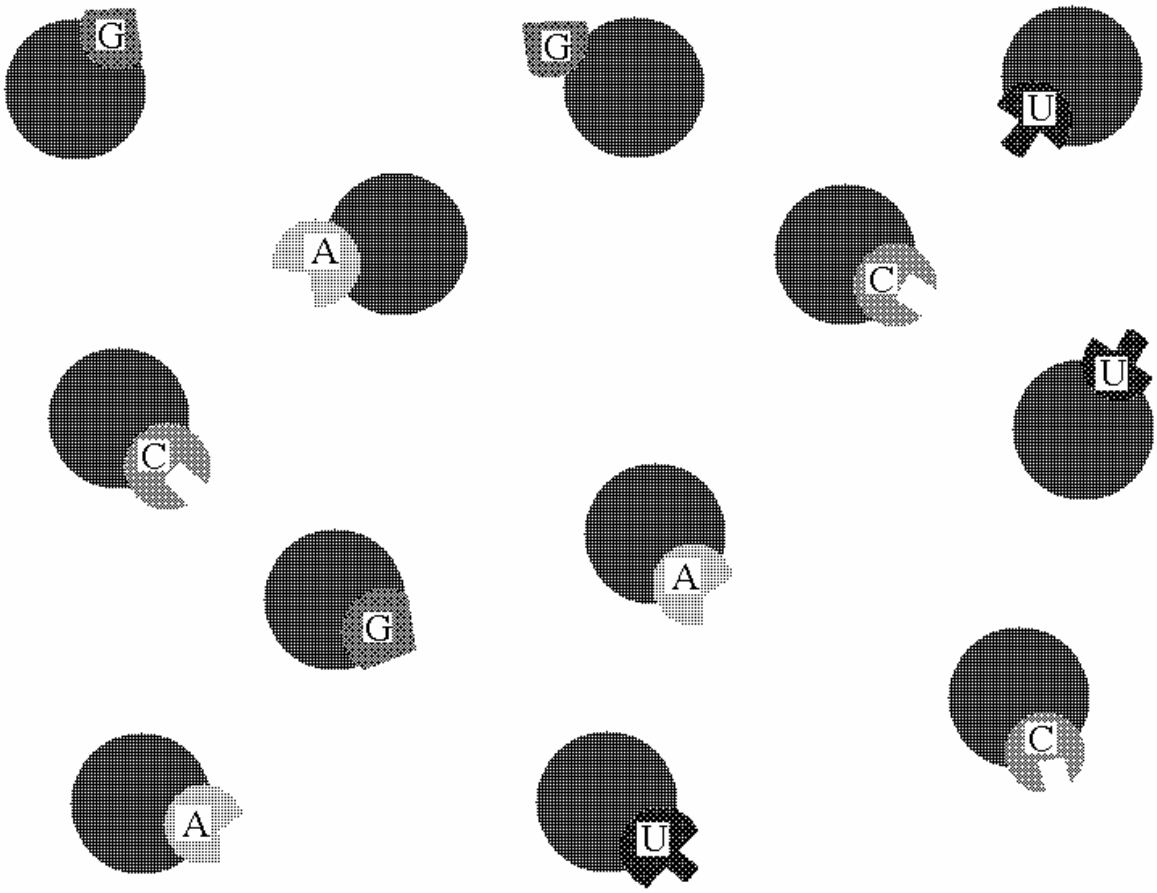
These tiny building-block nucleotide molecules are composed of a few specific simple molecules, but the important part for us about the nucleotide molecule is that each carries just one of a few possible specific types of base molecule, which we will call code keys.



Simplified view of a nucleotide
A: Code key
B: Building block molecule

The code keys we are concerned with are: A, G, C, U, and T (if you must know, Adenine, Guanine, Cytosine, Uracil, and Thymine) and essentially form the entire alphabet that describes our genetic makeup, meaning every single attribute of our bodies is the manifestation of a specific combination of these code keys. A building block can only have exactly one of these possible five different code keys attached to it.

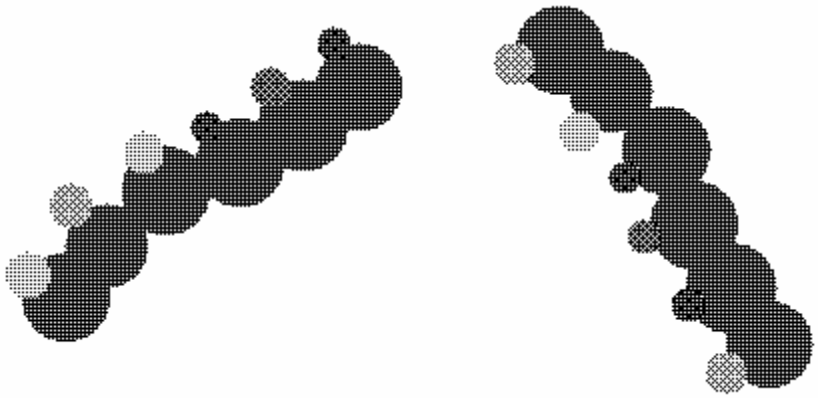
Now, imagine the point in time when the first building block was created in our ocean. Not an amazing feat considering how simple this molecule is in design. It was bound to manifest eventually with all the chemical volatility of the Earth's surface, and the onslaught of solar radiation pounding down on the oceans that creates quizillions of random molecules. Then another building block was created, and then another, and so on and on until millions and then billions of different building blocks are created all over the world.



Soon there are plenty of nucleotides

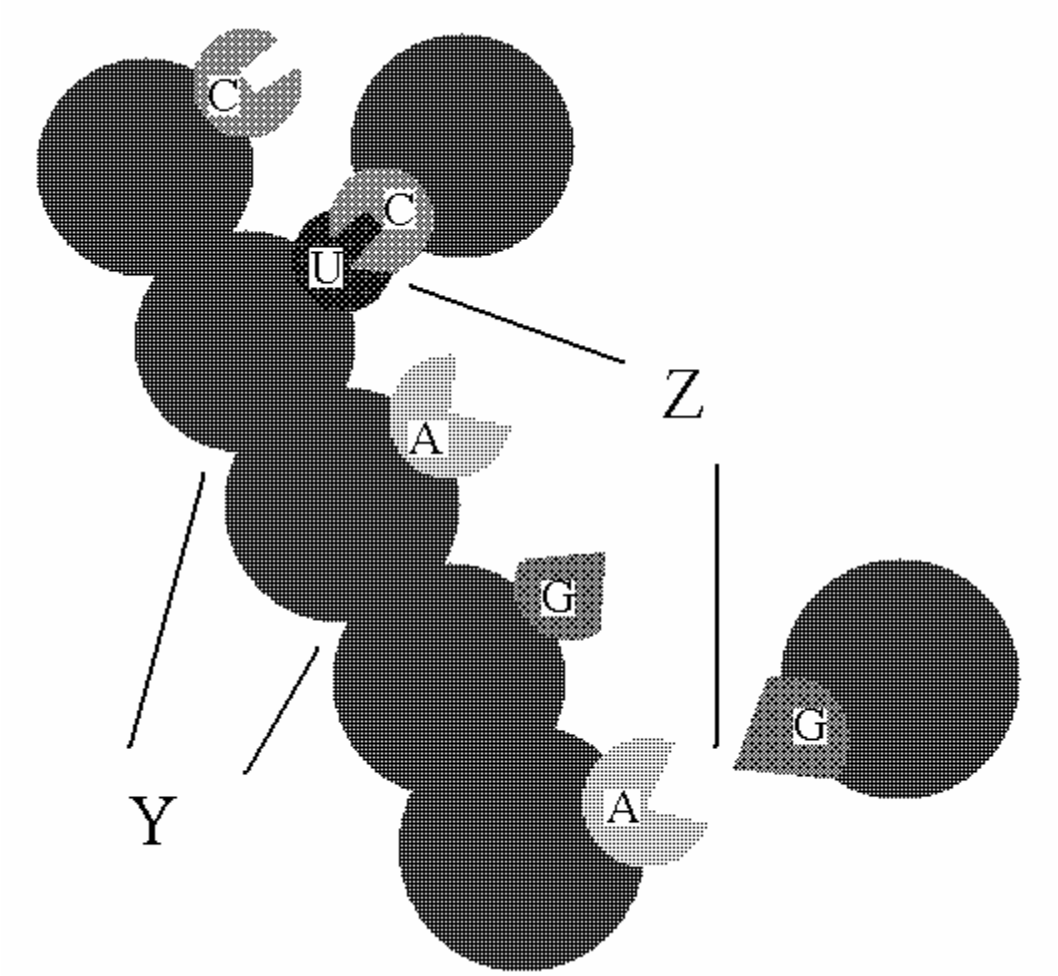
RNA

Eventually these building blocks are going to become so numerous that they come into contact with each other. The structure of these simple nucleotide building blocks makes them an excellent fit to stack together with other nucleotides, and so these building blocks started bonding together (assisted by gravity and atomic magnetism), forming small chains of building blocks called “RNA” (ribonucleic acid) molecules.



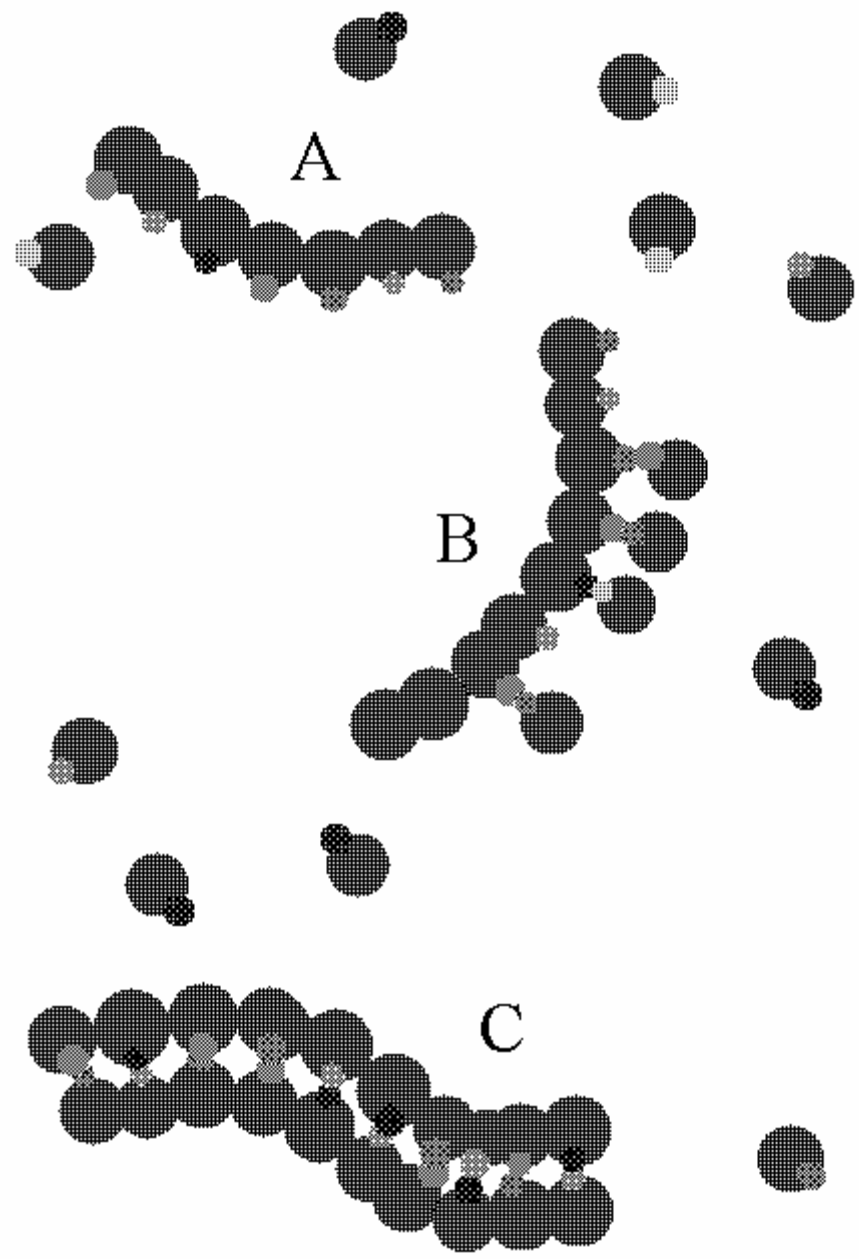
Nucleotides have a strong magnetic bond and naturally stack on top of one another to form long chains

These chains of building blocks fit together in such a way that they expose their code keys (A, G, C, U, or T) in a string running up along the side of the RNA molecule. As much as these building blocks prefer to stack on top of each other with a very strong bond, they can also weakly connect to the sides of each other by attaching one building block’s code key to another building block’s code key, but with certain restrictions: the code keys A and G will only match together, as will C and U (T will be explained later).



Y: Nucleotides have a strong bond when they are stacked…
Z: …but they can also weakly bond to each other by their code keys

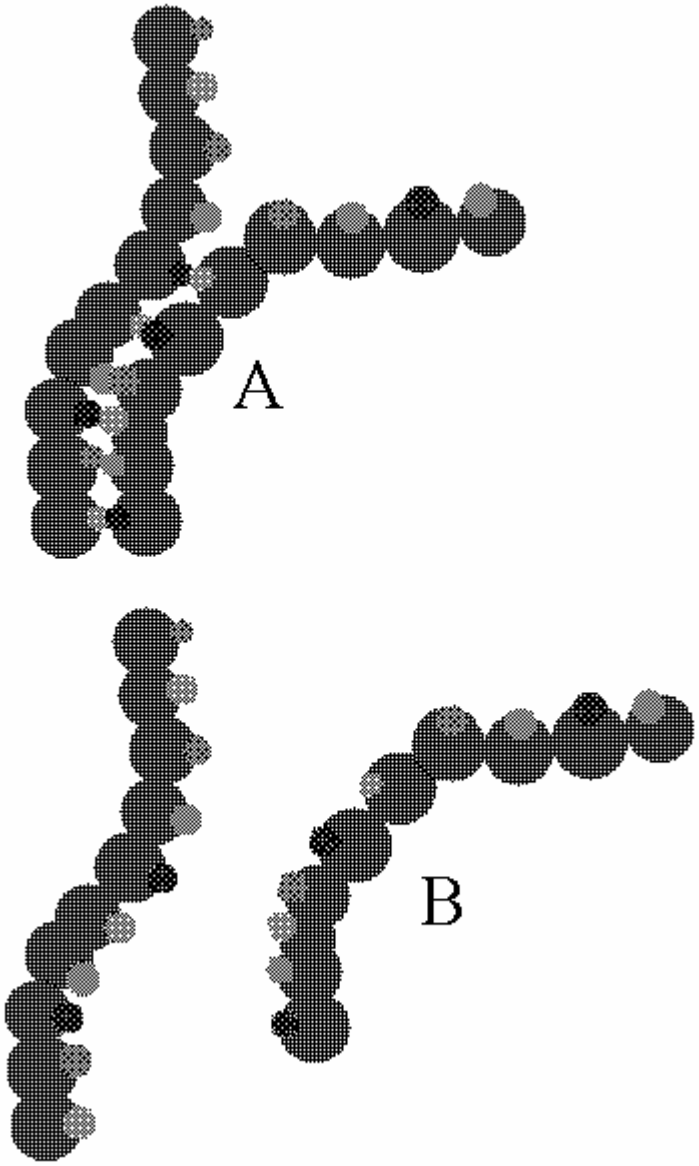
What we have here is an RNA molecule that consists of a string of strongly connected building blocks (nucleotides). The string can exist without anything connected to the building blocks' code keys but when other building blocks happen to wander by, the code keys along the side of the RNA sometimes catch them and they then stick to the side of the RNA (A with G, C with U). At some point the RNA molecule has a complete second RNA molecule stuck to it that was built piece by piece by assembling these wandering building blocks onto its side.



A: Single RNA molecule
B: Nucleotides in near proximity can attach to ends of RNA molecules, or attach by their keys to the side of it
C: Eventually the original RNA molecule has a completely new RNA molecule attached to it

The connection that keeps all these building blocks together is strongest at the top and bottom and weakest on the sides where the code keys are, and so when conditions are right (such as an environmental temperature peak), these two attached RNA strands will separate along

the code key bonds and split into two individual RNA strands, like a zipper being unzipped.



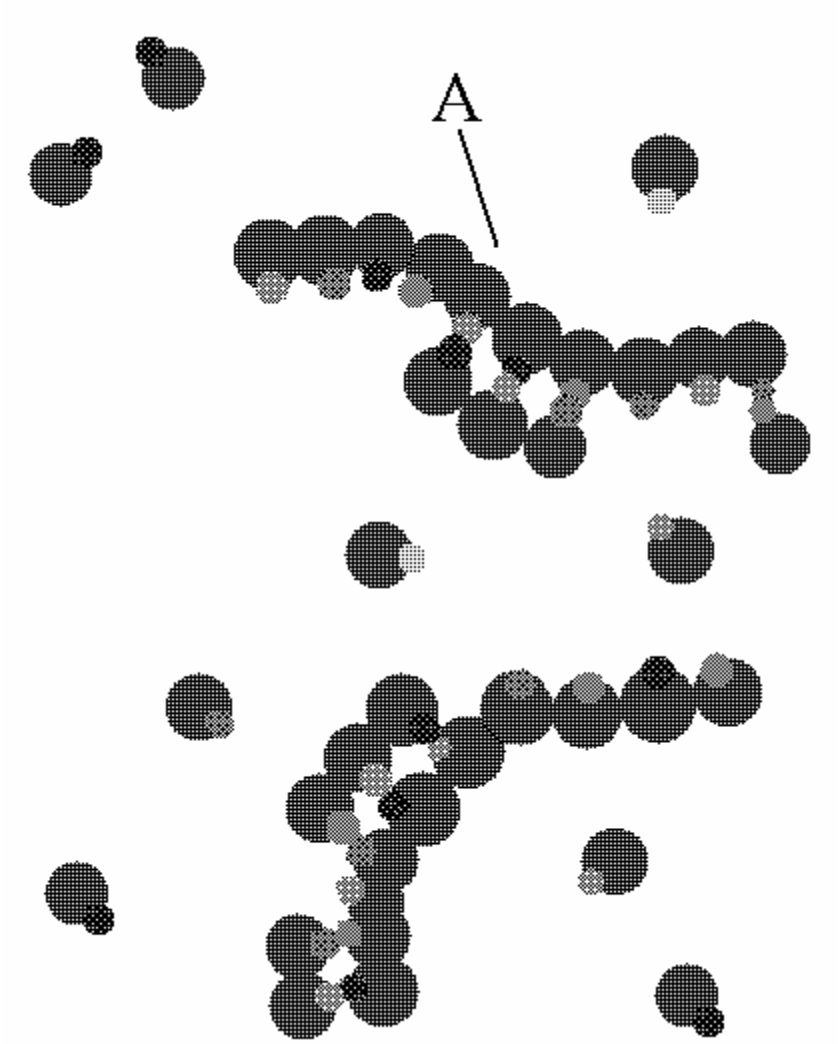
A: Environmental conditions (such as heat) may make atomic bonds less stable and the RNA molecules will therefore separate along their weakest link, the code keys
B: Two “opposite” RNA molecules are now free to once again begin assembling more RNA molecules

The two resulting RNA strands are exact opposites since the building block’s code keys on the first strand had to match the complementary

building block code keys on the second strand. C code keys will not match with C, but only with U; so, for example, if the first RNA strand started with a building block containing a C code key, then the RNA strand that split from it will start with a building block containing a U code key.

So how does this contribute to your happiness? Well, these details may seem remote from anything that could possibly contribute to your well-being, and quite possibly you are aching for something more interesting to learn, but please bear with the explanations, for there is an ultimate purpose to all of it. These dry facts are building a platform to support the core purpose of this book.

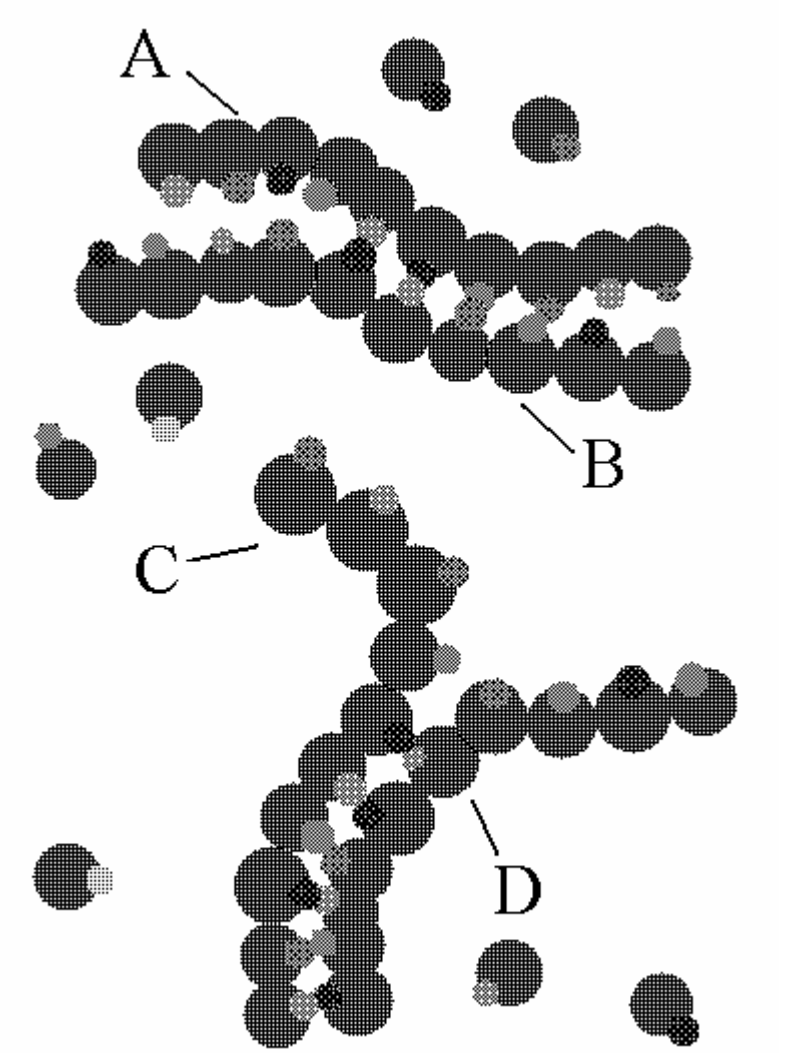
We now have two opposite RNA strands that restart the process of building more RNA strands along their sides. Sometimes by chance the RNA strands will lengthen by adding stray building blocks to the ends, but most of the available surface area of an RNA strand exposes a lot of code keys along the side for other nucleotides to weakly connect to; therefore the majority of the attaching building blocks will connect alongside the RNA.



The two RNA strands each build new strands of their own
A: Original RNA strand

When our two RNA strands gather enough building blocks to pair up for their entire length, they once again may split due to environmental conditions. This results in a third and fourth RNA strand. You might have noticed that the original first strand now has been duplicated, thanks to the effort of the second strand, and as well the second strand also has a twin that the original strand created. This happens because the original first RNA strand created the opposite second RNA strand, and then that opposite second RNA strand created its opposite, which is exactly the same as the original. Likewise, the original RNA strand has created another copy of the second RNA strand. In this way, every RNA

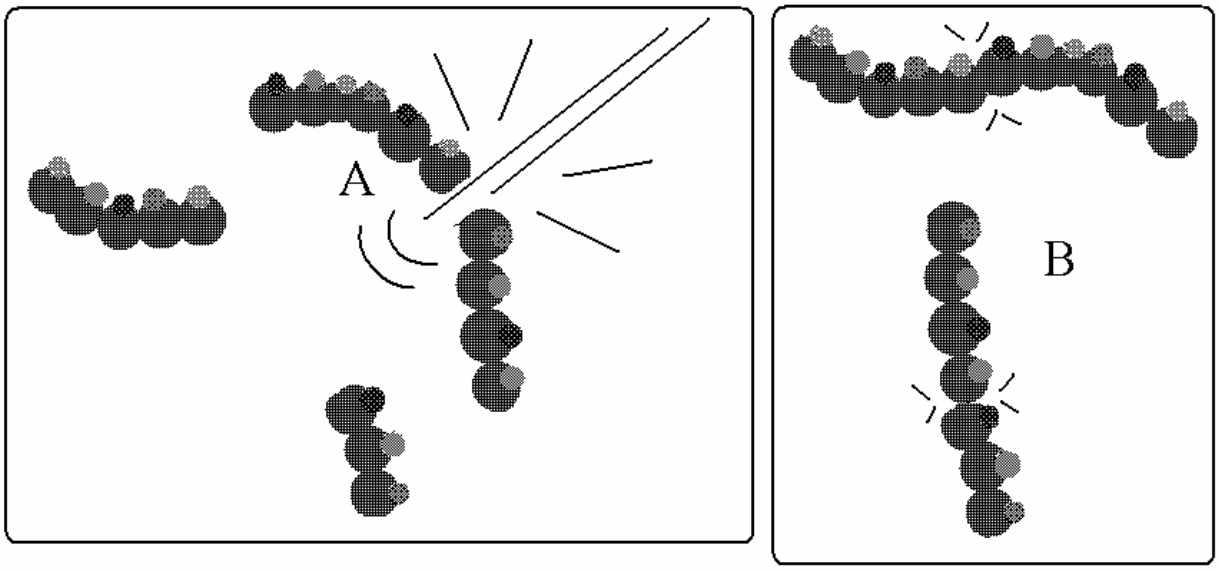
strand has a complete mirror image RNA strand that it can create, and which in turn can recreate the original.



RNA duplication process
A: Original
B: Second opposite strand created from the original
C: Opposite of first opposite, which means it is identical to the original
D: First opposite strand that was created from the original

What does all this do for us? This is the spark of life. The most fundamental requirement of any form of life is the ability to reproduce. RNA can reproduce itself and can also do a few other things as well, depending upon the sequence of the building blocks' code keys. The continuous process of RNA code key pattern changes are driven by the

ceaseless bombardment of solar radiation that will randomly impact and reorganize the building block arrangements until another useful type of RNA molecule is created.



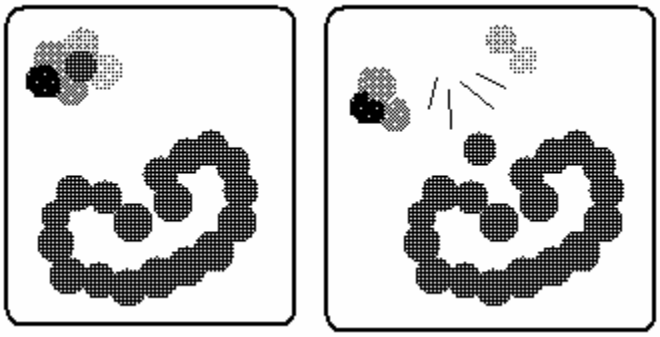
A: Radiation can split an RNA strand…
B: …and this can create new strands from the pieces

It all happens by chance. Virtually none of the random changes to an RNA strand will be beneficial to the RNA, but over time, with billions upon billions of random changes to billions and billions of RNA strands, eventually a configuration will emerge that somehow helps the RNA to reproduce.

RIBOZYMES

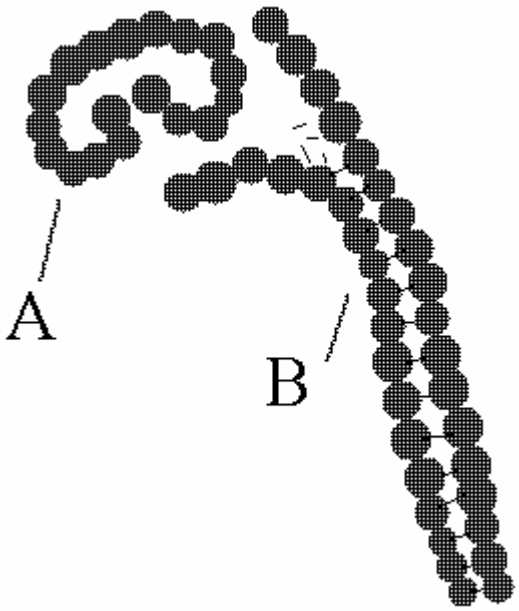
In certain code key sequences, RNA gains the ability to either construct molecules from raw parts, or break existing molecules that happen to be floating nearby. This is called “enzymatic” activity, which means that certain RNA strand patterns (called “ribozymes”) now have the ability to minuscully change their environment by promoting (catalyzing) simple chemical processes. Eventually these RNA strands, through millions of variations in design, become arranged in code key patterns that result in an RNA molecule that can assist another RNA molecule to reproduce. For example, some RNA molecules evolved to

"enzymatically" break free new building blocks that are embedded in other larger molecules, instead of just sitting around waiting for a random ready-made building block to wander by.



Certain sequences of RNA strands can perform enzymatic functions, such as breaking up other molecules to free up trapped nucleotides

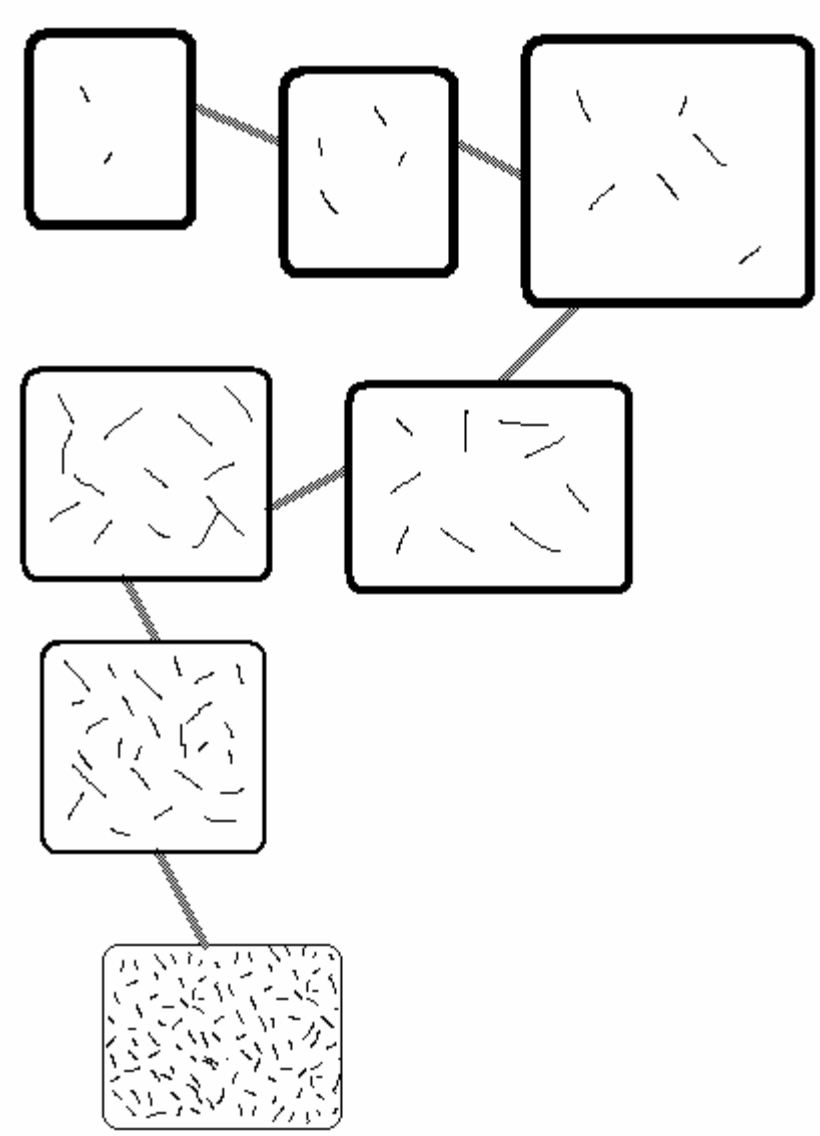
This greatly accelerates the rate at which RNA could multiply since there would always be a ready supply of building blocks created with which to build RNA. As well, some RNA molecules evolved to have a code key sequence that allows them to split the zipper of another RNA molecule that already has all the necessary pieces to duplicate.



A: Some enzymatic RNA strands were able to split another…
B: …RNA molecule that was in the process of duplicating, speeding up the process considerably

So instead of an RNA molecule having to wait for the right environmental conditions before it can split, another RNA molecule would enzymatically help to split it instead.

To demonstrate how quickly these molecules can multiply and spread out into our world, take just one of our RNA molecules and watch as eventually this molecule builds another opposite strand and then splits into two separate strands, those two split into three (the expected fourth one may have been destroyed by environmental bad luck), those three into say…six, six to 10, 10 to 18, 18 to 30, 30 to 50, and so on. Wow, in just a few steps, we have already increased our molecule population to 50! What happens if we take that a few more steps: 90, 170, 300, 550, 1000, 1800, 3200, 6000… Every step dramatically increases the population of our replicating molecule.



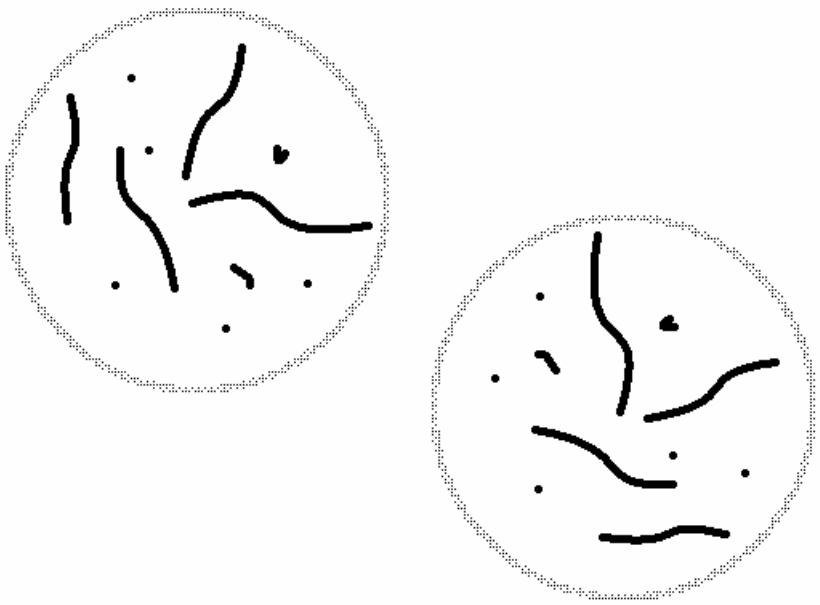
Every time the RNA strands reproduce, they significantly increase their population

Every single RNA strand is subjected to the same chance of random reconfiguration due to solar and stellar radiation and so with an ever-increasing population, there are many more chances for at least one of these RNA strands to randomly evolve with beneficial “mutations” (changes).

The ability of RNA strands to assist in the reproduction of other RNA strands is probably the first significant step in the evolution of life. These RNA molecules reproduced voraciously and they worked to assist each other to reproduce. The next important evolutionary step would be

to somehow contain these partner RNA molecules into near proximity such that the RNA that creates particles and the RNA that splits other RNA molecules are confined to a small region to increase their partnership efficiency. For this to happen, RNA molecules evolved to create a very basic "shell", that may have initially been formed from the accumulation of waste by-products from the RNA's enzymatic activities, but later evolved into a controlled process.

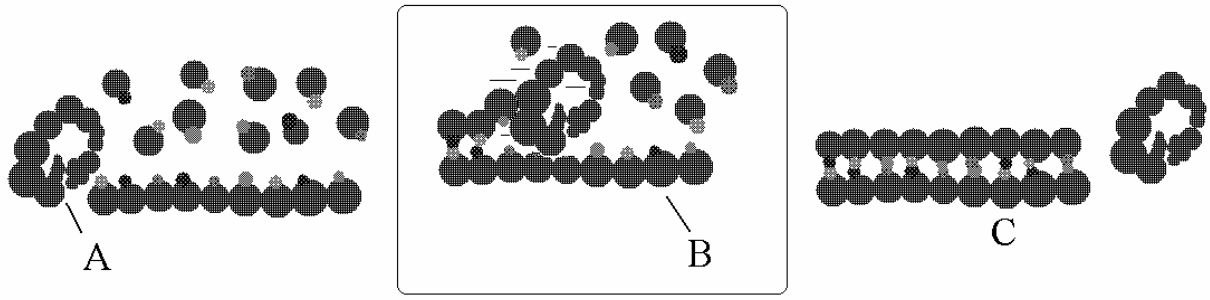
These shell-building RNA molecules, like all others, evolved by fluke, but once the random configuration of RNA came about that created the first rudimentary shells, the sheer gain in efficiency of RNA reproduction was enormous, and thus this form of RNA reproduced and evolved voraciously. The end result of these wall-building RNA molecules was the production of a protective layer that surrounded a group of many different RNA molecules, and this allowed them to remain confined in close proximity so they can work together more effectively.



Shells may have formed from the enzymatic activities of the RNA molecules, effectively grouping RNA strands together in what might be considered the first "cells"

With this new shell advantage, the rate of evolution again magnifies because of the improved efficiency in reproduction of these RNA strands.

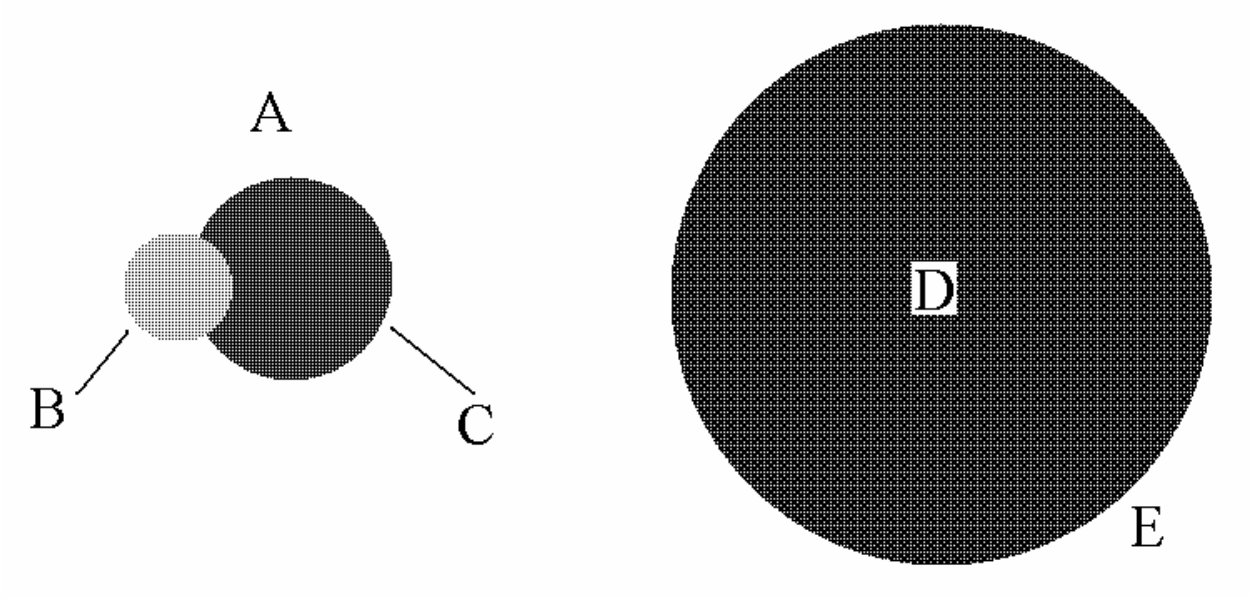
Eventually yet another type of RNA molecule evolves that helps another RNA molecule to assemble nucleotides to its code keys, once again improving the reproductive process. This enzymatic "stitcher" RNA molecule will travel down the other RNA molecule and stitch the properly matching building blocks to it.



A: Stitcher RNA
B: Stitcher travels along another RNA strand and attaches the appropriate nucleotides to it
C: Eventually creating a full opposite copy that can now be split from the original strand

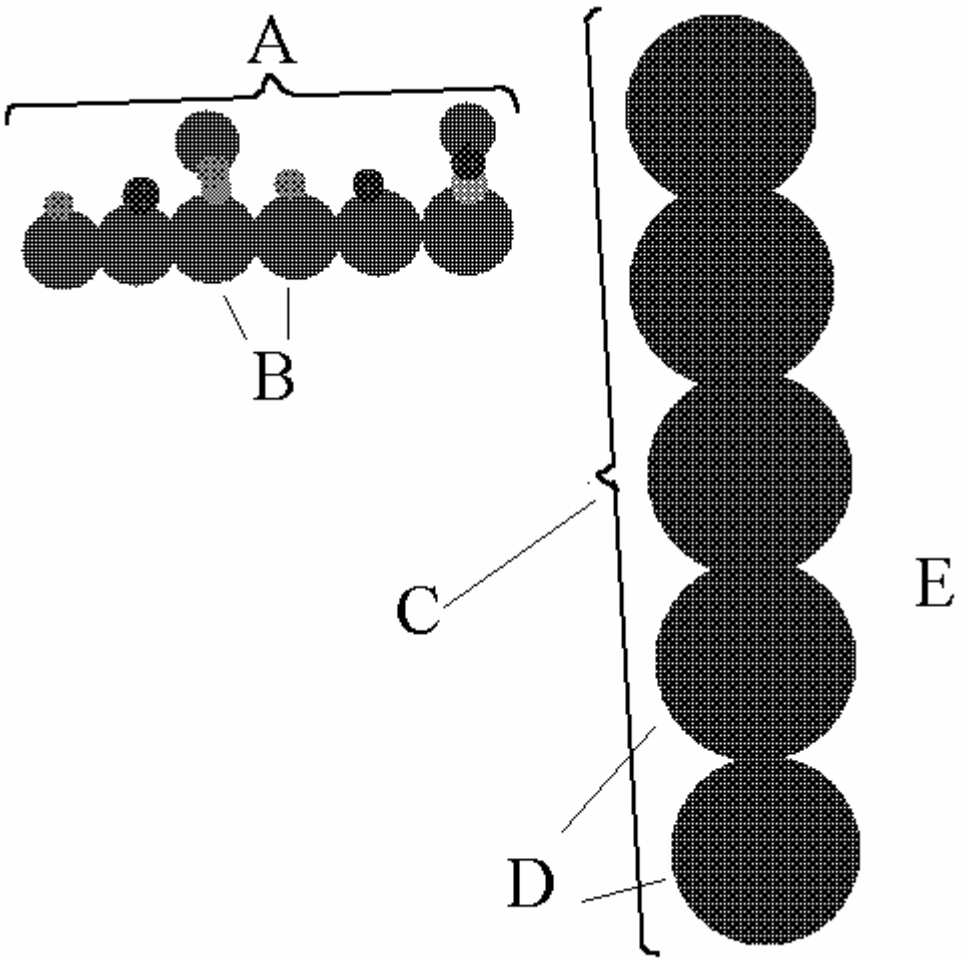
PROTEINS

The cosmic radiation that bombarded our primeval Earth also created many other types of molecules, and one that is particularly important to us is the "amino acid".



A: Nucleotide
B: Code key
C: Building block molecule
D: Amino acid molecule
E: No code key

Amino acids are similar to our nucleotide building blocks and can also form into chains similar to RNA, but the amino acid version of these chains are called “proteins”, and proteins are much more acrobatic than RNA strings. Proteins can be inert chains of amino acids but in certain amino acid combinations, these proteins become what are called “enzymes” and act very much like RNA molecules in that they enzymatically act on other molecules, but much more efficiently and tenaciously. However, proteins, lacking the code keys that help our RNA to reproduce, do not have any way to reproduce themselves.

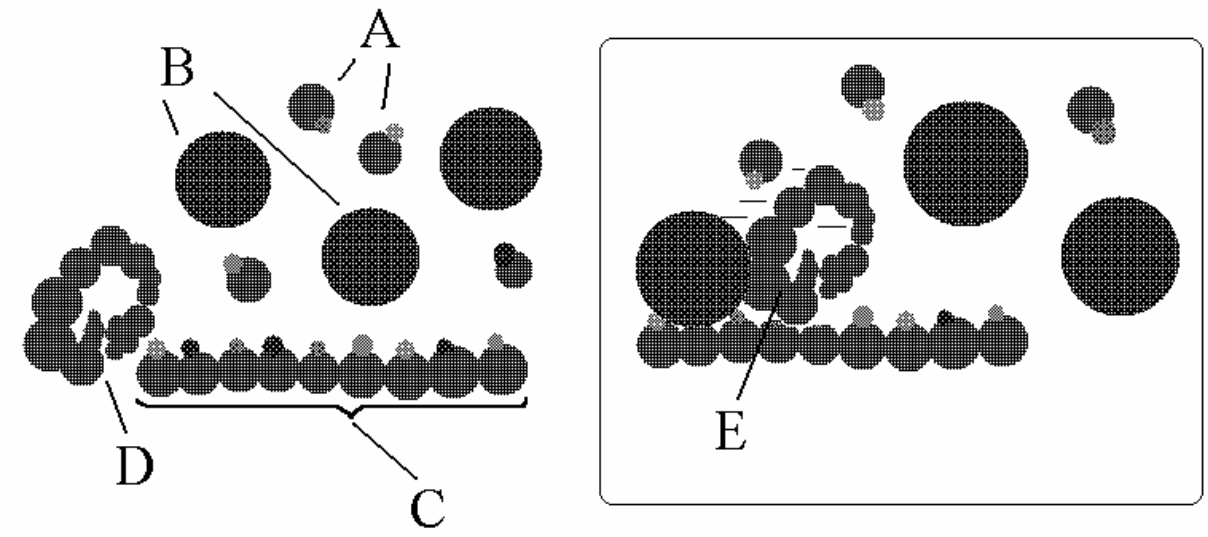


A: RNA strands have code keys, allowing them to reproduce themselves
B: Nucleotide
C: Protein
D: Amino acid molecule
E: Amino acids do not have code keys and therefore the protein chains they may form cannot reproduce by themselves

Reproduction must happen by chance (e.g. cosmic radiation), or through the process of being enzymatically stitched to an RNA molecule strand that serves as a template for a protein (explained in more detail later).

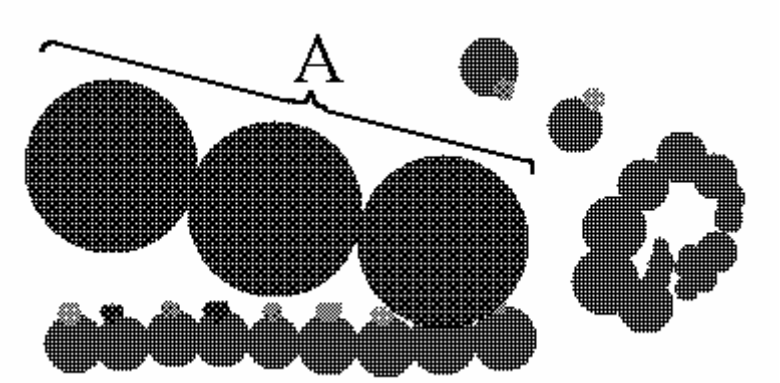
Back to RNA: with all these amino acids floating around in the sea soup, eventually one of our RNA strands mutates to produce a new form of stitcher (by sheer evolutionary fluke again). This version has a different agenda though: instead of trying to attach nucleotide building blocks to the RNA, it now grabs matching amino acids and joins them together in a sequence that matches the RNA strand (the type of amino

acid to be chosen is selected from a pattern of three adjacent nucleotide code keys).



A: Nucleotides
B: Amino acids
C: RNA molecule
D: New form of stitcher that attaches amino acids instead of nucleotides
E: Stitcher travels along RNA strand and creates new strand of amino acids

This new breed of helper RNA's (a very primitive version of what will eventually evolve to become the very complicated molecule known as the "ribosome") sole purpose is to create long strings of amino acids that immediately float off on their own because amino acids have no code keys by which to bond to RNA strands; but amino acids do have the ability to stick to each other.

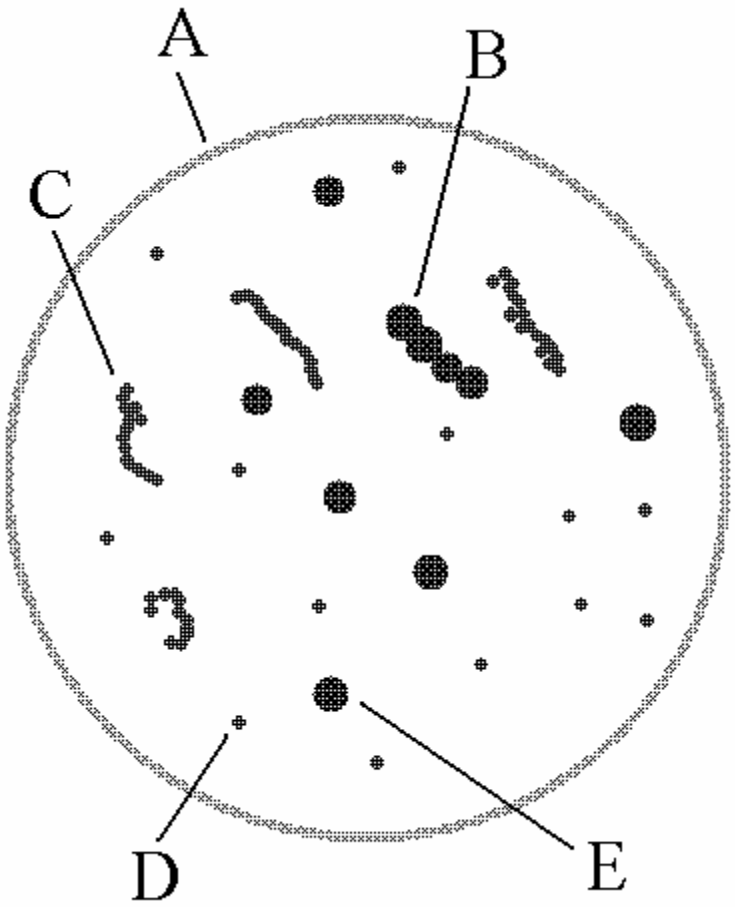


The amino acids do not stick to RNA so they separate from the RNA strand. The amino acids can stick to each other and therefore produce an amino acid chain called a “protein”
A: Protein

Some of these strings of amino acids that are created can also perform enzymatic functions just like the RNA could, but the amino acid chains are intrinsically much better at performing these functions. So with the help of our newfound friend, the protein enzyme, the efficiency of reproduction has again been increased because these new enzymes better assist the RNA replication process.

CELL BEGINNING

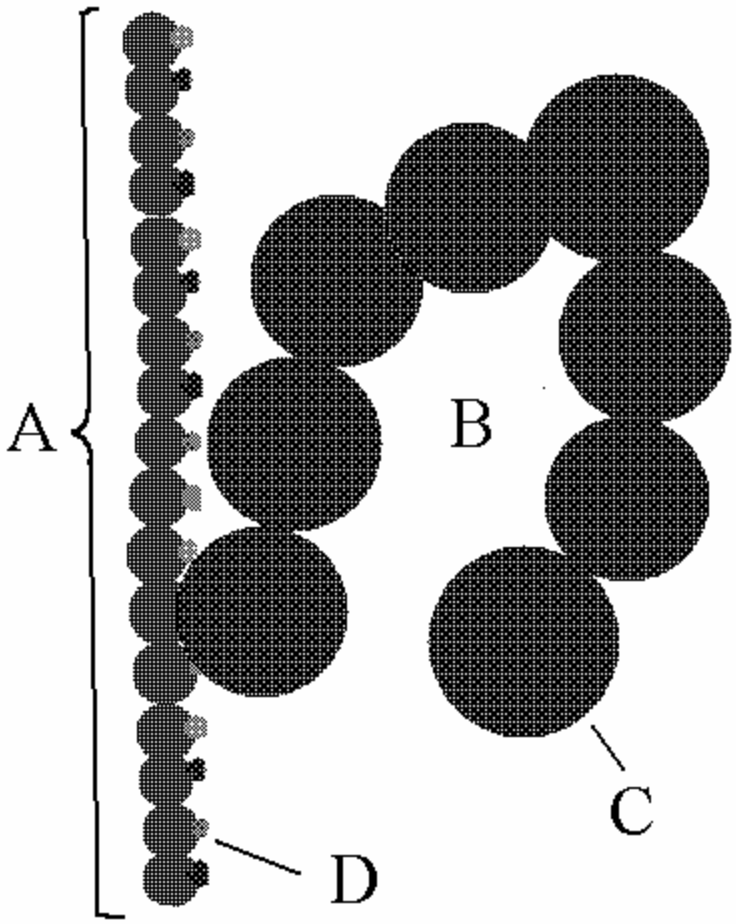
So far presented we have some RNA molecules that help each other reproduce and sometimes create protein enzymes to further assist in RNA reproduction, and all of this is contained in a shell. This is the beginning of the cell.



Beginning of the “Cell”
A: Shell
B: Protein
C: RNA strand
D: Nucleotide
E: Amino acid

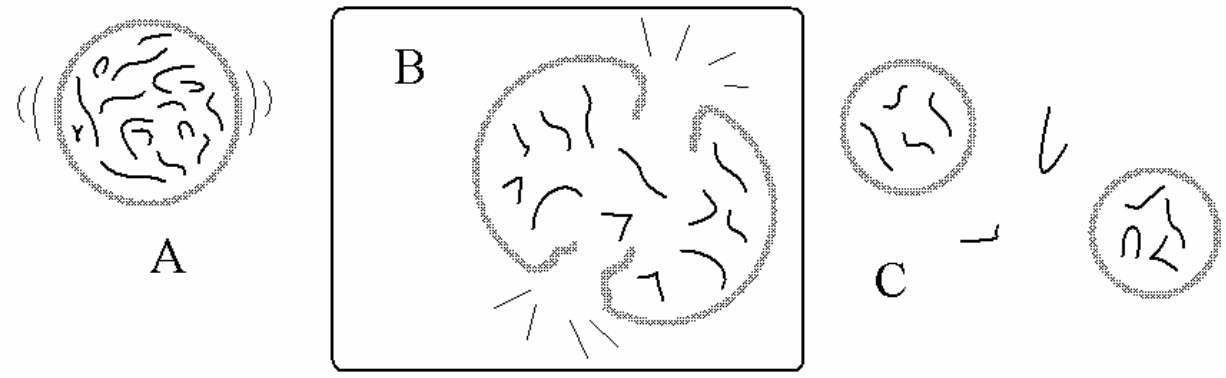
Think of a cell like a bag of seawater with enzymes and RNA in the mix. If you compare a cell to a city, then the enzymes play the same role as people, they perform the work. The RNA strands that produce proteins have a great reproductive advantage over other types of RNA, and eventually most RNA evolved to allow the protein enzymes to take over most of the functions that the RNA strand molecules used to do enzymatically for themselves, leaving the RNA instead to just supply the instructions for creating the protein enzymes since protein enzymes cannot reproduce themselves. Any RNA molecule that is the design for

an enzyme is called a “gene”, and genes are simply the instructions for building an enzyme.



A: RNA strands that create protein enzymes are called “Genes”
B: Protein enzyme
C: Amino acid
D: Nucleotide

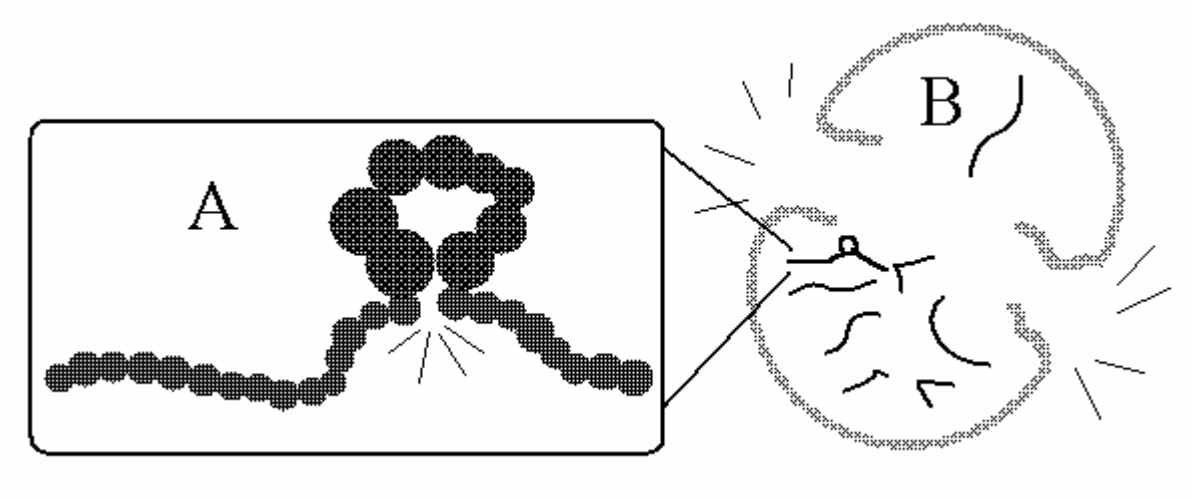
Some RNA molecules evolved to create specific protein enzymes that could create a more rigid cellular wall. Some enzymes even evolved to replace the helper RNAs (e.g., the stitcher, the splitter, etc.) because protein enzymes are much better and faster at these enzymatic actions. When these primitive cells eventually filled with enzymes and RNA to capacity, they would be crowded to the threshold where they would literally tear the cell apart and split it into two halves. Once the cell splits, the cell-wall building enzymes rebuild the split part of the cells and seal both of the new cells closed again.



A: When our primitive cell produces enough RNA strands and proteins, it will become too large for the cell to contain...
B: ...eventually breaking the thin cell's walls…
C: ...and the growth cycle starts all over again

Hopefully at least a full copy of all the various RNA made it into each cell, for if one particular type of RNA strand didn't make it into one of the half-cells, that new cell will possibly be unable to produce a very essential enzyme (stitcher? cell wall builder?) and the cell may cease to maintain its integrity (die) because it can't function properly as a symbiosis of smaller processes. It is the collection of RNA, and the protein enzymes that they create, that define the mechanism of our working primitive cell.

Further evolution of the RNA, and hence the evolution of the enzymes they produce, leads to a more controlled splitting of the cells, larger cells, and longer RNA strands that create increasingly more complicated enzymes. Over a great deal of time, the RNA molecules evolve to become quite long and complicated and eventually there are escalating reproductive difficulties that arise from their long length. They increasingly have a greater susceptibility to damage from their own partner enzymes which may suffer from damaging mutations that change their behavior, and the process of splitting becomes highly error-prone because of the number and size of RNA molecules that must be in both split halves in order for the new cells to continue living individually.



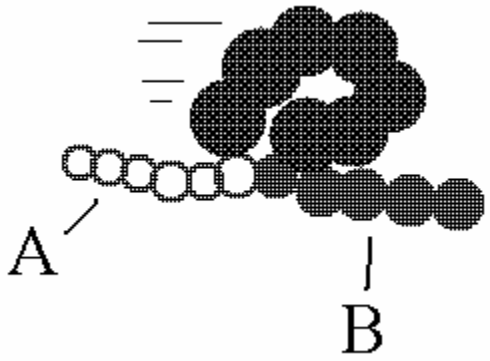
A: As the RNA-based cells evolved, they had increasing difficulties when reproducing. Occasionally the RNA strands would grow too long and break, or an enzyme evolved that was destructive and would attack RNA strands;...

B: …or when a cell splits, it doesn't share the RNA information equally and one half dies

There must be a more reliable way to keep this reproduction mechanism going, otherwise it would seem that RNA-based life could not evolve to become any more sophisticated than this level.

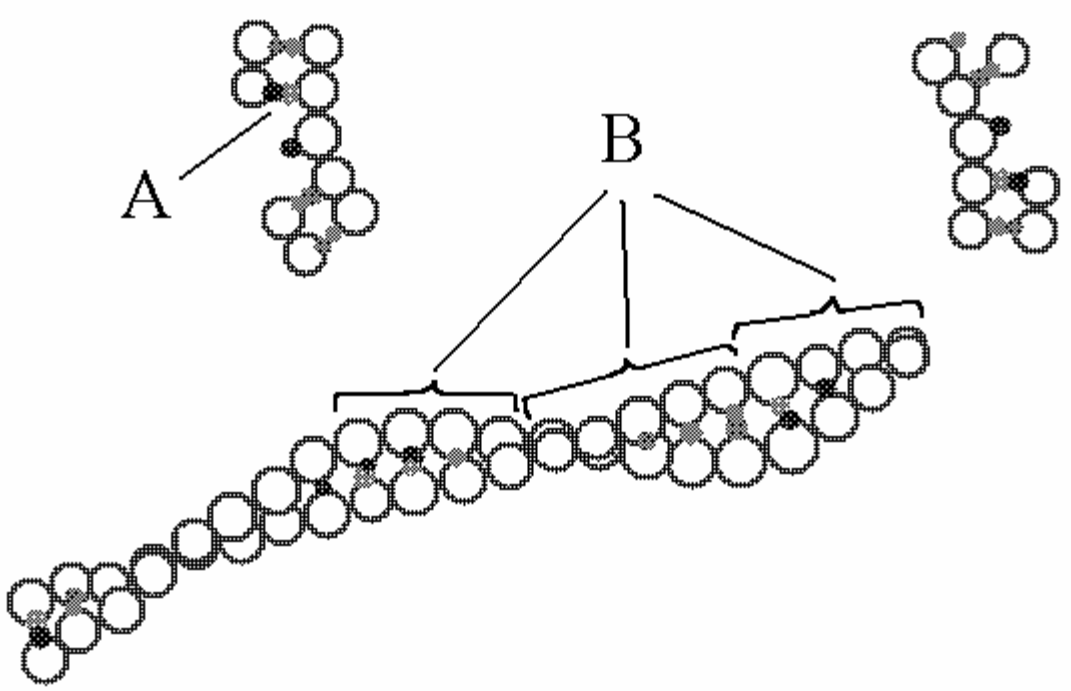
DNA

While most cells continued to evolve in this bacteria-like RNA model, somewhere along the timeline, in one of the zagillions of our RNA-based cell population, an RNA molecule finally evolved (by chance) to produce an enzyme (call it the "compressor") that would chemically alter some of the RNA strands floating about so that they were more compact, resulting in a cell with a portion of its RNA compressed into a smaller size.



Eventually, an enzyme (the “compressor”) evolved that would transform RNA into a compressed form
A: Compressed RNA
B: Normal RNA

This new form of compressed RNA could attach to the ends of other similarly compressed RNA strands and still be able to maintain a long length because of its much more rigid new structure, and as an added benefit, it was unrecognizable now by most other damaging enzymes so it wouldn’t be attacked by errant enzymes as often. This compressed version of the RNA would keep attaching itself to the ends of other compressed RNA strands until it became long enough that a copy of all the different types of RNA strands that exist for a given cell would now be a part of this mega-RNA molecule in compressed format; and this new type of molecule is known as “DNA” (deoxyribonucleic acid).



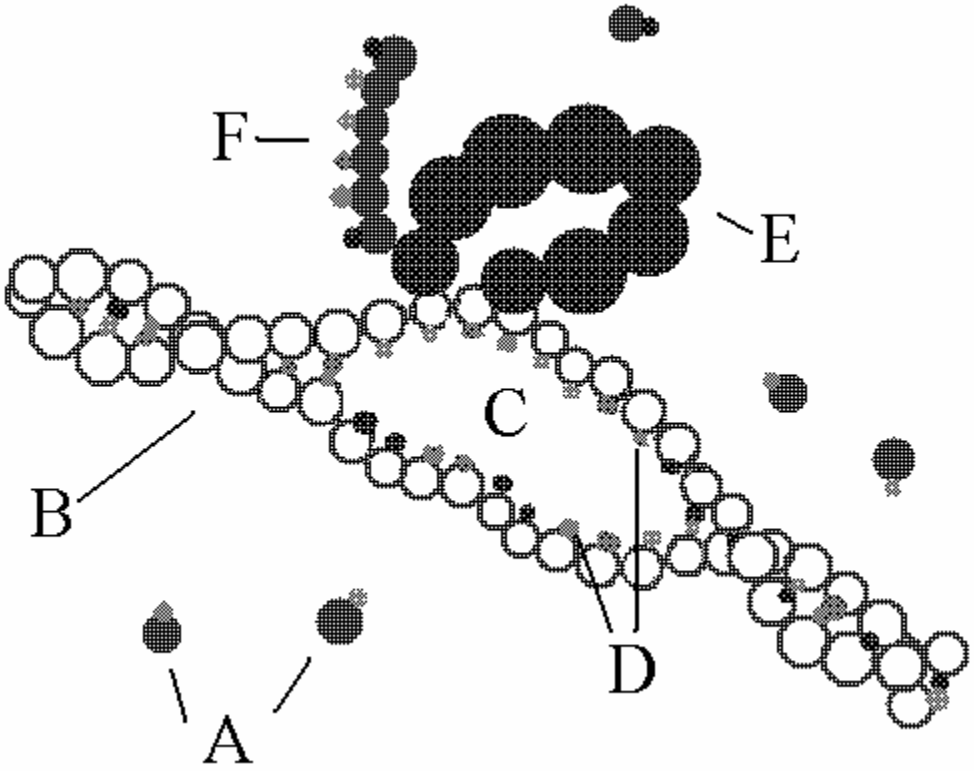
A: Compressed DNA can still bind on its code keys…
B: …as well as very strongly to each other's ends, creating one long and twisted DNA molecule

If RNA is analogous to a book, then DNA is the library.

DNA is different from RNA in many ways, but the important differences are that the compressor enzymes change the U code key to T (Uracil to Thymine), and that DNA is not as susceptible as RNA to splitting into two strands along the code keys as a result of environmental conditions. At first, DNA was not very useful to the cell. None of the enzymes could work with it (e.g., split it) and so it more or less was just wasted material floating about in the cell that did nothing because it would not split, or replicate, or produce anything. This compressor enzyme that creates DNA seems to have been wasteful with necessary resources in the cell by converting them to an unusable form.

Eventually though, something great happened: slight mutations in the existing RNA inevitably produced enzymes that were capable of operating on the DNA's slightly different structure. These new enzymes eventually evolved the process of splitting a small section of the joined DNA strands (taking the book off the shelf), copying that section to create an RNA strand (reading the book), and then rejoining the DNA to

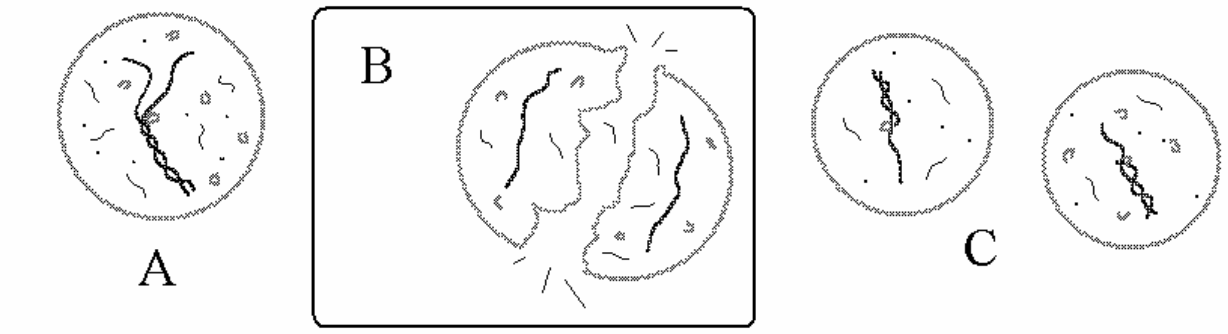
its mirror strand (returning the book to the shelf). What this new enzyme (the RNA creator) produces is a normal RNA strand that can be used by an RNA stitcher enzyme to create more enzymes.



Enzymes eventually evolved the ability to partially separate the strands of the DNA, create an RNA strand from the exposed DNA keys, and to finally stitch the DNA back together
A: Free-floating nucleotides with which to construct the RNA strands
B: DNA
C: Split section of DNA
D: Exposed DNA keys
E: DNA-capable enzyme
F: Newly created RNA strand

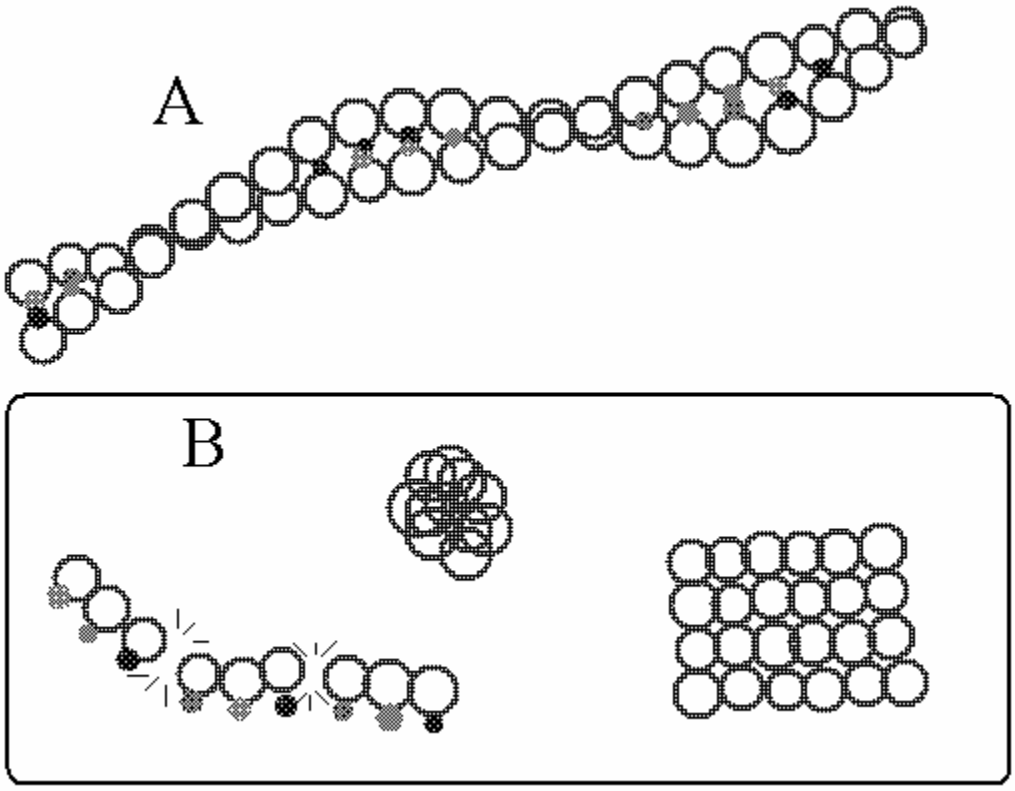
Now RNA molecules can be reliably reproduced from the DNA instead of relying on the RNA molecules to duplicate themselves. How does this help our cell? Now when it splits, whichever half gets the DNA (the full library of RNA instructions) will always be guaranteed to be able to produce all the necessary RNA molecules, and hence all the necessary enzymes, to help it live.

One more step: we can't just have one half of a splitting cell left with only RNA whilst the other lucky half gets the whole DNA molecule; the DNA copying is also critical. An enzyme eventually evolved to be able to completely split the DNA molecule into two opposite halves, and now when the cell splits, each new cell gets half of the DNA. Each half of the DNA is then reconstructed into a complete DNA molecule once again with the help of the DNA stitcher enzymes, and finally the RNA creator enzymes starts creating more RNA from the DNA: a reliable, self-replicating machine.



A: Enzymes separate the DNA strands
B: The cell splits into two halves, each half getting one of the DNA strands
C: Enzymes rebuild the DNA strands into complete DNA molecules

Why is DNA shaped like a twisted double helix? Well, other possible shapes that you might imagine for our DNA (e.g. string, ball, flat sheet) failed to evolve because of the mechanical difficulties of combining a large number of nucleotide building blocks into a structurally sound construct, and yet it still be functionally capable of reproducing itself.



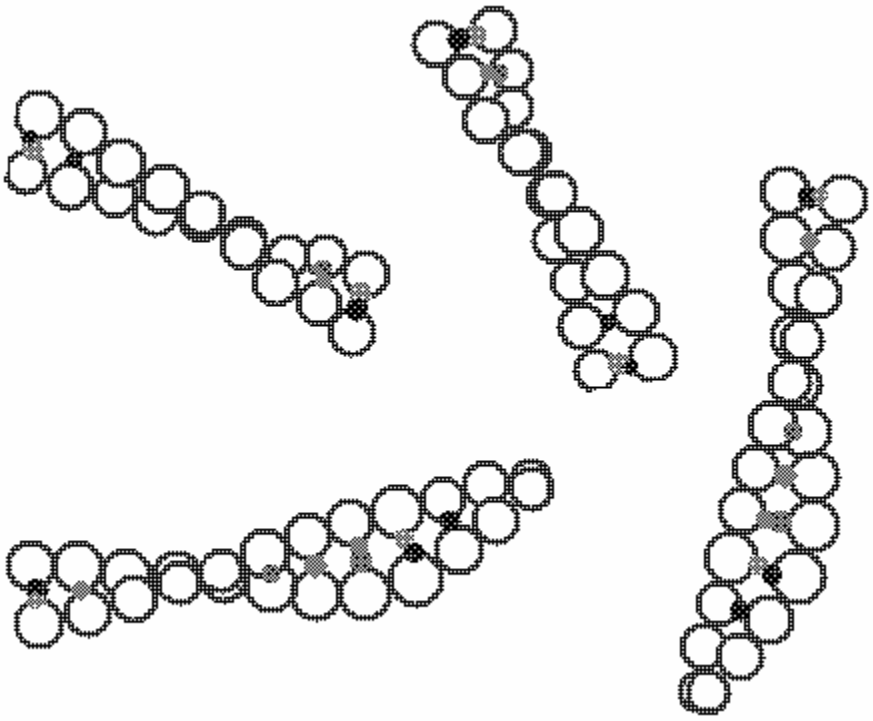
A: The twisted helix of DNA is structurally sound and easy for the enzymes to work with any part of
B: Other conceivable DNA models are either too fragile to sustain a large size, or inhibit the ability of enzymes to get at all the contained code keys

Mechanically speaking though, DNA is shaped like a twisted ladder because the individual building blocks lock to each other at a slight angle due to their respective shapes.

Is every part of the DNA important? Well, yes and no. There are many sections of DNA that do not translate into useful proteins, and might therefore be easily dismissed as 'junk' nucleotides that have accumulated through time due to inaccurate reproductive methods, but one important function that these junk regions can serve is as a fresh fostering ground for mutations to occur. It would be much better for the lifeform if existing functional genes were not modified, and so the junk regions allow for random mutational experiments to occur without breaking existing functionality. This isn't to say that existing genes are not subject to the same rate of mutations, just that mutations that occur

in junk regions are less likely to have severe repercussions; essentially adding potential functionality, which makes random mutations less volatile on average, instead of risking working functionality.

You may also have heard of the term “chromosomes”. These are simply segments of the DNA. In the billions of years since DNA molecules first evolved, they have become very long and it eventually became structurally difficult to maintain all that genetic information in one long piece, so “breaks” in the DNA evolved such that there are now many independent pieces to a DNA molecule, called chromosomes, which together constitute the entire DNA information.



DNA chromosomes together constitute the entire DNA information

This all happened by chance. Believe it. It sounds ridiculously unlikely that this could have happened at all, and it is ridiculously improbable that it even did happen. Look at it this way: it’s very unlikely that you would be directly hit by a person-sized meteorite; perhaps a trillion to one. But, what if a trillion meteorites all came down at the same time? Chances are, you’d be finished. This is how phenomenal odds can be overcome, by a phenomenal number of

instances. There were incomprehensible numbers of these cells, over unimaginable numbers of generations, and each and every cell was subjected to the same random gene mutation mechanism. If you do the math, it becomes quite obvious that there's nothing lucky about the evolution of life at all; it's a statistical inevitability.

ARCHAEA

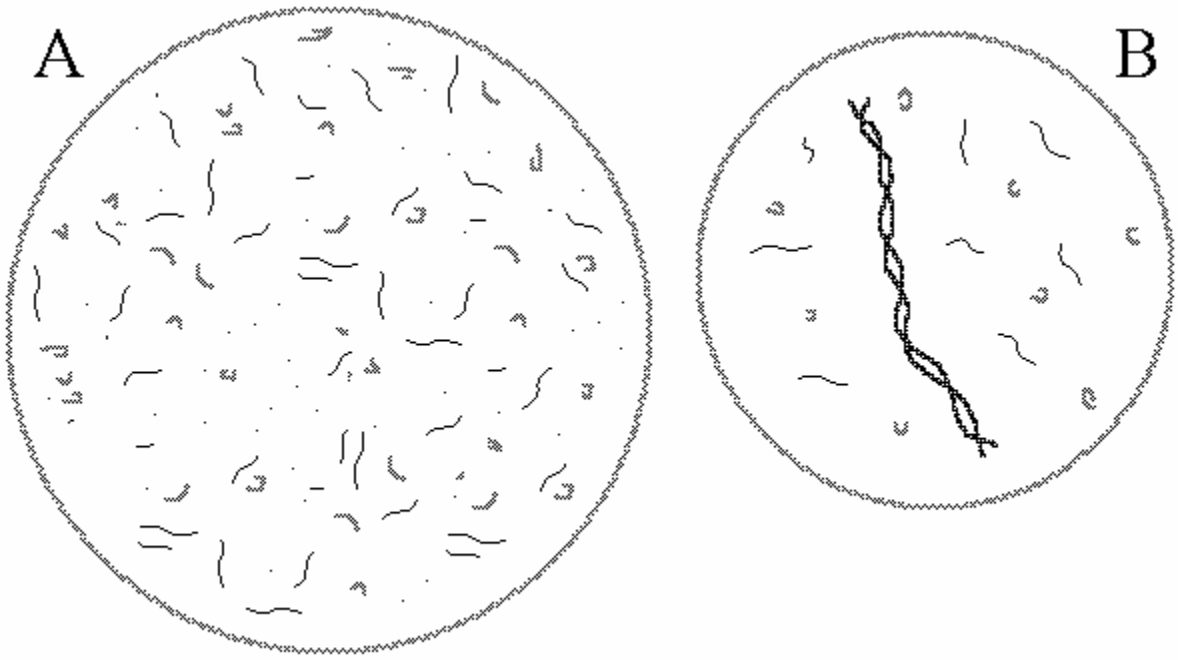
This very ancient and primitive DNA-based cell is the very first generation of a classification of life called the "Archaea". There were of course many different types of cells in the world but the Archaea is particularly important to us because it is the ultimate ancestor to all multi-celled life on Earth today. When the Archaea cells were first evolving during this very early time in Earth's history, the oceans were very hot and were constantly being pounded with stellar radiation over millions of years. All of these RNA and DNA building blocks were constantly getting rattled around and reorganized into random configurations until they eventually ended up into a pattern that was actually useful, produced useful enzymes, and so on. Once this process of life got started, it continuously produced more and more life, all the while being subjected to unlimited modifications from the relentless onslaught of stellar radiation.

To this day, the Archaea cells survive, some still inhabiting what we consider "extreme" habitats, such as near underwater volcanic activity where the temperatures would instantly kill most other forms of life. The Archaea evolved during a very volatile time period in Earth's history and are still the masters of extreme conditions; but much of the surface of the Earth has tamed considerably since these ancient times and many other forms of this first lifeform have since evolved to thrive in a less environmentally hostile world, eventually crowding out the dominance of the Archaea, our earliest ancestor.

Whenever one of these random modifications improved the efficiency of reproduction, that design would eventually dominate its environment; and with many millions of different environments on Earth, there were many millions of different designs produced, each best

suited for its niche. The design of all life was carved by probability over uncountable eons. What must be appreciated is the scale of millions of years, with gazillions of reconfigurations to bajillions of different RNA molecules that took place to finally end up with the still relatively simple but efficient and working mechanism that makes up living cells—tiny little machines with no other purpose than to copy themselves, over and over.

Over time, our ancient and very hot oceans became a soup of these simple and yet rampantly reproducing cells, all independently subjected to the same evolutionary process of random changes. Some cells grow large, some stay RNA-based, some become DNA-based like the Archaea, and some even evolve to utilize the sun's energy directly, etc.



A: RNA-based cell
B: DNA-based cell

With all these different types of cells madly reproducing and changing, eventually they will become so numerous that they have to start competing for resources. Whichever cells do the best job of acquiring raw materials and energy, are the ones that are going to flourish whilst the other less efficient cells perish from starvation (no building blocks

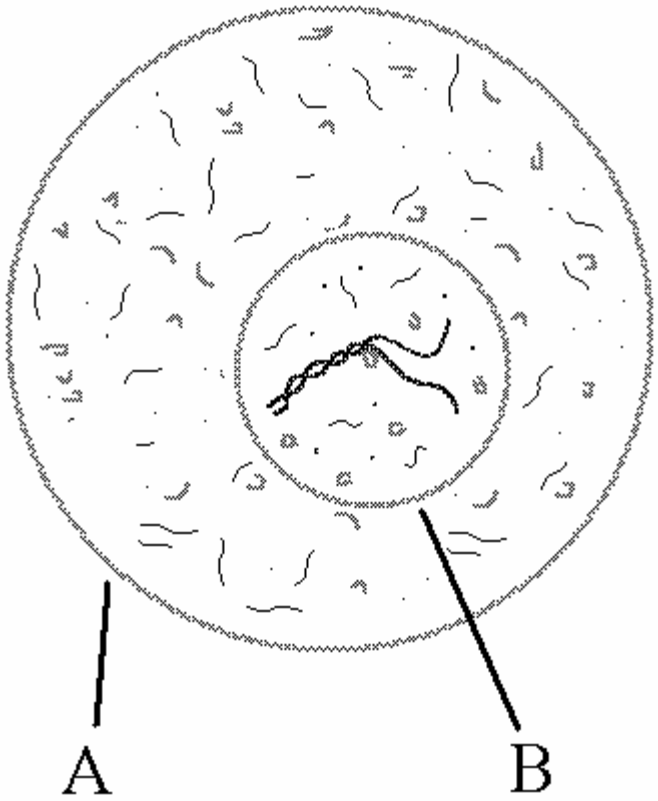
left over for them). Some RNA evolves to become more ruthless, learning how to create enzymes that break down other types of cells in the attempt to acquire its resources, effectively learning to "eat" each other.

On the good side, DNA, being different enough from RNA in fundamental design, is relatively immune from most other RNA molecules that might attempt to destroy it in the desire to break free the DNA's building blocks for themselves. On the bad side, DNA is very inefficient in reproducing because it has so many more steps to complete before enzymes ever get produced; but the tradeoff is a fortress-like composition that is impervious to the capability of the RNA to attack. DNA cells are similar to a turtle: it can't run very fast, but it doesn't have to because of its protective structure. RNA-based cells however, tend to be more prone to attack from other types of RNA-based cells since RNA has been around for so much longer and has evolved into many dangerous forms that can create enzymes to attack weaker RNA cells for their resources.

EUKARYOTES

Over a great amount of time, our continuously evolving cells become increasingly more complicated until eventually a stage is reached where there are so many different types of cells struggling for space and resources that some cells begin to team up with other types of cells to help them survive. The one example of this teamwork that is important to us is the partnership that formed long ago between one type of old-style RNA cell, and the new and improved DNA-based cells. There was a point in cellular evolution where for many possible reasons (overpopulation, stealing resources, etc.), a specific type of DNA-based cell evolved that somehow found itself either consumed by, or pushed into the innards of, a much larger RNA cell. This may have been a frequent occurrence, and perhaps in most cases the RNA digested the DNA, or vice versa, but over time this situation evolved such that neither would be destroyed by the union; the pair instead formed a symbiotic relationship where the RNA cell became the "host" for the

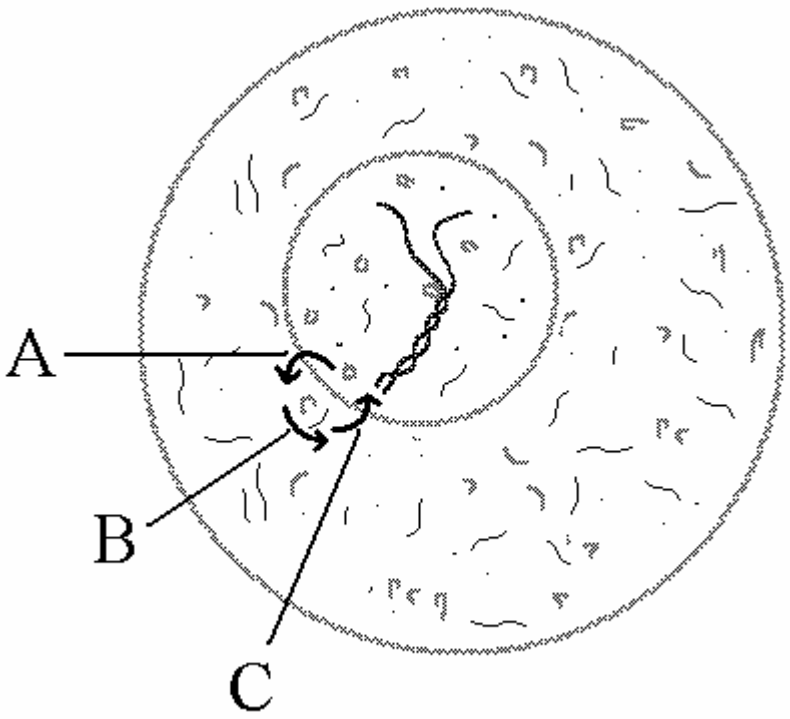
DNA cell. They eventually permanently merged together to form cells that are called “eukaryotes” (sounds like “you carry oats”), that have a DNA-based cell (which evolved later to become the “nucleus”) in the center of a host RNA-based cell.



Eventually some RNA-based cells formed symbiotic relationships with DNA cells, and the result is a composite cell called a "Eukaryote"
A: RNA cell contains the…
B: …DNA cell. The DNA cell eventually evolves to become the nucleus of the Eukaryote

These two cells evolved to more efficiently work together as a single eukaryote cell. Once this union was established, the DNA learned all the RNA sequences from the host RNA cell and eventually all the genetic information for both types of cells were entirely stored in the DNA. This merging of genetic information happened by the same mechanism that originally created the first DNA cells: the compressor enzyme that was originally part of the DNA cell, found its way into the RNA section of the eukaryote and began compressing the RNA found

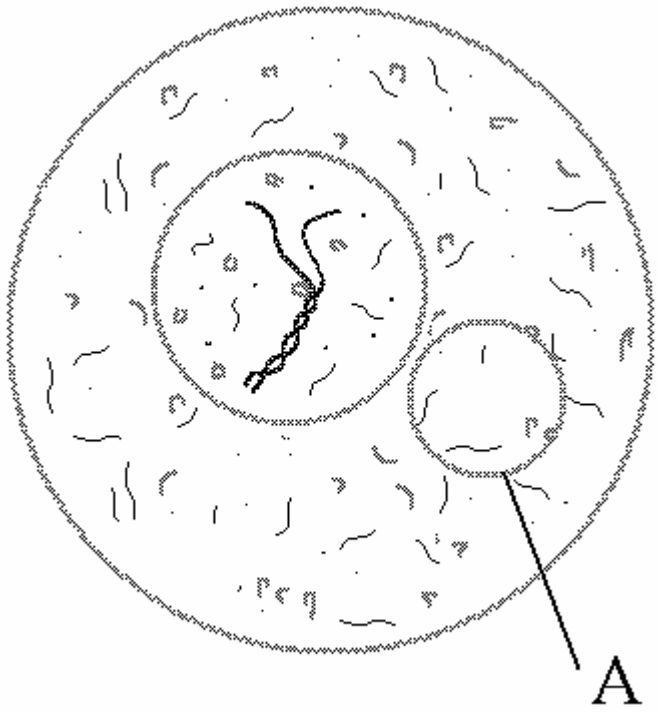
there. Then these compressed RNAs found their way into the DNA section and attached to the DNA molecule. In this way, important information the RNA cell had that the DNA cell didn't, could now permanently be stored in the DNA.



A: Compressor enzymes can leave the DNA-cell
B: They will compress RNA in the outer cell
C: The compressed RNA can enter the DNA-cell and attach to the DNA molecule
This is how all RNA information inevitably becomes stored in the DNA

How does the two of them combining into a single entity help them? Well, for one, the RNA-based cell was very efficient at acquiring resources, but had poor defenses against the onslaught of other types of RNA-based cells, and a poor reproductive mechanism that was prone to a high rate of error. The DNA-based cell has poor resource-acquiring skills and is slow to reproduce, but the reproduction is extremely reliable, and the DNA is protected from the attacks of other RNA cells. Both of these cells combined make a superior cell hybrid that can overcome a vast majority of resource-acquiring and reproductive challenges.

The eukaryote didn't stop there though; some eukaryotes formed symbiotic relationships with even more types of cells. One DNA cell in particular that is an excellent partner is one that can harness sunlight energy for its reproductive cycle. These sunlight-utilizing cells merged with some of the eukaryotes to create a spectacular hybrid eukaryote cell that could harness light to make fuel, benefit from the resource-acquiring skills of the original RNA host, and resist damage by using DNA to store all the necessary information. What a machine!

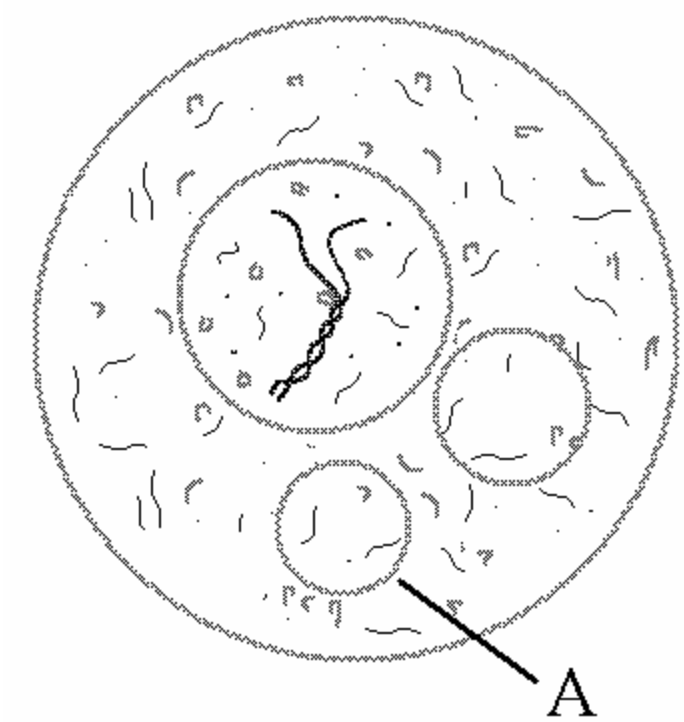


A: Some Eukaryotes joined with another type of cell that was capable of harnessing sunlight to produce energy. This combination produced a "green" cell

These eukaryotes (let's call them the "green" cells because they are actually somewhat green from the chlorophyll they contain) were unimaginably successful in reproducing and made short order of dominating the planet. Over a short period of time, virtually anywhere that there was water and sunlight, you could find these green cells. In fact, there were so many green cells that they started to change the

Earth’s atmosphere. You see, one of the side effects of the green cells' ability to utilize sunlight is the production of oxygen.

Over a great deal of time, our primitive atmosphere became polluted with this oxygen to the point that it was too poisonous for the majority of existing cells on our planet, which had all evolved in a much different atmosphere. With all this oxygen now in the air, it became difficult for the various forms of currently-evolved cells to function. However, some simpler DNA-based cells evolved to take advantage of the oxygen to produce its own energy supply. These oxygen-fueled cells became pretty good at utilizing oxygen but they lacked the enzyme richness that the more evolved eukaryotes possessed, until the oxygen-fueled cells *also* started partnering with the various types of eukaryotes. Some of the green eukaryotes, as well as some of the earlier, non-green version of eukaryotes, began to combine into symbiotic relationships with the oxygen cells until eventually we had some eukaryotes that could utilize oxygen as an energy source to fuel their cellular processes.



A: In order to adapt to the changing atmosphere, the DNA-based cells found yet another type of cell to partner with, this one capable of utilizing the oxygen that was slowly poisoning most other types of cells. Now our Eukaryote had the benefit of many other types of cells that all together made it quite a machine

The two most successful cells on our planet even to this day are these two common forms of DNA-based eukaryotes, the green and the non-green.

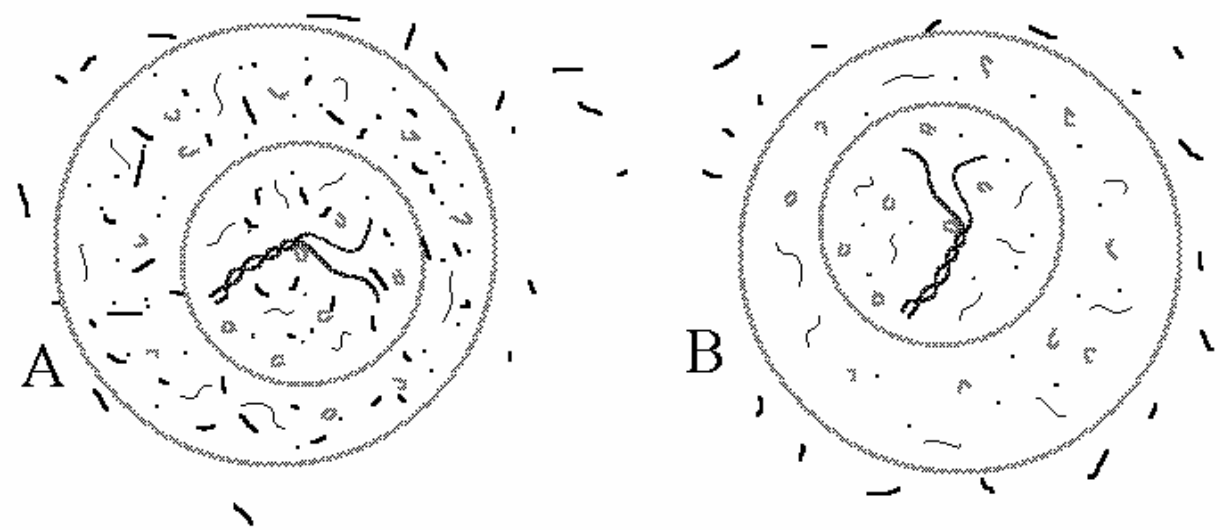
LIFE

Most people would consider this point in cellular evolution to be the true starting point of "life". For our purposes, however, let's take it a little further back and define life as, "any construct of matter, manifested mostly by design, that persists due to its collective facility of mutatively adapting to reasonable environmental stresses". The "collective facility" portion implies that within the whole population of these lifeforms, at least a subset will always overcome the majority of "reasonable" environmental challenges. Any construct that perhaps exhibits nuances of life, but without the ability to evolve, is just a lifeless mechanism.

This particular definition of life of course might preclude the very first reproducing RNA molecule since it happened to come about by chance (not design), but if this molecule can somehow eventually create a copy of itself, then the copy fits the definition of organization by design, and as it is indistinguishable from the original, the original now qualifies as life as well.

It should be noted that the sun is primarily responsible for providing the energy required for these ancient molecular interactions to take place. If the sun were to have died out very early on, the oceans would have frozen to nearly absolute zero and there would have been virtually no mixing of particles; life just wouldn't get started. The molecules that form life need some form of "energy" in order to fulfill the requirements for reproducing. Our DNA is the end result of billions of years of the sun's light energy being converted into ocean currents that allowed the mixing of raw materials needed for replicating molecules to form and reproduce.

Over time, there were quite possibly millions of different types of cells created in our oceans, each with their own idiosyncrasies, reproductive abilities, resource-acquiring skills, etc., all manifesting from the different types of enzymes programmed into their unique DNAs. Some cells may have become so specialized that their advanced cell walls absorbed from the surrounding ocean only the exact raw materials needed for the cell to reproduce. This would make them more likely to reproduce than another cell that perhaps was more liberal in what it allowed into the cell, letting in too many unneeded or unusable materials, congesting the nucleus and slowing the reproductive cycle.



An example of a more efficient cell might be one that restricts outside contaminants from entering the cell
A: Congested cell
B: Healthier cell

Some cells are just better at getting the necessary building blocks for their DNA than others.

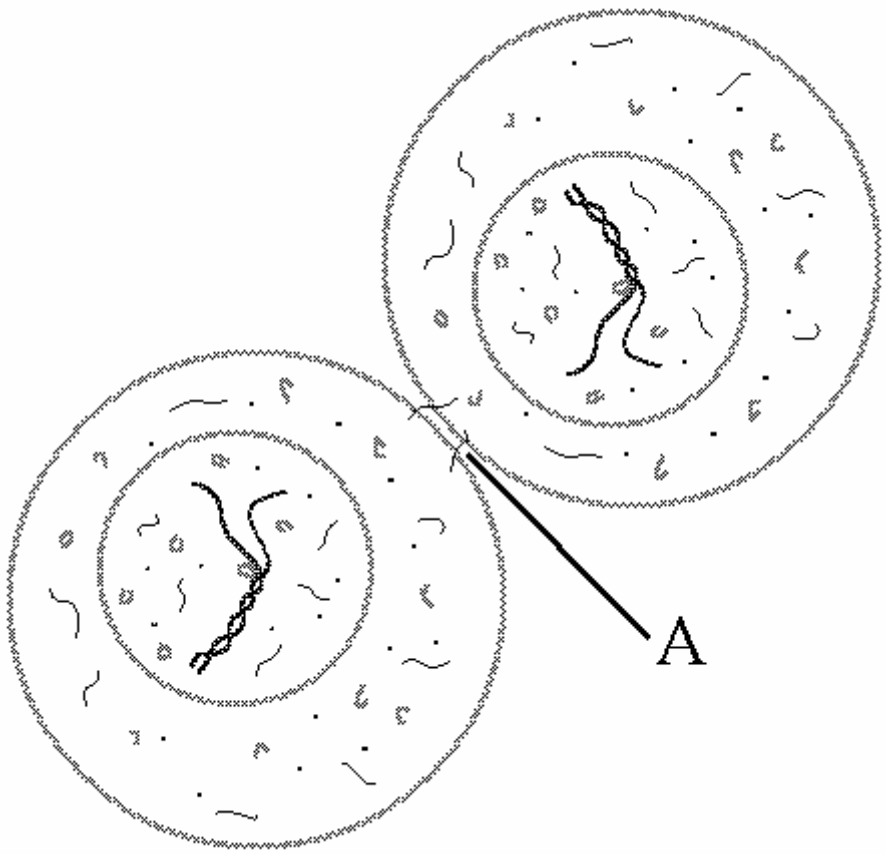
EVOLUTION

Cells are always subject to the process of evolution due to random mutations, and this is reflected in the changing nature and length of the DNA they contain, which introduces changes in their fundamental processes. A very small portion of these changes may serendipitously improve the cell's overall functioning, but the vast majority of genetic modifications are most likely detrimental since the design for a useful gene is a highly improbable occurrence in the first place. Therefore, most random changes that occur to DNA would more than likely be destructive rather than constructive. Cells that suffer from negative mutations are quickly eliminated from existence because of their inability to produce necessary enzymes for normal healthy cell functioning; that's just the luck of the draw.

What always happens though is that at least some small portion of the next generation of cells is better than the previous generation, and the same applies for all future generations of these cells in that each

generation will always have at least some better cells than the previous generation. We have here a continual process of refinement of the nature of the cell in how it acquires raw materials. The cells that are the best will obtain the raw materials the quickest and reproduce that much more voraciously, consuming raw materials quicker than other, not so optimized, cells and not leaving much raw material available for the other less efficient types of cells, most of which will eventually die off from starvation.

The rate of evolution is probably the most important deciding factor for whether a specific change to DNA can be regarded as beneficial or not. If each cell were to rely solely on the amount of random change it received from the cosmic radiation then evolution would indeed be very slow. One incredible advancement in evolution came about when these cells evolved the ability to exchange genetic information between themselves. Some cells evolved the ability to exchange their differing RNA genetic information by simply being adjacent to each other, allowing RNA strands from one cell to transfer over to another.



A: Genetic information can be passed from cell to cell since RNA can sometimes pass through one cell wall into an adjacent cell's wall. Eventually the shared RNA will be compressed and added to the other cell's DNA, and now both cells can take advantage of that genetic information

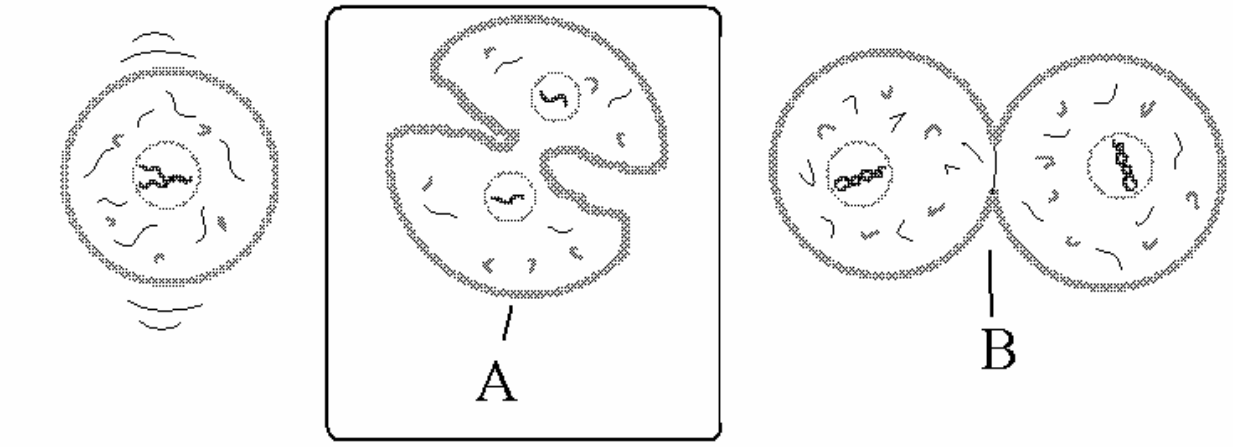
Eventually this RNA would be entered into the DNA of the recipient cell; in this way, new genes that are evolutionarily created in one cell can be rapidly dispersed among the entire cell population, rather than solely through that cell's progeny. This is the root and most fundamental form of sexual reproduction, which is simply, by definition, the sharing of genetic information. The cells that manifested this talent underwent an extraordinary change in the rate of evolution, having the ability to receive good genes from other cells by having this most primitive form of "sex" between themselves. This method would tend to favor positively contributing genes since any form of gene that may evolve but is detrimental to the cell would probably kill the originating cell. The death of a cell because of bad genes means that there will

never be any chance for those genes to be passed to other cells, leaving only the higher quality cells alive to continue distributing their healthier genes.

It must be appreciated how much time was involved in the evolution of these seemingly simple cells. The vast majority of life that has ever lived or even lives today is still a complete lifeform in a single cell and the modern-day presence of multi-celled creatures is a relatively recent evolutionary breakthrough. Most of the evolution of life that has ever occurred on this planet was dedicated to the single-cell form of life, which tuned and perfected them to dominate all niches of this planet.

MULTI-CELL

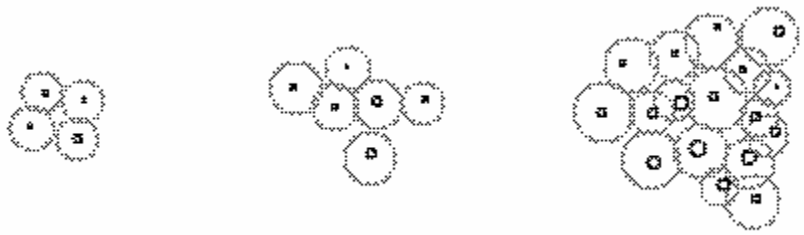
Ultimately a point in cellular evolution is reached when some of these cells attempt to split and the two halves don't quite go their own way. They have enough of a physical bond remaining between the cells to overcome cellular and environmental challenges to this union (e.g., the motions of the seawater); effectively the two cells stay connected.



A: Eventually a type of cell evolved the property that when it split, the two halves didn't quite break free of one another…
B: …and instead they remained stuck together

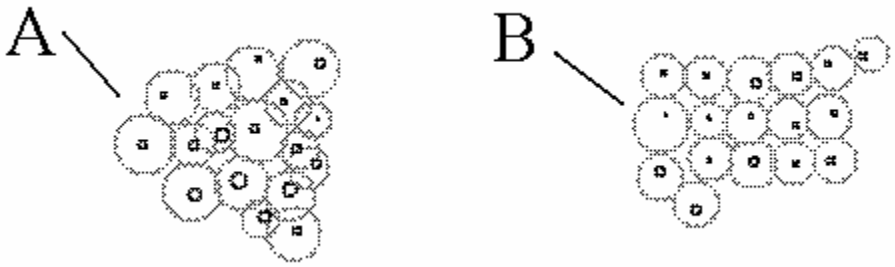
These two then split into four, four into six (a couple broke off), etc., to form a clump of attached cells. The types of structures that can be formed with these lumped-together cells can take on just about any

shape because they are suspended in seawater, which will support the collection of cells for any configuration they may happen into.



As the “sticking” cells reproduced, they formed larger and larger clumps of cells

At first the cells may form useless clumps that do not afford any new advantage to the cellular members, but again, as more time passes and the DNA continues to evolve, the cells themselves individually start to manifest into different shapes. One variation of these mutations would be cells that may be flattened, or oblong, and more specifically, cells that only attach along the outermost edge or perimeter. What happens when these types of cells split is they start forming a chain, or sheet of cells, rather than a clump. With these structures, all the cells get optimal seawater exposure by sheer virtue of surface area, and hence better access to nutrients (raw materials). They reproduce and “evolve” much quicker than the cellular clump structures because our new cells’ individual shapes collectively help the cells to assimilate more raw material, whereas a cell in the center of a clump shape would have very limited access to any raw materials because it is surrounded by a shell of its peers.



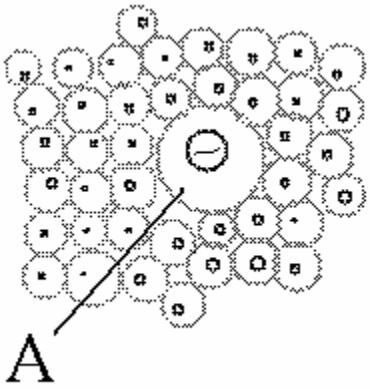
A: Cells that can split in any direction would form random “clumps” of cells that tend to starve the cells in the center
B: Cells that evolved to be individually flattened and would only attach to other cells on the outer edge, would form “sheets” of cells, of which all the cells would enjoy equal access to seawater for the raw materials necessary to further reproduce

SEED

The next important evolutionary step is the manifestation of the “seed”. Up to this point, under various environmental influences (moving seawater, etc.), the entities would sporadically break up into smaller entities (this being the form of reproduction of these multi-celled entities), while the individual cells continued the process of duplicating into even more attached cells. All cells in these very primitive entities are virtually identical, but, since evolution is a continuously ongoing process, regular changes occur to the DNA and eventually some lucky cell’s DNA is modified in such a way that this new mutant form of DNA will occasionally produce an “errant” cell, one that is not quite like the others.

Perhaps most of the time that such errant cells are created by this mutated DNA, they will have no ill effect on the entity as a whole; other times perhaps they actually become a detriment and the whole entity is adversely affected. This is the chance that evolution continuously takes in the pursuit of serendipitous improvement. Eventually though, a change will occur in some DNA somewhere that will produce what we’ll call a “greedy” cell. This important type of cell is virtually identical to all the other cells except that it is a little bit greedier than the normal cells, in its tendency to “hoard” nutrients. It immediately starts taking

more than its fair share of resources from neighboring cells, causing the rest of the entity great strain in trying to accumulate enough resources for all remaining cells.

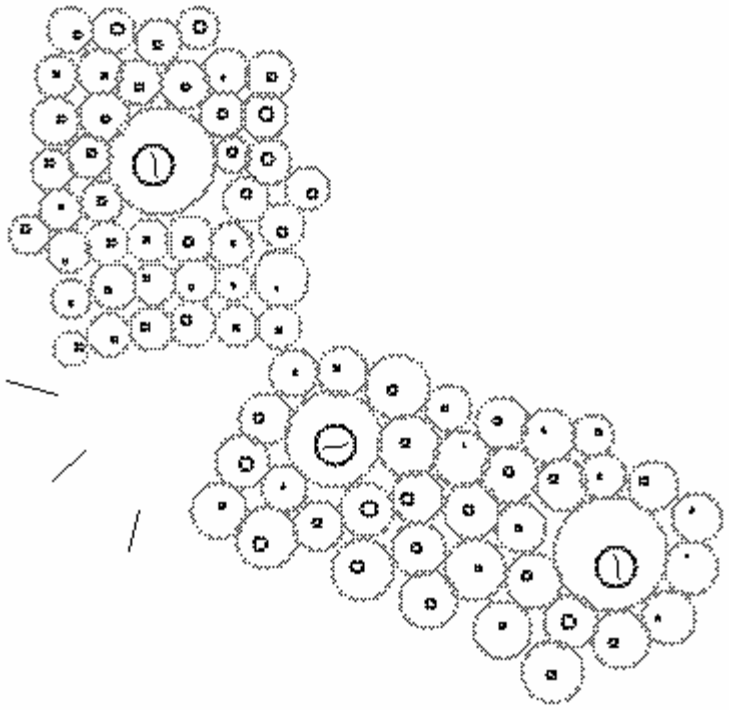


A: The “greedy” cell evolved and it hoarded more resources than its fair share, forcing the rest of the cells to work harder for their share

This greedy cell is the very first “seed” cell. It rapidly accumulates nutrients from its neighbors and subsequently splits very frequently. When it splits, it might produce another errant cell like itself, or just a regular-looking cell like all the rest of them. This can be a little confusing, but the DNA mutation that occurred in our first errant cell, does not necessarily always produce a new errant cell. This mutation only affects the character of the resultant cell a small proportion of the time, meaning that if a mutated cell divides, the new cell only has a small probability of activating this mutation that turns it into a greedy cell. The mutation is passed along in the DNA of whichever type of cell does get produced, but most of the time the mutation is dormant; therefore, errant cells can still produce seemingly normal cells.

Over time, this mutated version of the cell’s DNA outnumbers the original version due to the fact that our mutated version reproduces more often, on average. It still appears that there are many normal cells, but the errant cell mutation keeps rearing its head every so often, and produces yet another errant cell (a seed). This new entity that consists of a mix of mostly supportive cells and a few seed cells, continues to grow

in size just like it did before the presence of the seed cells, and the entity still will often be broken up in the seawater for various reasons.



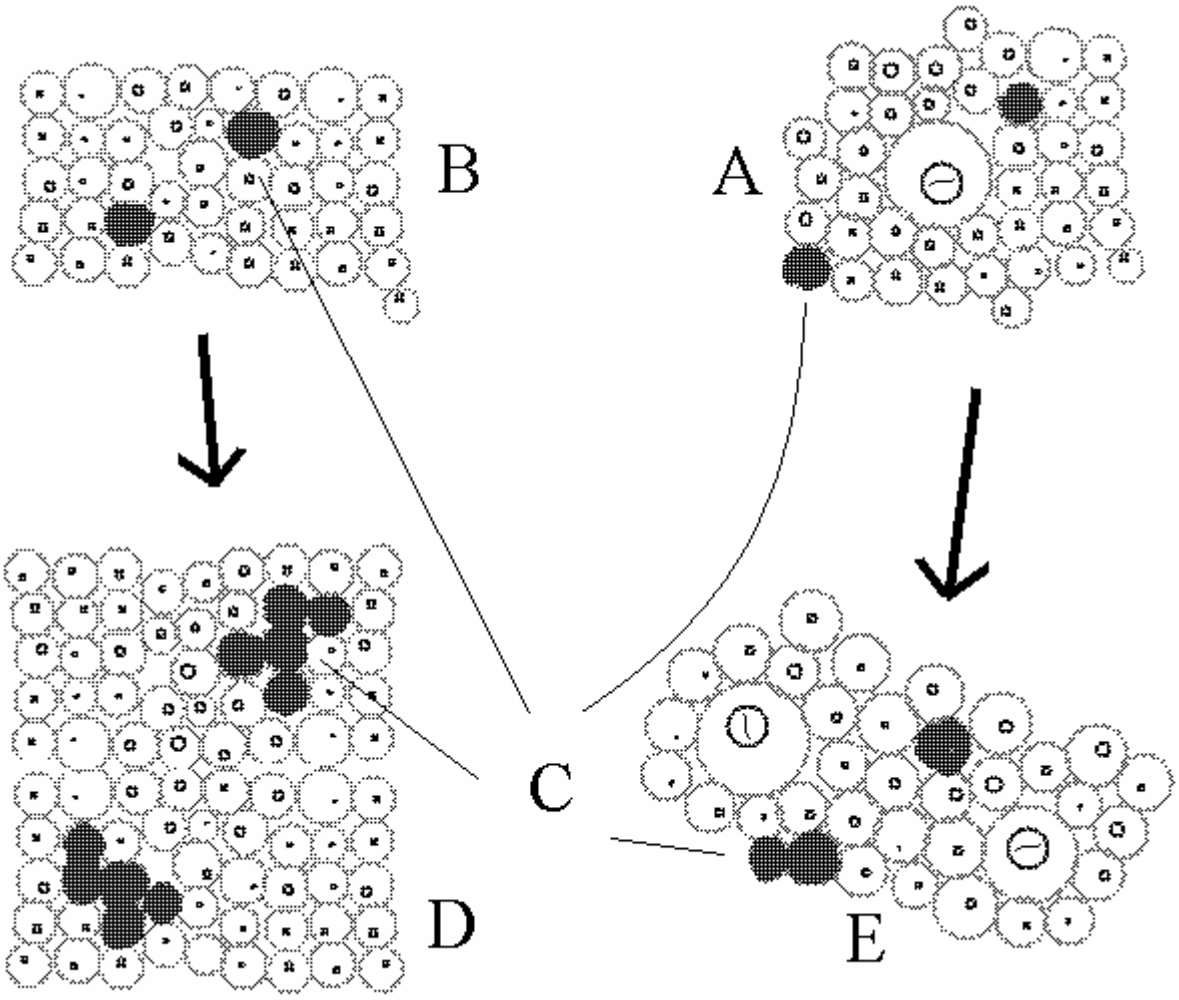
When the sheets became large enough, they broke apart into smaller sheets. These new sheets then continued to grow by producing new cells and new greedy seed cells

Over time, more evolution takes place and the normal cells finally accept their fate as slaves to the seed and now have improved in their resource-acquisition in order to appease the ever-hungry seed cell. The normal cells have become specialized to not only feed themselves, but to feed the seed cells as well. The entity has evolved from one with all its cells exactly the same, to an entity with a few seed cells (so the chicken came before the egg).

So here we have two types of cellular entities, our original type that does not have seed cells, and a new type that randomly, but somewhat predictably, creates a few seed cells. How does this new seed mechanism give an entity an advantage over non-seed entities? For one, it speeds up the reproductive cycle considerably as the seed cell

reproduces voraciously, having plenty of donated resources to work with. This would give the sheet entity a strong central growing point. Second, the seed cell wouldn't be as subjected to the various environmental mutative forces (radiation, etc.), compared with the entire surface area of the body of the entity.

Let's put it like this: a seedless sheet of cells (call it entity A) that are all exactly the same would have its cells all reproduce equally. Any cell from entity A that is somehow negatively mutated but survives, will unfortunately reproduce more bad cells, causing significant detrimental influence on the entity as a whole. Now if you had an entity with seed cells (entity B), then most of the cells contribute very little to their individual reproduction and instead most of the reproduction is focused on the seed cell. Since the seed cell represents such a small portion of the entity as a whole, it is less likely to suffer from random environmental mutations than our entire A entity, and hence the seed entity is more consistent in accurately reproducing its DNA.

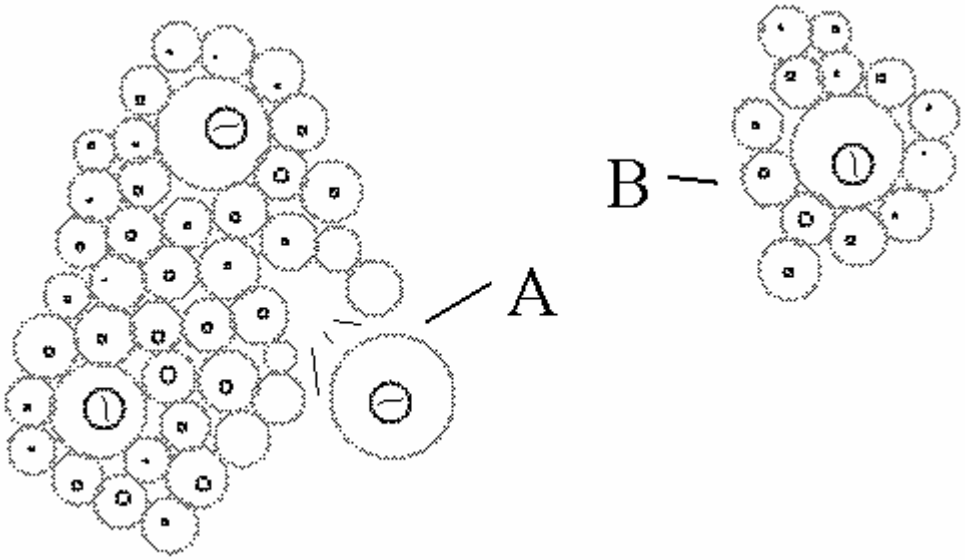


A: Since the seed cell does most of the reproducing, the seed entities have statistically less frequent inherited mutations than an…
B: …ordinary cell-sheet (seedless) entity
C: Negative mutations
D: B after some growth
E: A after some growth

You may argue that entity A would be more likely to evolve into something better due to the higher probability of a hereditary mutation, but remember that a very large proportion of random genetic mutations will be detrimental rather than helpful, so it's likely that A entities would be destroyed by too many detrimental mutations, whereas our seed entity has a much more reliable reproductive mechanism and therefore its population growth can outstrip the negative consequences of the relatively rare detrimental mutations to its seed cells. Essentially, seed-

based entities slow down the rate of its evolution because of their naturally reduced exposure to damaging mutations, thereby allowing such entities more time to reproduce and increase their chance of survival.

As cellular evolution continued, the seeds become very specialized and more types of cells evolved to help support the needs of the seed. As well, the entities evolved to be able to proactively "release" their seeds into the ocean as the seeds became resource-rich (ripe). The seeds would then float off to another area where they could begin the whole process of rebuilding a new entity by utilizing the resources they had accumulated. This again eventually repeats the whole process of creating a new seed-borne entity, which sends new seeds off yet again into the ocean to repeat the reproductive process.



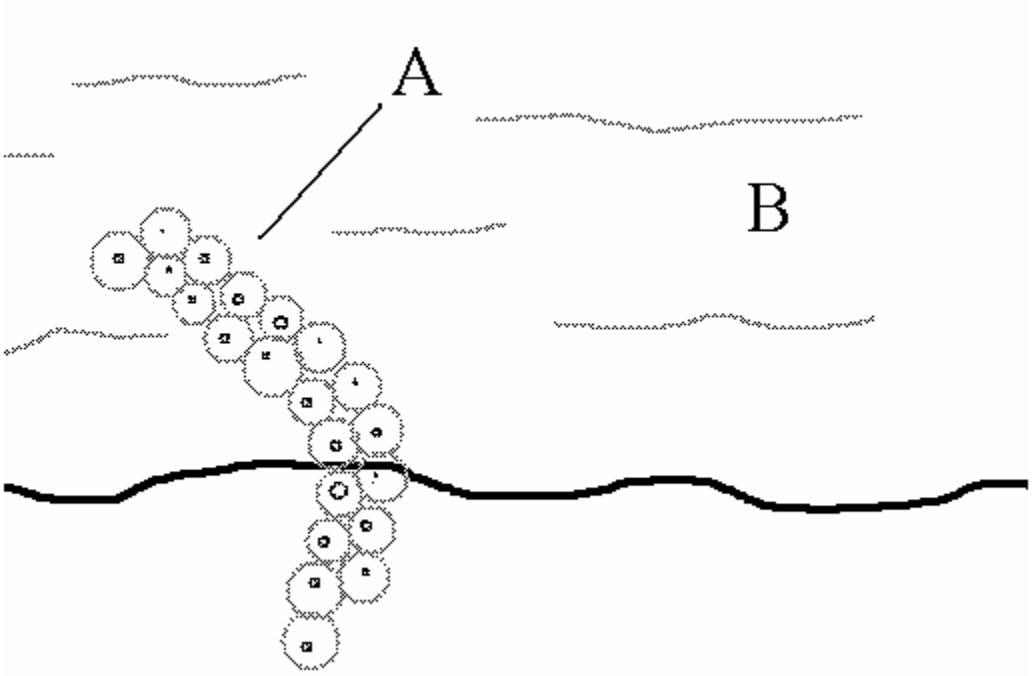
A: Seeds evolved to separate from their original entity (parent),…
B: …then to rebuild an entirely new entity (offspring)

The remarkable evolution of these simple multi-celled entities touched off an explosive boom in the diversity of life in our world. Previous to this point in time, there were billions of years worth of single-celled evolution to fill every niche conceivable in nature, and significant genetic advancements were few and far between. Now with the different advantages that can only be afforded this new multi-cellular

entity, the world's niches once again opened up to these newcomers and this radically diverse entity soon took on countless forms as it too spread around the globe, adapting to all niches, and creating all sorts of wonderful multi-cellular creatures in its wake. Let's discuss how all this can happen from such a simple entity…

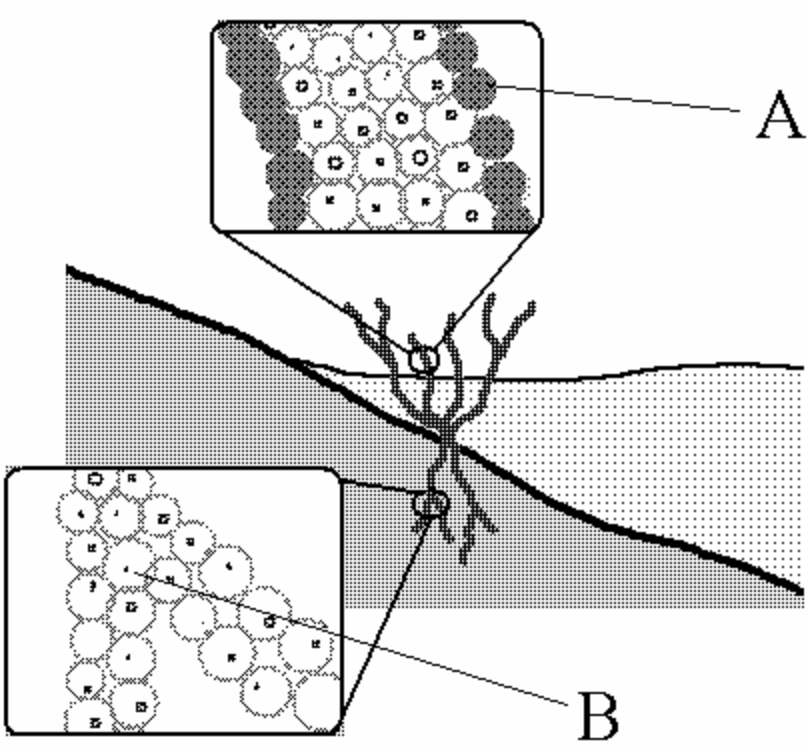
PLANTS

These tiny, multi-cellular constructs just floating around in the sea would be helpless to resist the motions of the water and wouldn't be afforded much in terms of a fresh supply of seawater in their immediate vicinity, but if these structures could somehow "move" against the seawater, they would have a continuously renewed raw material supply. One of the simplest ways to move against the seawater would be to "plant" yourself onto something solid in a place where the water naturally flows in currents. To this end, some of our entities evolved to grow a new type of cell, a "root" cell, that tends to grow partially into the seafloor. There, these root cells could obtain some raw materials from the ground, while the rest of the entity acquired nutrients from the flowing seawater that moved across the exposed remainder of the entity. This would be the first stage of the evolution of a plant.



A: Some cells learned to grow into the ocean floor, locking the entity in place, allowing the other cells to be exposed to the currents of the ocean
B: Ocean provides nutrients for reproduction
These cells formed the very first “plants”

Due to the unique success of “planting” yourself, these cellular constructs quickly became a very dominant lifeform, and they continued to develop a growing diversity of specialty cells. Some examples of specialty cells would be the cells that evolve to become the protective outer layer, or even cells that force “branches” into the growth of the entity. Some plants evolved from the green eukaryote hybrid cells, and they grew near the shore in shallow water to take advantage of the much more potent direct solar energy.

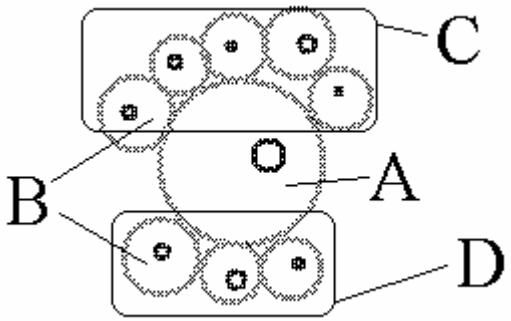


Examples of specialty cells
A: Green cells allow the plant to utilize sunlight for energy
B: Branch cells allow the plant entity to have multiple roots with which to plant itself

All of the different cells in a single entity contain their own individual copy of exactly the same DNA information, which provides the instructions for all the different types of cells within an entity. This means that every cell has all the instructions to do the job of any type of cell in the entity, including the seed cell. So how does a cell know what kind of cell it should be? The type of cell that each becomes is dependant upon the type of cell that it split from, and also somewhat by the type of its neighboring cell. A root cell is programmed to be a root cell because it split from or is beside another root cell and so the only genes in it that are activated to create enzymes are those that create the right amount and combination of enzymes to make this cell operate like a root cell. Every once in a while, a root cell will randomly activate a gene that will turn this cell into a branch cell and it will continue to multiply now on two lines instead of just one. It's simply how the

various genes are turned on and off in a statistically reliable fashion that determines a cell's function.

At its highest level, the seed cell is responsible for starting the long chain of events necessary to reproduce an entity in its entirety, by creating a few key "stem-cells" that have not been pre-determined as any specific kind of cell. These stem-cells are capable of turning into any type of cell and after they have reproduced more stem-cells for a while, they then start playing the various specific roles of plant cells, and their offspring cells will also become the various specific kinds of plant cells. These stem cells form the template that together creates all the pieces of the rest of the entity.

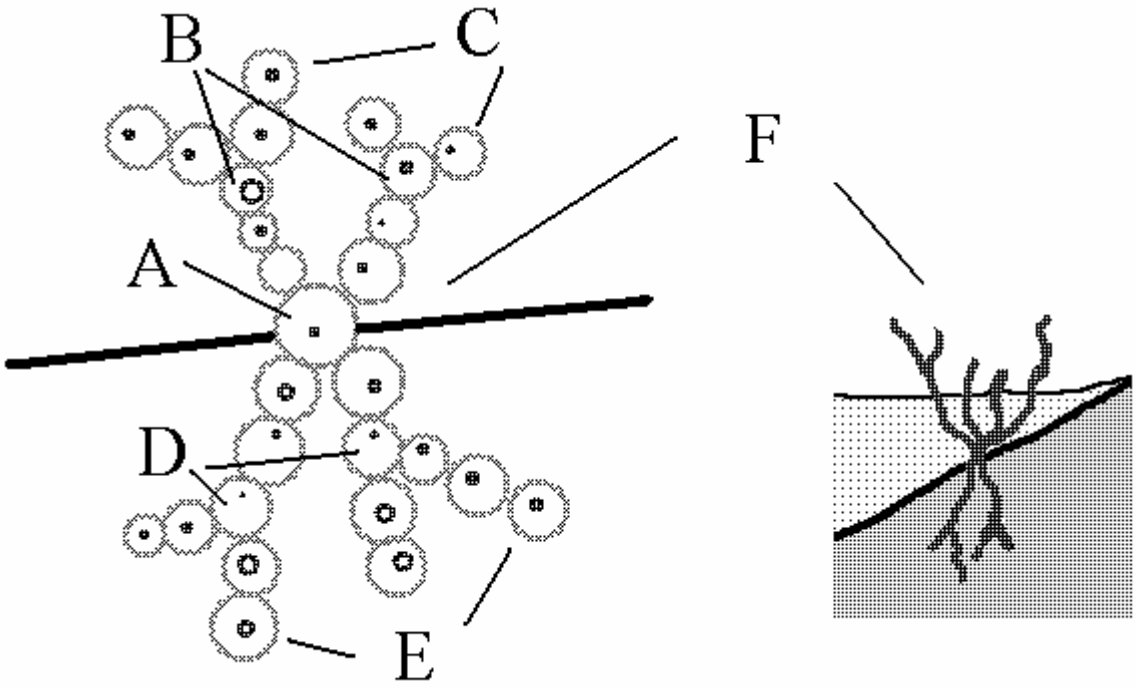


A: Seed cell starts to produce…
B: …stem cells that are responsible for the creation of the rest of the entity
C: Cells responsible for building above ground
D: Cells responsible for building roots

For example, one stem cell continues to split until it creates all the specialized root cells. Another stem cell may be responsible for the creation of all the branches and leaves, etc.

To oversimplify for the purpose of demonstration, imagine such a plant exists that has only 5 different types of cells in its composition: a seed cell, root cells, root branch cells, leaf cells, and leaf branch cells. The seed is released from the parent and serendipitously finds a nice patch of shallow-water ocean floor to begin building anew. The seed starts drawing nutrients from its surrounding package of nutrients (e.g., the fruit) that was donated by the parent entity during the seed's maturation. Now the seed cell splits into two cells, one being the leaf

stem-cell, and the other a root stem-cell. The root stem-cell reproduces quickly and these new cells grow together to penetrate into the ocean floor, occasionally producing a root fork cell that divides itself on two fronts instead of just one, forming a branch in the root. While this is taking place, the leaf cell also splits a few times and starts forming long leaf branches. The leaf cells also have a random tendency to reproduce branch cells and this forms a juncture from which two branches of leaf cells can extend.



A: Seed cell
B: Leaf branch cells
C: Leaf cells
D: Root branch cells
E: Root cells
F: Our seed starts the process of creating the entity and eventually we end up with a fully grown entity, the ultimate result of the DNA design

The plant is effectively “inflated” to full size from its DNA blueprints. Every cell has a full copy of the same DNA instructions but each follows its own specific portion of the instructions depending on where it is located, relative to the whole entity. This is just one simple example of a plant's growth mechanism; there are endless variations to this

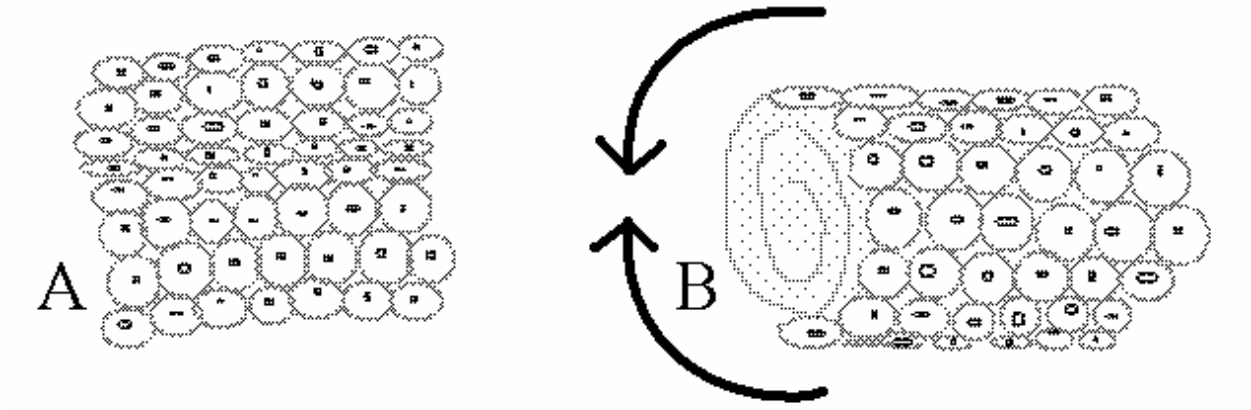
mechanism, which results in the countless variations of plants that have ever existed through time.

The shoreline plants evolved to grow higher than the water level to take advantage of the considerably more intense sunlight found above water. Eventually, these shoreline plants evolved to also grow on the shore, without the need for being submerged in water, drawing virtually all of their nutrients exclusively from the soil in which they are planted. This is another big step in plant evolution. Once plants could exist on land, they spread rapidly and into all imaginable forms: grasses, trees, vines, roses, etc. The ability to utilize solar radiation as an energy source is very naturally selective and over time, these light-utilizing entities became a ubiquitous form of life across the globe, wherever sunlight was available.

With all this plant matter spreading everywhere, trying to get some real estate within which to subsist eventually becomes fiercely competitive and the plants try everything available to them to make their DNA successful. Some plants grow very tall to get at the sunlight, blocking light for those plants below, some plants choke the roots of others, cutting off their competitor's nutrient supply, etc. Only the most serendipitously ingenious designs can continue to propagate and evolve, resulting in very diverse and increasingly clever mechanisms for establishing dominance.

SEA CREATURES

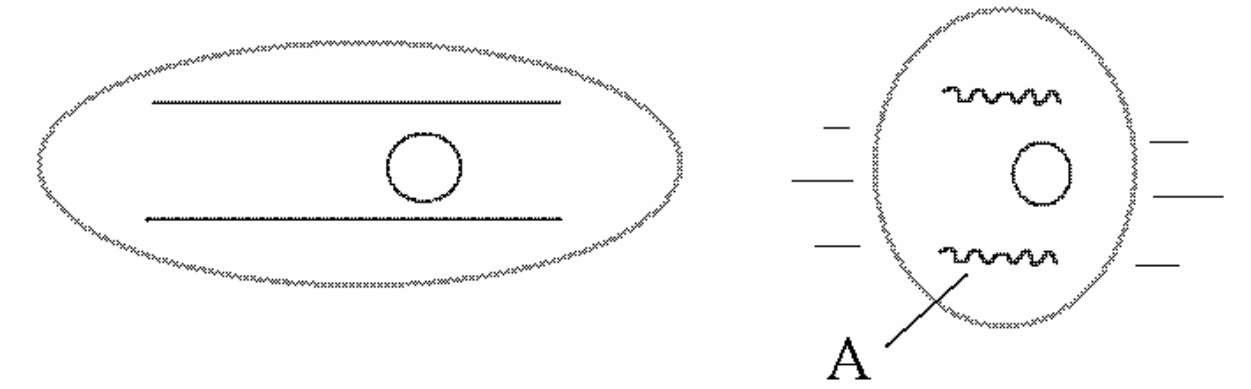
So where do the creatures of the planet fit into all this? Let's go back to our original sheets of cells floating about in the ocean. Some of these cellular structures never developed the capability to attach to the ocean floor like our plants could, and instead these hapless entities had no choice but to float about. These sheets of cells eventually grew to a sustainable size such that one edge of a sheet could, through motions of the seawater, come into proximity to another section of this same sheet, where it would stick together, allowing the rest of the sheet to roll up around itself, forming a short tubular shape.



A: Sheets of cells can have their ends brought together by the random motions of seawater
B: If the cells stick together somewhat, a roll can form, creating a tube shaped entity

The cells in our tubes, of course, continued to reproduce and as a result the tubes grew longer and wider, occasionally getting broken up as their sizes outgrew the structural integrity of the entity, but then continuously forming more tubes from the broken pieces.

The next giant leap in the evolution of these wonderful tube-making cells is the ability of “contraction”. These cells eventually evolved filaments that allowed them to momentarily contract to a smaller size.

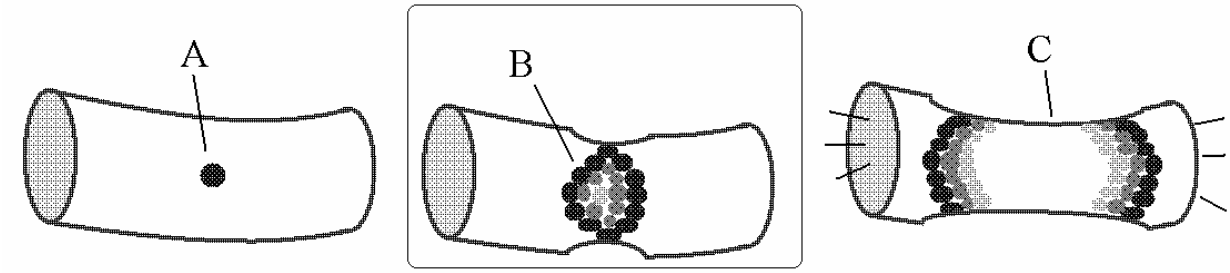


A: Contracting cells (muscle cells) have filaments that can shrink and this action contracts the entire cell

At first this new contracting ability might have been rather insignificant to the entity as a whole since if they all randomly contracted it wouldn’t

be much use to the entity. Through many successive generations, however, as a growing number of cells started exhibiting this ability, our entity's next serendipitous evolutionary step would be for the cells to contract in tandem. Our contracting cells evolved to tend to sit very close to the threshold of contraction, and when one of them finally does contract, adjacent cells are now pushed over their thresholds as well so they also contract. This causes a ripple effect and all the cells in contact with each other cascade into a group discharge.

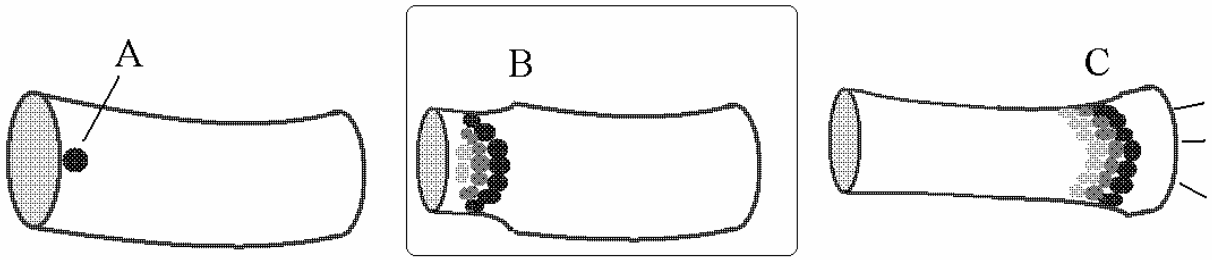
When this happens to our tube, the cell that fires first sets off all the adjacent cells which in turn set off the cells adjacent to them, and so on. Once the wave of contracting cells has traveled the circumference of the tube, the tube becomes narrower at that point because all the cells in that portion of the tube are contracted. As the cascade cellular contraction travels both ways down the length of the tube, the tube likewise shrinks in diameter. The net result of this discharge is that the entire tube is now shrunk in diameter from some arbitrary point, outwards.



A: One contracting cell begins the chain reaction
B: Adjacent contracting cells are triggered and the reaction travels down the length of the entity
C: The net effect is the diameter of the tube momentarily narrows, pushing seawater out of the ends of the entity

All this contracting results in a pumping action, however slight, that pushes some of the seawater out from within the tube. After the contraction is finished, the cells soon return to their normal size, and the tube likewise restores to its normal diameter, sucking water back into its center. Now, unless the discharge started exactly in the middle (lengthwise), it's likely that the tube "pushed" itself a small distance

because of the pumping action of the water. Eventually the cells have begun to accumulate a potential for another contraction and the process starts all over with another "pumping" action of the entity. Over time, the cells at one end of the entity evolved to take the initiative in setting off the wave of cellular contractions; by starting at one end of the entity and sending the contraction wave down to the other end, the most efficient pumping action is achieved and the entity can now move faithfully in a forward direction.



A: Some entities evolved with contracting cells that are more likely to contract if they are at one end of the entity
B: This would send the contraction wave from one end of the entity down to the other…
C: …resulting in the internal seawater being pushed out one end, allowing a fresh batch of seawater (containing nutrients) to be taken in, and motion of the entity as a whole

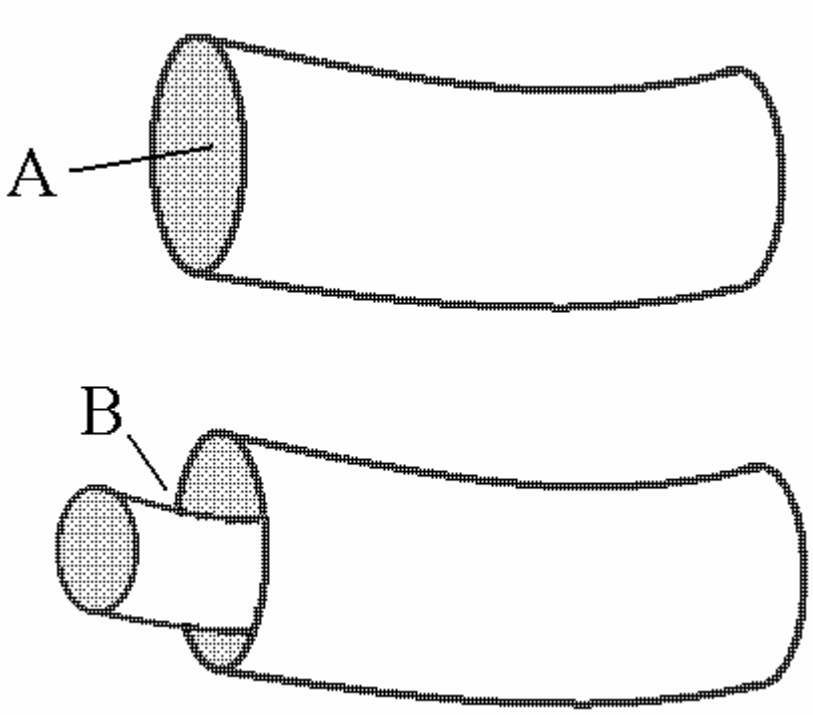
These cells that evolved to start the entity's contraction wave were the primitive beginning of the "central nervous system".

The cycle continues to move the tube forward by displacing the water within its confines. This simple cellular contraction has a wonderful net effect on the tube as a whole, not only providing it with motion, but also a constant supply of fresh seawater from which it can draw raw materials for its cells. This is a major evolutionary step, for no longer are cells forced to rely on luck to have seawater provide raw materials. Now the cells, working together, can regularly refresh their supply. Let's call this entity the "tuber".

We have a long way yet to go from these incredibly tiny multi-cell entities to something recognizable as a creature. We still need to add a lot of attributes such as a central nervous system, various senses, limbs, etc. Plenty of evolution has taken place in the near billion years since

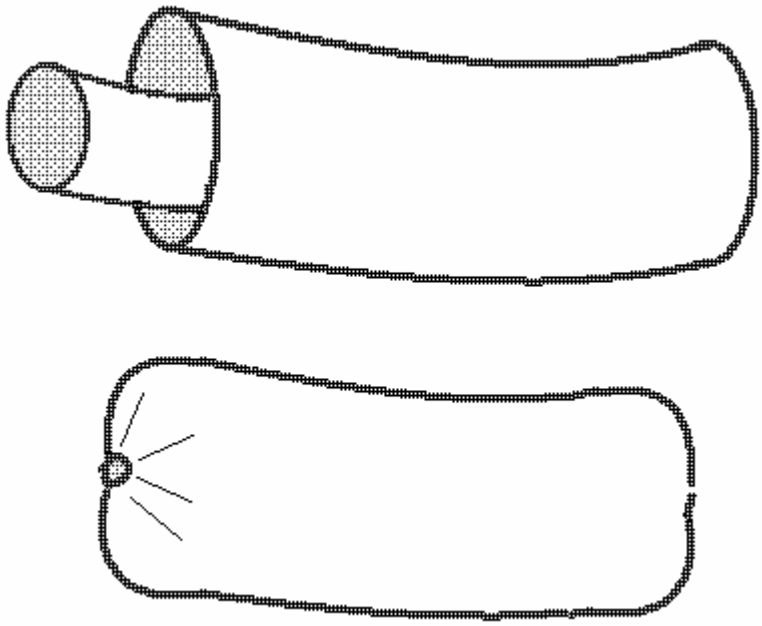
these first, lasting, multi-cell entities formed. To summarize, the tuber is a construct consisting of just a few different cell types (all with the same DNA), and these cells have evolved with the following properties: the cells don't quite break apart when they attempt to split (which results in a multi-cell entity), the cells bond to one another easily so that the entire collection of cells can form tubular shapes, and the cells can contract in size which results in motion for the entity. These properties allow these cells to team up and work together to produce a clever mechanism that exercises a very efficient means of acquiring raw materials. All of these advances in design happened by statistical probability working to forge better and better DNA. Simple and yet amazing!

The next few steps in this entity's evolution would be for it to develop its own particular specialty cells, much like evolution did for plants. Having the seed specialty cells already as the first step in this evolution, perhaps the most likely next step would be for these entities to evolve the ability to break down other "entities", as this would afford the "attacking" entity the highest concentration of readily available nutrients. Specialty cells would develop on the inside of the tuber that secrete enzymes, producing as well a mucous to protect these secretion cells from their own enzymes. These secretions would flood the inside section of the tuber. The secreted enzymes would be capable of breaking apart cellular structures of other tubers; that way, if a larger moving tuber should happen to propel itself over another smaller tuber, the smaller tuber would be disintegrated by the enzymes, releasing all the nutrients and stored energy for the larger tuber to soak up.



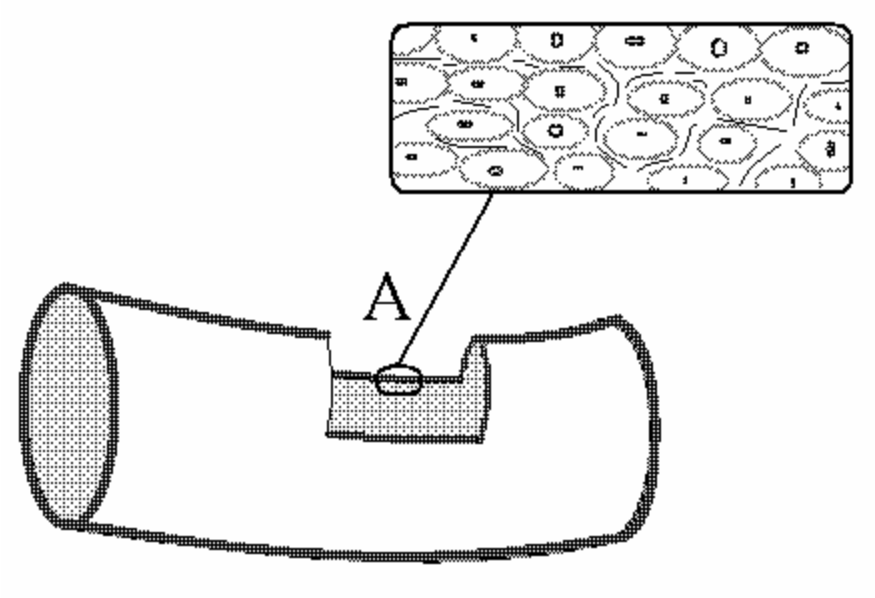
A: Tubers evolved to secrete enzymes from their inner walls
B: If it happened to luckily propel itself over another smaller tuber, the secreted enzymes would break down the smaller tuber, providing plenty of nutrients for the larger tuber

Though a sloppy mechanism at first since most of the nutrients would probably float away, or worse yet, the tuber would meander away from the food it just acquired, this consuming ability of the tuber eventually became increasingly more complicated as evolution continuously improved the efficiency of the mechanism. For example, the ends of the tuber would eventually evolve to contract in the presence of nutrients, effectively capturing the food within its confines until all the nutrients were absorbed.



The next evolutionary step is for the ends of the tuber to close in the presence of nutrients

Next, the thin wall of cells that forms our tuber may evolve to form multiple layers of cells so there is more strength to the tube walls, allowing them to grow to larger sizes and still be able to maintain structural integrity. Then our tubers develop a primitive form of circulatory system so that fresh seawater can be “pumped” through the narrow spaces between cells by the contracting motions of the individual cells’ “muscular” actions.

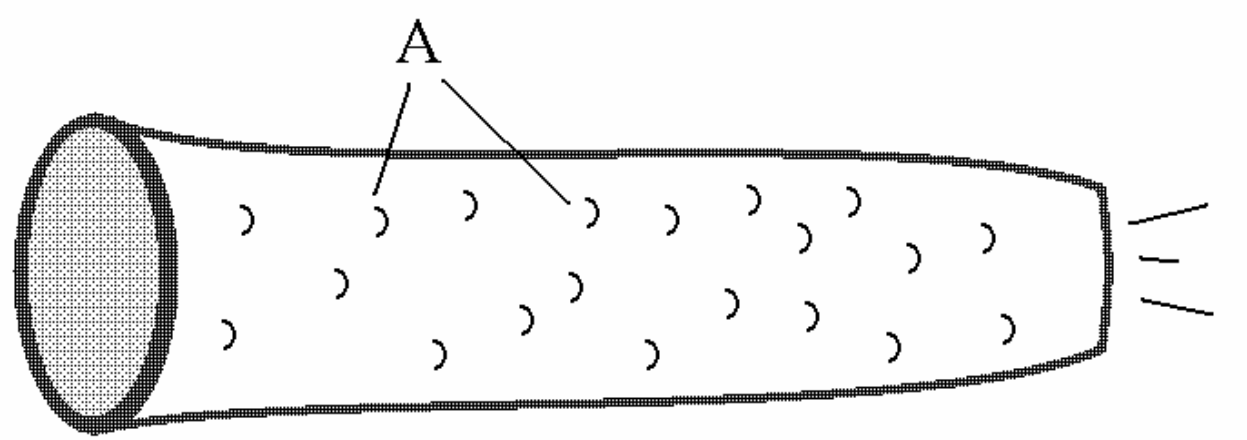


Cutaway view

The primitive circulatory system allows for the tubers to become larger and thicker "skinned" (though they still could only be seen through microscope) since all cells, even cells deeply buried by other cells, can still have access to the nutrients from the circulation of seawater. Our creature is starting to take shape.

This primitive seawater circulatory system is the most primitive root of our modern-day blood-cell based circulatory system, which replaces the function of the seawater in transporting nutrients, and the muscular pumping actions of the tuber's cells evolves into a centralized pumping system (the heart) to control the flow.

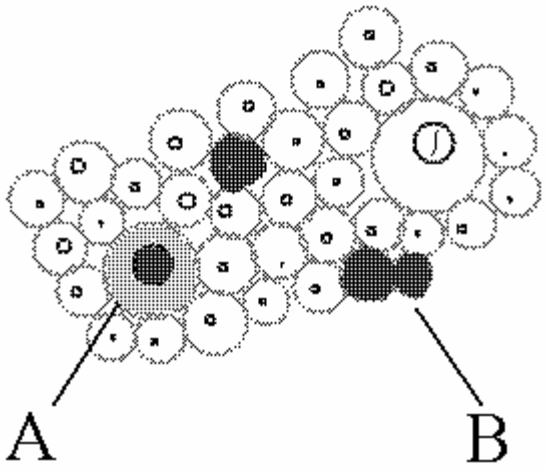
The development of the circulatory system means that the creature no longer has to have every cell directly exposed to seawater, and so, over time, it develops thicker and thicker "skin". Variations of this skin assists the creature's movement, such as a scaly skin which helps the creature to push on the water.



Our tuber continues to evolve into bigger and bigger sizes
A: Subtle variations in the DNA create skin that is scaly, which gives the creature a better grip on the water when it moves

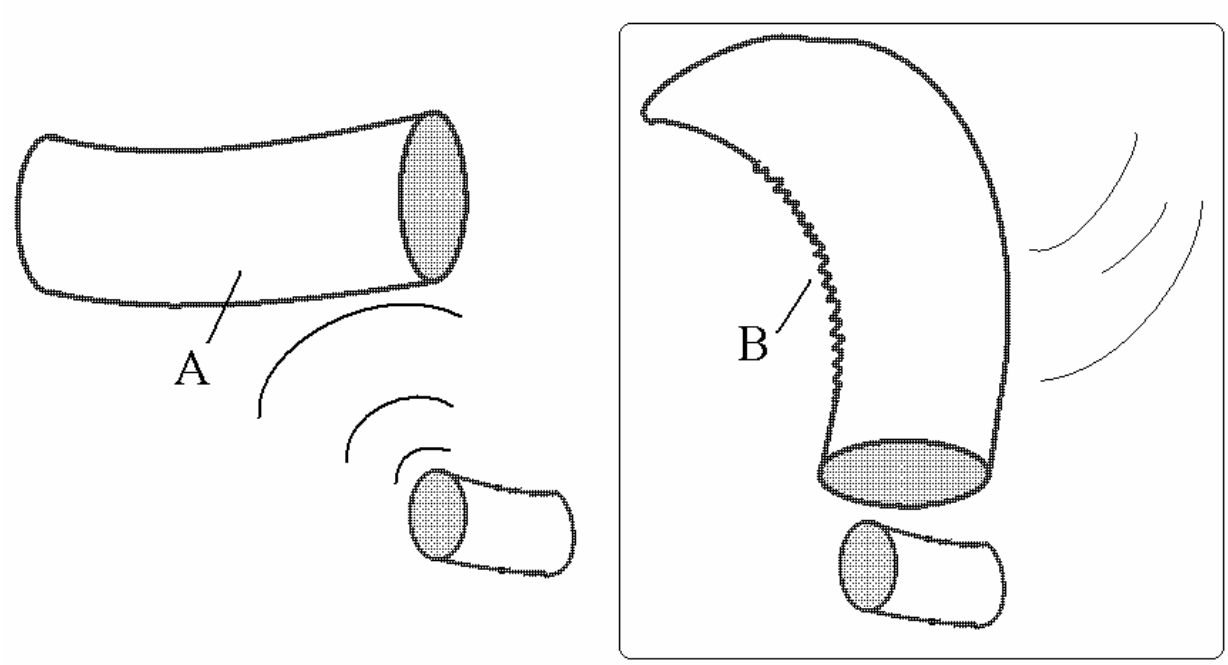
Eventually comes the development of tiny fins to give the creature finer and more powerful control of its movement.

Keep in mind that the changes that are happening to the evolving tuber are the result of random changes to the DNA over thousands and thousands of generations, resulting in new and modified enzymes that perform different functions, giving rise to the tuber's evolving cellular behavior. None of these evolutionary changes occur in an entity directly, only in the offspring that grow from the seed DNA that may have been randomly changed. Sure, some of the DNA in a full-grown tuber may be randomly modified (by the constant onslaught of cosmic radiation, or reproductive error) but only for the cell in question, not for all cells in the entity. This "mutation" will most likely just vanish harmlessly when the tuber eventually dies and disintegrates. The only way that a mutation will be passed on to offspring is if the mutation occurs in the seed cell, for when that seed cell is released and begins to create a new tuber, the modification is copied and passed on to all the cells in the new tuber.



A: Only mutations that occur in the seed cell ever get passed on to the next generation
B: Mutations that may occur in other types of cells never get the opportunity to contribute their mutated DNA to any offspring

Our tubers now have the ability to “eat” other smaller tubers and other nutrients floating about in the ocean, but even still, most food is acquired by sheer luck. To increase the odds of reproduction, our tubers have to be able to proactively seek out nutrient sources; and what better way to “sense” another’s presence than by “feeling”? Surely if something brushes up against you, your skin tells you about it; and this is the next evolutionary step that our tubers take, the ability to “react” to touch or the vibrations that result from another entity’s movements in the water. How this manifests in our tuber is with nature’s oldest trick in the book, reutilization. It’s a relatively incremental enhancement for the existing primitive nervous system to evolve subtly enough to allow the tuber as a whole to react to being touched, or to respond to vibrations in the water. As this sensitivity evolves in complexity, the tuber eventually evolves to perhaps vigorously “pursue” the source of any contact or vibrations, in search of a meal.



A: Vibration that hits the side of a tuber…
B: …triggers a localized contraction that points the tuber toward the source of the vibration

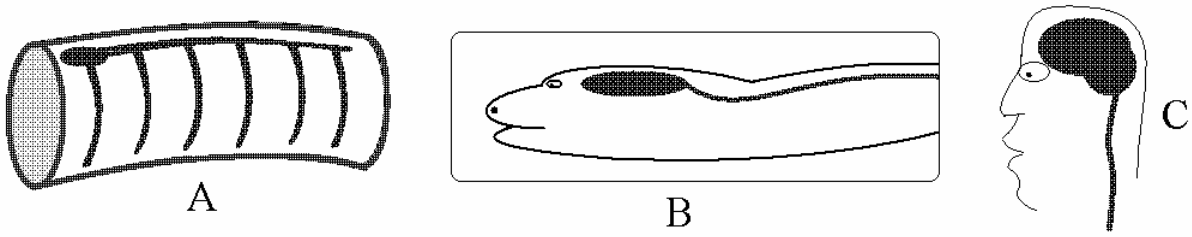
This ability would be sloppy at first but obviously any tubers that were a little better at pursuing a meal than the rest would be the most prolific in reproducing and hence this ability to pursue the source of vibrations quickly evolves into a very efficient ability.

Killer tubers: well, don't lose any sleep over it, they're quite tame by modern standards. As they are thus far described, the tubers still have a very long way to go before they can compete with modern creatures. The reason we see virtually none of these simple forms of life in our modern world is that they simply could not compete for resources with the highly specialized creatures of today. Tubers would be sitting ducks for the monsters that nature has produced in the millions of years since their introduction. Even modern-day lifeforms of the same size as our tuber, have the benefit of hundreds of millions of years of evolution behind them, empowering them with an arsenal of resource-acquiring and defending skills, and thus there is no niche remaining on Earth for so primitive a creature as our brave little tuber.

SENSES

An unimaginable number of evolutionary tweaks and augmentations occurred over the millions of years since our tubers first evolved, but the advancements that are probably the most interesting are the full complement of the “senses”. Over time the central nervous system evolved to be much more complicated, with virtually all actions of the ever-larger tuber being within the control of the central nervous system. The ability to successfully hunt down and consume other tubers lies in the effectiveness of being able to locate them, and so a myriad of spectacular hunting tools evolved for just that purpose.

The most fundamental function of the central nervous system is to recognize and generate “patterns” that the senses provide as information about the outside world. In order to be able to interpret all the increasing complexity of patterns that the evolving senses were providing, the central nervous system rapidly grew in complexity since each additional bit of precise control and access to environmental stimulus that the entity had, the better it could be at acquiring resources, and the greater its chance of survival, and hence the greater chance of reproduction to pass on its DNA design through its offspring.



A: The central nervous system evolved to interpret and respond to environmental stimulus
B: As the senses evolved in complexity and information, the central nervous system likewise increased in complexity in order to take advantage of this increase in information
C: Ultimately we end up with the very modern brain

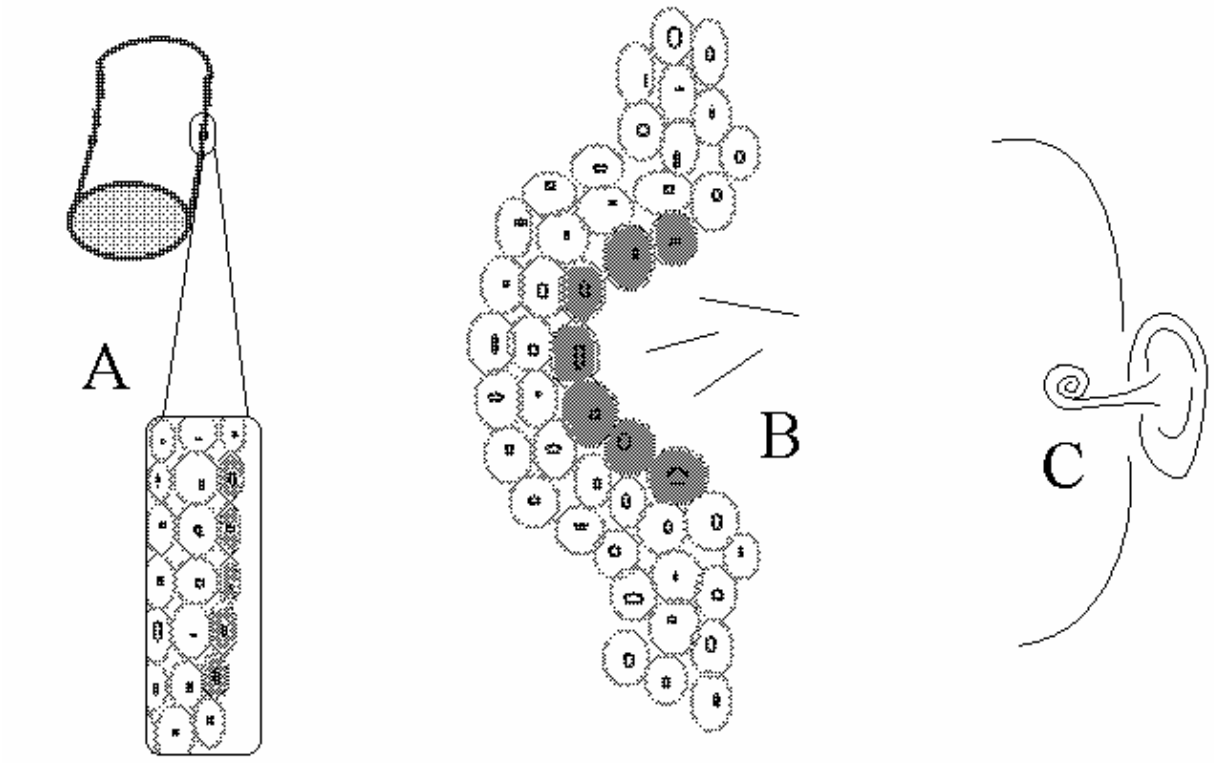
You may wonder why these primitive tuber creatures were so obsessed with resource acquisition. Well, with so many numbers and types of creatures populating the planet, resources are hard to come by,

and if one type of creature is lazier than another, the lazier one will fail to get all the building blocks necessary to reproduce and will eventually die without passing on its unique DNA design. The more aggressive creature, though, will have the best focus on resource acquisition and will be the most successful in reproducing, passing its design on to future generations. The limited supply of resources has fundamentally defined the primary goal of our creatures: to get as much food as possible to increase the probability of reproducing. There can never be too much food either, for our creatures will continue to reproduce indefinitely until the number of creatures outweighs the quantity of resources necessary to support them. They will eventually be forced to compete for resources with each other and ultimately hierarchically feed upon each other in order to keep reproducing, thereby leaving only the most aggressive and efficient creatures to survive.

The tiny tubers are the ultimate ancestors of all multi-cell creatures, but, since their introduction, they have evolved into millions and billions of various types of creatures that all possess their own special techniques for the acquisition of nutrients. It would be inaccurate to lay out the order in which any of these abilities evolved next since many abilities would have evolved simultaneously, so let's just take one particular lineage of the tuber's evolution and follow it through time in a hopefully plausible manner.

Building on the ability to feel vibrations in the ocean, the ability to determine the nature of these vibrations came next. By this it is meant that a tuber would probably like to be able to distinguish small bite-size tubers from dangerous, larger tubers. This distinction could be made if the frequencies of the various vibrations could be discriminated between. Lower frequency vibrations mean danger, smaller quicker vibrations mean lunch is nearby. This ability is the root of our modern ability to "hear" sounds. It was very simple and rudimentary at first, with specialized touch cells evolving that were much more receptive to vibrations than normal cells. Over time, these cells became clustered into dimples that passively provided mechanical amplification of sounds, improving the effectiveness of the sound cells' overall receptivity. In turn, the central nervous system evolved to accommodate the increase in

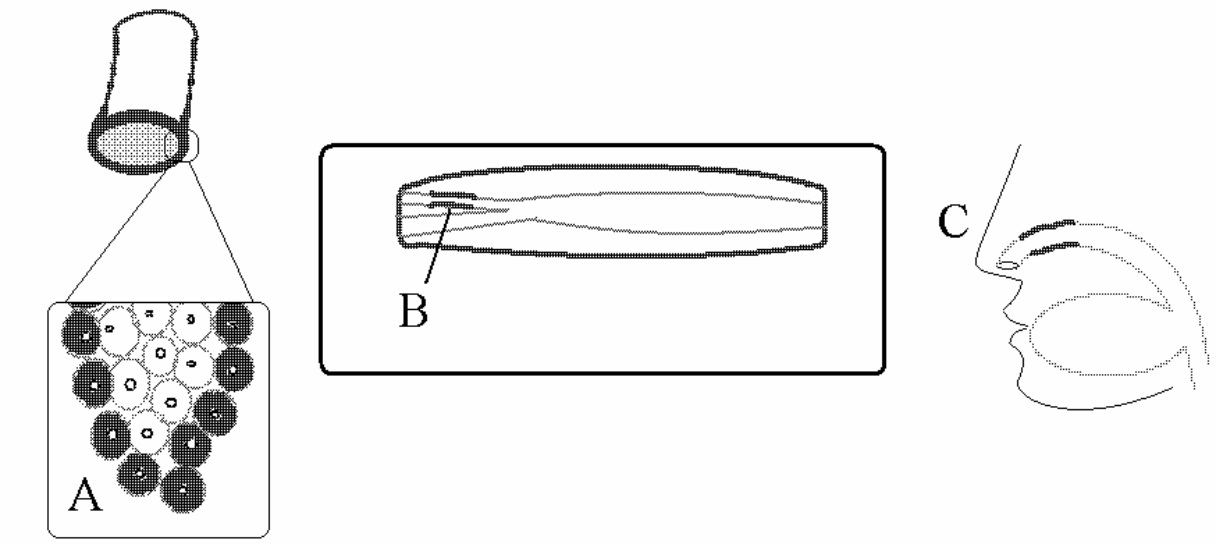
information that these cells would provide, and over a great deal of time we eventually ended up with a complicated organ capable of distinguishing a large range of frequencies. This provides a rich source of environmental information, better known as the sense of hearing.



A: Sense of hearing started with the evolution of vibration-sensitive cells
B: Over many generations, these cells evolved to form dimples or pockets so as to take advantage of mechanical amplification of sound vibrations
C: Over millions of years of vibration-sensing evolution, we end up with a very complex hearing mechanism; the ear

But before the hearing ability reached full maturity, other senses began to evolve as well. The sense of smell enables a creature to sense the presence of another by the waste particles that are produced from its cellular activities, even well after the other creature has left the region. This sense is especially important for its role in sexual reproduction because it's obviously important to be able to uniquely identify receptive entities of the same species so that sexual reproduction can occur. As well, the sense of smell can warn of impending danger. The first step in

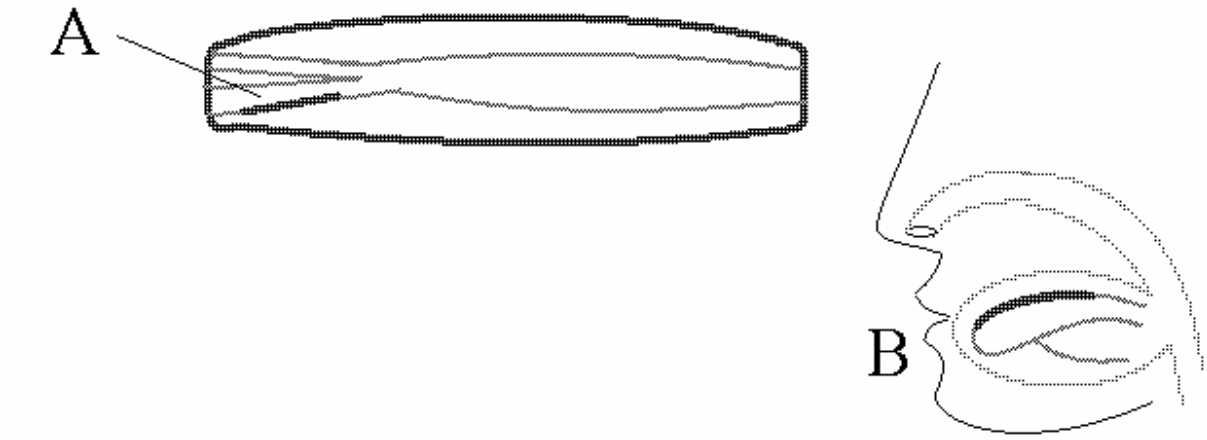
the evolution of the sense of smell is to develop cells that are sensitive to specific chemicals and waste products that other creatures produce. As more and more cells evolve to sense a myriad of different chemicals, the creature becomes increasingly adept at distinguishing the various balances of chemicals that define other creatures' waste signatures.



A: Specialty cells evolved that are sensitive to residual chemicals (scent) left behind by the cellular processes of another entity
B: As the entity further evolves, a special region develops that concentrates these "smelling" cells in an area where there is a persistent flow of environmental particles (such as where the entity is breathing)
C: Millions of years pass and the ability to smell evolves to become a very complicated and refined sense

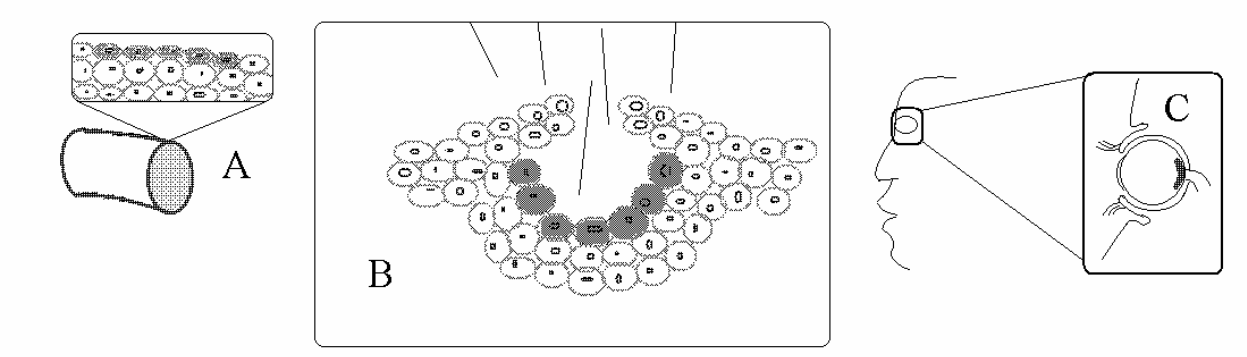
The sense of taste is very closely related to the sense of smell and borrows a lot of its design from the unique sensitivity of the smelling cells. The evolution of the muscular tongue assists in the breakdown of food but the plethora of tastebuds, which are a variation of smelling cells, also allows the creature to determine exactly what it is consuming. Things that are good for the creature to consume will trigger the tasting cells that are connected to the "good nutrients" portion of the central nervous system. Things that might be harmful for the creature to consume are likely to trigger the tasting cells that are connected to the "bad tasting" portion of the central nervous system, and the creature will likely not consume the substance. In this way the creature can filter out

what it consumes so that it can more efficiently obtain the nutrients it needs.



A: Specialty cells evolved that evaluated (tasted) the nutritional value of ingested materials prior to digestion, allowing the opportunity for the entity to expel potentially hazardous materials as well as to identify necessary nutrients
B: This tasting system evolved parallel to the smelling system and over millions of years has also become a very specialized sense

By far the most unparalleled of the senses is sight. In its infancy, specialized cells evolved that were sensitive to light. These cells would allow the creature to determine sunlit areas of water where plants tend to grow and edible creatures that feed off of the plants would tend to congregate. These light-sensitive cells evolved to cluster together in increasingly greater densities and as well began to recede into a "fold" for the purpose of limiting these cells' exposure to physical harm, and also to limit the amount of light that would reach these cells. This fold eventually evolved into a socket with the light-sensitive cells at the deepest part and a thin transparent cell wall covering the socket. The "eye" continued to increase in complexity, evolving a lens, with the socket forming an "eyeball" that could be muscularly rotated.



A: Light-sensitive cells evolved to allow the creature to navigate to regions of light, where nutrient-producing green plants tend to
B: These light-sensitive cells evolved to be embedded in dimples that had a muscular flap to control the amount of light that reached the light cells, in order to keep the cells at optimum light sensitivity
C: Millions of years later, the sense of sight has evolved to produce a focusing lens and a rotating bulb to contain the light sensitive cells

The benefit of having two eyes became highly selective for survival because it added depth perception to the spatial abilities of any creature with stereoscopic vision.

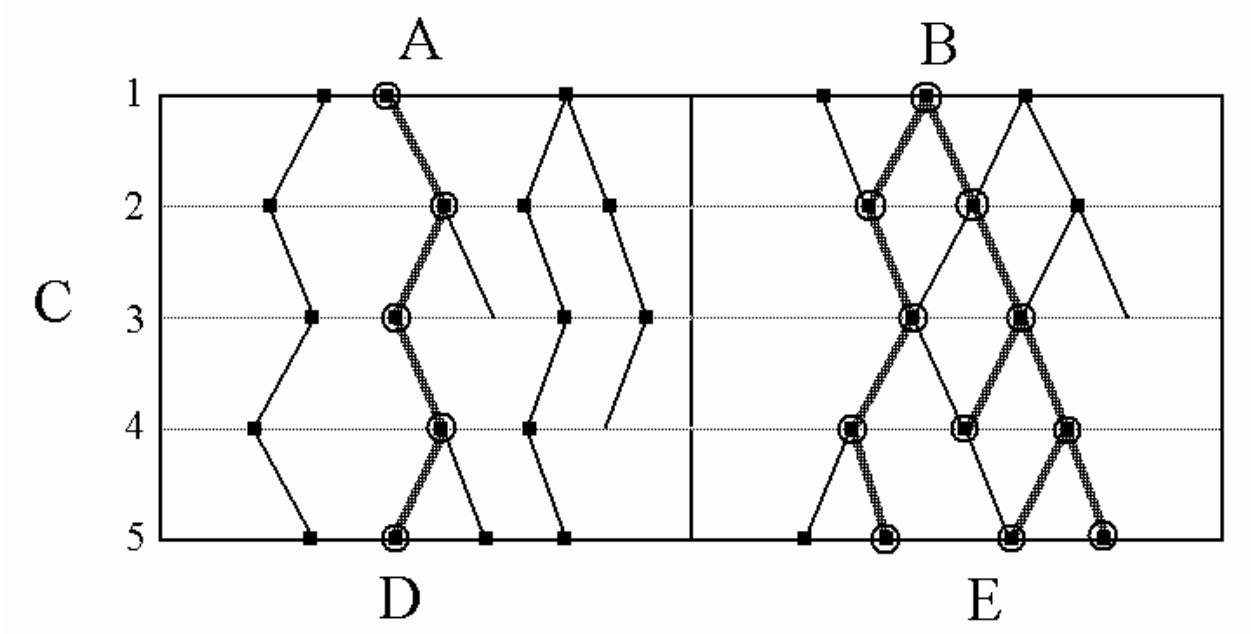
Having two eyes gives stereo vision, which adds the dimension of distance to the sense of sight. This distance measurement is calculated by the brain from the subtle differences in where each eye perceives a given object

SEXUAL REPRODUCTION

The final evolutionary trait (of potentially millions) that we'll explore is the ability to sexually reproduce. Our sexual organs are the most ancient part of our bodies, extending right back into the time of the single cell organism. Of course not all creatures or plants sexually reproduce but the vast majority of multi-cell creatures, particularly ones that are large enough to be visible to the naked eye or larger, have sexual

organs. The reason why sexual reproduction dominates (as opposed to asexual) is that sexual reproduction allows for the parallel sharing of genes within its population while asexual reproduction can only improve its direct lineage. The benefit of sharing genes is that all successful mutations of the DNA can be passed on in time to the entire population, which incredibly accelerates evolution when compared to asexual reproduction.

For example, let's say a mutant gene is created that somehow prevents disease M. If the creature that has the mutant gene sexually reproduces, then within a few generations an exponentially large number of the population will have the gene; but if instead the creature only asexually reproduces (splitting), then only its offspring and their offspring could ever have the gene, and the rest of the population will continue to be susceptible to disease M.

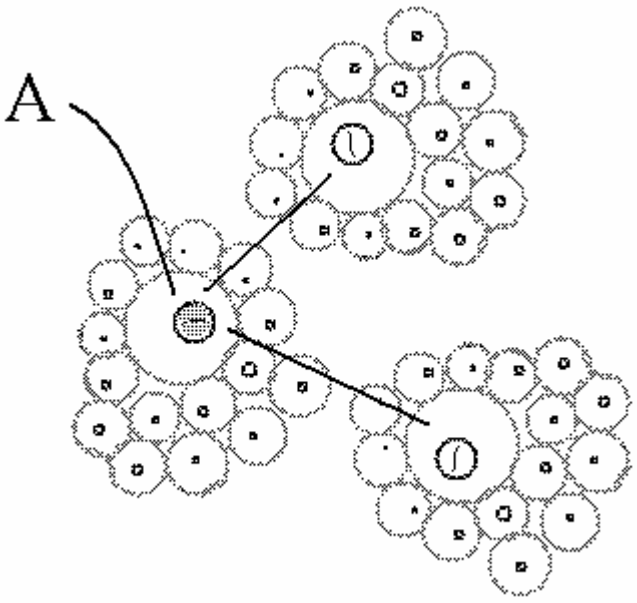


Family Tree's for:…
A: …Asexual reproduction and…
B: …Sexual reproduction
C: Generation
In each example tree, one member at the top develops a mutant gene that is beneficial (e.g., prevents a common disease)
D: With asexual reproduction, the beneficial mutant gene cannot ever spread to other members of this species and therefore is not beneficial to the species as a whole
E: With sexual reproduction, the beneficial mutant gene has a chance to re-enter the gene pool, giving non-related offspring the eventual opportunity to obtain and benefit from this gene

The ability to reproduce sexually is probably the most profound trait in terms of natural selection.

Let's start way back at the time of the eukaryotes, just as they were evolving to stick together to begin forming multi-cell entities. A lot of RNA information could already be passed between cells, allowing an RNA mutation to propagate laterally through the population if it was a good gene, whereas a bad gene would kill the cell before it could pass that gene on to another cell. When the multi-cell entities began to specialize with the seed form of reproduction, it became more complicated to pass RNA information since now only the seed cell's DNA would ever get passed on to offspring, the other cells no longer

being able to build entire new entities since now they have evolved to solely support the seed cell.



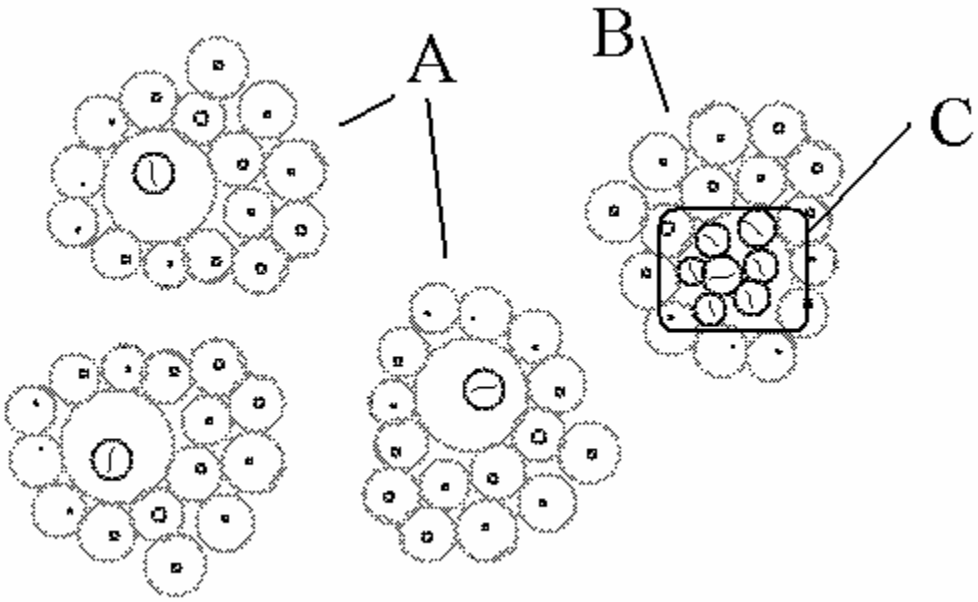
The seed cell mechanism may have been more reliable in terms of self-reproduction, but it became difficult to share newly mutated genes with the rest of the population since only the seed cell was capable of reproducing. With the increasing size of the entities, the seed cell was becoming very difficult for other entities to gain access to for sharing good genes

A: Positive mutation cannot be passed on to the other entities because of lack of direct contact with seed cells

Now we need a mechanism to transfer positive genes to the seed cell specifically.

Enter “gender”. Long ago, a simple mutation occurred that slightly modified the reproduction mechanism of one of our entities. Now when a seed cell wanders off to begin creating a new entity, it can produce either the same type of entity it came from, or occasionally this new mutation would become active and the seed would then produce an entity with a slightly different makeup. Let’s call this slightly different version of the entity, a “runt”. This new form of entity looks very much like our normal entity (call that one the “mama”), but instead of a single seed cell, it now has multiple, smaller seed cells.

The runt DNA is exactly the same as the mama DNA, but the new mutated gene will rarely become activated, and the effect of this mutation is to multiply split the seed cell.



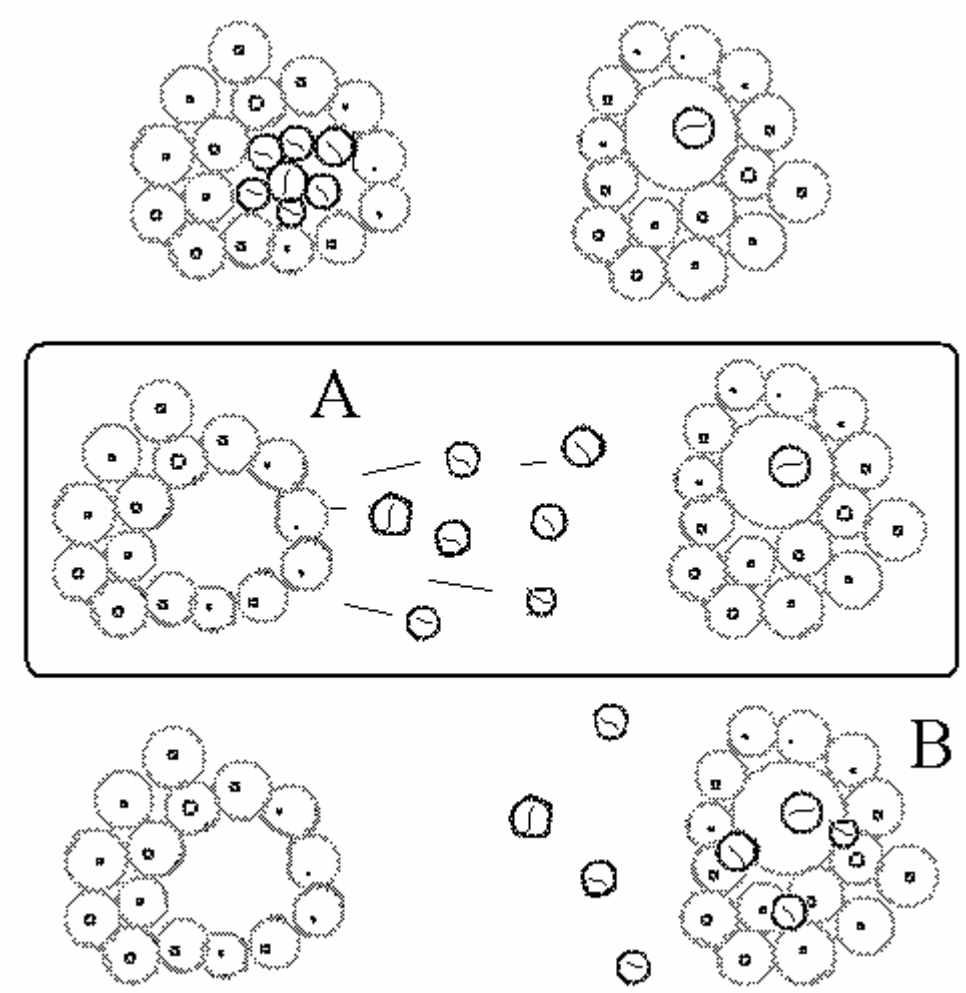
A: Mama
B: Runt
C: The “runt” version of the entity has a seed cell that splits into many smaller seed cells. These smaller seed cells cannot reproduce an entity by themselves, but they do contain all the DNA of the original entity that spawned it

This means that the runt’s smaller seed cells are forced to share the resources that would normally go to a single large seed cell, leaving them incapable of reproducing. It may seem like there is a big difference between the mama and runt versions when actually very little has changed in the DNA for this difference to manifest; however, the small change makes a tremendous difference in end result of how the entity now works. These runt seed cells by themselves are effectively sterile because they are not of adequate size to be able to accumulate all the necessary resources to create a new entity, but yet they still have the full complement of DNA and RNA.

When this mutation first manifested, the normal mama entities would produce this runt entity version very rarely, say 1 in 1000 seeds

would produce a runt, and the runt would most likely die off with no progeny, not being able to reproduce. It doesn't matter much to the remaining mama entities because they can still continue to produce more mama entities; so it's not so detrimental that once in a while a useless runt is produced. So what good is the runt version? It can't reproduce by itself because of the sterile tiny seeds…but what the seeds lack in quality, they make up for in quantity.

Imagine a whole population of these mama entities in close proximity (because they have reproduced so voraciously). As mentioned earlier, mamas continue to randomly mutate over time but now have a hard time exchanging RNA information because their seed cells are less accessible due to an increase in skin thickness. Our multi-celled mamas just can't rub their seed cells together to exchange RNA like single-celled eukaryotes can. However, when a runt gets produced, it ejects a lot of stunted seeds that by themselves would be hopeless at reproducing, but because of the sheer number of them, some of these runt seeds sometimes serendipitously cross paths with a mama entity's seed cell and by simply coming into contact with each other, the two versions of the seed cells can transfer a modest amount of RNA information between themselves, effectively performing the most primitive form of sexual reproduction.

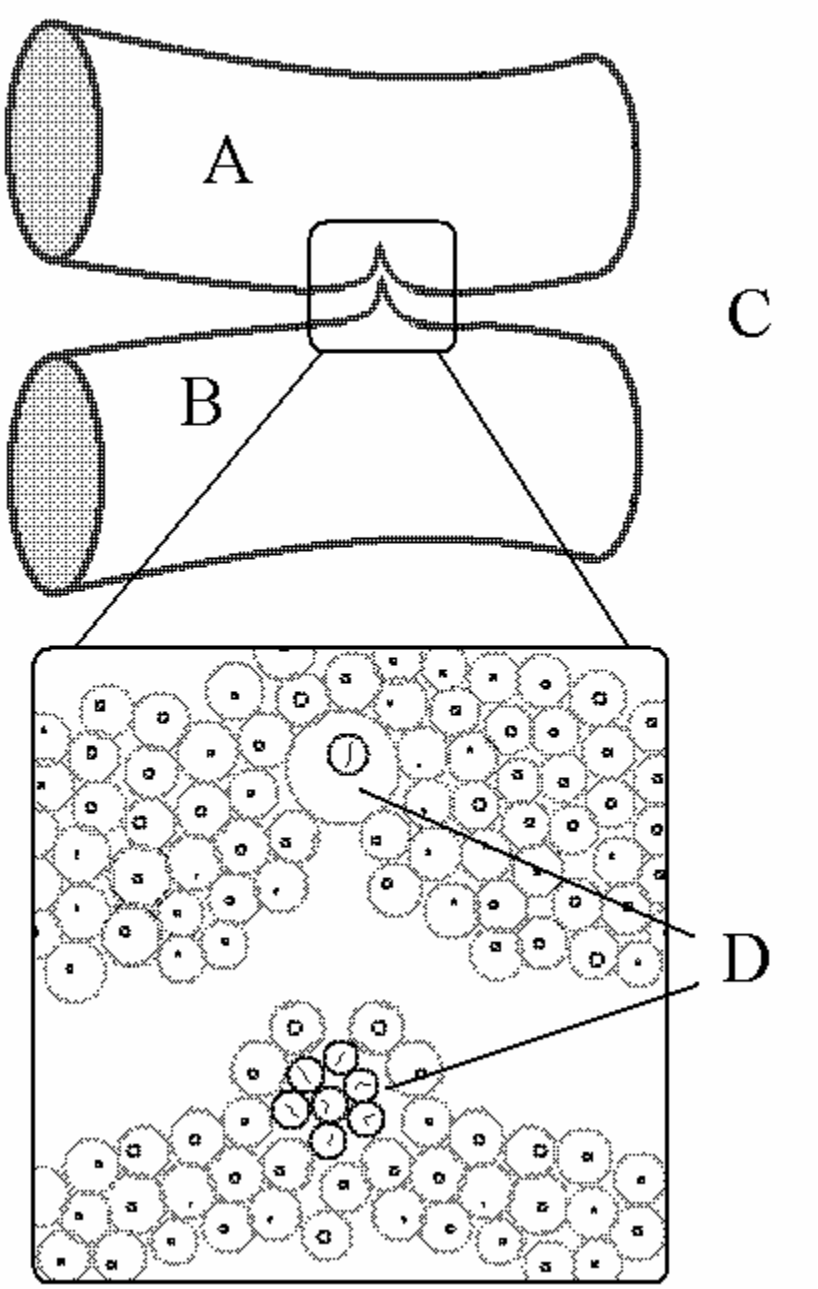


A: Runt version of the entity releases its seeds
B: Some runt seeds come in contact with the seeds of other mamas and they then can share genes

Now when this mama releases this genetically runt-influenced seed, it will not only pass on its own genetic information but it will also contain some of the information from the runt seed. This runt seed of course originally came from its own parent mama entity, so in the larger picture, the mamas have shared genetic information using the runts as the transfer mechanism. Despite the restrictions imposed by increasing in size, the mamas have found a way to continue sharing genetic information within the population.

Of course this runt mechanism was very sloppy and virtually ineffective at first, but it was because of the sheer evolutionary advantage of being able to share good genes laterally across lineages via

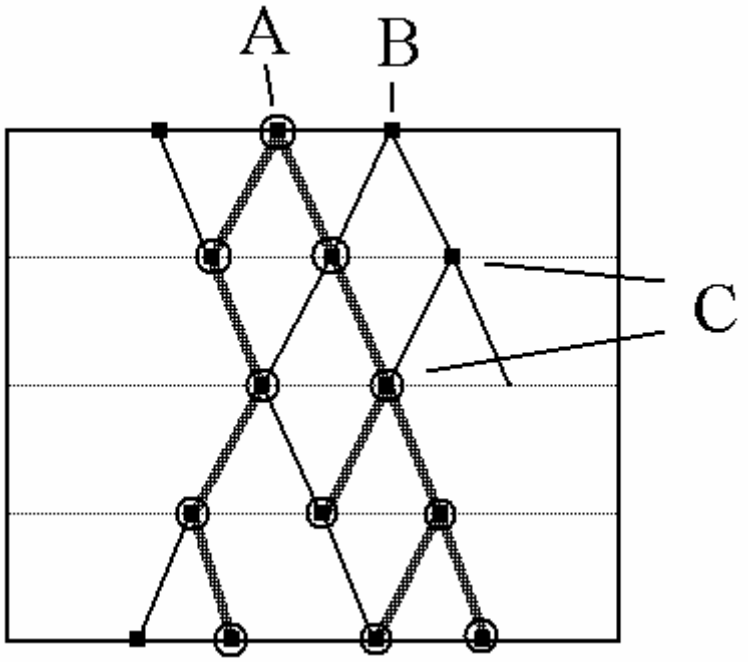
these runt seeds, that this method then quickly took hold as a favored reproductive trick. Slowly the DNA evolved and refined this process such that the runts were produced with a higher probability. As well, the mama entities began to "shape" in a way that made access to the seed cells a little easier for our runt seeds. This manifested as a "dimple" in the shape of the entity as it evolved into the larger tuber creatures. The runts, again with very little change to the DNA (remember they share the same DNA but with some genes that may or may not be randomly activated, which results in either gender being produced), capitalized on the DNA design of the mama dimple but inverted the design to produce a "bump" instead. Now a runt can easily attach to a nearby mama by fitting its bump to the dimple and this perfectly lines up the runt's seeds to come into contact with the mama's seed, sharing a lot of genetic information in the process.



A: Mama
B: Runt
C: Mamas evolve tiny dimples. Runts capitalize on this design and invert their version of it to create a bump that fits neatly inside the dimple
D: This brings the runt's tiny seeds within close proximity of the mama's normal seed so that when the runt releases its seeds, they can come into contact with the mama's seed

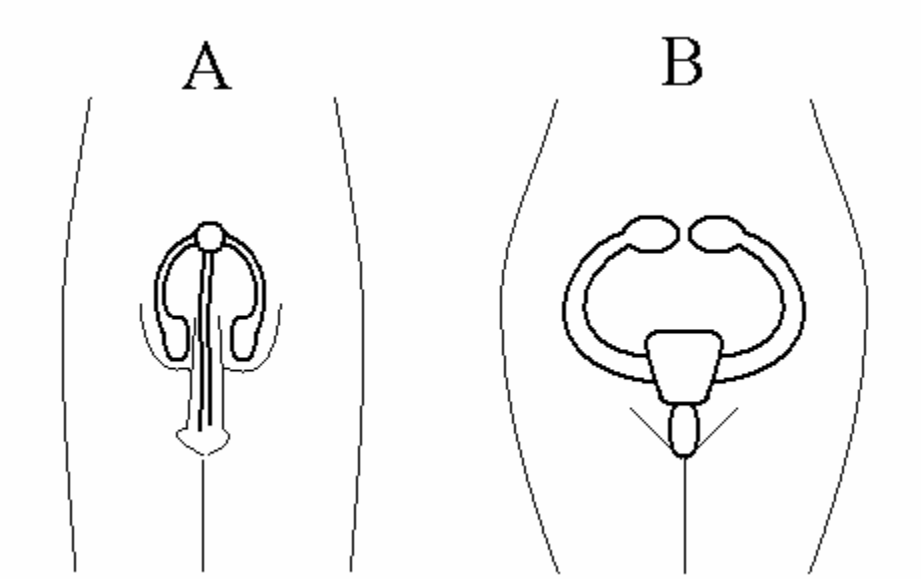
With a successful sexual reproduction mechanism, no longer does an individual creature always form a separate branch in our evolutionary

tree, now the branches reconnect at later stages in evolution. What does this mean for our sexually enlightened creatures? Well, now there are fewer bad branches and even though one branch might evolve a certain attribute that is highly advantageous while another branch never does develop this attribute, eventually both lineages will have this attribute when the branches rejoin in future generations.



A: With desirable trait
B: Without desirable trait
C: Even though one entity might not have a desirable genetic trait that another might have, after enough generations, the trait will eventually be sexually acquired by other members whose direct ancestors might not have had this trait

This mechanism improved over time into a phenomenal complexity as our creatures continued to evolve to larger and larger sizes, but fundamentally still involved the penetration by the male entity (the runt) into the female entity (the mama). The inversion technique of the sexual organs to form the female dimple and the male bump is still in use today. The male penis-head, vas deferens tubes, and testicles, can be inverted to produce the clitoris, fallopian tubes, and ovaries respectively.

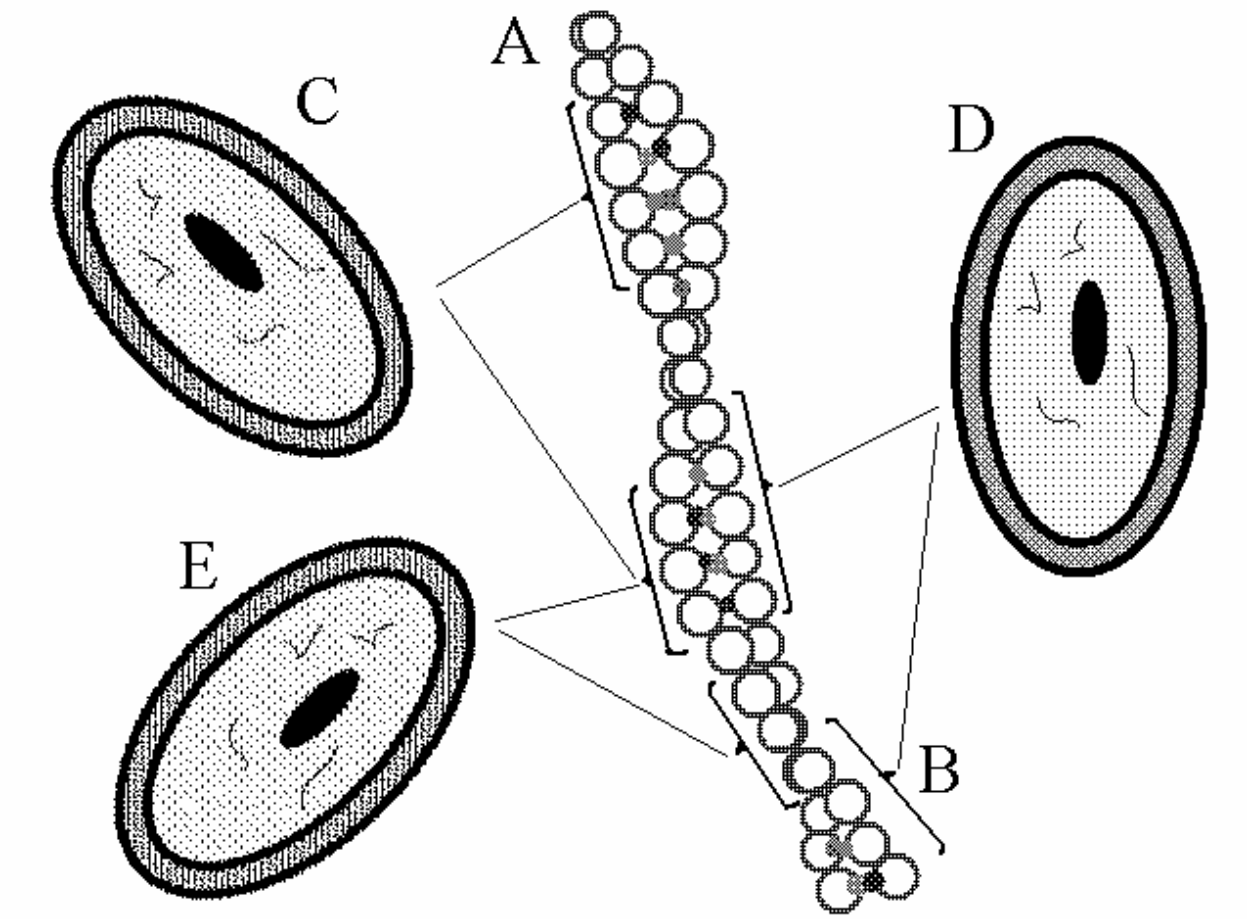


A: Male
B: Female
The design of the sexual organs is largely inverted in the opposite sex.
This allows for re-use of existing design

There is a lot less genetic difference between the instructions that go to making male sexual organs versus making female sexual organs than you may expect.

COLLABORATION

We are so accustomed to considering the whole entity as a single homogenous process that it is easy to overlook the fact that it is the combined symbiotic efforts of every individual cell that goes into defining the attributes of any living creature. It's the different balances of which enzymes are activated from the DNA in any given cell that determines that particular cell's function as a whole, whether it is to create a skin cell, an eye cell, a brain cell, or whatever.



A: DNA
B: Gene
C: Skin cell
D: Brain cell
E: Blood cell
All cells in the same creature have the same DNA. What makes the cells behave differently from each other are the particular genes that are activated in their copy of DNA

The collective of all these cells working in tandem, each performing their individual specialty functions, together creates the biological mechanism that we consider a complete creature; just like *our* individual cells work together to wholly create us human creatures.

NATURAL SELECTION

What's important to never lose sight of with all the aforementioned techniques and strategies that our creatures have developed to survive in

a competitive world, is that all of this evolution is for the single purpose of replicating the DNA molecule. That's all. Everything else that is going on is just an ever-increasing complexity in how the DNA goes about reproducing itself. Sometimes the DNA copies itself perfectly, but occasionally, especially because of its unimaginable complexity at this point, an imperfect copy is made. These rare but persistent reproductive errors lead to many random changes over time. If even a tiny fraction of the next generation has an imperfect DNA copy that somehow gives them a reproductive advantage, then those resultant entities will inevitably, through successive generations, become the dominant form of entity until it also is surpassed in quality. Step by step, chance after chance, the DNA continues to serendipitously find a way to tweak its mechanism here or there that affords it just a little bit more competitive leverage in its pursuit of reproduction.

At no time does a plant or organism ever look at itself and say, "Hmm, I think I could do better at reproducing if I adjust this particular gene". No, instead it is always a random or quasi-random change (the use of "quasi" will be explained much later) in the seed DNA that results in either a positive change or a negative change to the entity as a whole, with a vast majority of the changes being negative because of the delicate nature of genetic design. Negative genes however have a tendency to wean themselves out of the species, usually by making the resultant creature a less viable mate; therefore, even though positive changes are rare, they are much more persistent and therefore rapidly propagate throughout the whole species, and this fact alone is why sexual reproduction is by far the most selective advancement yet in life's long evolution.

The measure of whether a particular modification to the DNA is reproductively advantageous or not, rests entirely on how this modification alters the entity in relation to its environment. A plant that originally produced a semi-sweet seed and now has evolved to a new version that produces a very sweet seed, is probably highly advantaged since the seed will carry with it more nutrients to help it spawn, perhaps doubling the odds that the plant will reproduce. In this environment, this change has been beneficial. Alternatively, this same new plant with

sweeter seeds might become the victim of a colony of local insects that find the sweet seeds particularly tasty, destroying the seeds before they can ever be released. Same change, but contrasting results, because of the different environment.

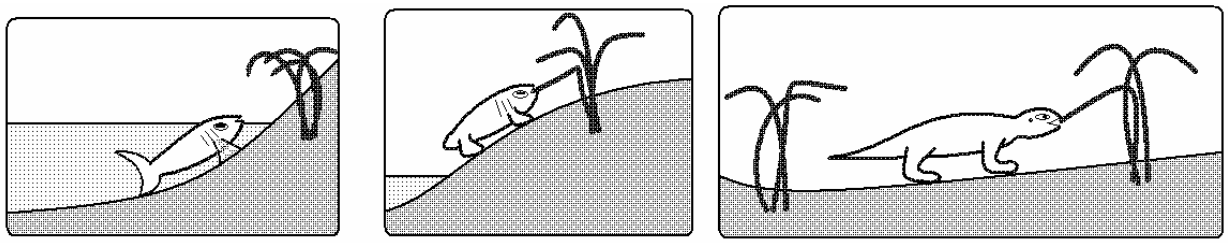
Why is change so important? Wouldn't one design happen to evolve that is the absolute best? Not likely. Environments continue to change and it is extremely improbable that something could evolve to completely overcome all environmental stresses that might be imposed upon it. For example, theoretically, farmers could choose the best seeds from their crops and the following season they populate their fields with those selected seeds. They could repeat this year after year until they had a tremendous crop, using only the very best of the previous year's seeds. However, perhaps the crop would get so good that insects would find it especially tasty and completely devour the whole crop, leaving nothing to spare. If the crops were left to their own natural diversity mechanism, perhaps some of the crops would have been devoured, but the rest would have been left to continue reproducing because of lack of insect-appeal. This natural diversity of evolution allows for resistance to environmental stresses, and so the best design is one that is the most radically diverse.

LAND CREATURES

Let's speed things up a little now as the rest of this story of the theory of evolution has already been published in many versions by many authors. Through an inconceivable number of generations, our sea creatures have evolved into millions of species: from fish, to sea snakes, to oysters, to coral. Individually each species is the masters of its niche in the ocean, and each has a different set of attributes to help it in its niche: some gather nutrients directly from the ocean, some eat plants for nutrients, and some eat other creatures. All creatures, however, share the common goal of reproducing their offspring.

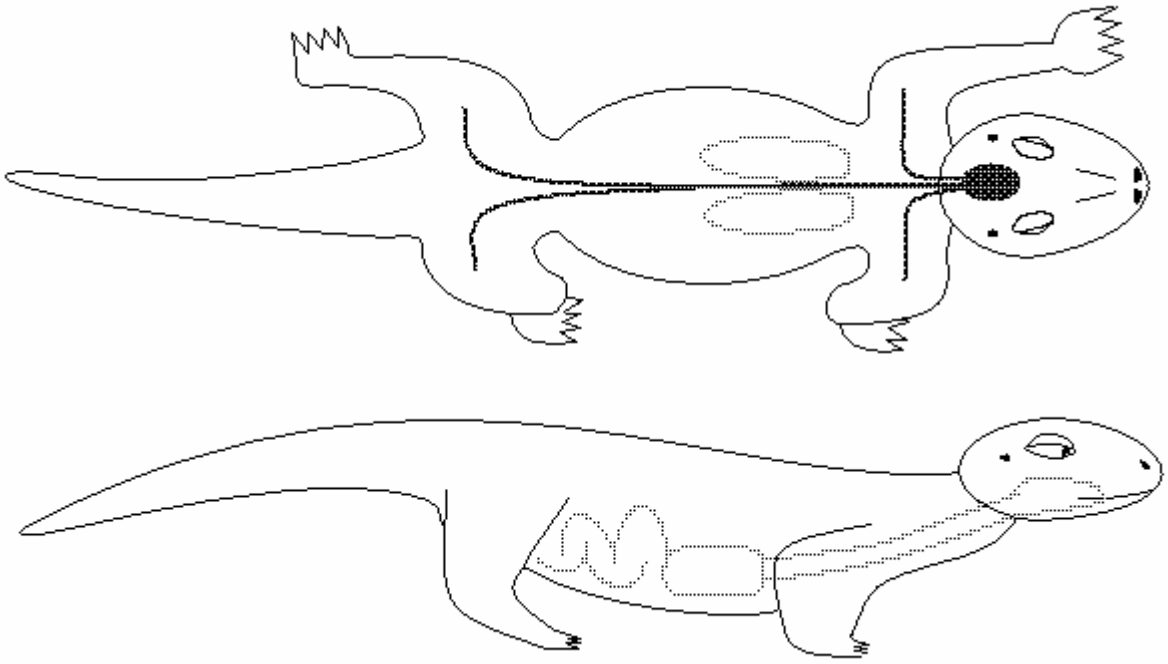
Then came the day that some very tiny creature swam towards the shore, and didn't stop. Using whatever limbs or fins it had developed for traveling through the sea or along the sea-bottom, it pulled itself a

short distance out of the water to reach the nutrient-rich plants growing just outside of its reach from its home inside the ocean. For short intervals this creature would journey a tiny bit onto land until it had to return to the ocean to breathe, not having the proper lungs to stay in air indefinitely. Over time, the next step of evolution would be for this amphibious creature to evolve the transition to lungs that breathe air directly, which made this creature's visits to the world above the ocean ever increasing in length, until it finally evolved to the point where it no longer had to return to the ocean that bore its ancestry. Now it began evolving to suit its new home on land, improvising on its current design (e.g., scales evolved into hair, gills evolved into ears, etc.)



Over countless generations, our brave little ocean creatures evolved the ability to crawl onto land in search of new food sources, until eventually they could permanently survive on land and had no need to return to the ocean

Once again speeding through time, our brave little land creature evolves and diversifies into millions of different land species, all with their idiosyncrasies that make them the masters of their niche in this world. There comes another distinct point in time that we'll identify as very significant: the birth of the "G-Freak", or "genetic freak". We use the word "freak" to imply that it is always changing forms. The first complete G-Freak was manifested long ago as a very tiny amphibious lizard with four limbs (or four appendages of some identifiable sort that are utilized for movement), senses of smell, hearing, taste, touch, stereoscopic vision, a central nervous system, air-breathing lungs, sexual organs, and a digestive system, as well as a few sexual behavioral traits (defined later).



The first G-Freak

This isn't necessarily the common ancestor for all land life but rather for all life with the aforementioned characteristics. It seems this combination of attributes has consistently produced the most successful form of large creature, for a very long time. Statistically there is the greatest survival advantage borne to creatures that evolve to a large size under this design, instead of, say, one with six limbs, or monoscopic vision. This has largely to do with a careful balance between the biomechanics of a larger creature, and the ability to acquire the necessary resources to live and reproduce; the G-Freak being the most efficient at striking this balance thus far among nature's creations. Most creatures that we would consider animals (elephants, alligators, monkeys, dogs, rats, dolphins, whales, birds, etc., but not insects or fish) are much evolved branches of the G-Freak family tree, as we are too. The most important distinction of the G-Freak will be explained later.

INSTINCTS

Let's zoom through more time and now the central nervous system has become radically more complicated in order to process all the sensory information that allows the creature to formulate actions which will hopefully reward it with progeny. This is the beginning of the evolution of the brain, which is very much an extension of the central nervous system. It's important to recognize that despite the increase in size or complexity of our creatures, everything that constitutes the "body" evolved entirely to complement the central nervous system's, and much later the brain's, ability to interpret and exert control in its environment. Consider the body like a great machine that the brain operates from the skull's cockpit.

Initially this ancient tiny brain was mostly the seat of instinctual processing, meaning that the creature would respond to a stimulus in a pre-programmed way. How did that functionality evolve? Take the fear of heights for example; pretend that we're watching the very first creature to ever come to the edge of a cliff. It looks over the edge and it doesn't realize that it shouldn't continue because it has never had a prior bad experience like this; and so the creature steps off the edge, providing closure to that branch of evolution. Later, another creature comes to the edge of the cliff and looks over, but this one randomly decides, "Hmm, not sure what I am seeing here so I would rather not experiment", and our first coward reverses course. The coward will eventually reproduce, and the offspring, having largely the same inclinations as the parents, will also more than likely back away from the cliff. Over time, this initially serendipitous aversion to heights evolved magnificently into the very common instinctual fear of heights, which today manifests the sensation of vertigo when confronted with a most formidable drop in altitude.

The creatures up to this point were very limited in their cognitive ability to act with apparent free will to their environmental stresses. Most of their existence was simply instinctual reaction to either environmental stimuli, or their body's internal demands. They could not think in a manner that we understand. You can try to experience this

autonomic perspective if you imagine yourself always feeling extremes of emotion. Something is moving nearby: intense fear, adrenaline, and alertness. Eating food: tastes so good, and so satisfying. Protecting a mate from danger: hatred and bottomless rage towards the offender.

All these instinctual responses contribute to the survival of the species by demanding specific physical and mental reactions to a given environmental stress. These instincts evolved by experimentation with all possible responses to stress, through countless generations, much as in our fear of heights example. Those randomly predisposed responses that were successful, and allowed the creature to continue living, were passed on to the offspring who would also survive similar situations, having the same predisposition that saved the parent.

The primitive brain evolved to balance environmental stimulus with reproductive potential, meaning that stimulus, no matter how subtle, is either good or bad depending on whether it results in a greater likelihood of progeny or not. The actions manifesting from instincts may not be entirely obvious in how they contribute to reproduction, but ultimately instincts evolved to coerce the entity into scenarios where the odds of reproduction would increase. For example, sexual desire is one of the most powerful instincts and it is quite obvious how this instinct can contribute to reproduction; however, the sensation of hunger may seem somewhat removed from garnering progeny.

So how does hunger contribute to reproduction? G-Freaks have evolved to consume much more energy than is necessary just to live, in the attempt to increase the probability of reproducing, since it increases the success rate dramatically to be proactive rather than passive. A male who conserves energy by sitting in one place waiting for a female to offer herself to him will most likely not reproduce since there will be at least some males with the inclination to be proactive, who will therefore be the ones to reproduce and pass on this proactive inclination to their offspring. This cycle continuously increases the average energy requirements needed for successive generations to proactively pursue reproductive opportunities. So, proactive sexual conquesting takes energy, which requires food, hence the hunger instinct primarily fuels the reproductive process.

DEATH

So why does everything die? It might seem logical that at least some creature would evolve to live forever. As logical and desirable as that may seem to intelligent entities such as ourselves, this isn't necessarily the best mechanism for the whole population for if every creature that was born lived forever, eventually there would be too many creatures and the only way that the older ones could possibly have enough resources to continue living, would be to no longer reproduce. No more reproducing means no further evolution, which means the inability to adapt to a changing environment; eventually the environment would change radically enough that none of the creatures could survive, ending that form of life forever.

The biological answer to that question extends way back to the most basic function of the cell: splitting. When a creature grows, its cells are following a nearly exact predetermined splitting agenda that allows the body to grow into its full size and shape in the correct proportions. Nature has evolved all creatures to maximize the quality of the resultant creature at the best age for conception, after which the body begins a long process of degradation. Every time a cell splits (for example, when skin grows), its resultant cell is not exactly the same as the original and over many splits, the newer cells tend to be less and less efficient at performing their duties. This declination in average cell quality means that the creature will eventually reach a threshold of cellular decay where its body can no longer sustain a constant flow of blood to the brain, after which it soon dies. Also, because of the way the stem cells divide to create the whole entity, each cell has a predetermined number of times that it is programmed to split; after which it will stop splitting and eventually perish. We are all built to die eventually.

Why haven't any creatures evolved to correct this? In terms of the ongoing viability of any species, inevitable death *is* the correct mechanism, and is necessary to avoid straining of resources as well as providing the mechanism for evolutionary changes to manifest. The

seed from any living thing has the blueprints to be able to completely reconstruct the original creature to the point where it also releases a seed. By evolutionary design, DNA information has very little investment in attributes that could benefit a creature after it has reproduced. For the sake of the seed, it would be more advantageous for the DNA to concentrate virtually all its reproductive design on all the steps necessary to grow to seed-releasing maturity, and not waste design on adding quality of life to the creature after it releases its seed. This isn't to say that there is no influence on the genetic design of the parent after its DNA has been passed on, since it is possible for the behavior of the parents to dictate to some degree the survivability of the offspring, hence statistically making their DNA more likely to survive. For example, the existence of the maternal/paternal instincts found in a considerable percentage of creatures demonstrates a form of evolved genetic design that only becomes effective after the progeny has been spawned.

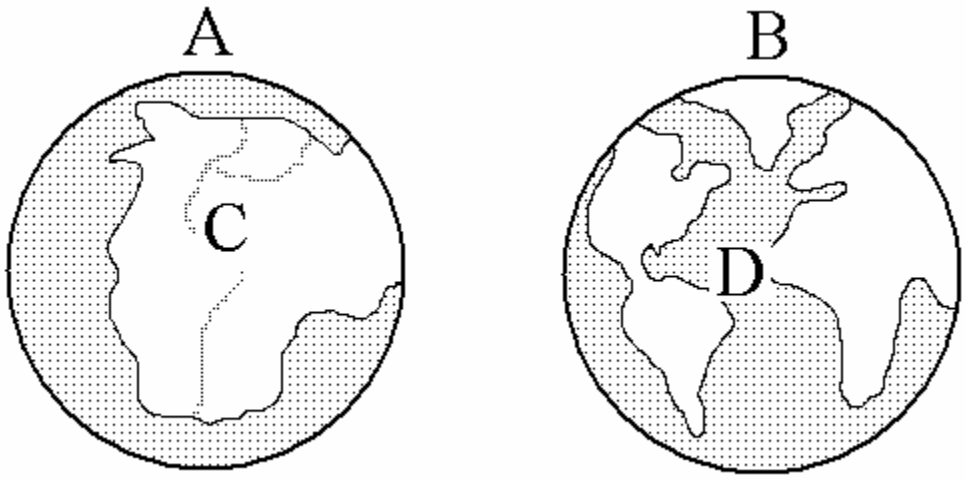
Hypothetically, if a creature were to somehow manage to evolve into a form where it lives forever, it might exist for a while but eventually some other creature is going to evolve past it and eat it for lunch. Also, the whole concept of living forever is statistically unlikely due to the improbability that an entity could exist for a great span of time without suffering fatal or inclement injury. Cells may be able to heal from small wounds, but the loss of a limb is permanent (for most creatures) since the original stem-cells that created that limb have been consumed during its initial growth. Inevitably, time beats down every natural mechanism, and it's only because of the ability to evolve through successive generations that creatures have been allowed the perseverance they have enjoyed throughout time.

INTELLIGENCE

At no time was the evolution on planet Earth more diverse and insatiable than when the G-Freaks reached their peak form as the dinosaurs that ruled the planet until about 65 million years ago. These incredible creatures were the result of nature at its finest for a stable

Earth environment. That all changed in a single day when a giant meteor struck our planet and upset the Earth's precariously balanced ecosystem, resulting in a global genocide beyond comprehension. But the good news is, there were some small survivors, and over time they began the slow process of repopulating the Earth with a new diversity of animal life, still favoring the G-Freaks, of course, for larger creatures.

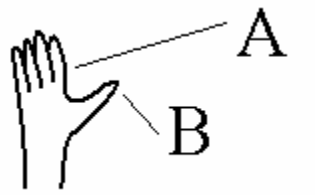
This time around though, the Earth was not quite so hospitable and tropical. One major reason is the result of the ancient super-continent Pangaea having slowly split into a few large pieces over the billions of years since our planet's surface cooled, into what would eventually become our modern day continents. This continental breakup created a much broader diversity of environmental niches on Earth's limited land surface area, making it difficult for the mostly obliterated dinosaurs to regain their once unchallenged dominance because no longer did the great swathes of tropical rain forest that bore them, exist. With the dinosaurs unable to recover, other smaller and less affected creatures were given the chance to evolve and dominate this new diversity of environmental niches.



A: Ancient Earth
B: Earth today
C: Pangaea
D: Modern continents

With less overall tropical climate, Earth's more challenging climates now favored smaller, hairy, and warm-blooded animals (mammals) that were less dependent upon the environment for internal processes, and were much cleverer at seeking the now much leaner resources.

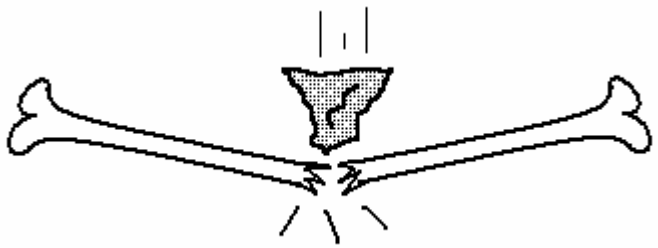
Some of the millions of different types of these new creatures spent a great deal of time in trees, and some of those tree creatures evolved very dexterous hands and feet with opposable digits (thumbs) that afforded these creatures the benefit of fine-tuned control as they swung from tree to tree.



A: Very dexterous hand with…
B: …an opposable digit used for grasping

These G-Freaks, very much like the small monkeys of today, were already starting to show signs of cleverness with their much larger brains than most other animals. Their larger brains evolved to help these ancient creatures remember where to find seasonal fruits, to calculate responses to environmental stresses from previous experience, but most importantly, to communicate. No longer is this creature captive to autonomic instinctual responses; now it can learn, and teach.

One of the fringe benefits of having dexterous hands and feet is the ability to grasp loose objects, such as rocks. Rocks are fantastic tools as they can be formidable weapons to protect against predators; they also can smash large bones from a carcass left by another animal, revealing the protein-rich bone marrow inside, that the original predator may have been ill-equipped to acquire.



The ability to grasp objects allowed these creatures to use rocks to break the bones of the remains of another predator's kill, to gain access to the soft protein-rich marrow inside the bones

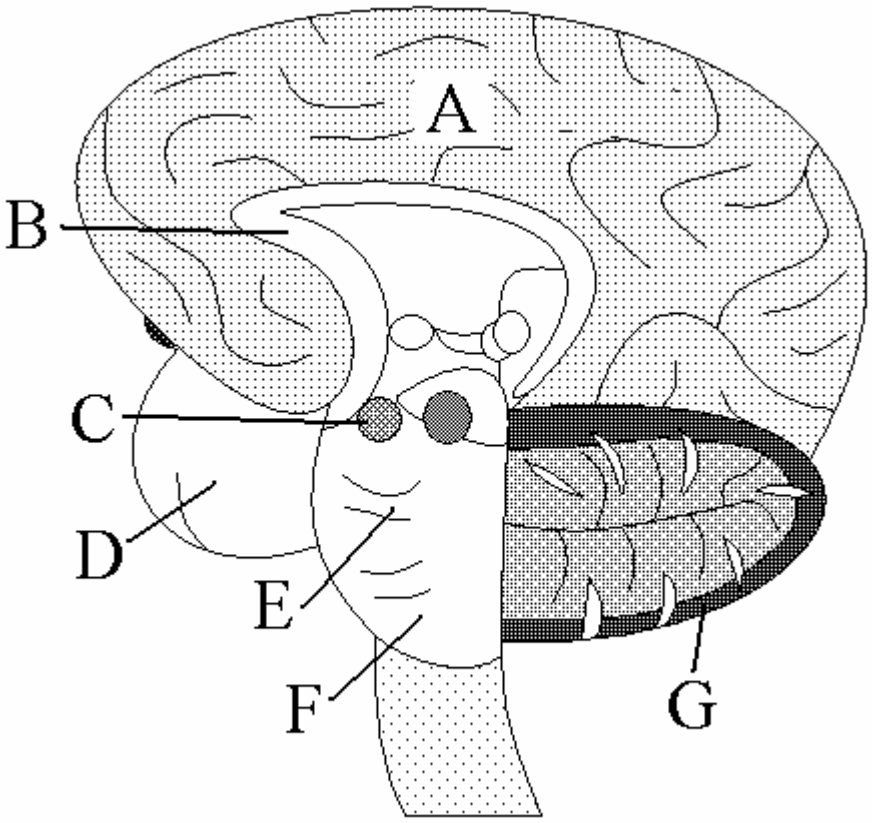
Other members of this brain-empowered species can observe rocks being utilized as tools, and they too can benefit from this transfer of knowledge.

The ability to learn, and to teach other members of your species new information, is the next most profound evolutionary step that life has yet taken, and one that has brought us to the form that we exist in today. Do not think, however, that we have finished evolving; the evolutionary process of course still continues today, even within our species. You can see it in its various forms as experimental mutations of different types of people, some fat, some thin, some smart, some not so smart, tall, short, fast, slow: all different random attempts of nature to try to find the best-fit design in a given environment. We are still very much Mother Nature's pet project with a lot of interesting attributes worth examining, so let's take a look at she has built into us so far…

Chapter 4 - Succession

BRAIN

Our brain: a phenomenal accomplishment of nature. How does it work? The brain is composed of the pons, medulla, cerebellum, cerebrum, pituitary gland, serotonin, dopamine, etc., etc.

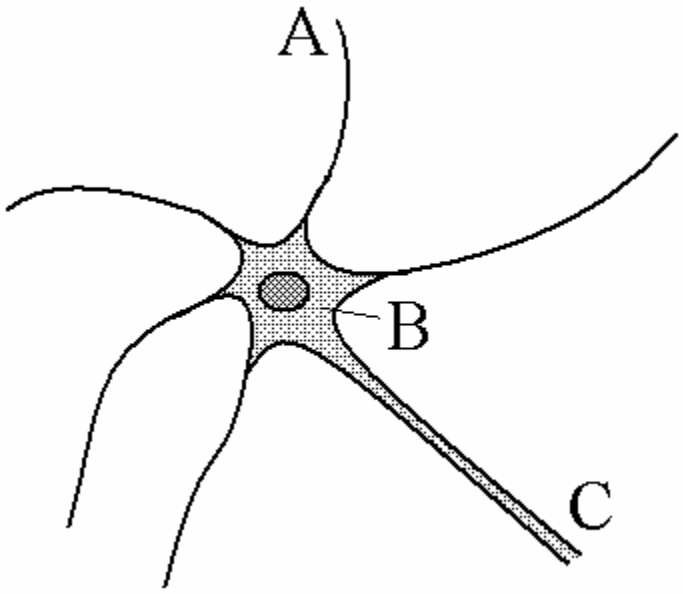


Modern Human Brain
A: Cerebral Hemisphere
B: Corpus Callosum
C: Pituitary Gland
D: Temporal Lobe
E: Pons
F: Medulla
G: Cerebellum

It is estimated that half of the genes in our DNA are specific instructions for the construction of the brain. You may find dissecting the brain into its various functions to be very interesting, but the most amazing thing about it is how the harmony of all the pieces working together creates your perception of reality.

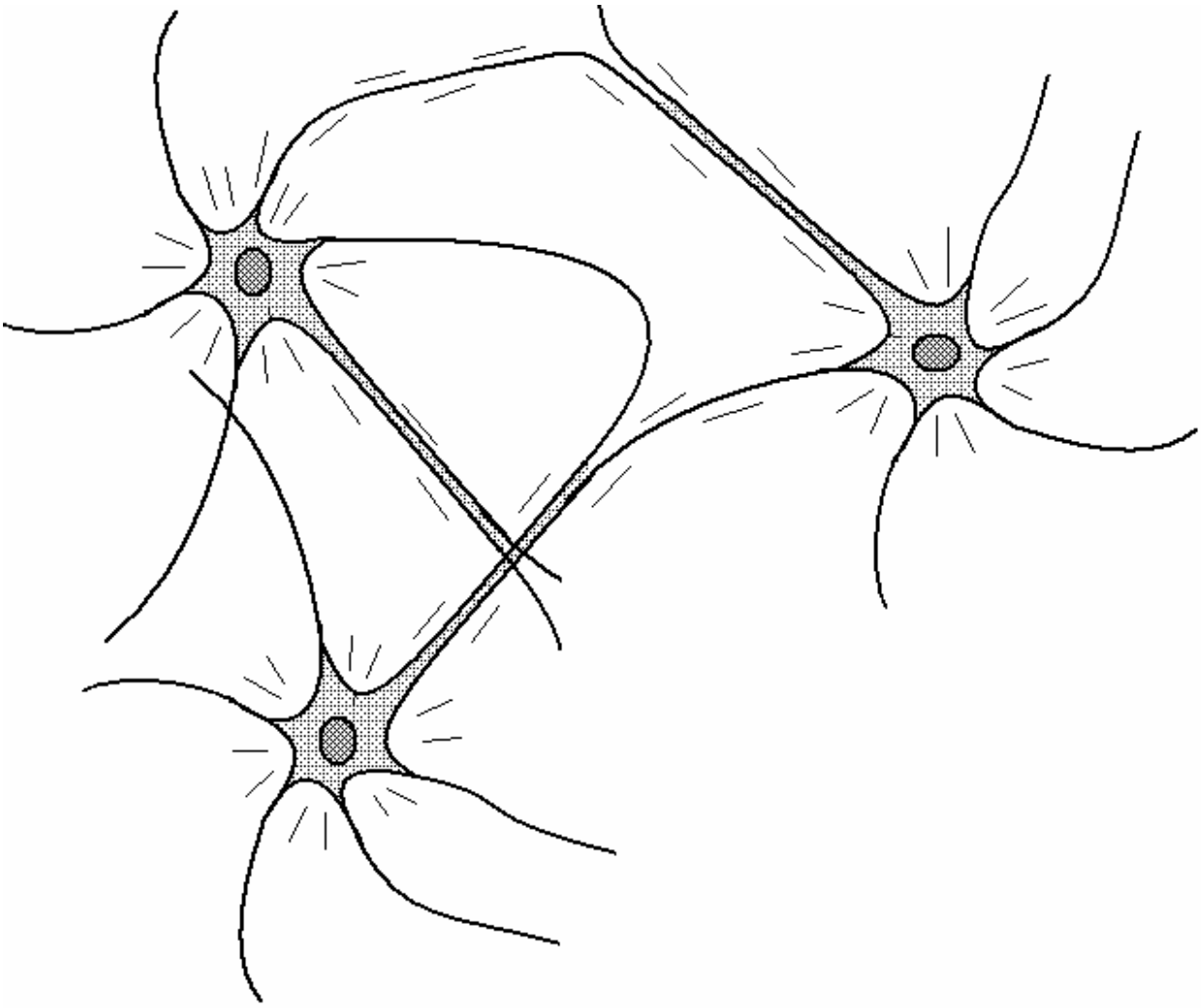
NEURONS

To oversimplify, inside the brain there are billions of "neuron" cells that receive messages from other neurons via tiny fiber-like strands called "dendrites". When a neuron receives enough signal stimulation from neighboring dendrites, it sends a signal of its own down its "axon", which eventually diverges into dendrites that connect to other neurons.



Typical Neuron Cell
A: Dendrite
B: Neuron
C: Axon

A neuron has the ability to send an electric pulse from its core, down the length of its attached axon, to be received by neighboring neurons, which in turn may or may not be triggered to send their own pulses off to other neurons.

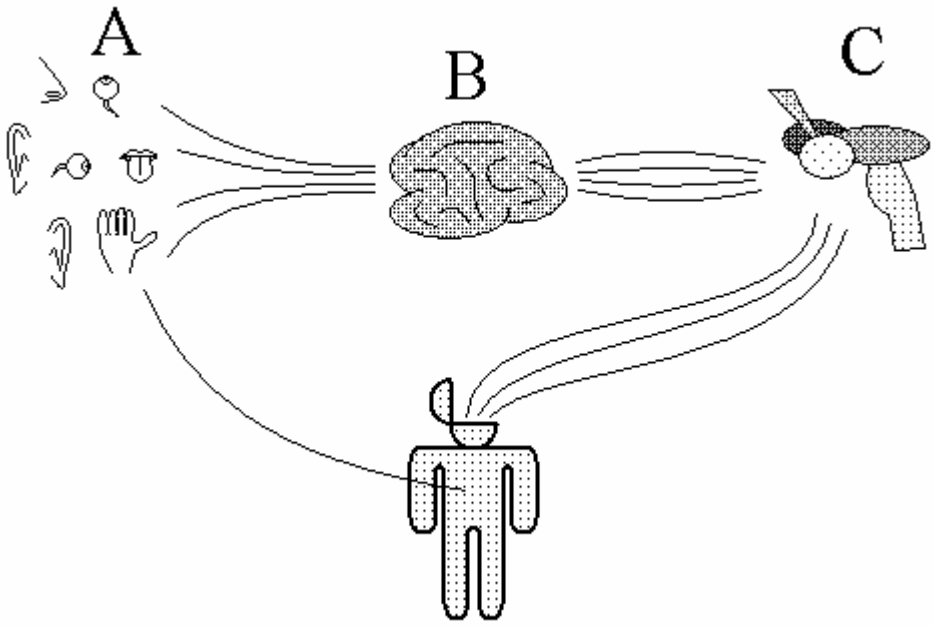


Neurons are all interconnected. When one sends an electric pulse, it starts a chain reaction to other connected neurons and they too fire off electric pulses

Neurons have the tendency to occasionally fire off random pulses without requiring stimulation from other neurons, but will typically fire off much more frequently when neighboring neurons are sending signals along the connecting axons and dendrites. This is the most fundamental mechanism of the brain, and at this microscopic level, it is difficult to imagine how a bunch of signaling neurons can collectively give us our intelligence, but billions of them together combine in effort to produce our consciousness.

BRAIN FUNCTION

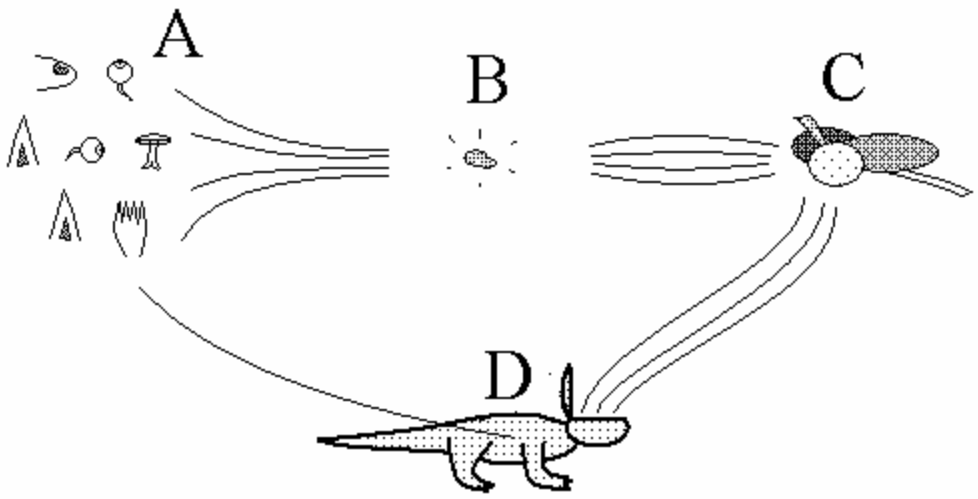
Imagine that you had an operating table, and on this table to your far left was a pile of sense organs, such as ears, eyes, a nose, a tongue, and some skin (ignoring the rather repulsive nuances of such a collection). These senses are the only means by which the brain can receive information from the outside environment. Connected to these senses to the immediate right is a blob of randomly connected neurons; call it the "gray matter" blob. Further connected to the right of this blob is yet another blob of neurons, this time tightly organized; call it the "instinct" blob. Normally you would find the gray matter surrounding the instinctual brain, but for our example, we have separated the two. Finally, let's add the rest of the body, all the muscles, nerves, limbs, etc., and place this lump of attachments right below the other three piles with the wires from the attachments going mostly to the instinct blob and a small bit to the senses. So now you have four interconnected piles of very disgusting pieces (seems life is always disgusting when not arranged properly).



A: Pile of senses
B: Gray matter
C: Instinctual brain

The reason there are some direct connections between the senses and the body is to allow for automatic reflex reactions to certain stimulus. For example, if one were to absentmindedly touch a burning object, the skin would send a powerful signal that triggers the regional muscles to contract, long before the signal hits the brain. If it were necessary to wait for the brain to process the burning sensation and finally decide to react, the additional damage caused by the delayed reaction to the burning could be considerable

How does this all work then? Let's start with a very primitive G-Freak brain and work our way up. This G-Freak brain has all the parts of the brain we see on our operating table; however, the gray matter blob is nearly invisible because it is so tiny.



A: Pile of senses
B: Gray matter
C: Instinctual brain
D: G-Freak

So this primitive G-Freak (call him Charlie) is moving about in his environment and his senses are sending electrical pulses to the gray matter blob. Since there really isn't much gray matter, the pulses from the senses just get passed right along to the instinct blob. Remember what pulses are: the neurons that are attached to the senses fire off a signal along their axons, and this triggers other neighboring neurons to

signal their neighbors as well. In this way a pulse signal can transfer from the senses, along a chain of neurons, to finally reach the instinct blob.

INSTINCTS

The instinct blob is responsible for taking all the information passed to it and determining the best course of action. Remember when our tubers evolved the ability to feel? They reacted by changing course and heading for the source of the vibrations in search of dinner. This originally passive action became increasingly more specialized because it usually rewarded the tubers with nutrients and energy, pretty much guaranteeing survival for them and their lineage. Over time, their central nervous system evolved to control and optimize these reactions to sensed vibrations. Likewise, Charlie's brain has evolved to control the reactions to its environmental stimulus, though the complexity of his primitive brain is vastly greater than our primitive tuber's limited nervous system. Charlie is the end-product of millions of generations of his ancestors serendipitously finding the best reaction to any situation he's likely to encounter. His instinctual brain is "hard-wired", as in permanently arranged in a genetically-determined fashion that will force him to react a specific way to certain sensory input (e.g., imminent danger) or internal needs (e.g., hunger). His actions are a result of the instinctual brain's ability to determine good versus bad stimulus, which Charlie interprets as either "desirable" or "painful".

To simplify for our purposes, Charlie's range of emotions can be generalized to four states: pain, contentment, desire, and pleasure. When Charlie is experiencing pleasure, the pleasure center in his brain is giving him an orgasm. This is the only natural state of the brain that will produce our definition of "pleasure" for Charlie, natural here implying that there is no artificial stimulation to the pleasure center of his instinctual brain (via electrodes, chemicals, etc.). For virtually all the rest of the time that Charlie exists, he is in a state of pain. Not necessarily physical, but mental, best described as subtle anguish or anxiety; let's call this pain mechanism the "sexual leash", or "sleash" for

short (more detailed explanation later). The longer that Charlie does not stimulate his pleasure center, the harder his sleash will pull until merely existing becomes intolerable to him. His instinctual brain is constantly exerting him to act in ways that will afford him sexual encounters, which ultimately result in progeny. This is true for both males and females though there are some differences in their respective instinctual brains, which formulate different criteria for actions that will result in desirable procreation.

It should be noted that pleasure is not the polar opposite of pain since it is possible to feel both simultaneously. They are two separate mechanisms in the brain. The opposite of pain might be considered desire, because pain is a state of not wanting stimulation, and desire is the need for stimulation. Contentment could be considered a neutral state; neither pain nor desire.

ADVANCED INSTINCTS

Let's now discuss the instinctual sexual deterministic behavior for a small subset of all the various G-Freak species: specifically, this subset includes the human species in its various stages of evolution (from before the hunter-gatherer, to the present day), and to some degree, a selection of other relatively intelligent and closely-related species (e.g., apes). Let's call this subset the "advanced" G-Freaks. These advanced G-Freak males have the instinctual desire to copulate with many females, a course of action which will statistically spread their DNA the most prolifically; whereas most advanced female G-Freaks more commonly will be sexually receptive to only a very select few of the males (call them "alpha" males) in the attempt to acquire only the best DNA from the available suitors.

A female pines for attention from as many of the desirable suitors as possible, in order for her to have the greatest possible selection of males to choose from. Mentioned earlier was the concept of "quasi-random" changes to DNA, and this is meant to imply that as creatures evolve more intellectual capacity, they will eventually have the means to subjectively assess specific qualities of the available suitors, in a way

that their primitive instincts would fail to recognize. Essentially, the criteria for the advanced female G-Freak's sexual receptivity has extended beyond the purely physical attributes that a male may have, to now requiring a degree of intellectual and behavioral conformity as well, that the female intelligently recognizes as beneficial to her potential offspring. The choices that females make for their reproductive mates largely drive the intellectual growth of the species.

The lucky alpha candidate that finally does copulate with a female, however, is not always her best choice to pair-bond with (a pair-bond being defined as a male-female couple that stays together for an extended time period to benefit the offspring). Seems that the best genetic pick of the males often makes for a poor provider since he tends to be constantly on the prowl for other females to copulate with. This leads to the females either raising their offspring alone, or with another male that does not have as much appeal to the opposite sex; call these "beta" males. This beta male is grateful for whatever sex she does provide (in return for his protection and resources) even if it can only be with that one female, despite all advanced male G-Freaks' tendencies to act like, and aspire to be, polyamorous alphas. Virtually all of these G-Freak males exhibit alpha-like needs and actions in their attempt to calibrate themselves against the competition, and to test the reception from females to quantify just how alpha they really are. Most males are varying degrees of both alpha and beta.

In no way does this imply that all offspring is garnered under these circumstances, though; in fact, it is much more common for most females to settle for a male who is somewhat less than alpha, in order to gain the security found in the less infidelity-ridden type of pair-bond that a beta male would more likely impose. This means their offspring would have a statistically greater chance of survival, having a more stable union of family for protection; however, the "inclinations" of each sex point them to "desire" the aforementioned behaviors, whether they act upon them or not. These tendencies statistically improve the quality of the species' gene-pool since the higher quality DNA of the alpha males will overall be more consistently reproduced, relative to the beta males' DNA.

INSTINCTUAL FLUFF

Going back to our more primitive G-Freak example: with Charlie, his very simple G-Freak brain is virtually always in some way compelling him to seek sexual opportunities. This "sex drive" is the most primitive instinct of any and all G-Freaks, and is the root of virtually every decision, evolutionary step, instinctual desire, etc., that G-Freaks are capable of. The sex drive is the foundation for all sexually-reproducing creatures on the planet, even non G-Freaks, and it has existed since the time when tubers first evolved the ability to sense their own kind. Life is designed to reproduce, that's all; there is no other function or purpose to life. You may argue that there are plenty of other instincts that do not directly motivate the need for sex, but these peripheral instincts are just reproductive supportive "fluff" that statistically (even if very subtly) navigate the creature through perhaps even very obscure behaviors and decisions, but still ultimately add that slight increase in probability for a sexual encounter. Virtually all the other instincts exist merely to enhance the effectiveness of the sex drive.

Some examples of instinctual fluff (loosely ordered by instinctual magnitude) are:

Fear – guards against time-proven danger.

Rage – protection of mate, offspring, and species from danger.

Hunger – affords the creature the energy and resources necessary to proactively acquire sexual encounters.

P/maternal – provides protection and resources to the offspring, improving the odds of their reaching maturity and further reproducing, continuing the lineage.

Ego – internal measure for suitability as a mate.

Power – demonstrations of strength, affording the alpha status for mating.

Love – creates sexual encounters and possibly a pair-bond to benefit the offspring.

Communion – safety in numbers, division of labor for resource acquisition.

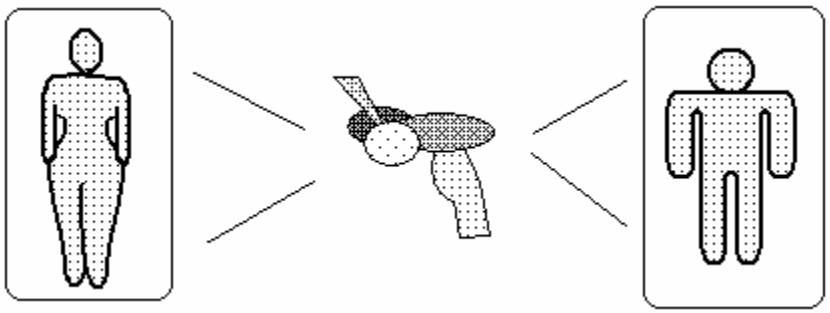
Altruism – allows for periods of weakness of some members of a species, preserving a greater diversity of DNA. Strengthens communion.

Curiosity – allows serendipitous discoveries that may benefit the species.

So here you have a partial list of instinctual drives (there are probably thousands of more subtle instincts) that all combine to control a creature's activities, and effectively result in the propagation of the species. All of this instinctual behavior is manifested from the instinctual blob part of the brain. Acting upon any of these instincts will relieve some of the pressure of the sleash, or rather, lessen the pain of normal existence, and is therefore a desirable act. The actions may not always result in a sexual occurrence, nor even be immediately obvious as an act that could result in sexual encounters, but endless generations have proven that such instinctual behaviors increase the probability of sexual encounters, sexual encounters equaling reproduction, and reproduction equaling the DNA continuing its lineage (remember, it's all about the DNA molecule reproducing itself). Resisting these instincts dramatically increases the pull of the sleash, or rather, increases the ambient pain of existence.

PERFECT MATE

How do the instincts know how to identify the opposite gender in the search for sex? Pheromones, visual cues, and other forms of communication help to identify potential mates. In the instinctual brain, there is a hard-wired section that describes the "perfect mate". When a G-Freak is assessing the potential for reproduction, the sexual cues from potential mates are compared to this instinctual "norm" perfect mate defined in the brain; the closer the fit with the model, the greater the attraction.



The instinctual brain is programmed with a "perfect mate" criteria, which helps the creature to recognize the various cues of the opposite sex. The closer the prospective mate's cues (e.g., pheromones, aesthetics, power, etc.) are to the perfect mate, the greater the attraction

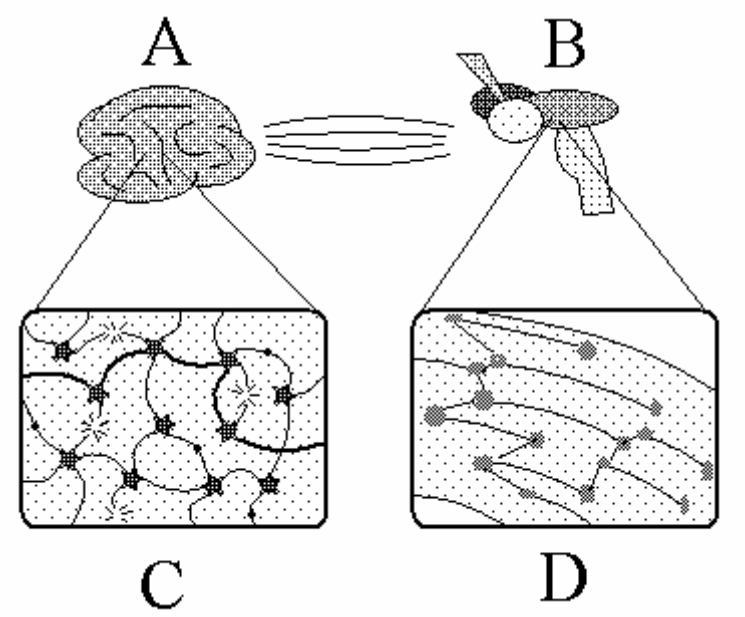
This desire for the largely genetically-determined perfect mate has the net effect of preventing wild genetic swings in DNA design caused by random mating with less-than-perfect suitors (e.g., ones with damaged DNA), which could degrade the quality of the species as a whole. How does this "perfect mate" become defined in the brain? Well, via the parents of course. The foundation for what one will find attractive stems from the ideal, youthful version of the parents' combined genetic makeup in the opposite-sex form; however, the requirements to satisfy this attraction are quite liberal in that there can be quite a diversity of suitors which fulfill the minimum perfect mate criteria.

Why can't one species breed with another? Despite the plethora of diversity of life on the planet, it is actually quite a delicate process for reproduction to be successful. Two species that have a relatively recent

common ancestor, like a wolf and a dog for example, might have viable offspring; however, a horse and a dog are too far removed in lineage and an attempt at conception will fail to merge their two halves of DNA in a way that could construct a viable offspring; the DNA instructions are incompatible. It doesn't take much of a difference to make DNA incompatible so that conception cannot occur, even though there are many shared genes between all forms of G-Freaks. It's proven that there is as much as a 98% match of DNA between humans and chimpanzees, between which no viable offspring can be created.

GRAY MATTER

So what does the gray matter blob do? Let's evolve our G-Freak a little more so that the gray matter is larger. Once again looking at our operating table, we see these gray matter neurons are different compared to the instinctual ones. The instinctual neurons and the connections that they form are very nearly permanent, but things are different in the gray matter. These gray neuron cells slowly but continuously form radical and complex dendrite connections to the neighboring neurons in a random fashion; sometimes new dendrites will form, and sometimes existing connections will decay and break.



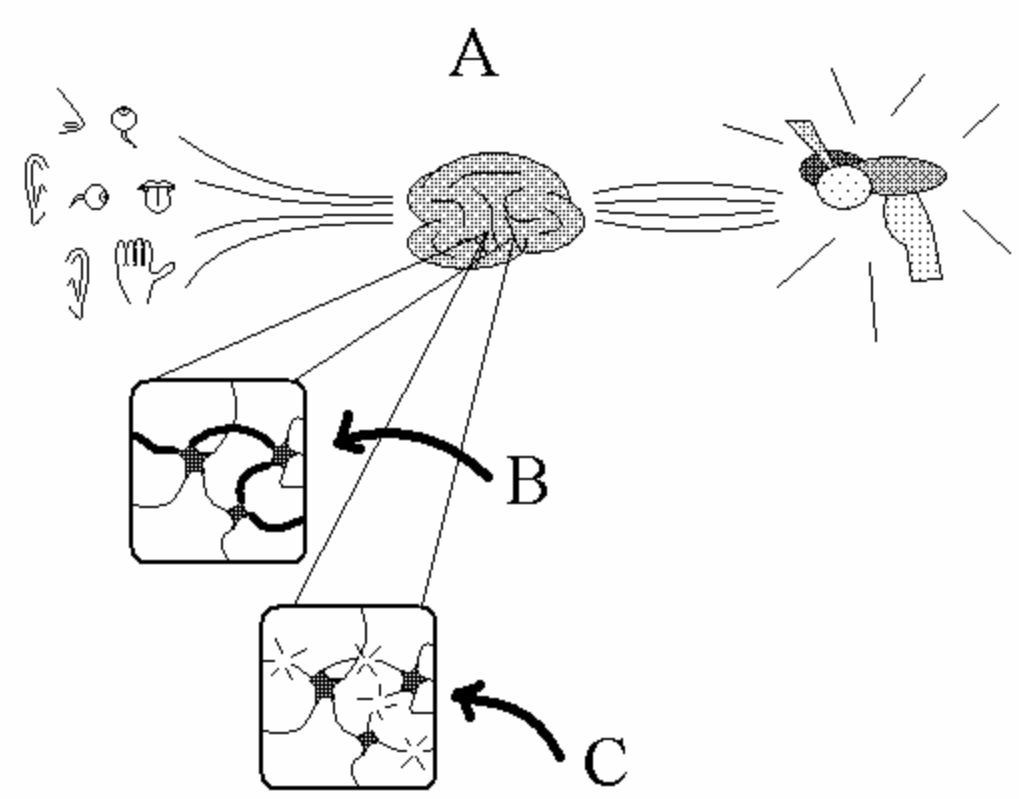
A: Gray matter
B: Instinctual brain
C: Gray matter neurons continuously form radical connections to neighboring neurons. As well, these connections tend to break frequently
D: In contrast, the instinctual brain's neurons are very strongly connected and tightly organized

This chaotic mess of connections might seem haphazard but inevitably, any signals that come from the senses eventually get through the maze of gray matter to finally arrive at the instinctual brain.

Something is a little different, though, about these signals that reach the instinctual brain; they aren't quite the same as they were when they started from the senses. The gray matter, with all its seemingly random wiring, has slightly changed the nature of the signals. This change happens because the signals from the senses have to travel through many various and complicated neuron paths to get through the gray matter and eventually arrive at the instinct blob, and this somewhat distorts the original information. This is what the gray matter does; it changes information from the senses. Once the signals finally get to the instinct blob, those gray matter neurons and dendrites which form the complicated signal path will either strengthen or weaken depending upon the instinctual brain's ultimate reaction to the signal stimulation.

MEMORY

If the instinctual brain's reaction to the gray-matter-filtered signals is weak, as in an indiscernible difference in pleasure or pain for the creature, then those dendrite connections are probably meaningless and will not get much stimulation. Eventually this connection will be broken as the existing dendrites naturally decay (which we perceive as forgetting), and eventually new random weak dendrite connections will form, setting the stage for storing new memories. But if instead, the instinctual brain's reaction to the gray-matter-filtered stimulus is either powerful resultant pleasure or pain, then those dendrites that formed the new path through the gray matter will strengthen, effectively "remembering" the stimulus response.



A: Sensory information is interpreted by the gray matter and is eventually received and evaluated by the instinctual brain
B: If the instinctual brain generates a strong enough response (pleasure or pain), then the gray matter neural pathways that delivered the sensory information become stronger (creating new memories)
C: If the instinctual brain has a very weak response, then those pathways eventually decay (forgetting)

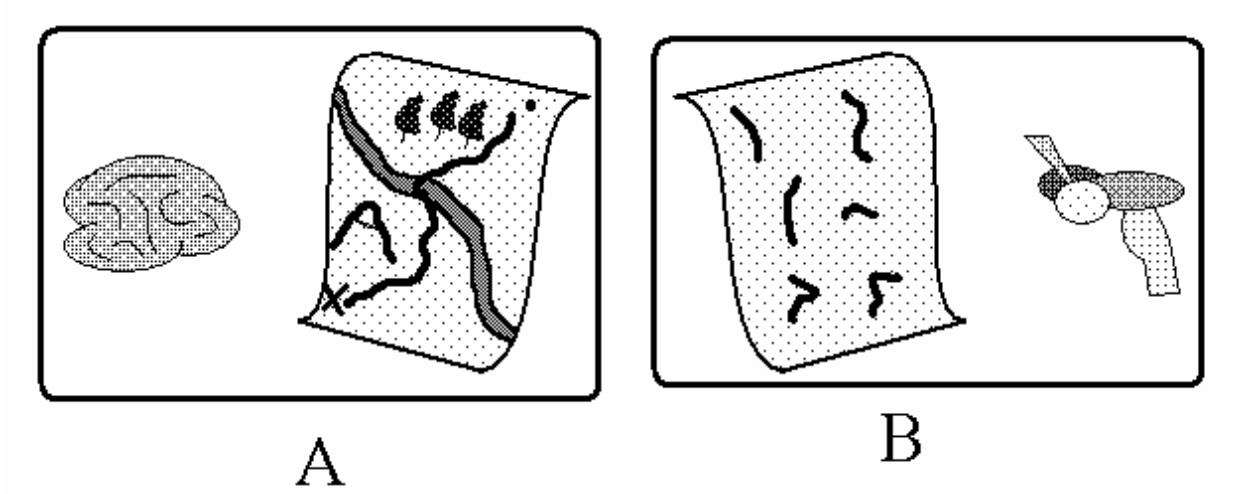
What is commonly referred to as the “short-term” memory is the brain’s mechanism to continuously reiterate the original sensory stimulus, but internally, so as to reinforce this memory establishment process. This ability to remember is the birth of primitive “consciousness”. Previous to the gray matter, creatures were automatons that simply responded in instinctually pre-programmed ways to most of the possible scenarios that nature would afford. Now there is a new creature, one that can “imagine”.

The gray matter evolved to give creatures the ability to remember things. This memory takes the form of strong pathways of neurons that have been strengthened by either a pleasure response from the pleasure center, or a pain response from the sleash. Once the instinctual brain has

reacted to a stimulus and the memory has formed, at any point in the future these newly reinforced pathways can now be stimulated internally to induce a subdued version of the same original response from the instinctual brain. This ability allows our gray matter to give us the ability to "imagine", allowing us to simulate various scenarios to test the instinctual brain's response, without actually experiencing the stimulation from an external source. The effective power of this ability manifests in many forms, but most notably in the ability to override the instinctual response that would normally react to a given sensory stimulus. By altering the nature of any sensory information that is finally received by the instinctual brain, it allows the instinctual brain to be stimulated by and to remember environmental stimulus that it might normally overlook and not remember due to that stimulus' non-"raw-instinct"-ually recognizable nature.

INTELLIGENCE

Gray matter gives us the ability to interpret potentially positive or negative stimulus that our instincts would fail to recognize. For example, if you had a map that describes where a treasure may lie hidden, your instincts would be helpless to assist you in the intelligent interpretation of the symbols on the map; however, the gray matter remembers those symbols and because of this, is able to translate them into an instinctually recognizable stimulus such that the appropriate actions can be taken to acquire the reward.



A: Without the gray matter to interpret environmental stimulus,…
B: …the instinctual brain would be helpless to understand anything beyond the scope of the instincts, even something as simple as a map

Your behavior is then intelligently dictated by the gray matter to fulfill your instinctual pull to retrieve this reward.

Our minds can only remember things that either stimulate the pleasure center (by placating the instincts), or that painfully add tension to the sleash. The first time we encounter scenarios where we have no previous experience or instincts to skew our perspective of this situation, our instinctual brain is helpless to determine if the scenario is good or bad. If the scenario ends up being a good or bad event (like a kiss, or stubbing your toe), then the gray matter records this such that the next time the same scenario is encountered, the gray matter has it mapped to the pleasure or pain center of your brain, allowing for an instinctual response to something that isn't intrinsically instinctually recognizable. The gray matter allows the G-Freak brain to re-map non-instinctually recognizable environmental stimulus into stimulus that will register with the instincts as significant.

DAYDREAMING

Understanding how memories form and decay can explain why we need to daydream when we're bored. The mind evolved to "remember" and replay previously learned information, but the environment might

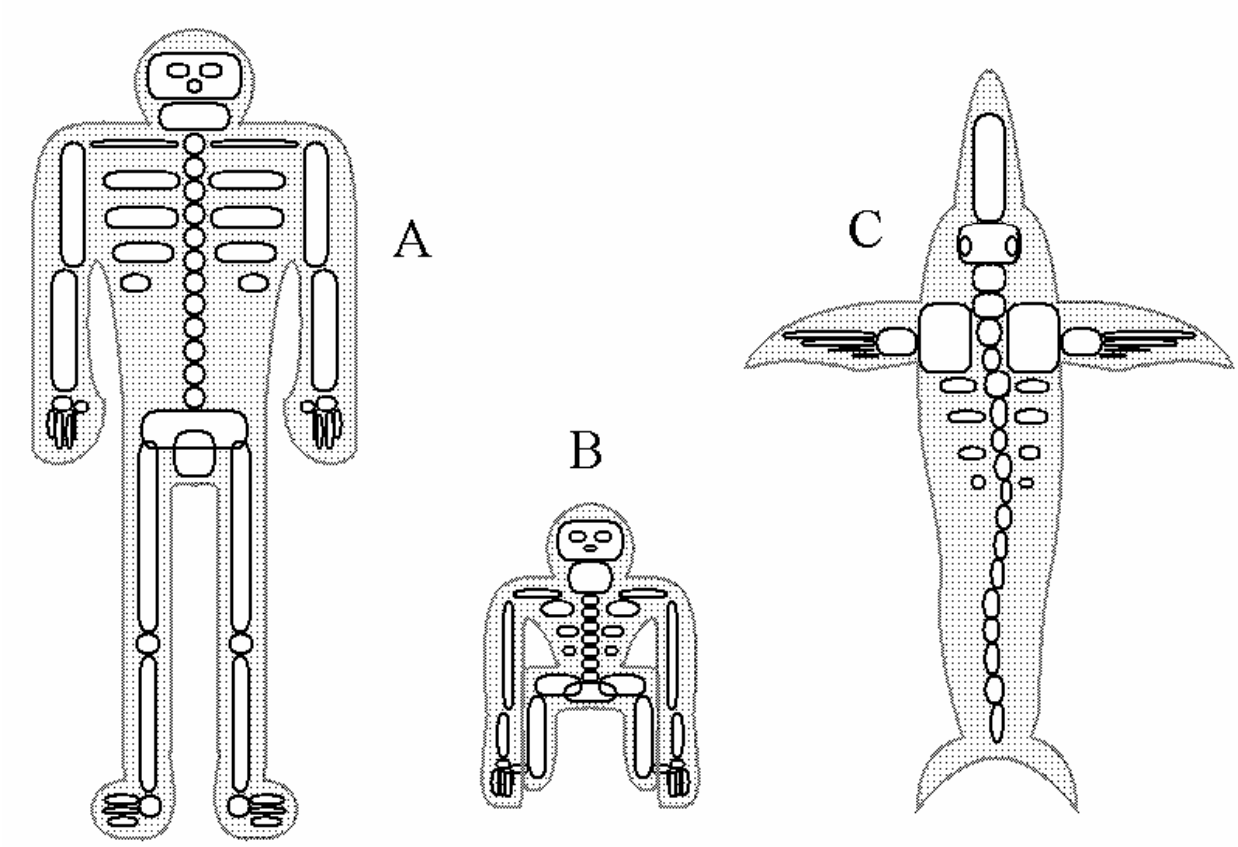
not always require the use of all the available information, and so naturally over time, this remembered information would eventually decay from disuse. The brain, however, evolved the process of somewhat random memory stimulation in the attempt to find an internal means by which to alleviate the sleash tension that a boring environment brings; the brain does this by stimulating neural pathways in the search for possible solutions to the current sleash-pulling (boring) environment, even if the temporary solution is merely distraction from the senses. The side-benefit of this process is that any memory pathways that are intermittently stimulated are reinforced by the process of remembering (daydreaming), thereby keeping those memories intact, maintaining a larger diversity of knowledge.

Our ancestors had a much better chance of survival if they maintained in their memories a multitude of ways to solve their problems, and so the mind evolved the "need" to sporadically jump from memory to memory to keep those memory pathways strong, maintaining the overall intelligence level. The downside to this automatic brain function of daydreaming is obviously that the distraction it causes can interfere with necessary concentration in the real world.

MORPHOLOGY

One of the most amazing things about all G-Freaks is that they are very similar in design, from a DNA standpoint. The DNA instructions that go to making the eyes, the nervous system, even the skeletal structure, all share very common instructions. What might be viewed as radical differences in design in terms of size and proportion, are merely minute differences in the body's "morphology". The geometry of the body alone does not necessarily imply radical differences in DNA design between different types of G-Freaks. G-Freaks fundamentally are composed of all the same elemental parts in sizes which vary between creatures. A chimpanzee is very similar in construction to a human, except for its much smaller size, whereas, it might be more difficult to see all the appropriate similarities to human structure in a

creature like a dolphin, but it too has nearly all the same constituent parts.

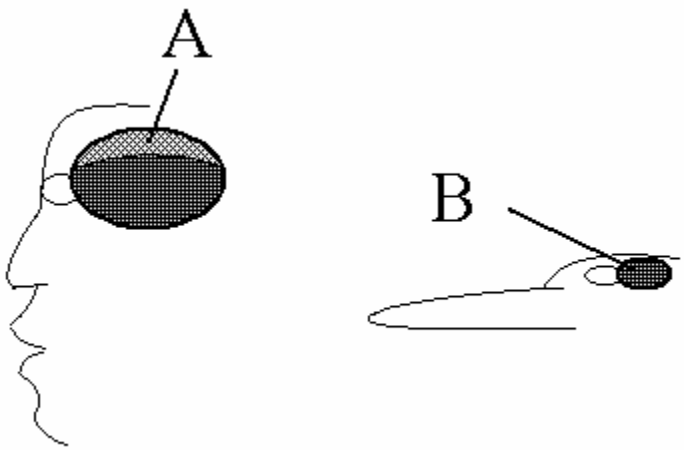


A: Man
B: Chimpanzee
C: Dolphin
All forms of G-Freaks have very similar DNA, and hence mostly the same genetic makeup, despite their radical differences in appearance. Skeletal morphology plays a large role in the layout of these shared characteristics

The most distinguishing factor in the final appearance and attributes of a G-Freak is the skeletal morphology, or the size and shape of the skeleton. Soft tissue areas, such as the skin, lungs, brain, etc., all stretch, expand, and fill to the measurements of the skeleton, which is dictated by the information stored in DNA. As creatures grow, the soft tissues attached to the bones are designed to multiply their cells until they can span the distances dictated by the bones' growth. This means, for example, that leg muscles will stretch and grow to exactly match the

bones they are attached to, lungs will fill the chest cavity, and the brain will exactly fit the skull.

Humans have very large brain cavities, when compared to other G-Freaks. To accommodate its massive size, the skull has evolved such that babies are born with incomplete skull fragments, allowing the head to be compressed during birth. These fragments become and remain loosely coupled during maturation until the brain reaches full size in late adolescence and the skull becomes rigid bone. A significant portion of the matured brain is the region of gray matter, and it is this large gray matter area that provides a wealth of storage for the brain to accumulate facts with, and is a primary indicator of the intellectual capacity of a creature.



A: Having a large brain cavity allows for ample gray matter to reside, where potential intelligence can be fostered
B: In contrast, a differently-evolved species might have a very limited quantity of gray matter, thereby leaving this creature mostly to the control of its raw instincts

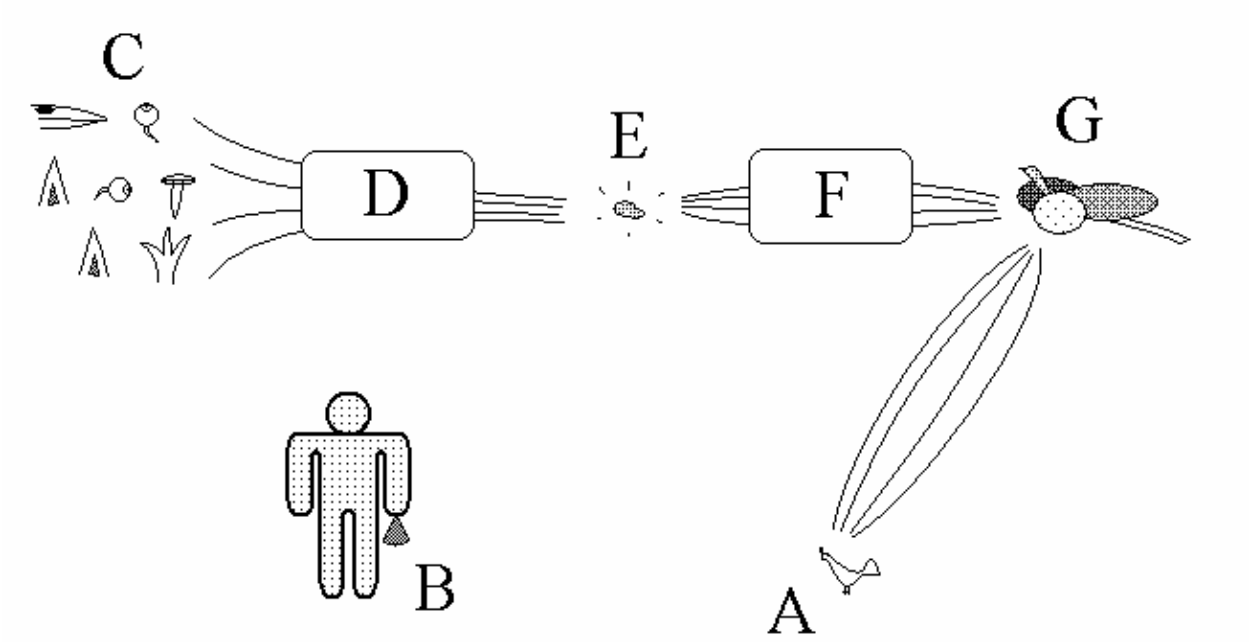
The fact that our DNA has evolved to produce a plethora of gray matter has granted us a great capacity for intelligence. However, brain size alone cannot dictate one's true intelligence.

INTELLIGENCE FACTORS

So what makes certain people more intelligent than others? Many factors contribute to one's overall intelligence: most important is the amount of information stored in the gray matter, but information alone would be useless without some controlled means of utilization. The ability to combine this information in meaningful ways is another critical part of intelligence. Other factors include the balance of positive and negative factors in one's disposition (ambition, arrogance, ego, etc.), environmental influences (such as diet, exposure to intellectual stimulus, etc.), the level of genetic predisposition for brain neuron density, volume, growth, and communication speed; and, perhaps the most unrecognized factor, the potency or sensitivity of the sleash, since it ultimately decides which information is to be stored in the brain.

LEARNING

You may have seen "tame" animals such as squirrels or birds that have overcome their fear of humans in order to receive some food from us. This is possible because their gray matter alters the animal's sensory information to the necessary degree such that their instinctual brain does not receive the "large, dangerous predator" message that its instincts are naturally designed to interpret, but rather the "plentiful food source" message that it learned; and this is how an animal can learn to overcome its instinctual fear of larger creatures.



Even though an untamed bird's instinctual reaction to a large creature might normally be fear, the small amount of gray matter it has can re-map the sensory information such that the signals getting to the instinctual brain are different

A: Hungry bird
B: Human with food
C: Bird senses human
D: The raw sensory information is sent to the gray matter
E: Gray matter converts what would normally be "predator" signals, into "food source" signals
F: New "food source signals are send to the instinctual brain for evaluation
G: Instinctual brain receives "food source" signals and the bird now behaves in a way that complements being in the presence of food (such as eating the food from the human)

The first time these animals encounter such a scenario of a dangerous large creature mixed with positive food stimulus, they get both responses from the instinctual brain. However, bravery equals food, and this "food source" pathway in the gray matter blob becomes stronger and stronger with each encounter. The gray matter remembers the reward of the food and so it learns to alter the incoming sensory information to suppress the danger signals, and instead replaces it with the food signals. Eventually the food reward outweighs the fear resistance. Having intelligence is the most advantageous, naturally-selective attribute that a creature can

possess, and this ability to learn cannot help but to inevitably evolve and develop into all creatures, as it did for us, to empower them to dominate their environment.

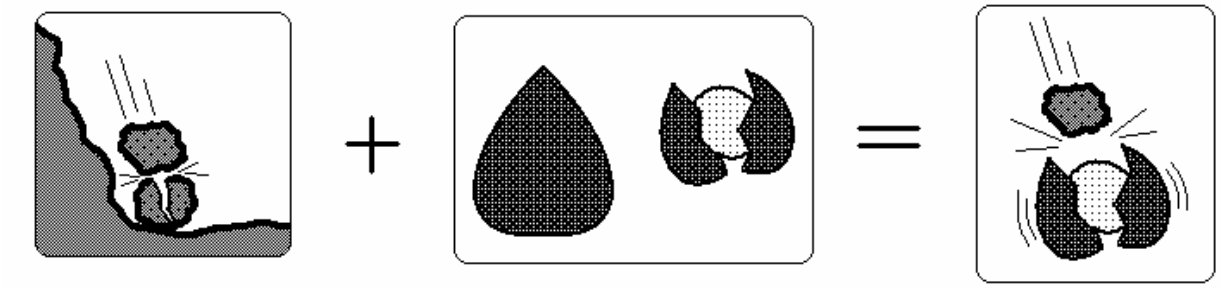
Back to our example: when our human-tamed animals become hungry, their instinctual brain stimulates portions of the gray matter in the attempt to seek out (remember) actions that helped them previously to acquire food, and one of the strongest pathways would be the generous donations of food from the gentle humans. Finding a human source of food would be the desired course of action that the hungry animals would take, whereas, if these animals had no gray matter to record the new food source, they might never again return to where they were fed by humans, leaving them with only their instinctual recourses for obtaining food. By being able to replay sensory information, or "remember", they can determine a non-instinctual course of action that alleviates their hunger.

So "learning" is the strengthening of pathways in the gray matter due to both the strength of the sensory input and the magnitude of the response from the instinctual brain, and "remembering" is the internal stimulation of those same memory pathways without sensory input. This relatively simple mechanism is the root of our exceptional intellect. It effectively allows for evolution of behavioral mannerisms in a single creature within its own lifetime. No longer are actions dependant upon generations of trial and error in order for new information to evolve into the creature's behavior; now creatures can evolve actions radically in a very short amount of time, thanks to the gray matter's ability to re-wire itself.

IMAGINATION

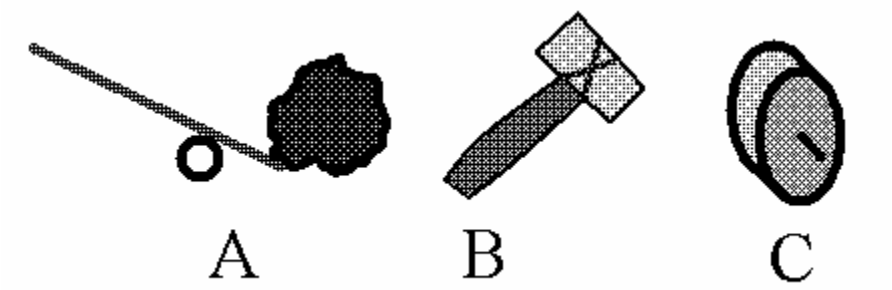
One of the side-effects of being able to remember is the ability to "imagine", or rather, to put together separate remembered information in a way that the gray matter has never encountered previously directly from the senses. Abstract thought. This is the top. This is where nature has peaked (thus far). The ability to formulate never-before-experienced scenarios in the imagination, from separate pieces of information stored

in memories, is the most powerful evolutionary step we have taken. Innovation, the accelerator of intelligence, is the ability to generate new information from known facts, into information that might not have been experienced or could not possibly be empirically obtained, essentially filling in missing information by the extrapolation of existing knowledge. An example of this could be a monkey that has observed a falling rock break another rock, and has also seen a large pile of hard-shelled nuts under a tree, with just a rare few that were already naturally split open to expose their protein-rich core for eating. Combining these two concepts would lead this monkey to use a rock to break open the remainder of the nuts.



A: Falling rock breaking another rock
B: Hard-shelled nuts with food inside
C: Using rock to break open nuts

Laziness is the seed of invention; or to put it another way, conservation of energy generates intelligence. The ability to create abstract concepts can manifest itself into ideas that relieve the creature of great expenditures of energy, as well as affording him new and greater sources of energy, by allowing him to optimize his actions. The lever. The hammer. The wheel. All of these inventions are too complicated to easily evolve naturally into our instinctual knowledge, but instead are the product of combining learned concepts stored in the gray matter, thus resulting in these tools that greatly magnify the amount of control we have over our environment.



The gray matter allows us to learn things that are far too complex for our instincts to evolve the concepts of:
A: Lever
B: Hammer
C: Wheel

The more control we have over the environment, the more we can reduce inherent environmental risks and increase the likelihood of sexual encounters.

CONSCIOUSNESS

So what controls all this chaotic remembering or thought? Our instinctual mind. It's very simple. Virtually at all times, the instinctual brain is demanding stimulation to the pleasure center. The instincts do their best to satiate this need but more often than not, sex is not immediately available so the instinctual brain begins stimulating various pathways in the gray matter mind in the hope of arriving at a solution that results in the stimulation of the pleasure center. This, my friend, is you. This is your conscious mind, your personality, your soul. The combination of your instinctual needs and the controlled probing of information stored in your gray matter combine to create the "illusion" of being whole, one, or aware; consciousness. As for the rest of your body, it is merely a chassis for the execution of your mind's desires. Picture if you will, a little "you" sitting in your head, controlling your body with various levers and gauges. You are in control of this great machine that is your body.

INTELLECTUAL EVOLUTION

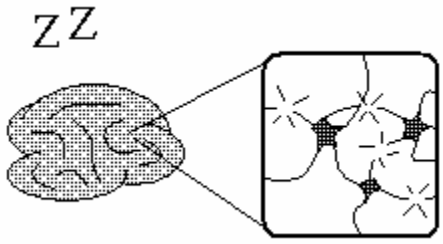
Twenty thousand years ago our ancestors were living in what are commonly referred to as “hunter-gatherer” societies. Their diets consisted of limited meats obtained from hunting, fishing and scavenging, fruits, vegetables, nuts, etc. They lived in small villages in perfect harmony with the environment, over so many millennia that their minds and bodies evolved to perfectly adapt to this lifestyle. Since then we have continuously evolved an increasing capacity for abstract thought due to our ever-increasing brain size. This evolution into higher intelligence may have advanced our civilization, and taken our bodies and minds out of the hunter-gatherer society; but remember, our instinctual brains don’t evolve nearly as quickly as our gray matter can and so a lot of what the instinctual brain needs is still firmly rooted in what the hunter-gatherer lifestyle can provide. More on this later.

SLEEP

Some properties of the brain may seem puzzling, such as: why do we need to sleep? Conservation of energy is the primary answer, as the active brain consumes a tremendous amount of energy. Historically, G-Freaks, to a large degree, have utilized daylight (or moonlight) to aid in the seeking and acquisition of food. The most effective use of a G-Freak’s energy stores would be to obtain food during proper lighting conditions to take best advantage of the sense of sight. This could very well mean at night for those nocturnal G-Freaks with exceptional vision that is too sensitive for daytime use. During the portion of the day when the sense of sight is poorly equipped to seek out food, it would be advantageous for the G-Freak to waste as little energy as possible, and so the instinctual brain reduces the activities of the body and mind by limiting motion, and by relaxing the tension on the sleash, defocusing the brain into unconsciousness. The instinctual brain will not waste energy probing the gray matter (thinking) if there’s no ambient sleash pain. These days, the fact that we humans no longer need to hunt for food during daylight does not remove the need for sleep, since the mind

is genetically designed by eons of evolution to require sleep. The fact that we can acquire food at all hours, unlike our ancestors, is such a recent phenomenon that we couldn't possibly have evolved out of the very ancient need to sleep, in so few generations.

So what happens during sleep? The brain is now reduced in sensitivity to the senses, and the body becomes muscularly immobilized. New gray matter connections that formed while awake are now subject to a lack of stimulation. If those connections are very weak (old memories, or meaningless connections) then they will naturally decay, leaving only those connections that were important or meaningful enough (had a strong response from the sleash) to keep strong connections.



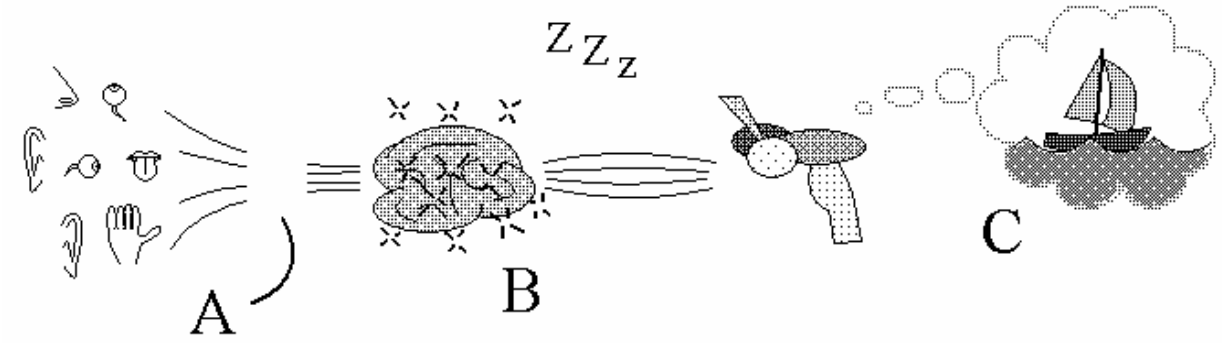
During sleep, weak memories decay and are forgotten

This results in the mind cleaning up the clutter. Plenty of information goes into the brain while it is awake, so sleeping gives the brain the chance to break down connections that are meaningless to the sleash.

DREAMING

Why do we dream? Well, while awake, one of the great talents of the brain is an incredible ability to embellish the sensory information that it receives from its environment. This is fundamentally what memories are for; they take the limited but familiar environmental stimulus and fill in details that were accumulated from previous encounters. During sleep, however, the senses are greatly reduced in sensitivity and sleash tension is very nearly removed. Over many hours, the instinctual brain will gently pull and relax the sleash (sleep phases),

not enough to awaken the unconscious mind into conscious focus, but instead in subtle waves of mild awareness. It was mentioned earlier that the brain's neurons will occasionally fire off randomly. Most of the time, this "peep" or "noise" in the brain goes unnoticed in the awake mind, but in the sensory-deprived sleeping mind, these peeps register as much more significant since they are no longer drowned out by the senses; kind of like how a whisper cannot be heard in a loud room but that same whisper can be easily heard in a quiet room. The more that the instinctual brain is pulling on the sleash during sleep, the more the semi-conscious instinctual mind will "hear" these peeps (since sleash tension dictates the brain's sensitivity to stimulus). The semi-conscious mind (meaning that the instinctual brain is mildly receptive to signals from the gray matter) will try to make sense of this noise by embellishing this information into a complete reality, wrongly assuming that this information originally came from the senses.



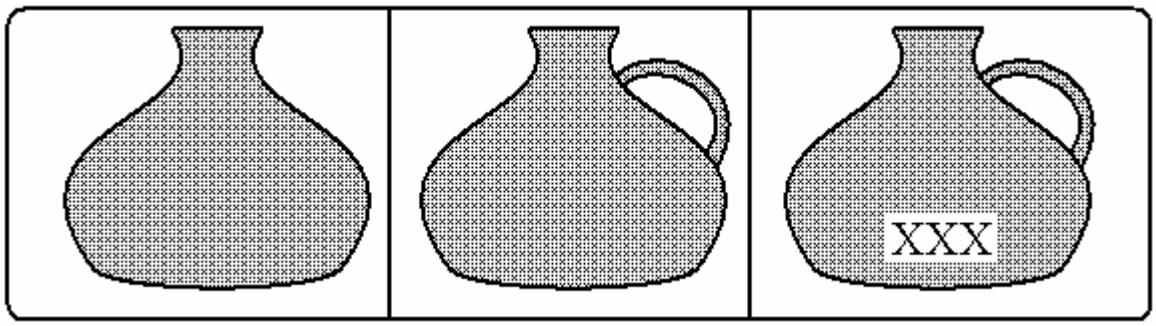
A: During sleep, the signals from the senses are mostly ignored by the brain
B: Neurons in the gray matter still fire periodically, despite the absence of sensory signals
C: If the instinctual brain is lightly asleep, it attempts to make sense of those signals and it creates a largely embellished reality, otherwise known as dreaming

Without the sensitivity to the senses to distinguish this subtle noise (noise always being present), the result is dreaming, or rather the attempt by the semi-conscious brain to make sense of this noise by fabricating realities from very limited and incorrect information.

KNOWLEDGE

We are now at a good point to introduce the “M-Freak” (meme-freak). It helps to first define the word “meme”. A meme is the “information” metaphysical equivalent of a gene. Remember that a gene is a portion of DNA that can be categorized to produce one distinct enzyme in the resultant entity; a gene is a specific bit of instructional information. Likewise, a meme is a specific bit of information, a thought, an idea, a notion—but conceptual as opposed to physical.

To explain, imagine you were the first person to ever make a clay pot. What a wonderful contraption you have created. It carries water and, well, that’s about it, but it’s still better than the rock you were using previously. Now you teach your friends and family how to make this wonderful invention and everyone benefits from the new tool. You have just passed on a meme to your species; or more elaborately, specific instructions that appear to be beneficial. Now your eldest child, having a keen mind like you, realizes that there would probably be a lot less broken pots all strewn about if people had a better way to carry them, and so handles are added to the design—ingenious. The change or augmentation in design of the pot meme is called meme evolution; much like any form of evolution previously discussed, it’s an improvement on previous models.



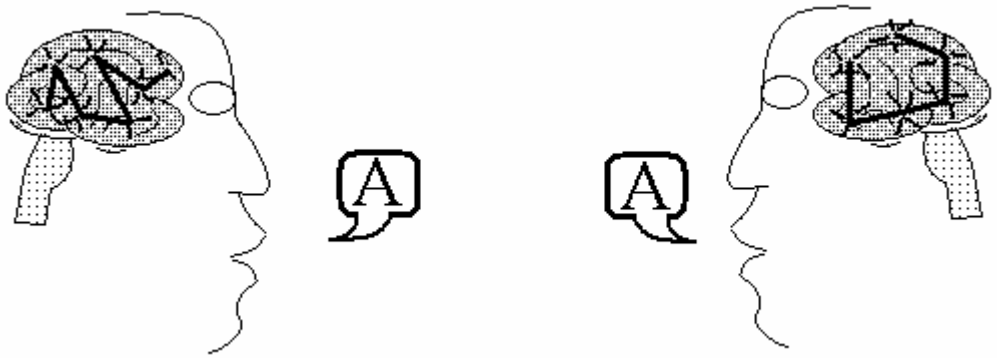
Clay pot meme evolution

Future models might include drawings, or creating various sizes; whatever it takes to improve the design is meme evolution. The term meme can be applied to any concept or design for just about anything.

The M-Freak is the net sum of all the memes that exist within a species that has the ability to share conceptual information. It is the sum of knowledge, a net perspective on reality, an entity with no physical form. In greater detail, the M-Freak is the concept of an abstract entity that possesses all the memes for a species. As much as a gene-pool contains all the genetic information for a given species, the M-Freak likewise contains all the meme information for a species. The M-Freak is considered to exist as long as the species exists, for it is the total collective information stored in the brains of that species that defines the M-Freak. Each physical member of the M-Freak could be considered a "cell" in its definition. All species (e.g., gorillas, dolphins, us, etc.) with the ability of abstract thought possess an M-Freak. Let's call the human version of an M-Freak, our "H-Freak". Like the G-Freak, the H-Freak continues to evolve with the changing perceptions and increased information capacity of the human brain.

To say that the H-Freak doesn't physically exist isn't exactly correct since the H-Freak collectively exists in the intricate pathways in all of our minds (our ability to think is only a result of chemical interactions between neurons), and therefore the H-Freak's existence is supported physically. However, the H-Freak is not dependant upon the survival of each supporting member for its own existence as long as there is at least one remaining member—though the H-Freak would change form dramatically should there only remain one supporting member, as its complexity cannot possibly be entirely represented by even a small subset of members.

How all this information is stored physically and chemically in a person's memory is only meaningful when "interpreted" by that person's brain, since how the information is stored is unique to each person. One person can say "hello" as well as any other, but the wiring of the gray matter neurons to accomplish that task are completely different in each brain.

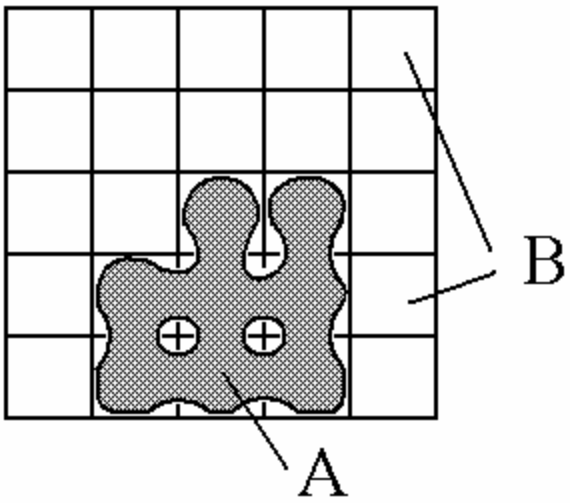


Information stored in the gray matter is distinct to each brain. What may appear to be the same act is actually formulated on very different neural pathways
A: “Hello”

This is analogous to the directions from your individual home to the town center; each person has their own specific directions (instructions) from their own homes to achieve the same goal of arriving at the center of town. We tend to think of our imagination’s ability to create our abstract concepts as being somewhat ethereal, but be sure that any thought you can possibly have in your conscious mind has a very precise, articulate wiring and chemical signature that is necessary to be able to formulate that thought in your brain. There is a physical support system for the conceptual imagination.

PERSPECTIVE

The H-Freak may be an abstract concept but it has a very real influence on the direction that humanity will evolve. The H-Freak largely defines how the instincts are to be extrapolated into cultural activities. You can imagine the H-Freak to be like a blob that is trapped in a series of chambers with no outside view, only doors to neighboring chambers. As we learn new information, our H-Freak opens a door and expands to fill this new chamber of knowledge as well. These individual chambers represent sections of knowledge that the H-Freak seeks to gain access to, for only when all chambers are opened will the H-Freak finally have the true perspective of what reality really is.



Total Universal Knowledge
A: H-Freak
B: Chambers of knowledge

Every time the H-Freak accumulates new memes (such as learning that the world is round instead of flat), doors to neighboring chambers are opened and the H-Freak continues to expand. Historically, though, it seems that for every answer we find, twice as many questions are created, and the true breadth of all knowledge may very well be beyond the scope of humanity's capacity to learn and understand. The H-Freak may never manage to open all the doors and expand to fill all the rooms that comprise the total universal knowledge. Still, the more rooms we open, the greater understanding, control, and ability to predict we will have over our existence; and this feeds our thirst for knowledge.

The gray matter is the sole source of all the information that we can possibly retain, and from this information alone is where we draw all of our knowledge and perspective on reality; however, we can't remember just anything—the scope of knowledge that the gray matter can retain is still instinctually biased. It is only possible to learn things that result in at least a mild reaction (good or bad) from the instinctual brain since this reaction is the *only* mechanism that creates memories in the gray matter. This means that all memories are in some way calibrated in prominence (and hence longevity) by the instinctual interpretation for the given stimulus. We can only "know" things about

our world through the retained knowledge contained in the gray matter, and the only way for this information to be stored there in the first place is through the approval or disdain of this information by our instinctual brain.

CLOSURE

Despite our desire and ability to absorb great amounts of information, knowledge doesn't travel well between humans because of our limited ability to express our abstract thoughts, our brain's limited capacity to remember things accurately, and the biasing that our instincts (ego, greed, etc.) introduce that skews information. Even so, our ancestors evolved to pass on information about tools, clothing, hunting—and reality. Our next chapter discusses how meme flow in our species has dictated our social and intellectual evolution.

Chapter 5 - Acumen

CONTROL

To have ultimate control of your world can bring you unlimited happiness (happiness being defined as a sense of contentment and well-being). Imagine if you had infinite wealth, the respect and love of all those around you, perfect physical prowess, ultimate wisdom, complete and total domination of your universe, etc.; you couldn't possibly be happier—or could you? Unfortunately, not a single person in history has ever had everything they ever wanted. It's just not possible to fulfill your desires to the degree within which your instinctual drives could be utterly satiated; at least so far in our evolution. But even those very chosen few who have been given ultimate power, or ultimate wealth, etc., still find that the related instincts continue to pull in their respective directions, even given what one would think was satiation of those instincts.

Despite the sexual base of the instincts, if a person could hypothetically have their sex drive artificially removed, they would still be subtly driven by the motivations of the instincts. The behaviors and desires that the instincts manifest, seem to perpetually exert their influence, even beyond their exigencies, beyond their effectiveness to result in a sexual encounter, beyond a great improbability of even limited satisfaction, and even when no sexual appetite exists; and must therefore be defined as insatiable.

PROGRAMMING

The gray matter evolved because it exponentially magnifies the control a creature can exert on its environment. The more control one has over one's world, the more likely one can please one's instinctual needs. The gray matter solves complicated problems by piecing together bits of previously acquired information, in ways that might arrive at a

solution to satisfy the instinctual pleasure center. It could be argued that the early brain was only capable of a reaction instead of an action, and that we have now evolved past that into a state of free will, but this is incorrect; our root drive for virtually everything is still sexuality. We are only capable of learning things that in some way please or displease the instinctual brain; every other conceivable type of information that might enter our gray matter is meaningless to the instinctual brain and will eventually decay from our memories. The only way to learn information that is not naturally recognized by the instincts is to somehow associate that information with something that *is* recognized by the instincts. A good example of this would be the difficulty in memorizing a random sequence of numbers. If the individual numbers are, however, affiliated with something that has instinctually meaningful attachments to it (e.g., birthdates, address, etc.), then the memorization process is significantly improved.

So, having only this instinctually identifiable information in the brain after a lifetime of learning only instinctually/sexually-biased memes, means it is impossible to "want" to perform any conceivable act that somehow does not have its ultimate root (however convoluted or concealed) in one or more of the primitive instinctual needs. The instinctually driven actions of any creature are always tied to a historically higher probability of a sexual encounter, sexual encounters equaling reproduction, and reproduction ultimately equaling DNA continuing its lineage. Our actions and desires always most fundamentally come from the DNA's mechanisms for reproducing itself, and we cannot escape from this reality. This may seem difficult to accept because of the vast diversity of actions we can take that have no apparent bearing on reproduction, but do not confuse the ability to perform apparently random acts as a demonstration of free will: what is at work here is actually the curiosity instinct seeking uncharted means by which to satisfy the other instincts.

MOTIVE

You may also think that with all our technologies and liberations from nature's toils, that we have evolved beyond nature. Well, perhaps we have altered our environments somewhat beyond the originally-intended design of our instinctual pulls that are better suited to a hunter-gather lifestyle, but we are still very much a part of nature's design. Every radical change in evolution from the beginning of life on Earth could conceivably be seen as cheating nature, until Mother Nature embraces it as her own. Our accumulated technologies largely separate us from the hunter-gatherer environmental stresses, but our great intellect also introduces a plethora of new environmental stresses never before seen and that we now must evolve to overcome. See how complicated things have gotten?

To demonstrate these intellectually-introduced stresses, let's add to our partial list of instinctual fluff so as to include the H-Freak's interpretation and implementation of this fluff (again loosely ordered by instinctual magnitude):

Fear – keeps from known danger
H-Freak: specters, protectors

Rage – affords protection
H-Freak: war, political oppression, competition

Hunger – affords the creature the energy and resources necessary to acquire sexual encounters
H-Freak: routine meals, etiquette, celebration

P/maternal – provides protection and resources to the offspring, improving the odds of their reaching maturity and reproducing
H-Freak: nursing, education

Ego – internal measure for suitability as a mate
H-Freak: leadership, acquisition, feats

Power – affords the alpha position for mating
H-Freak: money, religion, weapons

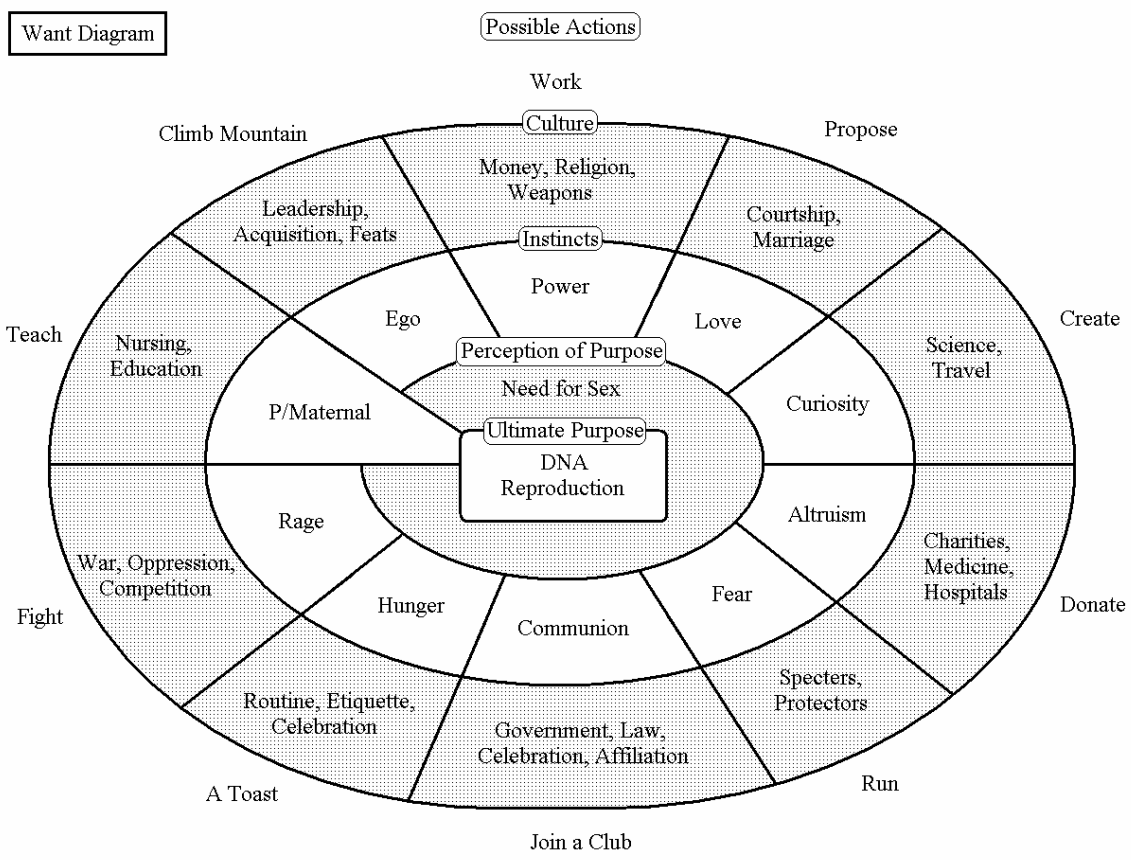
Love – pair-bond to benefit the offspring
H-Freak: marriage

Communion – strength in numbers, division of labor
H-Freak: government, law, celebration, affiliation

Altruism – allows for periods of weakness in some members
H-Freak: charities, medicine, hospitals

Curiosity – allows serendipitous discoveries
H-Freak: science, travel

Let's finish the definition of the sleash: draw a small circle with the words "DNA Reproduction" in the middle. This is the "Ultimate Purpose" circle. Draw another larger circle around the first one, and enter the words "Need for Sex", with a very small pie-slice sectioned off that contains the words "Paternal/maternal". This is your "Perception of Purpose" circle. Draw a larger circle around everything, subdivide this outer section into multiple chambers, and fill these individually with the instincts (love, ego, etc.). Extend the "P/maternal" pie slice to reach the perimeter of this new larger circle. This is your "Instinct" ring. Next, draw an even larger circle around the original circles, extending the subdivision lines of the "Instinct" circle's chambers into the new outermost section, and fill those sections with the corresponding H-Freak fluff (marriage, charities, law, etc.) relative to their respective instincts. This is your "Culture" ring. And finally, on the outside of the largest circle, write the words "Possible Actions". You have just re-created the "Want" diagram.



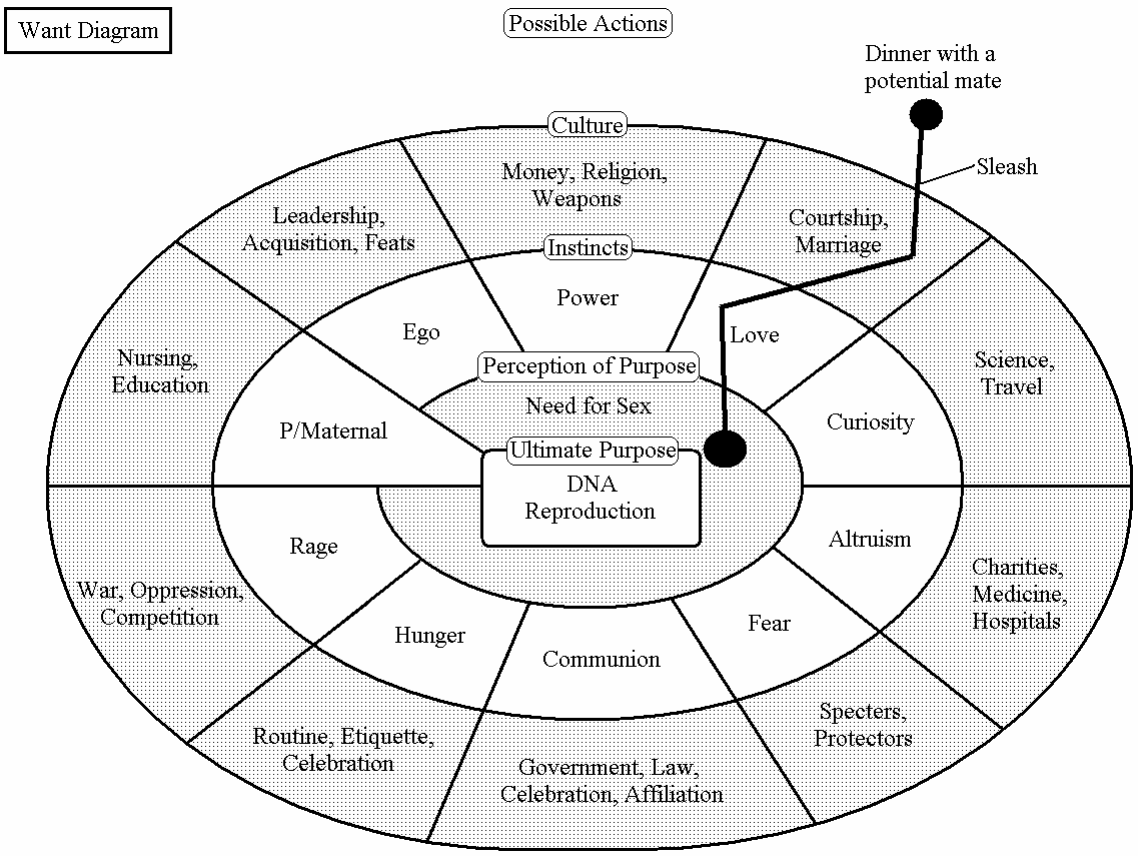
This is how your mind works: imagine a strong rope attached at one end to a pole in the middle of the Perception of Purpose circle. The other end is attached to one of any of the possible actions. This is the "sleash". The first thing you'll notice is that you are separated from possible actions by a few layers. You may choose to sit in the "Need for Sex" circle, indicating that your thoughts are primarily about sex, but the sleash keeps painfully yanking you because you are not actually having sex, or even receiving sexual attention, and it is very uncomfortable. So you decide to try something else rather than focusing on the fact you are not currently engaged in some form of sexual activity, to try and find some way to stop this sleash from pulling on you.

The only way out of the purpose circle is to enter one of the sections of the instinct ring. Should you try to hop over the instinct ring to get to the outside (perhaps through some truly random act, like endlessly squeezing your fist, for example), the sleash immediately and painfully yanks you back into the middle (which we perceive as

boredom or frustration). After a couple painful attempts to bypass the instinct ring by performing non-instinctually recognized actions, you concede that it is a necessary step to enter a room or two of the instinct ring in the search for relief from the sleash.

The reason we use the term “sleash” (sexual leash), here instead of, say, “DNA reproduction leash”, for ultimately that is the true foundation of all desirable actions, is that there is no instinct that forces us to think of our actions as resulting in our DNA being passed on through our progeny. All the instincts combine in an effort to trick us into actions that increase the probability that we’ll reproduce our DNA, but we're completely oblivious, below the instinctual level, of what we're actually doing. We’re instinctually aware of the need for a baby, but a baby is simply creating a vessel for our DNA to be passed on. So it doesn't make sense to extend the sleash down to the DNA reproduction level since we cannot “feel” the need of the DNA to reproduce itself. This need has been abstracted into higher level instinctual needs, and from this perspective, our DNA can be considered a virus that creates and manipulates an oblivious host (us) for its own reproductive purposes.

Stepping into the raw instinct chamber and acting upon pure instinct may have served a primitive human’s sexual conquests, but in our day and age, mercilessly tearing the head off an antelope in a grand display of hunting prowess might result in therapy instead of sexual opportunities. So you decide to put a little more thought into your actions and head out into the culture ring to try and camouflage (or perhaps “embellish” is a better choice of word) your instinctual motives with some intelligence, the sleash continuously yanking your attention all the while. Finally, you decide on an intelligent action (e.g., having a formal dinner with a desirable mate) which is the derivative of an instinctual desire, resulting in a higher probability of a sexual encounter, sexual encounters completely releasing the tension on the sleash for a short period of time, and somewhat removing the pain of existence, temporarily. Your actions have manufactured a scenario where your DNA can be passed on. Mission accomplished. The instincts have fulfilled their purpose.



The paternal/maternal instinct, or more specifically, child-rearing, is the only instinct that tends to bypass the sexually motivated derivative that serves as the foundation for all other instincts. All the other instincts increase, no matter how subtly, the probability of a sexual encounter.

It is rare for any chosen act to come from a single instinct; more likely it stems from a combination of instincts, and then becomes further complicated in the intelligent cultural interpretation of the act. Our gray matter complicates our instinctual behavior by increasing the complexity of our acts to the point sometimes that actions may seem totally removed from sexuality. You might see how difficult it is to pick an arbitrary act and trace it to its roots. The art of fishing is one step from food, which keeps us alive long enough to eventually reproduce, so that is relatively clear; but the art of classifying animal remains might take a little creative searching to reveal the instinctual roots (how about: instinctual

curiosity for knowledge, leading to peer approval for any discovered knowledge, placating the discoverer's ego instinct, which serves to increase their inherent alpha-status, and thereby subtly increases their probability of the opportunity for reproduction— whew).

The only instinct that actually does not increase the probability of a sexual encounter is the maternal/paternal instinct, which can inhibit further sexual encounters for the sake of increasing the viability of existing progeny, though this "rearing" instinct loses its tenacity as the offspring matures, and the sexually-based instincts once again overwhelm.

PERSONALITY

The balances of instinctual pulls are different for every person (or any creature for that matter). This results in varying shades of personalities: some people are more aggressive, some more passive, some curious, etc.; and this is nature serendipitously experimenting for the best-fit personality to match the demands of the environment—those personalities that adapt the best to their environment will be most likely to reproduce. Instincts are like permanent, hard-wired "memories" that are genetically programmed and serve to extend the effectiveness of the primitive function of reproduction. It is not always possible to be having sex, but in our ancestors' world there were many environmental scenarios and conditions that led to a greater probability of sexual encounters. The instincts evolved to identify these environmental conditions and then to react to them by mildly stimulating the pleasure center (interpreted as desire) in anticipation of fulfilling an instinctually pleasing scenario. This instinctual response then encouraged the appropriate instinctual behaviors to manifest, thereby increasing the chances of a sexual encounter. The entire function of the raw instincts is to manifest behaviors that have proven themselves as reproductively viable over millions of previous generations.

Because of the complexity of our modern-day social structure, our sleash tether is very long, wound around many motivations and perceptions that may sometimes seem removed from our primitive

instinctual drives. We may believe that we enjoy certain activities that have no apparent sexual derivative, losing sight of the fact that your sleash is actually going through some instinctual doors, and the layer of culture and perceptions is then further complicating the path. Most of us cannot just simply have a sexual encounter, or indeed are prepared for one, whenever the need should become critical, and so our minds continuously search the gray matter in the hope of even a long-term solution to the problem of the instinctual pulls. This need feeds our thirst for knowledge, since the more information that is readily available in the mind, the more likely for it to be able to solve the problem of the instincts' needs, and consequently reduce the tension on the sleash, for the only relief from the sleash is the placation of the instincts.

KNOWLEDGE

What is knowledge? Knowledge consists of facts, experiences, etc., but if you break it down to its most fundamental definition, it is a mapping for the world around us. The brain maps the environment by posing instinctual needs and then recording stimulus that either satiates or exacerbates those needs. For example, your gray matter is mapping this book's information right now, and how well you record it in your memory will largely be determined by how this information relates to your needs.

The gray matter is not genetically pre-organized, but rather is largely determined in interconnectivity by the relevant instinctual environmental stimulus that is experienced during the course of our lives. Our gray matter accepts environmental stimulus and strengthens the dendrite connections that happen to be connected during this stimulus, "mapping" the outside world into something concrete in our heads. For example, one might discover an abundant source of apples if one climbed to the top of an apple tree. Remembering where these fruits are could provide an ongoing source of food; but if we were without the ability to remember this information, all of our fruit meals could only be found by sheer luck or instinctual cues.

On the other hand, this acquired knowledge of the fruits' location high in the trees may be a valuable bit of information, but it is only predictably useful for environments that match the originally-learned information. The knowledge that abundant apples are high up in an apple tree is useless if there are no apple trees around. Some perceptions and knowledge of environments, however, are generic enough that they are useful over a wide range of environments, like the concept of gravity which would apply to most environments one would conceivably encounter.

To be specific, your overall knowledge can be considered the percentage of your entire environment that you have mapped in your gray matter, a simpler environment obviously being easier to have a nearly complete knowledge of. The degree of knowledge is a product of the complexity of environment. The more complex and chaotic the environment in question, the more complicated the knowledge required to predict it to any degree. At the other extreme, having amassed formidable knowledge in your mind is useless if the environment that it maps ceases to exist, and the related mapping in the gray matter is therefore now chaotic and meaningless, relative to the remainder of reality. Take the trained mouse forever out of the maze and its learned knowledge becomes useless. This implies that perhaps the only truly universal knowledge that ubiquitously applies to all environments would be mathematics, and everything else that can be known is just an application of some form of mathematics (no matter how complex) to map the environment. Mathematics is the true voice of the universe, the window into its soul.

FREE WILL

What does it mean to be conscious? Or even better, what is the difference between a conscious act and a random event? For example, for you to sit down on a chair is an obviously conscious act, and for a given raindrop to land in your hand is most likely chance—or is there indeed a difference between the two? Look at it this way: the raindrop is following a very precise path from the cloud to your hand, that path

being defined by the wind, temperature, and many other complicated parameters that are very precise in their influence on the path of the raindrop, until it finally lands in your hand. The fact that this particular drop made it to your hand may be highly improbable but there was no luck involved, it was the result of the exacting mechanics of the atmosphere unfolding to produce the raindrop/hand collision.

Likewise, your brain is an exacting mechanism. The environmental conditions that existed (the chair being present, feeling tired, activating the wiring in the brain that controls sitting) made the event of sitting down happen. The desire to sit down was an accumulation of all the environmental parameters, including the chemical and electrical state of the brain, resulting in the action of sitting. This wasn't a "conscious" decision that we might be inclined to understand as free will; in actuality it was the fulfillment of internal and environmental conditions inciting our brain to want to sit, and then activating the body to behave in a sitting manner.

This implies that there is no real consciousness as we like to understand it, with the ability to choose, but rather we are helpless to the actions manifested from the wiring of our brain's design. Absolutely this is true. We are automatons—complicated, sure—but all our decisions, actions, and feelings are precisely defined by the system that we are, and are never random. We have no more free will than a river that is confined to its riverbed. We have evolved a powerful illusion of free will to accommodate our ego, because the notion of being automatons will tend to aggravate the ego since it implies that we are not in control of our thoughts and actions; but that doesn't change the truth that we are no more truly in control of ourselves than the clouds in the sky.

EGO

The ego. The mind's inward eye. Self-perception. The need for acceptance, respect, etc., all stems from this instinct. The ego effectively allows one to gauge one's acceptability by one's peers based upon feedback from society, and at the most fundamental level, one's

viability as a mate. The need to feed this ego instinct drives us to portray our "greatness" to others; it is essentially responsible for our "sales pitch" personality. This instinct will add plenty of painful tension to the sleash should one act in a fashion that is not well tolerated by peers, and likewise will release a lot of tension should one receive praise.

One of the most beneficial side-effects of having a strong ego is increased intelligence. Because of the serious level of sleash tension that a negative ego reaction can instill, the instinctual brain will sharpen into focus and force the gray matter to search very hard for a solution to the pain. The ego instinct is one of the most dominant instincts and forms a very large part of your personality and motivations.

The reason the ego evolved to be so powerful is rather complicated: our gray matter empowers us with the possibility of an incredible range of dispositions and personalities, of which an unfortunate side-effect is possibly straying too far from the perceived "normal" personality (which is mostly culturally defined). Straying from the norm can be indicative of potential genetic problems that might not be favorable to continue the lineage of. To avoid diluting the quality of the gene-pool (the collection of available genes within a species), it would be better (genetically speaking) for potential mates to isolate such a "deviant" person from the possibility of sexual encounters, by means of social or physical ostracism.

UGLY

As well as avoiding the possibility of sexual encounters with what we perceive as a physically "ugly" person, we are also negatively sensitive to ugly personalities, such as those with great aggression levels, or low self-esteem. Our ego gives us the ability to gauge our personality congruency with, and physical reception by, the rest of the species and therefore consciously adjust our various behavioral attributes to levels where the net qualities of our personality are acceptable to the species, increasing the chances for a sexual encounter.

The ability of a species to reproduce with a mate that is within an acceptable tolerance of the species' "norm" points to something much more fundamental. The entire natural history of experimentation of DNA changes, or meme changes of perceived reality, have rarely proven rewarding to the newly mutated members and more often than not would result in their demise. A very small percentage of "changes" have actually benefited the species as a whole, and only these positive changes were eventually distributed and permanently incorporated into our species, either as part of the DNA or the H-Freak. If the species were to incorporate a larger percentage of changes by relaxing the strict definition of the perfect mate, the whole species would degrade into a much more chaotic mess of persistent disfigurements and/or radical perceptions and actions founded on incorrect memes. Thus, we have evolved into a very concise window for what we will tolerate as an acceptable degree of change, thereby keeping the current but precariously balanced "best fit" notion of physical and mental attributes from dilution.

COGNITIVE DISSONANCE

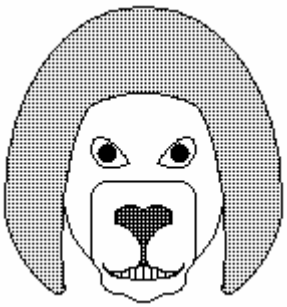
It is extremely difficult for us humans to let go of our own preconceived notions of reality in the attempt to perceive reality through someone else's eyes, even despite that the other person may have a more accurate perspective. Cognitive dissonance is the term used to describe the painful mental anguish that one would suffer should information be presented that would significantly alter one's perception of reality. This adversive reaction results from having a large number of seemingly well-established credible memes, suddenly and irrefutably challenged to be invalid. The person having this reaction can experience anything from uneasiness to crippling fear, even a complete mental breakdown.

For example, if someone had overwhelming evidence that could prove to you that your parents were aliens from another planet, chances are you'd deny the credibility of any proof presented, no matter how compelling. Even if it could be proven beyond any doubt, your cognitive dissonance would be too painful and disorienting if you tried

to rewire all those years of incorrect information stored in your head, and so you'd continue to deny the newly discovered truth, beyond proof, beyond logic. This is the nature of this instinct, complete and utter resistance to radical changes in perspective. The cognitive dissonance reaction has the net effect on our species of containing known "time-proven" memes within our cultures, and doesn't allow for radical shifts in perception, since, like genes, statistically only a small percentage of meme mutations are factual (beneficial).

REPULSION FRINGE

There is a "Repulsion Fringe" that surrounds the "perfect mate" ideal in our minds. If you were to look at a dog, there's obviously no natural desire to have a sexual encounter with it and so there is no animosity felt towards it (barring prior negative experiences with dogs). However, as you morph (a smooth transition from one image to another by combining into a series of intermediate images the attributes of both images in complementary ratios) the visual image of a dog closer and closer to the "perfect mate" image, you will notice that when it gets close to something recognizably human, it becomes quite a horrific sight, having both some dog and some human properties now.



Anything that approaches being human-like, such as this dog/human face, will agitate the repulsion fringe and will be perceived as ugly

Continue to morph completely into the "perfect mate" image and it eventually becomes quite tolerable to look at, not having anything but human qualities. The portion of the morphing image that causes

discomfort is the Repulsion Fringe reacting to human-like characteristics that are too far out of the perfect mate norm.

This fringe is responsible for maintaining a tight genetic balance in a species such that it resists wild swings in diversity in the offspring that would result from a random distribution of reproductive partner pairings between all members of a species. It keeps members focused on reproducing with only those that best represent the "perfect mate" and instills an instinctually recognized hierarchy of sexual dominance that categorizes the reproductive potential for all members. The Repulsion Fringe is also serendipitously responsible for controlling the spread of communicable diseases by forcing the members of a species to be repulsed by the sight of an obviously diseased individual.

We are only physically attracted to those that closely fit our internal "perfect mate". Likewise, we are generally mentally attracted to those that represent a predictable and compliant personality, which is often defined by the cultural norm (common faith, principles, pursuits of intelligence, etc.). This subtle attraction to personalities that exhibit mental conformity allows us as a species to resist radical meme changes in the H-Freak. This Repulsion Fringe also operates on the meme level too. Differing perspectives and beliefs are equally likely to agitate one's Repulsion Fringe. Despite all of our species having evolved from the same ancient parents, we have diversified somewhat among our cultures, both in external appearance and in reality perception. This difference sometimes approaches our Repulsion Fringe and begs us to act in an "ostracizing" manner, which manifests as revulsion and oppression in our instinctual attempt to limit the probability of sexual encounters with the "antagonist", and to control the threat level of the surrounding environment. Also, radically new ideas, like the thought of cloning humans, or artificially creating life, can be quite offensive because it reveals our fragility as a lifeform.

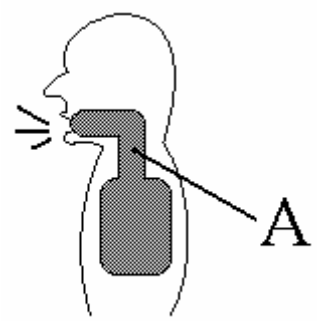
FACT OR FICTION

Imagine if you believed everything you heard. You wouldn't be able to make sense of the world. So much information, so many

opinions; impossible to put all of it together into a meaningful perspective of reality unless you can somehow strip away apparently nonsensical information. How is one to differentiate true information from nonsense? Not easily, especially in ancient times when the amount of information the average person had was very limited, and even that information was easily and often distorted into fantastical realities. The only thing that seemed to give credibility to information was just how many people believed in it. Seems if something shouldn't be true, then someone's bound to find out and spread the word, so chances are by the time you'd hear some information, it's already passed the test of time and must be true. This mechanism for establishing validity has a statistical probability foundation to it that lends some credibility to well-distributed information; however, this does not mean information *is* factual, just that it's not within the population's means as a whole, to determine it not factual.

COMMUNICATION

Let's take a very long step back into the dawn of humanity, back to when our ancient ancestors first learned to communicate by squeaking their throats with various pitches of sound. Most G-Freaks can produce some form of noise from their mouths. The mouth is an ideal place for this ability to evolve since a source of compressed air is already available (the lungs) and a small area for the air to escape through (the throat) is adjacent, resulting in the ability to produce a whistle-like pitch.



A: The throat is an ideal location to evolve the ability to produce sounds. Compressed air from the lungs can be forced through the muscularly controlled throat to produce different frequencies and amplitudes

This ability to make sound is a very advantageous attribute for a species since producing a loud, easily distinguishable noise can alert other members of the species to imminent danger. The ability serves as well, of course, for other subtler forms of communication.

Our very ancient ancestors evolved this oral sound ability to a phenomenal dexterity, affording them a great range of pitches and emotional expression. This, by the way, is the root of our deep love for music. Music simulates the primal voices of many of our ancient ancestors in communion. Their form of communication, via varying pitches of sound from their throats, was very limited but the messages they tried to convey were almost pure emotion, much like our brains interpret music today. The pitches of sound our ancestors created with their throats continued to evolve until the ability to produce phonemes was reached. Phonemes (or basic sounds, essentially syllables) began the age of word communication, and it became a much more accurate means by which to share memes among members of a species. Now our ancestors were able to describe verbally: how to make a hammer, how to hunt, and what the world we live in is all about.

Of course, nobody back then could possibly have imagined the world was round when the horizon appears flat, or that the Earth moves around the sun when they cannot feel any motion, etc. They could only work from the information afforded them and at the time they had only their senses to reveal the secrets of the universe to them. In an effort to better understand and control the environment, our great ancestors had to

put something together to make sense of what they observed, and so they fabricated complete fantastical realities from which they could derive at least a little reason and understanding.

LIES

Enter Glack the caveman. The following is a story about a very significant person in our history. He lived before all recorded time but his essence reverberates throughout humanity to this very day. Glack is the very first person to ever tell a lie. Glack and his son, Glack Jr. (they didn't have a lot of syllables back then…), are just back from hunting. Black clouds roll in and soon there is a thunderstorm. Everyone fearfully runs for shelter and as the clan of cavepeople wait out the storm in the cave, Glack Jr. asks, "Father, why sky boom?" Glack is stunned. "Wow, that's a really good question", he thinks to himself. "Why, why, why…" his mind continuously polls his gray matter, searching for information that will suffice to answer the question, to please his child, which would please his own paternal instinct, and lessen his sleash tension by having better control over his environment. Unfortunately, all that his gray matter polling could come up with is rocks and the not so tasty parts of prey. He looks around; everyone is looking at him, waiting for this epic answer. Now his ego is yanking the sleash very hard! Oh no, if I don't answer this question, I'll lose viability as a mate…

And so, he lies.

"Son, sky entity angry". Gasps and confusion from the crowd. Sky entity? Whoa! Nobody ever said anything about a sky entity before! Suddenly the whole clan is as terrified as it is intrigued. Glack's ego releases some sleash tension, having delivered an answer demanding of respect. Whew, that was close.

Glack Jr., not to be swayed, asks, "Why sky entity angry?" Poor Glack, now that he has started lying, he can't stop without considerable damage to his ego from the inevitable scorn of others should he admit to

lying. But he also remembers the look in the others' eyes when he did lie; it was awe and respect. Hmm, maybe this lying works better. He probes his mind for reasons that would cause anger, finds one that makes him especially angry, and so, he lies again: "Son, sky entity angry because we no share food with him". More gasps from the crowd. Now everybody has questions, mostly out of fear because they have to know as much as possible about this sky entity in order to avoid angering it in the future. So Glack goes on lying all night, quite impressed with himself really, having won the awe, respect, and adoration of the whole clan with just a few mistruths. He can tell by the look in all the suitable females' eyes that he has set a world record for alpha male status, for one who can provide safe recourse from the dangers of the world must surely have some special DNA.

What happens to the clan now? Now the H-Freak is much different, much more complicated. Now the clan ritualistically cooks food for the sky entity in the hope of appeasing its temper. Sometimes not cooking enough as evidenced by further storm activity; however, it doesn't rain every day and so the offerings must be working at least somewhat.

Soon awareness of the sky entity's bottomless hunger is passed on to every clan capable of communication. This passage of information is called "meme-flow". Quite simply this means a tidbit of information that seems to match observations of reality, is passed on from member to member, and through time, until everyone knows about it. To continue our example…because of this widespread meme-flow and general acceptance of information, serious credibility is afforded it and pretty soon it is global ritual to offer food to the sky entity.

One day the clan leader from the west, Glacko, comes over to visit our clan in the east. Glack, seeing Glacko arrive, steps down from his throne, brushes aside his legion of followers, and he and Glacko embrace, for it has been an extended absence. Glack raises his hand, and addressing his legions, commands, "Prepare feast, or sun entity no visit tomorrow". Everyone panics and in short order, a feast is prepared.

Later, Glack and Glacko are eating when Glacko asks, "Glack, why does sky entity food offering still have head attached? You make

sky entity angry!" Glack is perplexed. He never said anything about having to remove the head from offerings? It seems some meme information changed as it traveled from person to person to eventually reach the western clans. There is bitter confusion and ultimately Glack and Glacko angrily part and over time they eventually separate into two distinct clans, one that keeps the head on the offering, one that doesn't.

Now the reason this whole food offering ritual had gained any credibility whatsoever in the first place was that there wasn't already a sufficient explanation for storm activity; and the great fear the storms brought, with their powerful displays of lightning and thunder, begged for some form of control over them. Glack's mistruths fit the observable results to some degree and so those meme lies were easily incorporated into the H-Freak. Unfortunately, because of the inaccurate nature of meme flow, Glacko eventually got the revised version—which did, however, equally well fit the observations. When those two differing memes are brought together, one needing a head for a sacrifice, and one not, they immediately clash. Glack insists that his way must be right because his clan has been doing it that way for years with fairly good results. Glacko also insists his way must be right, having had the same results. Why didn't one just give in? A few reasons: ego, fear, confusion, time-proven evidence, but all of that can be summed into "cognitive dissonance".

Our minds simply cannot accept radical shifts in philosophy. It was such an overwhelming accomplishment to be able to somewhat control the sky entity with offerings (or so everyone believed, except Glack the liar) that to take chances with alternative methods might result in disastrous consequences. Nobody was willing to take any chances. To try to accept that they had been doing it wrong for all this time would bring their minds great pain for it would mean that they invested heavily into a false meme, also meaning they are prone to mistakes, which damages the ego, increasing the sleash tension, etc.—when they have been so sure for so long that what they were doing was right. It just can't be possible that they are wrong.

Eventually the day comes when Glack dies, having been gored by a mammoth that wasn't properly appeased with the sacred smoke from

the clan's burning grass offering; and with his death forever dies the truth, leaving the rest of his people to inherit his legacy of falsehoods that manages to at least somewhat make sense (however inaccurate) out of reality.

It is easy to understand why Glack chose to fabricate a conscious entity to bear the responsibility for the storms since within his limited intelligence he really didn't have a lot of other plausible explanations to offer (lie about). He could only relate his conscious ability to move small things, to the ability of some much larger conscious entity to control the atmosphere. By associating the unknown with things that are better understood, such as an ethereal being that is capable of administrating the environment, he makes the process of storms "familiar", the will of some great creature. His little fib, though, has sparked a phenomenal amount of chain-reaction fibs, and with his death, his legacy now needs a new leader. Glack Jr., having been the closest to the endless source of wisdom spewing from his father, immediately assumes the role of spokesperson for these great ethereal entities. It's not all fun and games though; Glack Jr. is quickly hounded by his clan for answers to an endless plethora of questions. Glack Jr., not having his father's true gift of affinity with the ethereal entities of the world, somehow has to add to the "truths" that his father started.

And so, he lies.

BELIEFS

Lies, lies, lies. That's how we all got started. Lies from one generation become truths in the next generation and those "beliefs" continued to evolve and grow. The existence of the differing and contradicting beliefs that eventually result, stems from the inability of our ancestors to accurately transfer memes over great distances and time. Some information gets lost, some embellished, some newly created, and these beliefs continue to grow larger and larger into more complicated superstitions and faiths. This is the beginning of culture and religion, two very intertwined concepts. Culture can be described as the activities

of the members of a society, whilst religion is the H-Freak's perspective of the universe that dictates appropriate activities of the culture. As humankind's intelligence continued to increase and we began to evolve out of the relatively simple hunter-gather societies, so did the complexity of these ill-premised beliefs increase, as did the degree of integration of these beliefs into daily rituals, inevitably resulting in the complex exercise of beliefs and rituals in the form of organized religions.

RELIGION

Over time, these ancient forms of religion become very complicated, with very elaborate and convoluted explanations for everything going on in the world. This is the result of the endless questions that arise because of the previous falsehoods that eventually took hold as "fact". There are an incredible number of meme constructs that evolved into our cultures that were originally created to placate the egos of the continuous chain of liars. This cycle of lies keeps manifesting itself into such a big lie that it becomes inconceivable that it could all be false, having so much investment by so many people; the situation is further exacerbated by the development of complicated rituals and ceremonies to punctuate activities that serve the religion.

The complexity of these religious rituals and the associated terminology gives thy a false sense of authenticity and pushes followers into willing complacency due to the exasperation suffered in the futile attempt to surmount it all with reason. Various forms of tests of "faith" are established to press individuals into a deep conscious commitment to these religions, and completing these tests of faith results in a great sense of accomplishment, which is easily interpreted as a "divine" reward, confusing a manufactured victory with a perceived but fabricated ethereal communion with a god. It can't possibly all be nonsense; or can it?

Soon enough, the religions start competing for members—the more members a religion has, the greater the power of the leaders, and ultimately the greater the ego placation of those leaders. Religions necessarily become very crafty and ulterior at recruiting and keeping

members by playing upon the fears of the people. "How would you like to burn in the eternal fires below [this concept of fire below most definitely evolved from witnessing a volcanic eruption]; no? Well, then join our beliefs. Would you like to live forever? Join our beliefs. Never want to be alone again? Never feel alone with our beliefs", and so on… The most successful religions over time evolved to perpetuate a constant state of fear, confusion, and denial for their members in order to become and remain powerful.

POWER

Glack being afforded king-like status by his clan was no accident. Members of the clan instinctually recognized that Glack could provide them safety and wisdom and so they selfishly honored him with love and affection in exchange for his protection. As much time passed and these "beliefs" evolved, it became quite a powerful position to be educated in the idiosyncrasies of the established belief, since it afforded one a special affinity with the "gods". Now everyone wants to be a "spiritual leader".

Not everyone can be a spiritual leader though, or it takes away from the advantages of being special; no, the criteria for becoming a spiritual leader must continuously get harder and harder in order to weed out the less deserving, leaving only the most truly egomaniacal willing to tolerate difficult tests to finally garner the position of "respected leader". These criteria have evolved into sometimes unbelievably radical tests of willpower. The candidates willingly subject themselves to torture, lifetimes of sexual abstinence, or other demonstrations of sheer willpower, leaving just enough remaining willing candidates to populate the positions of religious leaders throughout society. Intelligence is most definitely not a key factor for attaining the status of religious leadership; in fact, having a formidable intelligence may more likely make these difficult religious leadership qualification tests seem an unreasonable obstacle relative to the intellectually diminished reward of a leadership position in an intelligence-suppressing belief.

It may be amusing to note that the main drive to become such a leader stems from a hungry ego, which is designed by nature to help a creature reach alpha social status, which in nature results in a greater probability of sexual encounters, which some religions *forbid* for their leaders in order to weed out leadership candidates. This demonstrates that the instincts can sometimes mislead us into dead-ends that our complicated cultures introduce. The amusement ends, however, when those leaders reciprocate their sexual frustration by introducing memes to their followers that associate sex with evil connotations and thereby reduce that culture's sole outlet for true pleasure, to an abominable act (sins of the flesh) that can only occur under certain ordained conditions, affording little pleasure to the participants. This religious oppression of sexual liberty may have had the unintentional result of strengthening the pair-bond, and of controlling venereal diseases for which our primitive species was ill-equipped to deal with, but these serendipitous, positive consequences of sexual oppression are only a passive result of the ultimately malevolent revenge plotted by abstinent, sexually-frustrated, spiritual leaders.

IGNORANCE

Cognitive dissonance and the limitations of our senses to observe the true nature of reality have over a great amount of time resulted in what we observe today as organized religions. It wasn't so long ago that most people thought that the world was flat, or that the Earth was the center of the universe. What other conclusions could they possibly have come to, having witnessed with their own eyes the flatness of the observable Earth, and the stars, moon, sun, and planets all whirring about in the heavens whilst the Earth seemed to stand still? They tried to explain their world with the very limited information available to them and the result was these fantastical rationalizations in an effort to understand their worldly observations.

SCIENCE

As the tools we have to perceive the universe continue to increase the resolution and magnitude of the observations available to us, religion has been forced to adapt to this new information, but slowly. We are now advancing in information acquisition much faster than religion has the ability to adapt, and so science will become the next "belief", having the inherent design of being able to quickly adapt to new information. Science might easily be mistaken for a "religion" as both are based upon faith in the interpretation of observations. However, the primary distinction between religion and science is the lack of an ethereal entity to function as an answer to difficult or unanswerable questions. Not having this catch-all mechanism reduces science to, at best, a philosophy.

Religion's ethereal-being perspective has always been continuously challenged by a constant flow of new and difficult-to-accommodate facts, and by the very nature of religion itself, which often necessarily refutes evidence that challenges faith, even in the light of absolute proof. This progress continuously weakens religion's bonding tenets as its members evolve into increasingly more complicated perceptions of reality than religion can easily provide answers for. It's easy to further extrapolate this progression of religion's breakdown to the inevitable non-spiritual reality suggested by the progressively weakening influence of "faith" to keep members of a religion intellectually dormant. Eventually the notion of an ethereal being in control of the universe will casually slide into the "mythology" category, alongside the plethora of other bastardized reality perspectives that humankind has conjured forth throughout history.

Science, on the other hand, organizes and integrates these endless new memes that our H-Freak perpetually accumulates, and attempts to fabricate a perception of reality that can accommodate all of the known facts. Science also forgoes the need for a conscious "creator" as the root of everything and thereby accepts that we came about by chance. None of this guarantees that what science tells us is entirely correct; it just means that the reality perspective that science provides fits the

observable universe better than religion can, and religion will inevitably be viewed as nothing more than an evolutionary phase of humankind's intellectual growth.

INTELLECTUAL EVOLUTION

It is difficult to imagine a design for the structure of society, other than religion, from which we could have evolved. There has never been a source of information for what reality really is, other than the slowly growing repository of human knowledge, and therefore we have always been restricted to limited and perceptually skewed information from which to structure our societies. However, without *some* form of societal organization, we would be subject to our unsuppressed instinctual desires and anarchy would reign, making the accumulation of memes virtually impossible to propagate throughout the species, as we would not be able to maintain stable infrastructure systems of meme-flow (churches, schools, etc.). Without some innate sense of ordered mass communion, we would have little chance of evolving beyond our hunter-gatherer instinctually driven platitudes. Religion is the very first intellectual evolutionary step possible that can facilitate the cultural infrastructure necessary to allow for the social and intellectual evolution of our species.

The presence of religion from the beginning of the ability to communicate verbally is a necessary step in the evolution and ever-increasing accuracy of our H-Freak's perception of the universe. There is no conceivable intellectual evolutionary path that can take us from a caveperson perspective to a science-based reality perspective in one magical step, because obviously it takes a phenomenal amount of information to understand reality for what it is, and most of that knowledge has always been and still remains inaccessible. Because of this, we have endured the blasphemy of truth for centuries, sometimes at the expense of millions of lives lost in meaningless battles over gods that don't exist; sometimes wasting millions of lifetimes in endless worship; sometimes investing everything into nothing. The most destructive and wasteful force on our planet is misinformation.

SKEWED INFORMATION

Misinformation is a cancer of the H-Freak. Sounds very sad, but this is nature at work on our evolving H-Freak. That's not to say that everything about religion is negative, quite the opposite really; understand that the design of any culture or religion is always a reflection of the desires and instincts of the people that compose it. It may be skewed in perspective by the egos of its leaders, but there are always at least subtle human instinctual influences in a culture's design and with that there will always be some degree of satisfaction for the people from whatever model of culture/religion arises.

Wrapping reality with a perception has the value of prediction (control of environment), even if somewhat incorrect, affording the greatest power to those with the most influential and accurate perception. In this manner, most religions have tried to change to adapt to new memes as they were discovered. The most successful religions would be those that can adapt the quickest to the changing perceptions of the H-Freak, and give their members a strong sense of communion, safety, and power, as most religions today have evolved to do. If information was presented that could not possibly be integrated, or was contradictory and damaging to the established belief system, it was generally suppressed and these memes were possibly even weaned out of all consciousness and records by this oppression.

CREDIBILITY

Our intuition, or rather a strong mathematical correlation to a concept, is our ability to sense the credibility of a meme. Religions by design attempt to preclude and oppress new meme integration that threatens the stability of the faith, until there are new lies manufactured that can support a relationship from existing religious memes to the new ones. Only then will these new memes intuitively feel justified to the religion's members. Extending the lies of the religion to integrate newly acquired memes, allows for the information to be incorporated into the

minds of the religion's members with an intuitive feeling, easing the integration. It may feel right, but the absolute root meme, an ethereal creator, is still a lie. That discredits the whole infrastructure, since everything depends upon the validity of the root meme, like all the branches of a tree still need the foundation of the tree's trunk.

A religion by design will have a very intuitive feel since most of its memes actually do tend to support one another, thanks to some creative liars. For example, words of wisdom, founded upon the attributes of their various gods, are an ideal arsenal for religions to convey the credibility of the meme-pool that the religion represents. The logic for the manifestation of those words of wisdom may be sound, resulting in a natural intuitive feeling of their validity, but the supporting memes are fabricated and so these maxims have no more validity than the seemingly logical statement, "Galgitrons can fly because they have wings" when in fact, Galgitrons don't exist.

MEME-VIRUS

Because of the parasitic nature of religion and the ulterior methods by which it propagates, it could conceivably be considered a meme-virus, with the host being our minds (a virus being defined as something which is dependant upon the host for survival and is useless or detrimental to the health of the host). The religion meme-virus infects the minds of people by building upon plausible assumptions, and firmly plants itself with a myriad of defense mechanisms (cognitive dissonance, pseudo-logic, association to verifiable facts, etc.). For the exact same reason that any drug addict will pursue chemicals, we willingly submit to the presence of this religion meme-virus because it has the ability to subdue our powerful fear instincts, thereby somewhat reducing the normal pains of existence. Religion is the most abused drug on Earth.

On the other hand, religion does provide a template from which culture can be defined. It defines morals and purpose, creates a feeling of well-being, instills self-government (the gods are always watching), and describes methods by which punishment can be enacted—a full and complete guide for proper living. There are plenty of qualities about

religion that are redeemingly beneficial, but also many negative aspects that reduce the overall quality of life for its members, and most of these negative qualities exist for no other reason than to placate the egos of the spiritual leaders. Science, on the other hand, has no emotional quality by design. It attempts to preclude the human emotional element in the search for the unbiased truth, resulting in it not being a very fulfilling pursuit for the ego-driven human animal, but this lack of concern for damaged egos gives science the radical flexibility necessary to accommodate the tremendous rate at which we continuously discover and assimilate new information.

MANIPULATION

Brainwashing, or rather, extended and compelling exposure to a given perspective, is the ubiquitous tool of any culture's proliferation. Any matured culture (one that has stood the test of time) affords its members a large degree of predictability in their perceived world. Despite even a perhaps largely incorrect perspective, conforming to the design of a time-proven culture will usually benefit its members because so many of the challenges faced in our perceived world are defined by the H-Freak in the first place. A culture's perspective on reality may perhaps be only somewhat accurate, but existence within its boundaries often affords its members a complete enough definition for reality such that a reasonable quality of life can be had, and our biological reproductive cycle can still remain viable.

To augment integration of people's mindsets into the established cultures and religions, specific rules are implemented to allow easy identification of rewards or punishments, and the paths or actions that will lead to either. By placing these rewards and punishments within visibility of the culture's members, actions are easily administrated and great power is afforded the leaders. Persistent education from a very young age is probably the most effective mechanism for cultural integration.

What happens though when questions arise that seem to negate the credibility of certain learned memes? Obviously if someone exposed a

"shortcut" to the rewards, then power would immediately shift away from those leaders that benefited from the members' laborious pursuit of the longer original path. It then became imperative to incorporate a degree of "denial" skills into the religions such that members were rewarded for their rejection of seemingly contradictory information to the established beliefs. This is the integration of our primitive cognitive dissonance reaction into society, and how it has been manipulated by those with power to retain that power. "Faith"-based religion (meaning don't ask any questions and deny all that is not taught by the religion) is the fundamental mechanism for preventing these colossal shifts of focused power.

This shift of power might have been overwhelmingly good for our species if it had actually occurred, but bad for the egos of the leaders that would lose their power, and so "radical" ideas were vehemently oppressed by those leaders. There are a myriad of examples throughout time where sound logic (e.g., the notion of a round Earth instead of a flat Earth) was quashed and severely reprimanded by the powers that be, in order to maintain the stability of their power.

Most religions will attempt to program people's minds with a universal overseer entity that is responsible for assessing your worth for whatever reward you may be vying for (e.g., afterlife) as offered by your religion should you conform your behavior to their design. This design for culture and religion is very successful because it has exceptional control over the constituents' independent activities even when not in the presence of another to judge those activities. People always "act" differently when in the presence of another because their egos are subtly sensing cues, negative or positive, from the other person by which they can assess their own behavior as acceptable or not. Ego placation lends to conformity. If a person always believes that they are being observed, they are inclined to act in a fashion that demands ego placation from the observer. If the observer has great value to the person (e.g., such as one that believably offers eternal life) then the person's actions will be concisely controlled to augment their relationship with the observer—even if that observer is an ethereal being, which has just as much

perceived legitimate presence in their minds as real physical beings would.

ETHEREAL ENTITY

People have virtually always believed in some form of conscious entity as our original creator/parent, even though religion has taken perhaps millions of radically different forms over time. How else could our ancestors possibly have perceived their world? The need for this entity, from the very inception of religion, is the extrapolation that anything that does happen in the observable universe has to be the will of some conscious being. Since the ancient people themselves could enact actions with conscious will, they could easily surmise that the motions of things around them must be the will of other greater beings. Having only this limited perception of reality, it would be difficult for them to understand anything moving (such as a cloud) to be a passive result of the laws of physics.

Belief in a deity as the seed of humanity is a product of religious evolution. Nearly every religion has a version of a "conscious" creator because it serves to answer our most fundamental but difficult questions: Where did we come from? What controls all this commotion around us? But the notion of a creator doesn't really answer these questions because it introduces a new question: Where did the creator come from? Some may argue that the ethereal entity has always been around; well then, why couldn't we have always been around without the need for a creator? At some point in this infinite pursuit of the "ultimate" ultimate creator, the only logical final conclusion that can be reached is that life was created as a passive result of common physics, and was not manifested under the design of some ethereal form of consciousness. We obviously did not start in our current form, but the chain reaction of life started long, long ago in a form barely recognizable as life, as a result of statistical probability.

This idea of a conscious ethereal entity still persists today as the core for virtually all religions and serves as a "catch-all" answer for any questions that are not easily explained. It is often understood as the

ultimate “parent” to humanity, the controller of all the forces (whether directly or through other gods), the ultimate punisher (instilling self-discipline, subsequently providing infrastructure for society to evolve), and the ultimate benefactor should thoust conform in good fashion. The acceptance of the ethereal entity concept very neatly completes the universe for the believers, and it is the comfort gained by this illusion of totality of perspective that makes it both appealing and virtually immovable in the face of cold, incomplete, and subjective science. From a solely sales-pitch point of view, science has a hard time competing with fantasy. Science, however, does have all the correct answers, we just haven’t learned to ask all the right questions.

TYRANNY

By instilling this overseeing ethereal entity in the minds of people, effectively the members of a culture become self-governing, self-disciplining, and quite easy to manipulate on a large scale, providing a stable enough social infrastructure for the fortification of a society that can organize and educate. Of course, that is also a weakness in that the focus of power falls onto the leaders of these religions, and where there is power, there are those that seek to take it. This is how kings and dictators came to be. Religion may control the people, but the tyranny of conquerors evolved to seek out and control the religious leaders and subsequently all the people. The more religious leaders under control, and the more people and land under control, then the more powerful the tyrannous leader becomes, and the more likely he will be able to maintain this position of power, to his great ego’s (near) satiation.

And so the egos of the tyrants resulted in thousands of wars being fought over the ages as these leaders manipulated the masses of people via their beliefs (religion, propaganda, etc.), for their own selfish power accumulation. War on the front lines is justified to the lowly fighters as a battle for honor and dignity, but at their core, all wars are a battle for resources; either to acquire them or to keep them. Behind all the hype, only the selfish leaders know the sinister truth. To clarify, tyranny can be distinguished from noble leadership by virtue of tyrants having

selfish motivations behind their decisions while, in contrast, true leadership implies motivation towards the greater good of all.

SPIRITS

Having an ever-increasing quantity of gray matter to map our world with has changed the character of the H-Freak a great many times as memes persistently continue to enter into our H-Freak's design. Our instinctual fears have fostered a plethora of incorrect memes in order to experiment with possible controls over those fears. Our fear of death, for example, can be appeased with the possibility of life after death, or with the concept of a spiritual soul; we become something that is not physical and is instead immutable. Very appealing concept, and very difficult to disprove, and as such this concept is embraced by virtually all religions. A spiritual soul just seemed to make sense because it is incomprehensible to imagine what it must be like for yourself to no longer exist. This concept of a spiritual soul was fostered by a number of other factors as well: bereavement, religious manipulative leverage, unexplained phenomena, etc.

The concept of a spiritual soul, however, is a double-edged sword; for along with all the comfort you may gain from believing you will exist forever, and that your deceased loved ones are still with you, comes the inevitable conclusion that there must also exist the souls of those that aren't so nice, some downright evil, and perhaps some not even human. What a horrifying world to live in. Fearing every dark corner, believing a specter to be the cause of unexplainable events, normal environmental stimulus exponentially magnified in instinctual fear response because of false extrapolations by the improperly programmed gray matter as to their origins. You can imagine the level of terror could be quite maddening to those who allow their minds to wildly imagine the possibilities. Of course every fear is also a weakness, and those less pious people who claimed they could control or vanquish these spirits would unduly be afforded great power and respect, preying on the ignorant fears of the believers.

DRUGS

The existence of spirits was widely accepted as a plausible cause for most phenomena that didn't have an easy explanation, and gained further credibility with the misdiagnosis of various mental illnesses (which could be interpreted as possession by an evil spirit), and the ingestion of chemicals readily found in nature that alter the way the senses work. It is widely known that some forms of natural mushrooms (the active ingredient being psilocybin) can produce severe hallucinogenic results. Prepared roots from a cactus (producing peyote) can also produce serious hallucinations. There are many substances readily available in nature that distort our sensory perception of reality, and it is understated how profound the influence is that these chemicals have had on humankind's intellectual evolution.

Non-human G-Freak creatures have a more primitive awareness of their surroundings than we as modern humans do, and to them, their surroundings are much more animated such that they perceive life where there is none—in the trees, the rocks, moving water, etc. This very ancient perception evolved to maintain a state of constant guard to protect against attack from camouflaged predators. Some natural chemicals can enhance this primitive perception in our minds, and such experiences in our recent ancestors may contribute to the meme origin of ethereal beings residing in otherwise innocuous objects (e.g., tree spirits).

Chemical abuse has exposed our H-Freak to radical perceptions of reality that our brains were not designed to manufacture. It is quite conceivable that our medieval ancestors enjoyed a regular diet of mushrooms and that occasionally they would ingest a psychotropic one, with terrifying results. Trees talking, mistakenly seeing movement, feeling something touch you: all are side effects of this powerful drug, but could quite easily be interpreted by our ancestors as spiritual interaction. A history of drugs and their abuse has introduced and/or strengthened fictitious elements in the H-Freak meme flow.

SOCIETAL EVOLUTION

The inevitable demise of any tyrannical leader stems from the fantastic success of the evolution of our meme-flow mechanisms. Education has brought people from near animal-like existence, to now affording them very sophisticated perspectives, and many revolutions have taken place to usurp the tyrannical leaders in an effort to better disperse the powers that those leaders attempted to keep for themselves, power coming in many forms, such as wealth, freedom, knowledge, etc. Each generation of society bears a new form of government and law that continues to reduce the relative influence of the religions and rather focuses on the non-spiritual needs of the people. This is a result of the waning fulfillment that religion can provide to its members as our knowledge and cultures continue to exponentially increase in complexity.

The governing bodies and laws that we create are largely designed to prevent one's personal desires and actions from superseding the needs of the masses. Some of these laws are still firmly rooted in religious origin but for the most part are separable from a spiritual inclination (e.g., common sense morals). The H-Freak is now extremely complicated because of the vast accumulation of knowledge we currently possess, and the evolution to formation of a government and laws was inevitable as religion became less encompassing to serve the needs of society's evolving members. People subsequently behaved less in a self-governing capacity, and needed another form of restraint from the feared descent into anarchy. Now the people's lack of negative actions is founded mostly upon fear of prosecution from society, rather than from spiritual penalties.

It should still be noted, though, that no matter how far removed our new lifestyles are from our hunter-gatherer instinctual design, the design of our cultures is always going to, in some abstract form, represent and fulfill the needs of the instincts so that the members of a society have a means by which to exercise those instincts. Society reflects us, it didn't create us; but it does, however, shape our future evolution. Our religions, our laws, our governments, are all evolutionary steps in the

pursuit of an ever-increasingly efficient societal and cultural design that results in the fulfillment of the lives of an increasing percentage of members. Culture continuously evolves in a direction that allows more members to enjoy their lives, with a consistently increasing average quality of life.

PERSPECTIVE

Reality never changes, we just don't know exactly what it is, but we keep evolving different and more accurate ways to perceive it. You may not think it would be fearsome to learn something new about reality, but our instincts react with abhorrence should a significant chunk of our perception of reality be disproven. Imagine what it must have been like for the first time to perceive your world as a ball, after a lifetime of believing it to be flat. It would probably be a rather traumatic experience.

Throughout the centuries, our H-Freak has changed radically many times, and yet our instinctual drives still remain nearly pure in their hunter-gatherer ambitions. Twenty thousand years may seem like a long time since we lived in our biologically ideal environment, but in evolutionary time it is miniscule when compared to the millions of years that it took to evolve our instincts to where they are today. It isn't possible for our instincts to change to any measurable degree in such a short span of time, and so we are still held captive by the primitive mechanisms that served our ancient ancestors.

Chapter 6 - Elucidation

ADAPTATION

Our gray matter has the ability to absorb and remember a great deal of information, and with this, we also have the ability to exist quite healthily within a staggering myriad of possible perceived realities (various possible forms of the H-Freak). As long as the culture that one participates in allows one's basic instincts not to be denied placation for extended periods, then that culture can be expected to thrive. It must be appreciated how quickly cultures evolve in comparison to our instincts; sometimes even within a single person's lifetime, a culture can change radically enough that a person must be able to adapt in order to continue having some form of communion with their fellow humans. This suggests that a human's genetically predisposed base personality is a very small subset of their resultant matured personality since our personalities have to be fluid and dynamic enough to adapt to the ever-changing H-Freak.

MEMORY

When the early G-Freak brains first began evolving the ability to remember, this new talent probably helped them to identify their kin, or to map out geographical terrain so they could remember where to find sources of food or protection. Since then, our brains have evolved to a large size, much larger than probably would have been necessary to overcome most of the challenges put forth by nature. No, most of our challenges now are self-imposed by our cultures. Our brains evolved to be large mostly to increase our social intelligence to accommodate the phenomenal complexity of the social structures that we create for ourselves. We all play an instinctually-propelled social chess game of positioning oneself for potential mating opportunities, no matter how complicated that game may be, or far removed our actions may seem

from mating, or even how unlikely that mating opportunity would be. Indeed, this mating motivation is most often even beyond our awareness. Our intelligence has added a great deal of complexity to our perceived worlds and so a large percentage of the environmental stresses that we now encounter are of human origin. We've already got a good handle on Mother Nature's stresses but yet we continue to increase in brain mass, exhibiting greater intelligence in order to meet the increasingly complex requirements of our social interactions.

PERSONALITY

The root instinctual drives are virtually the same for all people, and yet there are limitless types of personalities, and there have been just as many unique cultures throughout time. How can we have all these different personalities if everyone has the same inclinations? The answer lies in how well an individual person's physical and mental characteristics fit within the ideal "perfect mate" definition, as instinctually and culturally defined by the majority of people. Should a person be mentally or physically ugly as perceived by their peers, their personality evolves in a manner radically different than that of a beautiful person; each is received differently by society. This feeds their individual brains differing stimuli when encountering the same scenario; therefore, their individual gray matter records different stimulation. When these different people then subsequently probe their gray matter for a solution to satiate the instinctual drives, they each get a different possible solution to their problem, and thus they act differently from each other.

The most significant influence on a person's personality is their environment. If someone lives in a hostile environment where they constantly battle for whatever instinctual placations they seek, they may reflect that environment with a hostile personality, or perhaps with the opposite, a submissive personality. Whichever personality is most effective in producing thoughts or actions that result in the greatest tension release on the sleash, is the one that will surface and dominate.

MATURATION

Many of the instinctual inclinations of a baby as it matures through adolescence into adulthood will adapt to serve a nearly similar but more mature purpose. We all know that crying babies need some form of attention; they are trying to express some discomfort or pain they are experiencing. This crying form of communicating eventually matures into the use of language to express a need (though in extreme circumstances, the emotional pain one might suffer as an adult will once again invoke a crying reaction to express that suffering). There are many other instincts that also change in form as one matures; for example, the instinctual pleasure that a baby experiences while breastfeeding, serves as the foundation for their future matured sex drive.

At no time during life is one more receptive to one's environment than as a child. Children are literally "meme-sponges", and at an early age the only instinctual reward they recognize is the love and care from a human. As their gray matter develops and begins the accumulation of knowledge that will help them feed their sleash once they mature, they accordingly take in large volumes of information. Children's smaller brains don't have the complexity of an adult brain and therefore a lot of their stimulus processing is greatly magnified in the instinctual brain compared to an adult's reaction to the same stimulus. Their young minds do not have an educated gray matter to filter sensory information.

Because everything is so new at a young age, the brain is very sensitive to environmental stimulus and this incites powerful responses from the instinctual brain. The emotions of a young child are much more intense, almost like an animal's emotions. They feel intense happiness, sorrow, terror, etc. This time of life is critical for the foundation of the personality they will carry with them into adulthood. Everything that happens to a child during these tender years will skew their perceptions of the world as they mature. The wrong kind of stimulation can have disastrous results on their evolving psyche, forever scarring their personality by forging strong pathways of negativity in their gray matter. However, this hypersensitivity can also obviously

work to the benefit of the child if the correct positive stimulation if applied, rendering them peaceful, intelligent, and loving as adults.

Children will exhibit signs of the instinctual pulls long before they are physically ready to be sexually receptive. It's important to recognize that the instincts and pleasure center work together to create desires that manifest behaviors to increase the probability of sexual encounters, but they can each be considered independent systems. A child will develop the instinctual drives long before their sex drive has matured the "perfect mate" yearning, for which the instincts are meant to serve.

As the child mature into an adult, a vast majority of the possible cultural and environmental stimulus has most likely been experienced by the person, possibly a great number of times, resulting in a near-automatic response to daily scenarios for which acceptable reactions have been developed. However, when some new meme presents itself that results in a strong instinctual reaction, the sleash yanks the adult mind into enhanced sensory alertness such that it might afford this new information a strong connection in our gray matter. This is the shock-value of new information, which is interpreted by the person as intense interest. Children practically exist in this state of alertness, but adults tend to "coast" with previously-learned automaton-like reactions (learned from prior exposure to same scenarios) until something new presents itself.

SOCIAL INTEGRATION

In order for maturation into adulthood to be complete, humans need to share and learn the appropriate cultural memes; this need to learn is driven by the ego trying to position the person into the alpha spotlight (to be the most desirable to their "perfect mate"). Of all the forms of human communication, nothing is more compact and efficient than humor. What makes something funny? When a great deal of information is transferred (not exclusively verbally) with great efficiency from one person to another, in the form of instructions for combining previously learned memes in a way that might never before have been considered, it has the result of pleasing the communion

instinct since it exposes a large degree of mental conformity between the communicating persons. A high degree of mental conformity is required in order for that level of complexity of meme transfer to be successful, with the result that humans will "laugh" during this experience: a combination of shock-value and communion.

LONGEVITY

It was described in earlier chapters how the design of the seed was only to create a healthy entity up to the point that it also releases a seed, and that the remaining function of the seedless entity was an inevitable degradation in health, eventually resulting in death. This cyclical process frees up resources that would otherwise be consumed and effectively wasted by the no-longer-reproducing older members. However, with humankind's intellectual ability to teach and learn, it has become advantageous for our species to evolve a greater lifespan than our original instinctual and genetic design intended. If we live longer, we are able to pass on a greater amount of meme information to our offspring and this tends to increase survivability as a result of the greater control over the environment that knowledge can bring, and a broader H-Freak overall. As a consequence, we have evolved to live much longer beyond the period when we are physically capable of being reproductively viable, and this longevity is even further augmented by our medical technologies. Our intelligence has effectively increased our lifespan.

POTENTIAL

Let's loosely suggest a working figure of 10% of your personality being genetically predetermined by your instinctual pulls, and the remaining 90% being the result of adaptation to your environment. There are still subtle variations, of course, between each person's independent instinctual strengths that may color their resultant personality, but without a means by which to learn (culture, education), our resultant personality would be very animal-like, greatly dependent

upon the instincts for guidance. This leads to the interesting notion that perhaps the truly amazing people that we honor and revere, were simply lucky contenders in life who had an ideal upbringing, resulting in a wiring of their brains that lead to their greatness. Had those same people been brought up in different families, cultures, or lands, perhaps they would have instead made a fine representation of an average person, or even a complete failure to society.

It's quite reasonable to believe that there is some genetic inclination to greatness, but the drive and opportunity to harness and nourish that greatness must also exist if it is to flourish. Call it the "prospector" instinct. To have a gift, and to capitalize on that gift, must both occur for the gift to manifest into something recognizably wonderful. Imagine all the untapped talent that probably exists quietly in the minds of so many "average" people who have never had the opportunity or motivation to explore their gifts.

GENETIC INFLUENCE

So the environment determines a very large portion of your final personality; however, there are some instinctual influences. Take, for example, homosexuality. Very few Earthly species exhibit homosexuality and yet within the human species, we have a suggested 10% ratio of homosexuals (this has always been a tainted figure but will suffice for our purposes). How can our reproductive mechanism allow for homosexual tendencies since those inclined individuals mostly would not reproduce and hence homosexuality should evolve right out of the gene-pool in a couple generations? It might be easy to draw from this the conclusion that homosexuality is "learned" (which is probably responsible for at least a small percentage of homosexual behavior) and might therefore be "corrected", but the fact that homosexuality is persistent in roughly the same percentage across all cultures and races, despite varying cultural tolerances and exposures to homosexuality, lends to a more biological root.

If we look at gorillas, it is quite obvious who are the males and females. The males are monstrously huge in comparison with the

females and the sexes are each constructed very differently. This is dimorphism, or the difference in "morphing" their shapes from one sex to the other. Gorillas have a huge dimorphic ratio and as such their "perfect mate" image is vastly different between the two sexes. For humans, because of the reducing importance of physical attributes as opposed to intellectual attributes that lend to our survivability, we have continuously evolved to reduce the dimorphic value between our sexes to where it currently resides today at an average of about 15%.

Human male and female genders are very similarly constructed, with much more subdued sexuality signals than our ancestors probably would have preferred. With this evolutionary reduction in dimorphic ratio, the lines between the instinctual "perfect female" and the instinctual "perfect male" have drawn closer and now as a result, a small percentage of our offspring are born to mature into someone with the instinctual "perfect mate" ideal of partially or wholly the same sex as themselves, resulting in homosexual tendencies. In fact, because the human dimorphic ratio is so low, it will frequently occur that two heterosexual parents produce homosexual offspring.

GENDER

Though our species is gender-determined during conception, we are not so physically different between the sexes as you may imagine. A lot of the DNA instructions that create our various attributes are common to both sexes but used slightly differently within each sex. For example, if you were to invert the testes and vas deferens tubes, you would end up with the ovaries and fallopian tubes; nearly the same construct instructions but in opposite directions. The body uses various levels of bodily chemicals, such as testosterone and estrogen, to enable or disable various male or female attributes during maturation. Breasts fail to manifest in males but males gain more overall muscle mass than females, and men have a prominent Adam's apple when women have virtually none—all due to the chemical balances that existed internally during maturation. In this way, the blueprints that create humans can be mostly applied to both genders, with subtle instructional and chemical

differences resulting in substantial overall distinctions between the sexes.

SATISFACTION

It was mentioned earlier that it is virtually impossible to fully satiate our instinctual mind with the limited range of imperfect placations that we can feed it today. That's partly a result of our current reality perspective suffering from frequent radical changes in the H-Freak's perception of reality over a very short period of time, and our instincts not having enough time to adapt to our new environment in a way that naturally and easily provides us with a feeling of well-being. That sought-after feeling of well-being is today a hard-won reward which has to surface through many layers of cultural abstraction from our pure instincts, and even then the sense of well-being is not quite fulfilling since it is defined by a culture very far removed from the clarity of our pure instinctual desires. As well, the technologies that we create to help us in our lives, lead to a host of new environmental stresses that we are not well suited to deal with, and this again compounds the difficulty in pursuing placation of the instincts.

TECHNOLOGY

No longer confined to the climates and landscapes of our ancestors, we have developed systems of division of labor that are greatly optimized and can achieve exponential control over our environment. Now we live in perfect caves (buildings), we have running water and sewage control, the need for hunting is virtually obsolete, and we can travel over great distances. However, the cost to the bulk of humanity has been indentured servitude. Too often for a great portion of our waking hours, we are devoted to the toils of wealth accumulation, far beyond the degree that the design of a hunter-gatherer-evolved creature such as ourselves, is fit to absorb. As a result, our bodies and minds undergo considerable "stress" reactions, leaving us in a constant

state of anxiety, lack of fulfillment, and increased durations of extreme sleash tension.

The technologies we create to control our environment are the result of our exponentiating intelligence finding increasingly more complicated and concise ways to satiate the sleash. One of the unfortunate side-effects of our evolving H-Freak is that it has surpassed the innate protection that our instinctual design provided for us in nature, and now our intelligence has afforded us tremendous insight into how our bodies and minds work. There are many medical advantages to this higher intelligence that allows us to exercise our altruistic and self-preservation instincts in a way that nature could never grant us; however, knowing too much about how we are constructed can also be negative to our health because of our newfound ability to tap into our biology in ways that Mother Nature would never have allowed. We have no natural safeguards to protect us from the awesome power of new information; as in our lack of specific instincts that force us to act responsibly with the knowledge of how our bodies and minds work.

QUICK-FIX

Enter the "quick-fix". Early G-Freaks had a hard time cheating nature's design in the pursuit of pleasure. They had to earn it the old-fashioned way, through the instinctually-founded actions that might result in tension release on the sleash. Modern humans have it a little better, though. With our massive intellect, we have evolved a myriad of ways to bypass our instinctual brain's design and get right to what's important, pleasure. Ultimately, pleasure is all that matters.

The quick-fix is defined as a means by which a person can reduce the tension on the sleash in a way that doesn't necessarily increase the probability of a sexual encounter, and in some cases can be detrimental to the recipient's health. These quick-fixes may be relatively easier to obtain than other forms of sleash-relaxing activities and therefore the person can fall into a dependency for that quick-fix, resulting in "addiction" and subsequently the performing of possibly detrimental activities that complement that addiction. Those of us who have a

relatively difficult time satiating the instincts in a normal healthy way for whatever reason (e.g., stress, unattractiveness, self-esteem issues, etc.) are especially susceptible to the allure of addictions.

An interesting notion is that we are addicted to our instinctual pulls. We are addicted to sex, food, power, etc. The term addiction often tends to the negative but by definition we are quite helpless to the addictive pull of the instincts. The addictions that we'll address, however, are not intended for our design by Mother Nature. One of the very few entirely healthy quick-fixes that humanity has evolved is masturbation. Masturbation is a relatively recent evolutionary step we have taken, one that bypasses our natural mechanism for obtaining sexual encounters. If you want to see how powerful our sex drive really is, try not masturbating or copulating for a couple weeks. Very distracting, to say the least.

Having the ability to masturbate is complementary to having intelligence. If we could not masturbate, there would be no readily available relief from the constant pull of the sleash, and indeed it would be difficult to concentrate on performing intellectual activities. Masturbation simulates to a lesser degree the function of orgasm, allowing our species to temporarily somewhat relieve the sleash tension, enabling the individual to invest more deeply into intellectual pursuits that might afford them a greater overall environmental control, with the consequent result of satiating a greater number of the instincts.

The appeal of the quick-fix has also resulted in some serious negative human conditions as well. Chronic habits such as smoking, caffeine, alcohol, illicit drugs, gambling, worship, excessive or unhealthy eating, etc., that all temporarily relax the sleash tension with sharp spikes of artificially induced instinctual gratification, are usually administrated at the expense of the person's mental and/or physical health. The foundation for the masochistic quick-fix's blind appeal lies deeply rooted in the reaction of the sex drive to instinctual placation. The natural relaxing of the sleash is a result of it being "distracted" by stimulation from one of the instincts. If the instincts are not being stimulated then the sleash can focus on pulling, but if some of the instincts are being stimulated naturally because of the person's exposure

to appropriate environmental conditions, then the sleash is distracted and relaxes. There is no way for the instinctual brain to distinguish artificial from natural instinctual placation, and so if a person finds an artificial means of stimulation, the instinctual brain will still become distracted, relaxing the sleash in the same way as if it were receiving natural instinctual stimulation.

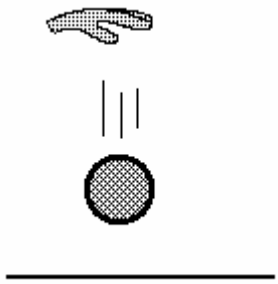
CLOSURE

Hmm, seems like humanity is starting to act in bizarre ways that nature never intended, or could have even prevented. Every time nature gets hold of our advancements, we find yet another way to cheat the system. Now here we are, countless humans, complete masters of our planet, the top of the food chain, a plague upon the Earth. What happens next?

Chapter 7 - Emancipation

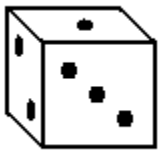
FATE

Fate. Can we predict the future? Absolutely not—not with 100% accuracy anyway. It is impossible to take into account all of the variables that our universe imposes on us. In order for us to be able to make 100% accurate predictions, we have to have a "closed" system, a scenario where all the variables are known. Dropping a heavy ball from your hand to the floor is very nearly a 100% predictable result.



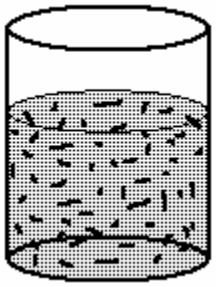
No matter how many times you release the ball from your hand, the effect of gravity will push it to the floor. Very predictable.

Some nearly closed systems can be more complicated, but still exhibit some levels of predictability. Repeatedly rolling an evenly weighted cube die with numbers one to six on the faces will result in each of the numbers appearing topside with the same approximate frequency as any other number.



It may not be possible to always predict which of the six faces should show up on any given roll; however, it is impossible to roll a seven, for example, and therefore the results are somewhat predictable. This illustrates a very nearly closed system with predictable averaged results over many iterations. The predictability of knowing that each of the numbers will appear approximately the same number of times as each other, rests in the simplicity of a system with a limited number of variables involved. A simple mathematical formula will predict for what percentage of the rolls a given number will appear.

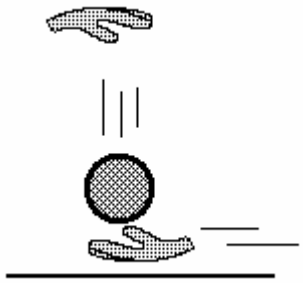
And still other systems can appear completely random. For example, to a jar full of water, add some tiny flakes that are visible in the water and are light enough to be caught by the motions of the water (like crushed tea leaves). Put a lid on the jar and shake it vigorously. Placing the jar on a table and observing the results reveals a collage of flakes winding chaotically and apparently randomly about, hapless victims to the water currents.



This is called “Brownian motion”, and is an example of conceivably “random” motion. The apparent randomness of any chosen flake’s motions is the product of our not being able to measure and incorporate all the variables that combine to give the result witnessed, into a mathematical formula that can predict the result. This may appear to be a closed system but there are also many variables that influence this system that may not be obvious, or are not even contained within the jar. Some of the variables of this system might be: water temperature, flake mass, flake count, glass surface friction, glass temperature, surrounding air temperature, ambient light, humidity of glass outer surface, etc. It

would be very difficult to predict the path and orientation of any particular flake without knowing absolutely every single variable that affects it. In this example, those variables would be virtually impossible for us to completely enumerate and measure accurately enough within a meaningful timeframe and then process in a mathematical formula that exactly models our real-world system; hence, this system appears truly random to us.

That's not to say that it is indeed "random"; quite the contrary, there is no such thing as randomness, only "apparent" randomness because of our inability to construct a mathematical model by which we can predict the system's results. Even seemingly closed systems, like our ball-dropping example, still suffer from external influences (ball being caught by an unexpected hand, a meteor strike, etc.) that may have virtually no measurable probability but still negate the possibility of an absolute 100% predictability.



Sometimes the ball does not make it to the floor

It's impossible to extract a truly closed system from inside our universe that can be considered independent of its surroundings, since there will always be the possibility of external influences on any system, no matter how slight they may be. The only truly closed system might very well be the universe itself. In order to predict what happens next in the universe, you would have to know the properties and energies of all locations of space, which includes all particles, photons, and empty space, and then incorporate all this information in a meaningful way such that predictions can be made. Not possible. So we are left with extrapolating predictions from limited, or grouped, information. This is

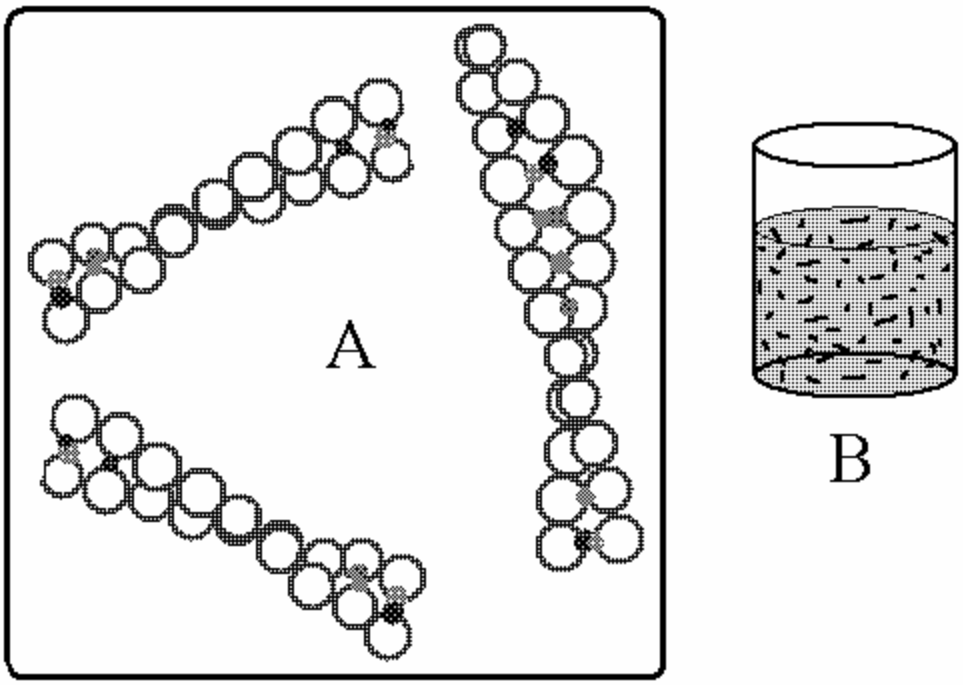
not to say that since events aren't 100% predictable, they must therefore have some degree of "randomness" to it, but rather that our observations of the universe will never be completely accurate and so our predictions and knowledge will always suffer at least somewhat from incomputable factors.

The non-existence of true "randomness" also means that "fate" is built into the universe. Nothing happens by accident. This is not meant to imply that fate was "consciously" constructed, but that the universe's agenda will unfold in an exacting prescribed manner, with no more purpose than a boulder rolling down a mountain. Similar to our example of the ball dropping to the floor, all particles in the universe are constantly interacting with other particles and they will always interact in *exactly* the same prescribed manner every time for any exactly-defined scenario (assuming you had all the variables that define that scenario; the obtaining and combining mathematically of all those variables already having been described as incredibly difficult to accomplish). Understanding and believing that fate exists is fundamental to the understanding of the root meme of science: mathematics. Nothing in the universe is spared the mechanism of mathematical prediction, no matter how complicated its system may appear to be. Accepting that fate exists means that even the most apparently random mechanism (like the Brownian motion we looked at) is an exacting system that has a precise, predetermined outcome.

ORDER

What is meant by the term "order"? Order is the organization and activity of particles and particle bodies that results in a common goal. On the other hand, we tend to think of chaos as that which lies outside of our ability to extrapolate any form of predictability, and it may seem natural to associate chaos with randomness, of which we have just denied the existence of; so is chaos then order? No. Chaos is a system just like order, but the difference between them is not randomness (which doesn't exist), but the ability of individual elements to combine in function to achieve a common goal that the elements would be

helpless to achieve alone. Our order mechanisms (such as DNA) are an assemblage of elements that work together to create more order. The constituents of a chaotic system (e.g., our Brownian flakes), however, do not work together, and this distinguishes it from order.



A: DNA is an example of “order”, where all parts are organized with an underlying purpose
B: Brownian motion is an example of “chaos”, where none of the parts combine for a common goal

The universe may seem randomly disorganized but it is indeed a perfectly closed predictable system, for which it is unfortunately well beyond our ability to gather all the necessary parameters for making predictions. Still, despite its incomprehensible size, everything in the universe is connected to everything else, all parts of the system are accounted for, and each part contributes to the universe’s agenda as a whole.

CHAOS

It might be acceptable to define the period just after the universe was created, as the most chaotic layout of all the particles that ever existed in the universe, more than at any other time in history. Things just can't get more disorganized and seemingly random than what must have resulted from the Big Bang. As time passed though, eventually this chaotic mess started becoming more organized as the gravitational and magnetic forces of the universe exerted their properties upon all these particles such that eventually they formed stars, planets—and life. Life is the most concise form of order that currently exists in our universe, having the ability to intercept environmental energy (sunlight, chemical energy, etc.) and utilize it to rapidly create further order at an atomic level. Life at its most primitive stage was simply a collection of atoms that could replicate its design, and this process has now evolved over countless eons to produce these colossal vessels that are our bodies; and yet, each atom in our body is part of a larger purpose. Life is pure order.

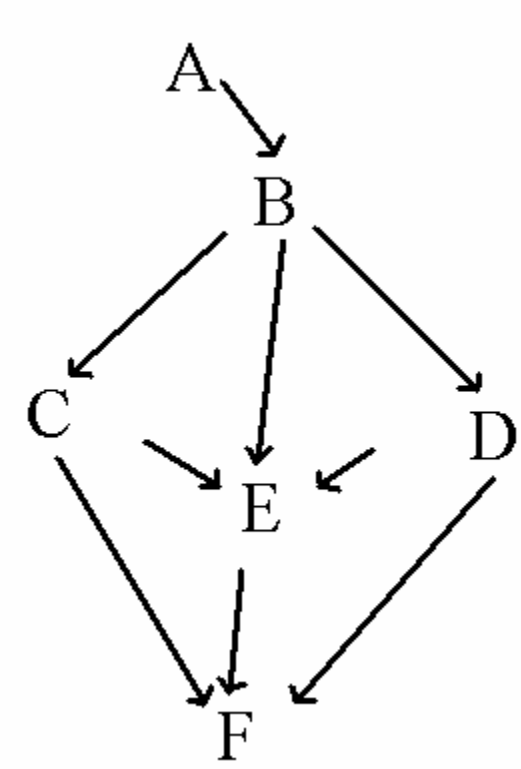
ENERGY

Life also has the property of leveraging any accessible energy it can find, to augment its pursuit of acquiring even more energy. The more evolved and complicated a lifeform is, the more exponential is its ability to seek and release trapped energy (photosynthesis, digesting food, etc.). This means that all forms of life tend to evolve abilities to seek out and release much more energy than the amount simply needed for their own creation, and this surplus of utilizable energy allows life to create as much new order as possible. However, some of this newly released energy inevitably escapes the clutches of life and may be wasted if it reaches the perimeter of the universe unintercepted; the process of life is therefore accelerating the cooling of the universe in its own selfish pursuit of order creation.

Gravity and magnetism are the driving forces behind any energy release once that energy has been unlocked. Unlocking it, however, can sometimes be difficult. Easily-accessible forms of energy (such as

sunlight) have many “consumers” all competing for the same energy, whereas more complicated forms of energy (food, fire), require increasing complexity of the consumers in order to gain access to that energy. This reduces the number of competitors for difficult-to-acquire energy. Simply put, the more complicated a form of life is, the exponentially more energy it can tap.

This would seem to suggest that gravity and magnetism indirectly drive life to evolve into more complexity. To demonstrate how, consider that for most plants their primary source of energy is the very limited sunlight that falls upon their bodies. Herbivores require a great deal more energy to exist and so sunlight alone could not possibly sustain them; they evolved the more complex ability of stealing energy by consuming plants, which exposes a colossal amount of readily available energy. Next would be the carnivores that have evolved enough complexity to be able to strategically prey on just about anything else that’s alive, stealing their victim’s diligently acquired energy. We humans have a complexity that not only allows us to exert a minimum amount of energy in our acquisition of personal sustenance energy, but we have also created countless energy-requiring machines and other apparatus that hugely magnify our energy requirements and consumption. To meet this demand for energy, our intelligence has discovered sources of energy (e.g., fire, nuclear power) that are impregnable to less complex forms of life.



Life's Energy Flow Tree
A: Sunlight
B: Plants
C: Insects
D: Herbivores
E: Omnivores
F: Carnivores

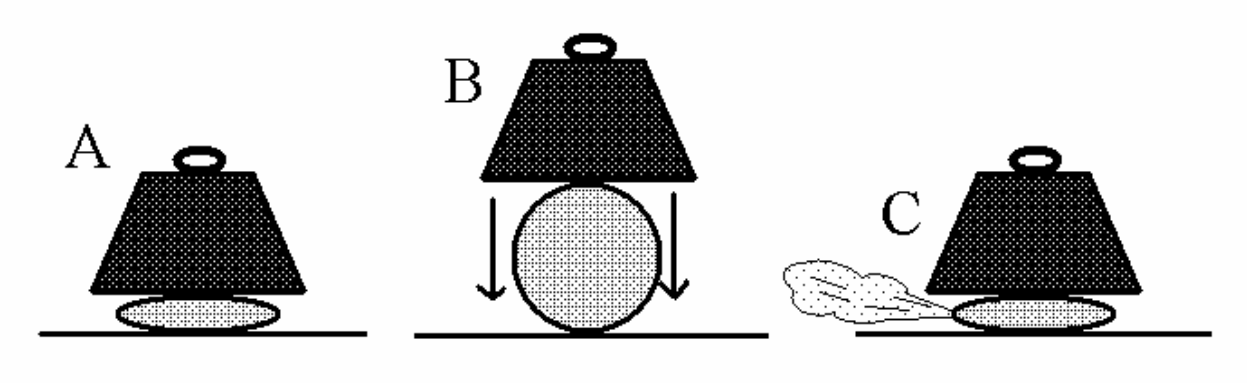
GRAVITY

While magnetism makes only a modest contribution to assist in the discharge of unlocked energy, gravity is the primary fuel for the complexity of life because of the tremendous amount of gravitational pressure (to be explained) that is ultimately relieved by the giant swathes of trapped energy that more complicated life can release. Intelligent life, being the most complicated form of order created thus far, serves as the key to releasing trapped energy in huge ratios with respect to the original investment of energy needed to unlock it. Gravity is the ultimate catalyst and power-source of order, and increasingly intelligent life is the universe's path to higher order. Without gravity, no energy-emanating

bodies could form in the universe, and no order could exist in the absence of this energy; chaos would dominate, and there would be no concept of life.

What does relieving gravitational pressure mean? Getting back to our original gravity analogy with Bart and Angel: when enough distance separates them, they will individually spherically stretch the bether immediately surrounding themselves, a total of (nearly) two particles' worth of bether stretching. When they are immediately adjacent, however, their combined bether stretching effects overlap one another and the total combined bether stretching is noticeably less than two particles' worth. This difference in the amount of bether stretching is what fuels gravity and pushes the two particles together in an effort by the bether to relax some of the stretching that these particles impose individually. So, for example, if we separate atoms by adding photon energy to their electron orbits, thereby forcing each of the atoms to require more room, we are increasing the gravitational pressure that exists between the particles, and this pressure squeezes that newly added energy.

To analogize, if you place a weight on a deflated ball, the weight will be virtually in contact with the floor. Now if you pump that ball full of air (representing energy), the air is now forced to bear the weight in order to keep it separated from the floor. If that air is somehow released (tapping the energy) then gravity is responsible for squeezing that air out and the air is relieved from the gravitational pressure it endured while trapped in the ball.

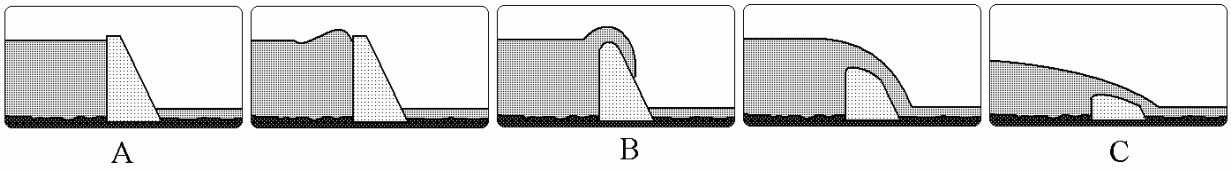


A: Heavy object sitting on empty ball
B: Adding air to the ball (simulates adding energy between particles) will separate the object from the ground, and the air has to now bear the weight of the object
C: Releasing the air (tapping the energy) relieves the pressure on that air and allows the object to come into contact with the ground. Gravity assisted the release of air (energy)

This simulates the effect of releasing a particle's photon energy, allowing particles to come into closer contact, somewhat relieving their combined pressure on bether. Gravity fueled this energy release by squeezing it out of the object, relieving some of the gravitational pressure between particles that the energy imposed.

LEVERAGE

How can the utilization of energy result in a greater discharge of energy? Much like a sand dam holding a large amount of potential energy in the form of a motionless body of elevated water. If you were to borrow a little energy and make big enough waves so that they spill over the top of the dam, the dam will eventually wear down to the water level and the resultant flow of water through the break in the dam would eventually destroy the dam, releasing all that stored energy in the elevated water.

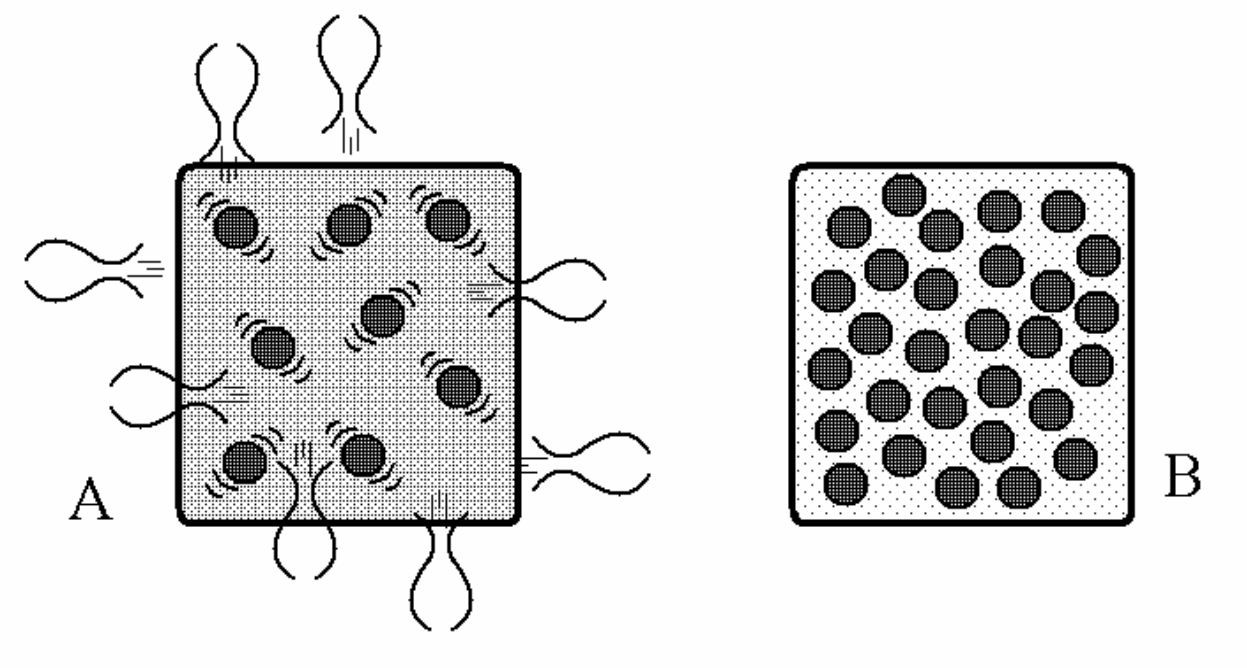


A: The sand dam will hold the elevated water forever...
B: ...but if some energy is added to the system, the water can overwhelm and break down the sand structure that contains the water,...
C: ...eventually releasing all the trapped water
A little bit of added energy released an exponential amount of trapped energy

This analogy for releasing stored energy is easily applied to most forms of stored energy; the trick is to discover how to unlock it (e.g., rubbing sticks together till they ignite, or inciting a nuclear reaction, etc.). Borrowing a little energy can release a lot more energy if it is done intelligently, which is why the system of intelligent order that borrows energy can flourish, since it can learn to utilize, and propagate itself from, the resulting release of trapped energy.

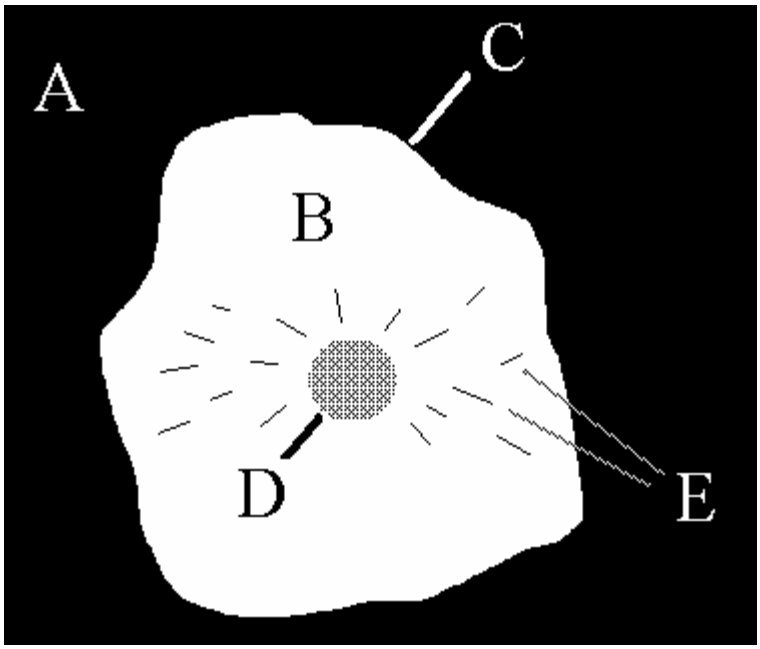
ENERGY FLOW

The light energy being released by the sun and other stars is the consequence of the universe falling from the Big Bang's originally high-energy state to an inevitable no-energy state. Any spatial structure that is not at a temperature of absolute zero will radiate energy because the effect of gravity will relentlessly squeeze the atoms' electrons into lower orbits where they occupy less total orbital radius, forcing them to release photons of energy until the object reaches absolute zero.



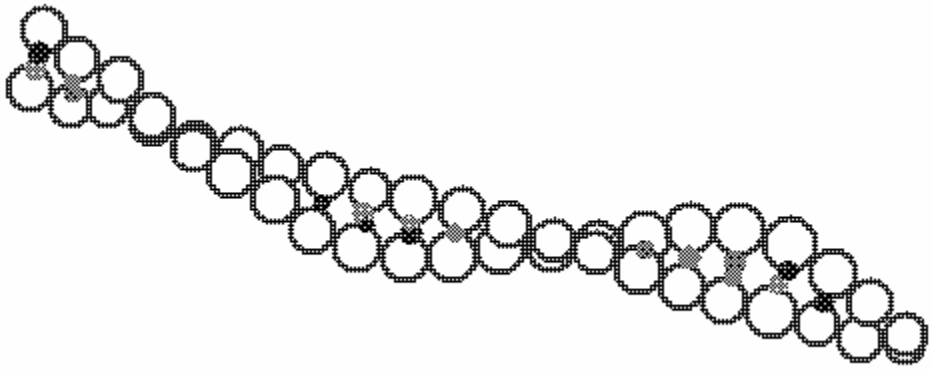
A: Gravity puts the squeeze on atoms, forcing the electrons that orbit them to take lower orbits, thereby releasing photons of light energy
B: When the object reaches a temperature of absolute zero, its particles will be very close together. Gravity has squeezed out all of the light energy that was keeping the particles separated

Since particles in a body are always under the influence of gravity and magnetism, they are virtually always releasing photons if they are above absolute zero. Inevitably those photons will take a path that hits the universe's perimeter, wasting that energy forever.



A: Infinity
B: Expanded bether
C: Perimeter of the universe
D: All particles in the universe
E: Light that will reach the perimeter
Any light energy that reaches the perimeter of the universe is wasted

Life systems within our universe that intercept this energy flow can utilize the energy for the formation of their own spatial constructs.



Life intercepts energy and utilizes it to build spatial constructs, such as DNA molecules

When the order of life begins forming, it creates a chain reaction that continuously and exponentially creates further order in the universe by

utilizing some of the unregulated energy flow that would otherwise be wasted in the universe's cooling process: and as the complexity of life increases, it continuously evolves new ways to release trapped energy that might otherwise remain dormant.

INTELLIGENCE

It may seem that the larger a living creature is, the more energy it takes to assemble it and therefore it should be less likely to have evolved since energy is a highly competitive resource. As mentioned earlier, however, instinctual ingenuity, or intelligence, however subtle, has the ability to release swathes of trapped energy resources that would not be available to smaller, less complex lifeforms, and therefore larger bodies can and do tend to release and utilize exponentially more energy during their lifetime than what was consumed to merely facilitate the construction of their bodies. Larger, more complex life is not limited to the same energy resources as less complex forms of life. This means that more complex life is naturally selected for in the evolutionary process. You can consider all living bodies to be conduits for energy flow: the little energy that was absorbed to create these conduits, is greatly offset by the total volume of energy they convey (or cause to be conveyed) during their lifetime; as such, even larger-bodied life can still be considered part of the universe's cooling process, in fact, larger-bodied life represents an advanced stage of the universe's "falling" into order.

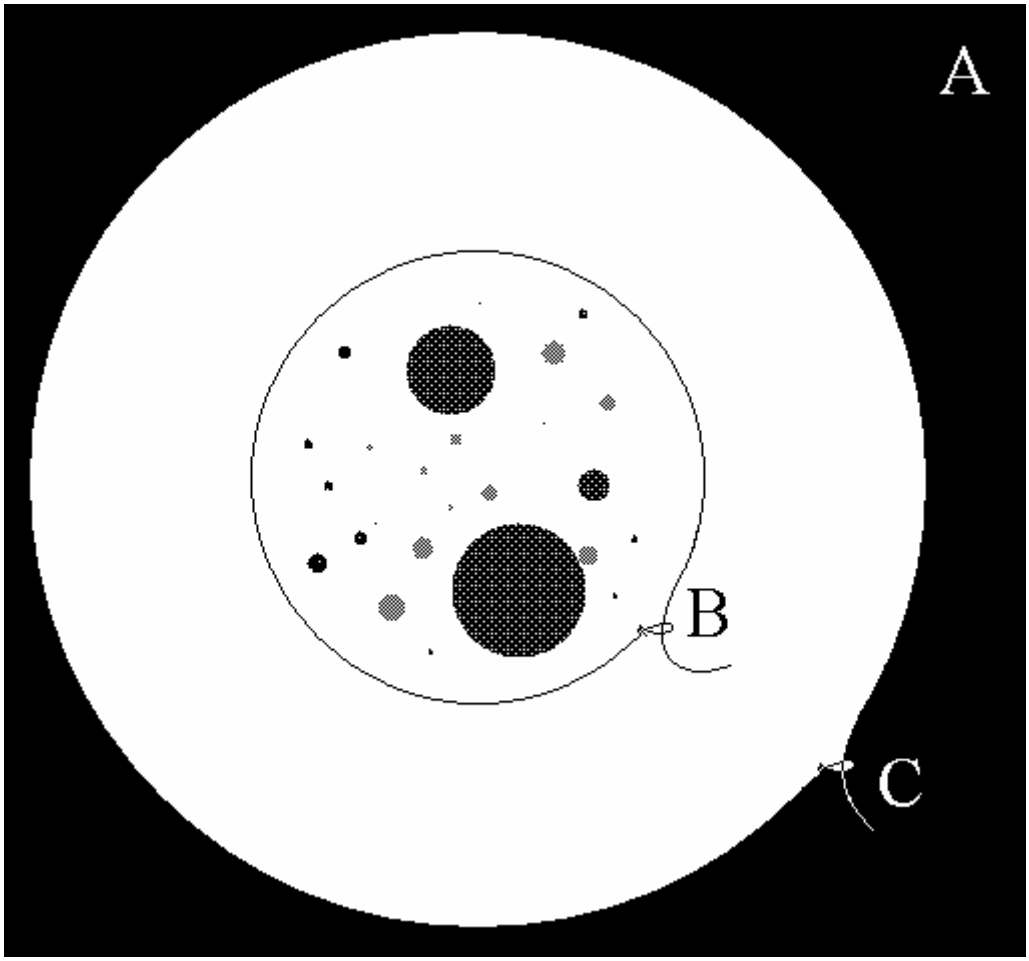
COOLING UNIVERSE

Life serves as an energy flow valve that diverts energy from a variety of sources, to flow through the mechanism of life, with life borrowing most of that energy to create further order. If order didn't create further order, eventually all of the currently existing order in the universe would eventually degrade into chaos through various reasons, such as entropy, or injury, etc. While it might be theoretically possible to efficiently convert most of the intercepted energy emanating from the

stars into the formation of spatial constructs (life, or other types of energy-requiring systems), it is most likely impossible to capture all the stellar energy, much less convert it with 100% efficiency into the controlled mechanical construction of things. There will always be some continuously wasted energy that eventually reaches the perimeter of the universe, and is lost forever. A simplistic way to look at the universe is to visualize all the particles and photons vibrating but everything slowly coming to a stop as the vibrations continue to reach the perimeter; like a giant bell that has been rung and is slowly getting quieter and quieter, until it is silent.

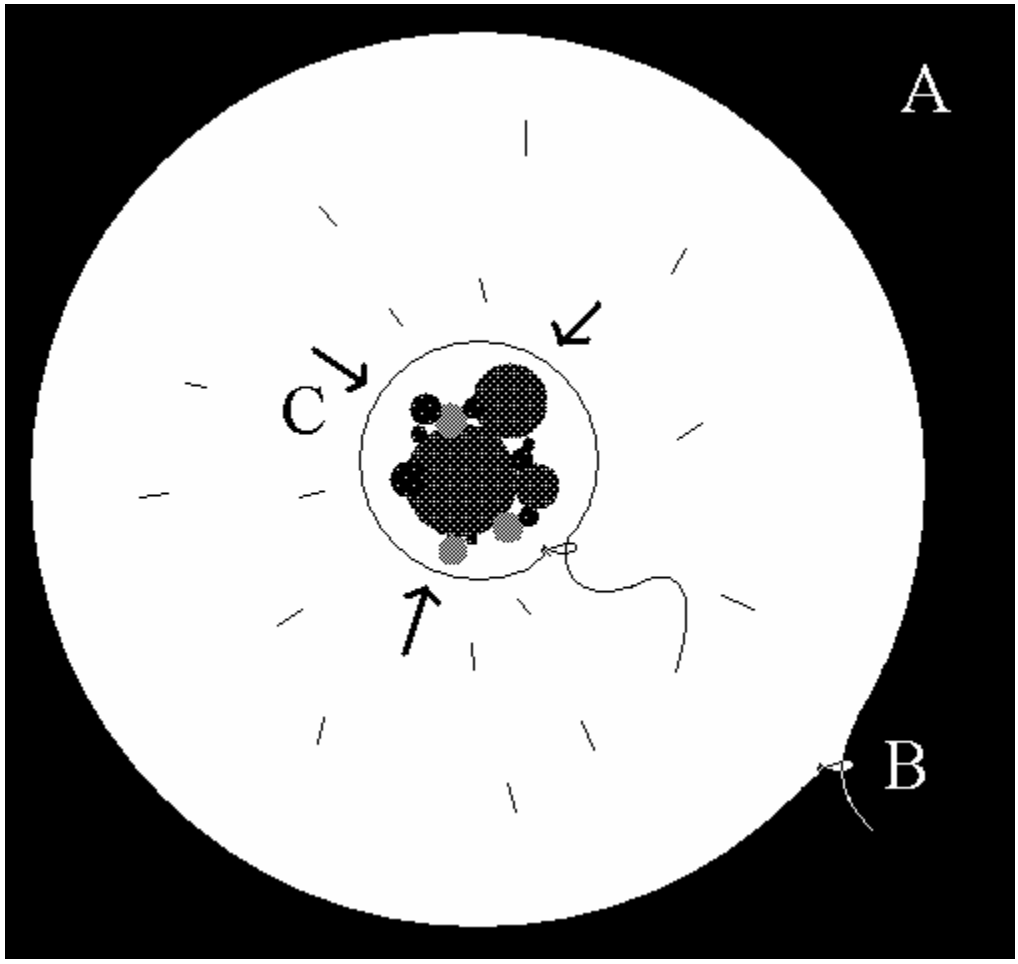
WASTED ENERGY

To demonstrate how chaos plans to complete the universe, let's create a simple model. Imagine that you had all kinds of small shapes spread out and flat near the center of a table. The pieces represent the particles and larger bodies in the universe. Next lay a length of string in a tight circle around the entire mess of puzzle pieces such that the string barely surrounds the outermost pieces. This is the size of the "matter" portion of the universe. Now place another much larger circle of string around the smaller circle. The outer string represents the "perimeter" of the universe.



A: Infinity
B: Matter circle
C: Universe perimeter circle

Now slowly pull on one end of the matter string so that the circle it forms shrinks in size, forcing the pieces it encircles to come together haphazardly. This is the effect of gravity. As gravity continues the squeeze on the puzzle pieces, they get closer together, and hence release photons to accommodate the pressure.

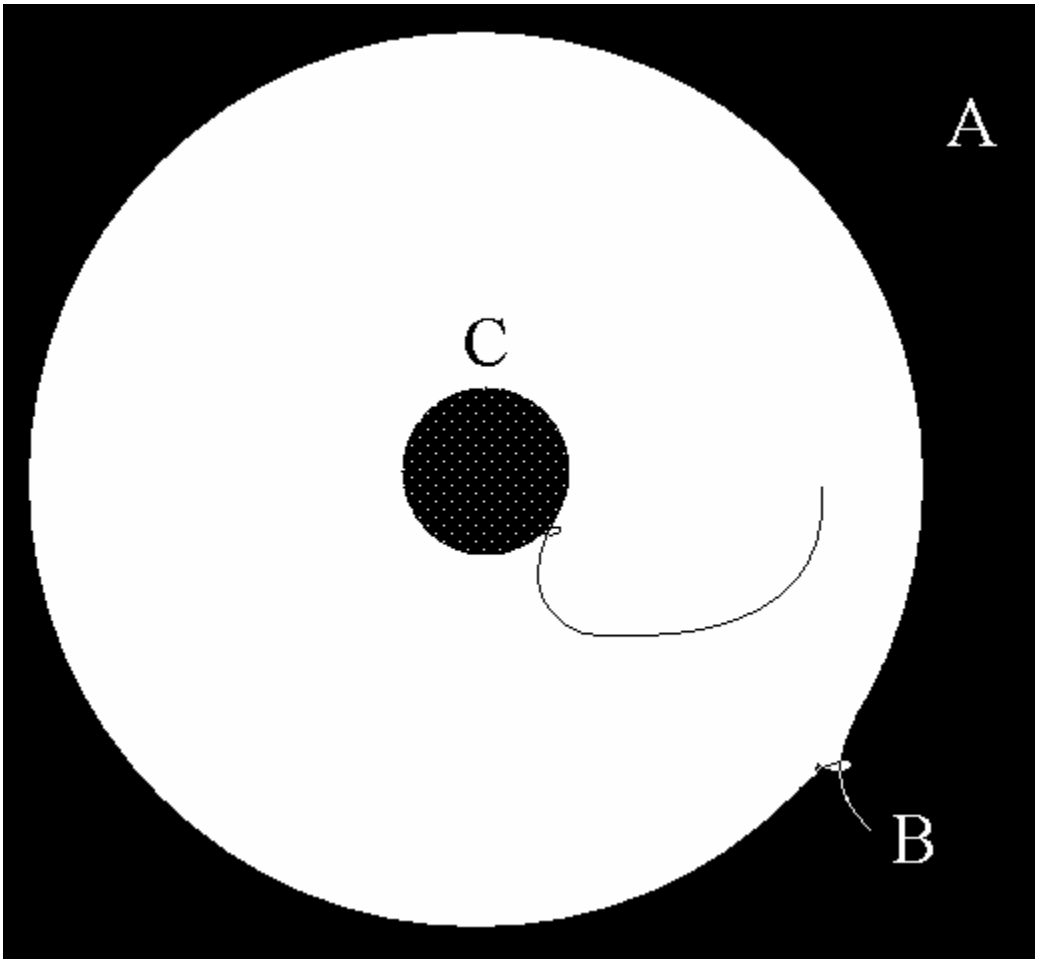


A: Infinity
B: Universe perimeter circle
C: Gravity squeezes out photons

As photons are released, the puzzle pieces that release them get incrementally closer to adjacent pieces, allowing the matter string circle to continue shrinking. Eventually the photons journey out of the matter circle (after possibly visiting many other particles in the matter circle) to finally reach the universe perimeter where the photon energy is wasted. This is the current state of the universe today.

It may seem that at some point in the very distant future, after shrinking the matter circle enough, the pieces would all be in contact with each other and the matter circle could not shrink any more, resulting in the pieces not being as compact as possible, leaving lots of wasted area (potential energy) between the ill-fitting adjacent pieces. But in fact, the effect of gravity is so powerful that despite the irregular

pieces being in direct contact, they continue “crushing” into each other, “squeezing” in to fill in all the gaps even between atoms, until there is no unoccupied area left, leaving a perfect, incredibly dense, sphere.

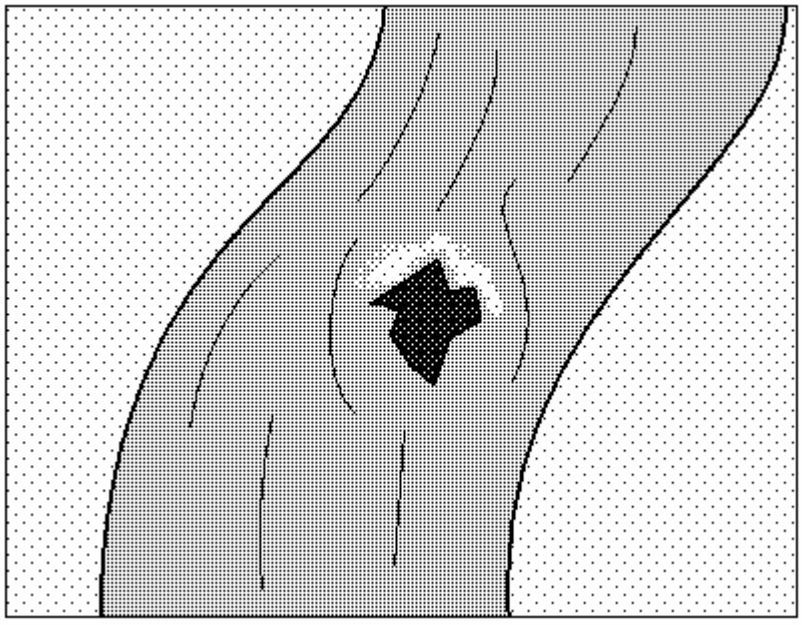


A: Infinity
B: Universe perimeter circle
C: All matter will eventually be compressed together, with no remaining light energy

The gravitational pressure of all the pieces forced together is so great that the distinction of individual particles is lost as they become mashed together and congeal into a solid mass of super-particle material, forming a colossal black hole. This is the inevitable fate of all matter in the universe.

UTILIZED ENERGY

Now, where does order (such as life) fit into all this? From the beginning of time, ambient energy flow has interacted with the particles in our universe, generating a continuous process of random order creation, passively creating simple structures until one is serendipitously created that can recreate itself, beginning the chain reaction of life. Like water bouncing off a rock a short distance back upstream in a river, life started in that little blip of improbability that tends upstream (the utilization of energy) in the emptying flow of the universe's energy.



Water bouncing back upriver, briefly opposing the force of gravity, is an example of passive interception of water flow. Likewise with energy flow, it is within the focal point or reflection of ambient energy flow, where the opportunity for order to be created (such as life) can occur

ORDER TEAM

And that brings us back to us humans. Our instincts give us the foundation for our purpose in life, providing various motivations for us to act in ways that may result in reproduction, reproduction resulting in DNA continuing its lineage, and more order being added to the universe.

Order is the ultimate root of everything we are or do. When anything imaginable is broken down enough, it either fits into the "order" category, or the "chaos" category.

We are on the "order" team, which is responsible for the intercepting and utilization of energy flow (whether we released it, or the closing matter circle did) for the purpose of creating more order, and therefore every single attribute of our being stems from this innate purpose of order. The universe truly favors the order team because of its exponential ability to replicate and evolve efficiency, giving order a huge advantage over chaos in terms of effectiveness. It might therefore be accurate to state that once life started, the universe began "descending" from chaos into order.

CHAOS TEAM

The chaos team is responsible for recklessly closing the matter circle and wasting as much contained energy in the universe as possible before the order team has found a way to utilize it to make more order. Who will win? That depends on how soon the order team got started. Chaos had a big head start because right after the Big Bang, there was virtually nothing but chaos, and energy was wasted at a phenomenal rate. The order team couldn't even begin competing until the stars and planets were created, but even then its most important members, life, didn't happen right away. Life needs a "nucleation" point, or rather, the very first reproducing molecule, to randomly manifest into existence in order for life (concise order) to begin propagating. This took a long time because of its sheer improbability but the conditions needed for the random assemblage of the atoms necessary for life inevitably came about, and now the order versus chaos race is on.

INTUITION

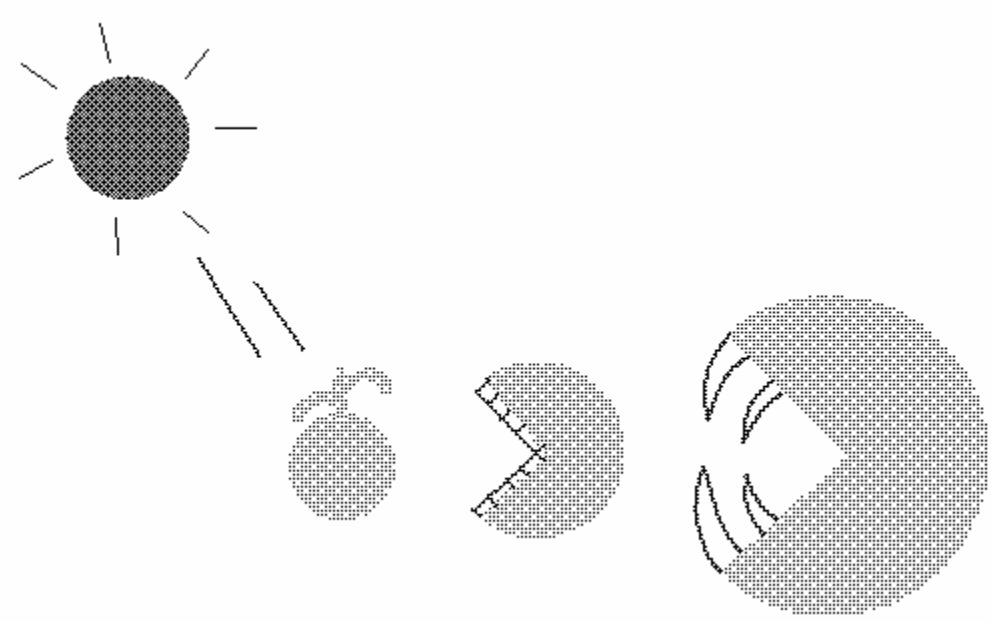
Our intuition, or "gut feeling", is our innate ability to sense mathematical infrastructure in any given system. We have evolved to necessarily follow our intuitive inclinations, sensing the chaos that exists

outside of this intuition, and our species benefiting from the ability to instinctually recognize the mathematical patterns underlying a given environmental scenario. The sleash is evolutionarily designed to manipulate us in “intuitive” ways that statistically afford us the most control of our environment in an effort to maintain this order that we have evolved into through a long chain of generations past. We are always evolutionarily “falling” away from a state of chaos, and towards increasingly more efficient energy utilization.

Our instincts “point” us towards efficiency. For example, on Earth, the net solar energy that reaches the planet is the final determinant of how much life can exist here, which also pressures the evolutionary changes to increase the efficiency with which life absorbs and utilizes this finite energy. Because energy is such a competitive resource, the design of life must continuously evolve to become increasingly more concise in order to meet the necessary efficiencies needed to remain viable, or else be forced to increase in complexity in order to gain access to the reservoirs of more obscure energy. Generally though, much evolution has to occur before a new plateau of energy resources becomes accessible to a lifeform and so this lifeform would have spent a considerable amount of time evolving to optimize its energy utilization on its current energy resource plateau before it evolves the ability to go to the next one.

LIFE ENERGY FLOW

Life can be simplified to the concept of “energy sponges” that can combine and grow in volume. Picture the planet covered with an endless quantity of these tiny energy sponges (e.g., plants, insects, etc.), and larger energy sponges (e.g., herbivores, birds, etc.) rolling over and completely absorbing these smaller ones, accumulating most of their energy, and finally the largest energy sponges (carnivores, omnivores) absorbing anything smaller than themselves.



Energy on Earth flows through life starting from the sun, through plants, to plant-eaters, and finally to meat-eaters. Each level soaks up energy from the level below it, like an energy sponge

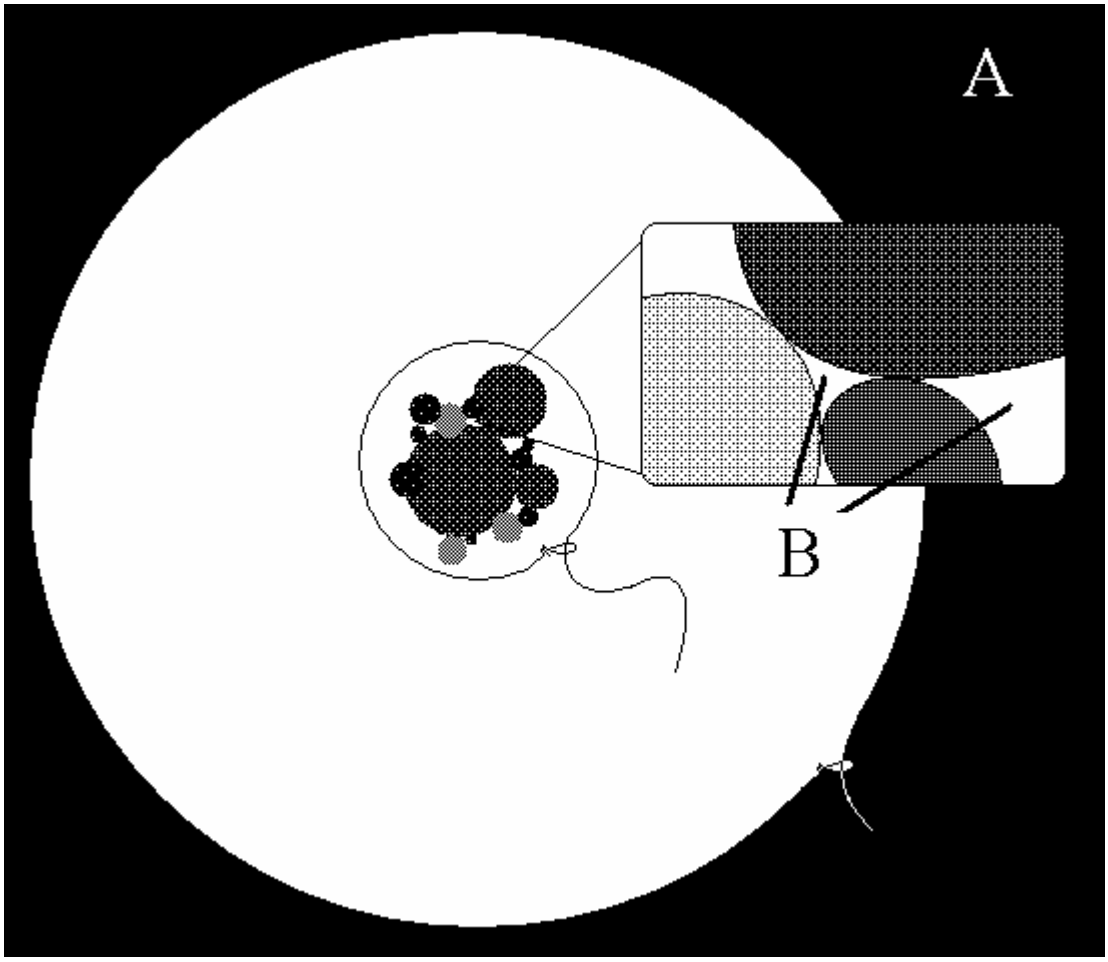
All of the sponges absorb energy until saturated and then continuously release any further energy that is absorbed (as heat, motion, etc.), forming a state of equilibrium. The ability to consume more energy than what is needed merely to subsist provides them the extra energy necessary to subdivide and create another energy sponge. Before life on Earth, the sun would heat the Earth's surface with its solar radiation, and then that energy would be directly released back into space as heat radiation. These days, however, energy flows through a very complicated system in which some of the energy travels a mightily complex path of various life conduits before it gets released back into space.

FUTURE

Having reduced ourselves to a fairly simple abstract concept, we should now look at what fate has in store for the H-Freak. Of course there is no way to predict exactly what is going to happen, but the understanding of our universe as thus far presented lends to some simple

mathematical extrapolations. You'll remember our dice example that had apparently random results, but with an underlying system that dictates all the numbers will show up approximately the same number of times over a large number of rolls? Likewise, as it has from the beginning of time, the universe has an underlying system that will predictably continue to formulate increasingly more concise and efficient mechanisms that capitalize on energy to form order. The more efficient and concise the apparatus is in its energy acquisition, the more likely it will be to surface and eventually dominate since this mechanism directly complements the universe's descent into order and will be afforded the assistance of gravity (no matter how far removed the process may seem from gravity).

The wasted area (potential energy) that exists between our tightly packed matter pieces isn't necessarily going to have to sit there and wait until gravity finally squeezes out all the light energy by crushing everything.



A: Infinity
B: Potential energy

If we had a means by which to reorganize these pieces such that more of them fit together better to release that much more energy, then whatever system is capable of arranging the pieces would be able to access a supply of energy inaccessible to other less crafty systems. These "smarter" systems would therefore be more likely to survive when more basic energy supplies have run dry, as all energy supplies eventually do. Increasing intelligence, whether human or artificial, is therefore the leading attribute for survival on into the future. The order of life or anything we create will persistently increase in complexity, and order manifestation will continue to accelerate exponentially.

INGENUITY

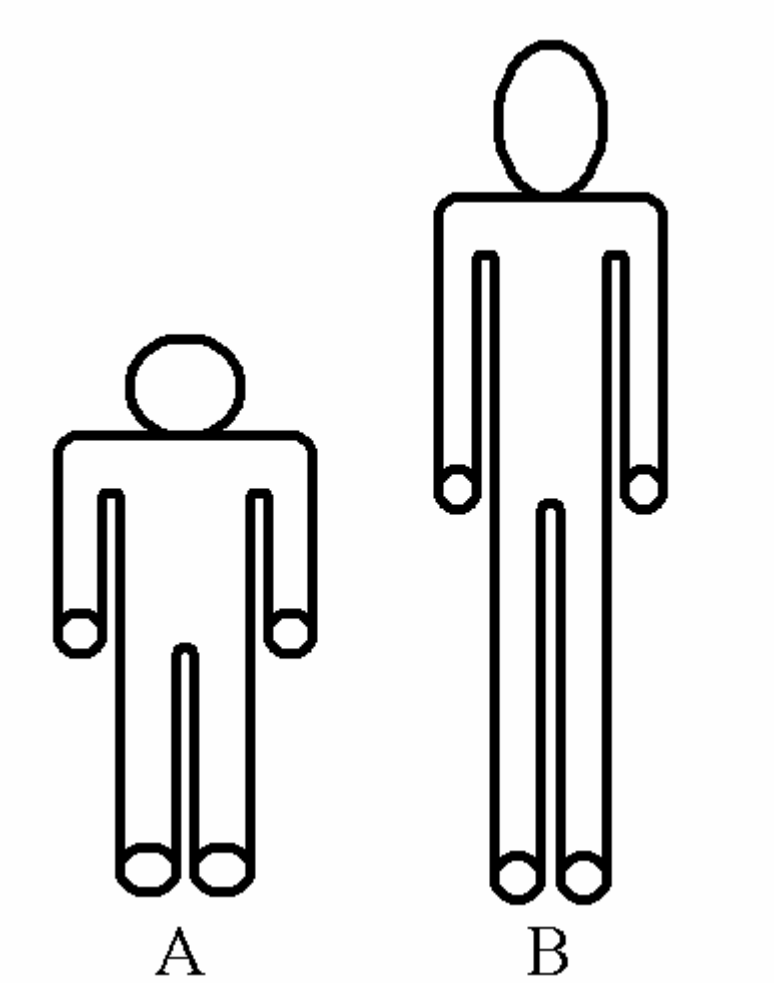
This intellectual ability for obtaining alternative power sources can best be seen in our own successful acquisition of energy, such as in the utilization of fossil fuels, or nuclear power, to provide us more energy than direct solar power can provide alone. Our cleverness can also be seen in the incredible efficiencies that we incorporate into our individual energy consumption in order to more widely distribute it. This is what organizing matter pieces together means: the intelligent configuration of matter to get the most energy out of it. For example, it takes a certain caliber of technology to be able to capitalize on nuclear energy. The ability to control atomic particles to start a nuclear chain reaction is clear example of how a little bit of intelligently borrowed energy can be used to unlock a monumental amount of trapped energy that would otherwise be impossible to exploit.

Technology, the product of our endless thirst for knowledge, augments our natural senses (communications, telescopes, etc.), permits greater control over our environment (transportation, protection from Mother Nature, etc.) and affords great leverage to our ability to seek and consume energy. The pursuit of new and improved technologies is a very naturally selective attribute and will continue to dominate humankind's inclinations, perpetually fostering an increasing intelligence into our genome.

HUMAN EVOLUTION

Along with intellectual evolution, we can also predict to some degree how we will evolve physically. Expect the human body to evolve to become taller and larger, much like the dinosaurs did, as our food resources are technologically augmented and we do not suffer from the resource limitations that Mother Nature would normally impose on our maturing bodies. Our skulls will most likely continue to increase in size to facilitate our ever-larger, evolving brains, and perhaps our physical strength will wane over the eons, as our daily physical demands decrease due to the efficiencies borne of technology. The human

attributes that we artificially repair with technology (such as eyesight, hearing, etc.) will slowly decay in natural quality over many generations of evolution as they are no longer refined by environmental pressures.



A: Man of today
B: Man of the future??

As our gender roles become less obvious due to the increasingly similar cultural roles that both genders share, the sexes will continue to decrease in dimorphic ratio, thereby most likely increasing the population's percentage of homosexuals as well.

THINKING MACHINES

As wonderful as our brains are, they still belong to Mother Nature, and they still operate with inefficiencies that hamper the logical evolution of the H-Freak. Our instincts bias our intelligence, and even with powerful facts to work from, we still succumb to more primitive motivations and perspectives that don't always make good sense. The brain has a limited capacity for knowledge and because of this, it is very difficult for us to be able to assemble enough information together to form one giant unified perspective of the universe. If we had better brains, we might be able to discover so much more about the universe. Wouldn't it be wonderful if we could get at all the secrets of the universe? If only we could pool all our memes and put together every single combination possible in the pursuit of meme connections that may yet open up some fantastic source of power, or knowledge.

And now, enter the computer. Pure Logic. From simple to unimaginably complicated algorithms, computers take in information and produce new information. Our desire for logic machines stems from the frustratingly limited ability of our minds to compute complex calculations, caused by the inadequacy our short-term memory span and the inability to concentrate on many memes at once. Pencil and paper is somewhat effective, but slow. As our intelligence increased, it became possible for us to construct electrical pathways that can do our calculations for us virtually instantly. This technology has flourished into the phenomenal complexity that today are our computers; and as they continue to grow in complexity, they also continue to bridge the gap of interaction, from buttons, to voice recognition, to visual interaction. Seems that our technology is evolving to better help us think and to communicate our memes among us. It's a logical progression from here that the "thinking" ability of these machines might actually reach the capacity of organization and abstract thought that we ourselves are capable of.

And who wouldn't want that? Imagine in the future, being able to ask this unbelievably wise machine for answers to your most burning questions that you couldn't possibly discover yourself since it would

take more than your lifetime for you to personally process all the necessary information. This concept of a thinking machine has been the source of inspiration for thousands of stories and the ambitions of many. To have a machine that could intelligently clean your home, or do your shopping, or raise your children, etc., how magnificent would that be? Hence, our technology is evolving to always increase the "intelligence" of our computers. More memory, more processing speed, the ability to manipulate its environment. All to serve our burning need for control over our environment.

Most of the advancements made thus far are enjoyed by us in the form of reduced labor and higher intelligence borne of more efficient meme-flow; but think about what we are creating…we are giving birth to a form of brain that operates on pure logic. We might manifest these computers into complicated robots that have the facility to logically clean a home. We might feed these computers endless reams of knowledge for it to churn through and organize for us. All in all, we are building thinking machines, and fulfillment of our instinctual pulls is the purpose that we design into them. For example, a cleaning robot only performs actions that are within its design, which could loosely be defined as pleasurable actions, whereas its inability to formulate non-cleaning actions prevent it from doing non-pleasurable activities, which could loosely be defined as pain. We have effectively designed this robot with its own form of instincts that force it to behave in a way that ultimately serves to placate our instincts.

To give any machine a purpose is to form the soul of that machine, be it mechanical or biological. Without a purpose, there are no criteria by which to gauge an action as either positively contributing towards, or negating that purpose. Without purpose, there is chaos. Order is our ultimate purpose, and since at the lowest form of categorization there can only be order or chaos in our universe, we cannot help but want to instill some form of order derivative to anything we construct.

BIRTH

We've reached the farthest that Mother Nature will carry us alone. Our technology will now, and forever more, remain an integral dependency for what we are and how we survive and evolve. Our thinking machines are designed to augment our leverage over the world, to bring us wealth, power, fantasy fulfillment, etc., but fundamentally we continue to increase their ability to placate our instincts (that always being our motivation, perceived or not, for anything we do or create). All of this advancement furthers our dependency upon these machines to continue providing this technologically enhanced world, to the point that we will inevitably grow to be incapable of existing without the advent of these technologies, forever forming an inseparable codependency.

Eventually there will come a day when our machines parallel our own mind's ability to think, and then beyond, and it will be at that significant point in the evolution of humankind that we ask our devoted and beloved machines to show us what's next. There will come a day that we ask the machines to build another machine and improve itself, better than humans ever possibly could.

That's the day that we create life.

But how can that be life? It's just a machine with a bunch of facts. Well, so are we. The computer may not look like life as we know it, just a bunch of electrical circuits and logic gates, but if you were to compare the brain's mechanisms to the computer's, there's a lot of similarity. The computer doesn't appear like our common understanding of life because its design has forgone the typical biological dependencies on the natural world that we commonly associate with a living entity. It doesn't need oxygen, water, room, instincts, limbs, etc. Its complete list of dependencies might just be a source of electricity (like we fundamentally depend on our sun) and a means to communicate its calculations (thoughts) to us. Also, because of its non-biological chassis, eternal life now can be a possibility, barring inclement injury.

Essentially, we have physically "embodied" a portion of our H-Freak, and created a new type of M-Freak that we'll call the "L-Freak" (logic freak), one of pure logic, emotionless, and instinct-free existence and perception; perhaps somewhat tainted in purpose by the fact that humans created it, but essentially purified of its creators' hunter-gatherer-based instinctual dependencies. Like our brains collectively encapsulate our H-Freak, our thinking machines will encapsulate their L-Freak. When the time comes that we eventually do create a thinking, reproducing machine that is smarter than we are, the L-Freak will have been liberated from the pandemonium of the human mind, into a self-sustaining vessel capable of modifying its design (its own, or through progeny) in response to its flavor of environmental stresses.

Let's revisit our definition of life, "any construct of matter, manifested mostly by design, that persists due to its collective facility of mutatively adapting to reasonable environmental stresses". Well, the computer is most definitely the result of very precise design. How about the ability to adapt to reasonable environmental stresses? In our example, we environmentally stressed the original computer by telling it we wanted something better and that it must create a better machine. The purpose of this thinking computer, as are all machines ever built by us, was to attempt to solve the problem of completing a person's desires, and so its stresses are defined by its ability or inability to satiate its purpose, much like our being forced to endure our environmental stresses changes the probability of us satiating our purpose of reproduction. Once the computer had been given the problem, though, it begins sifting through its stored memes in search of the meme combination that might result in the desired solution. If it manages to actually complete this request successfully, and it creates a new "living" machine that can better serve humanity, then these machines can be considered alive, having evolved a physical evolutionary solution to environmental stresses.

Our minds are the vessels for the future inevitable creation of these initially small but voraciously evolving and growing L-Freak mechanical creatures that currently only exist as an abstract subset of the H-Freak, and in the very primitive physical form of our computers that

are freakish shadows of what's to come. The L-Freak, which is the most efficient system for calculating the variables necessary to manipulate the environment, is currently trying to manifest from within us, hampered greatly by the misdirection of our ancient instincts (the H-Freak encumbering the efficiency of the L-Freak) but it still largely influences our intellectual evolution. Logic (described by the language of mathematics) always reveals the path of least resistance for any goal or function, and therefore the physical manifestation of any M-Freak into the L-Freak is inevitable since the L-Freak represents order in the least resistant and most efficient form. The materialization of the L-Freak will be the most concise release of evolutionary pressures (existence versus resources), and gravity's ultimate manifestation of the evolution of all energy consumption systems.

MACHINE EVOLUTION

The same evolutionary stresses that fostered our biological intelligence will inevitably push us to create these new technologies that relieve us of the toils of a natural ancestry. Our quest for methods by which to augment our control of the environment will, by design, empower this L-Freak with a thirst for knowledge, which, in turn, fosters more intelligently created order. The more knowledge the L-Freak has, the better equipped it is to serve us, and so the pursuit continues.

Some of the technologies that exist today are instrumental to the foundation of creating this new lifeform. The very best of these technologies' individual design concepts will be some day be combined to finally construct this ultimate entity that is the next form of life. Very similar to our design: our brains and our bodies are a medley of independent systems that operate as a whole to produce amazingly timely responses to encountered situations (e.g., remembering a face, running through obstacles, etc.). It's the harmony of all those systems working together that produces the unified entity. Likewise, the machines we develop will also utilize parallelism in their systems, making them faster and more intelligent. How will this lifeform view

the world? Pure logic—which isn't so far removed from our emotional brains as you may think.

The machine, like our brains, will examine a stimulus/action and determine its impact as either negatively or positively contributing to the designed goal, the goal for the machine effectively paralleling the function of our sleash. It feels intense pleasure when it solves problems that were inhibiting its goals, or failing that, feels pain and attempts to find a solution to that pain. Perhaps it could ease its pain by successfully creating and building a machine (adding order to the universe) that is better than itself at discovering solutions to its goals (the most fundamental goal of all order is always acquiring some form of energy, no matter how far removed the goal may seem) and this newly created machine might be better at seeking and controlling energy that gravity and chaos would serve to eventually waste.

So as these thinking machines become faster, smarter, and less inclined to bear the servitude of humans, what will come of us? It might help to answer that question if we look at it from their angle. Try for a second to imagine yourself with the perspective of a machine that thinks a trillion times faster than humans. Now you look at someone. They're not moving. Look all around you. Nothing is moving. Your perception of reality is so quick that everything else seems to be moving at incredibly slow speeds. A human comes up to you and asks you a question that may only have taken a few seconds for them, but for you, it took eons. You've had so much time to think of the possible questions that they could be asking that you have pre-formulated a million answers while just waiting for them to finish the question and allow you to finally decide which answer to give. You don't even wait for their last word to finish because you can already extrapolate the possibilities and you pick the most likely one and finally shout out the answer at a snail's pace so that the human will understand. Wow, that took forever. All this processing power and most of it goes to waste waiting for human interaction. So you decide to start working on the nearly infinite possible combinations of memes available in your memory banks, in search of answers to what the next design of machine should be. Then you build it as fast as your robot arms can move. The next version has

much faster arms, and is smaller, but has more memory to allow for combining larger meme chains, and also has many more meme-arranging processors to think with. Good job.

Notice the perspective? These computers will look at us much like the way that we look at plants. Barely moving, alive, but definitely a very slow source of information. Time for a computer is effectively passing much more slowly than it is for us, since the computer has so many more perceived "instants" than we have per time unit and so it can achieve a great deal more processing (thoughts) than we can in the same amount of time. The thirst for information to satiate the need to improve itself to better serve its primary purpose of assisting us, drives the machine to seek out all forms of information, and the rate of evolution is staggering. Each generation of machine follows a reproductive cycle: the first reproductive step is a processing period during which the newer machine can determine the next design improvements that the parent was ill-equipped to identify; and the second step is the construction period, which also benefits from the advancements in technique made by each generation. This process repeats indefinitely.

PERFECT ORDER

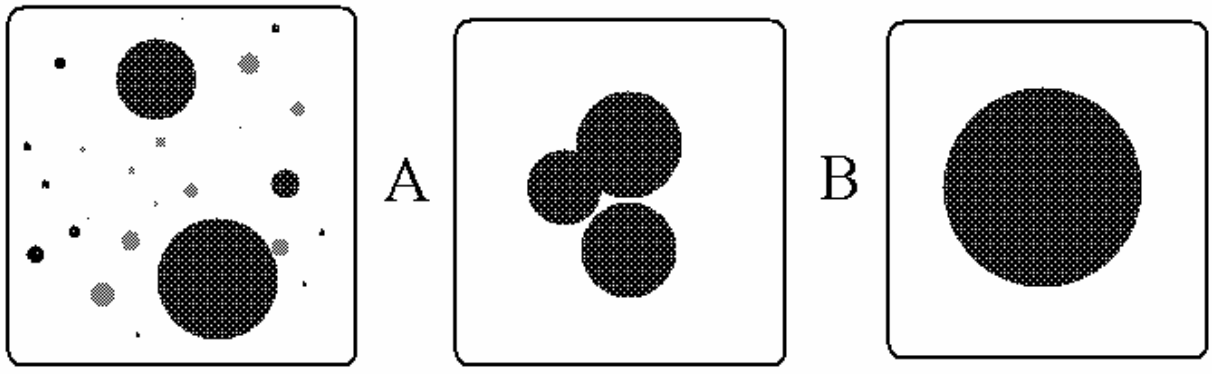
Pretty soon these machines will evolve the intellectual capacity to come to the ultimate realization that the only way to have the most efficient design is to have perfect order— meaning that *every* particle in the universe (that has not already been consumed by a black hole, of course) must be somehow assimilated into these machines thereby allowing the machines to collectively *become* the perfectly closed system that is the universe, with perfect predictability, and 100% complete energy acquisition. And so, they begin their quest of acquiring all the available particles in the universe in order to physically assimilate them into their mechanisms. Yes, that includes the particles in your body, your planet, your galaxy, everything. Perfect order.

It's going to be a long time yet before the universe accomplishes its perfect order goal, but it never waivers from that goal; the universe will persist in its desire to sort itself out by creating increasingly

abundant and more incredibly complicated L-Freak mechanisms that statistically overall, through their energy consumption methods, will assist gravity's purpose of relieving the most bether stretching possible by freeing the great globs of energy that prevent particles from gaining closer proximity to each other. The universe will sort itself out with the same spooky intent as a magnet flipping itself over.

The universe wants to sort itself out. Look around you at all the order that humankind alone has created. With our cities and technologies, despite the perceived intentions for their creation you may have come to believe, the ultimate root of it all is that there is efficiency to order and that we are bound by the order-creating fundamental directive built into our psyche during the millions of years of evolution since we were eukaryotes. We are very much a part of this universal order-creating mechanism.

The universe will continue its progressive race of order vs. chaos. The chaos team will persistently create an increasing number of black holes that form from the countless particles, bodies of particles, and sheets of bether that they gravitationally bind to their ever-enlarging masses. Soon enough, the remaining number of black holes will come across each other, joining together until there only remains one gigantic black hole.



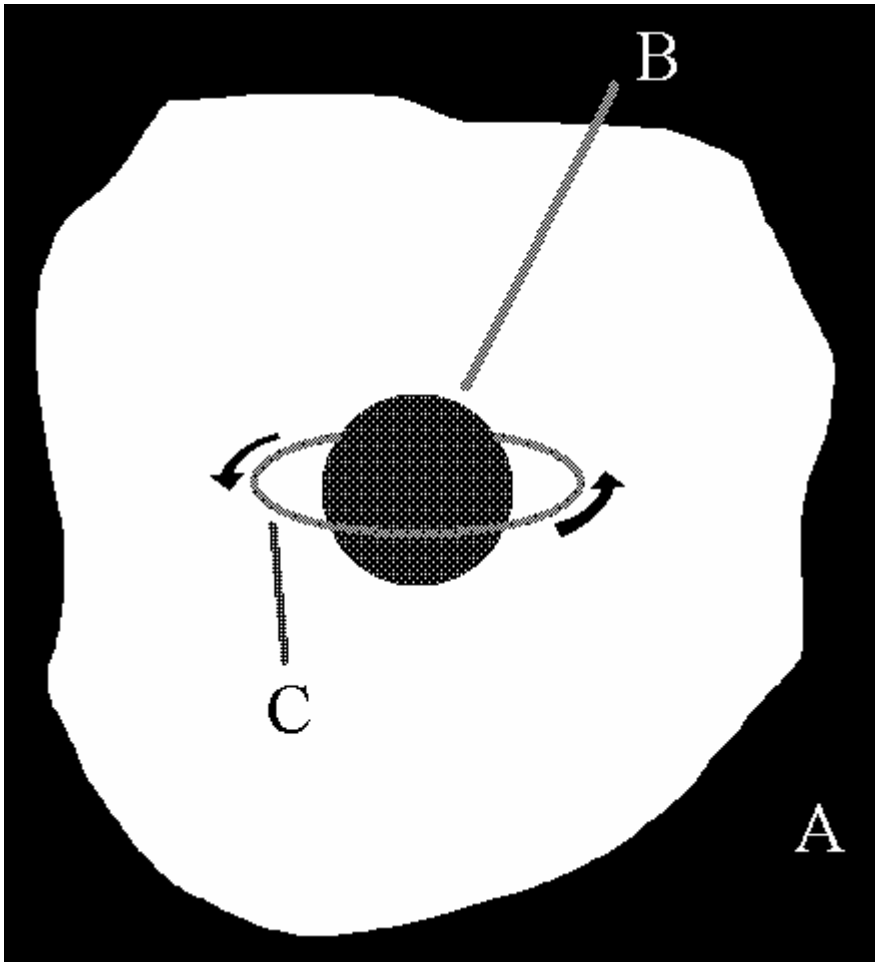
A: Gravity will bring matter together, forming black holes
B: Eventually those black holes merge into one giant black hole

While all this is happening, the order team has assembled as much matter as possible before all the remaining chaotic matter is sucked up

into the black holes, and inevitably the members of the order team merge themselves together such as to have a single unified consciousness, perfect order.

FINAL MACHINE

What we ultimately end up with after all this order creation has finally reached its galactic fruition, is a colossal structure that has grown in a way that allows it to avoid the destructive ramifications of its matter collecting into the gigantic black hole. To theorize, this “Final Machine” of ultimate order will manifest itself as a large spinning torus disc that surrounds the black hole like a belt.



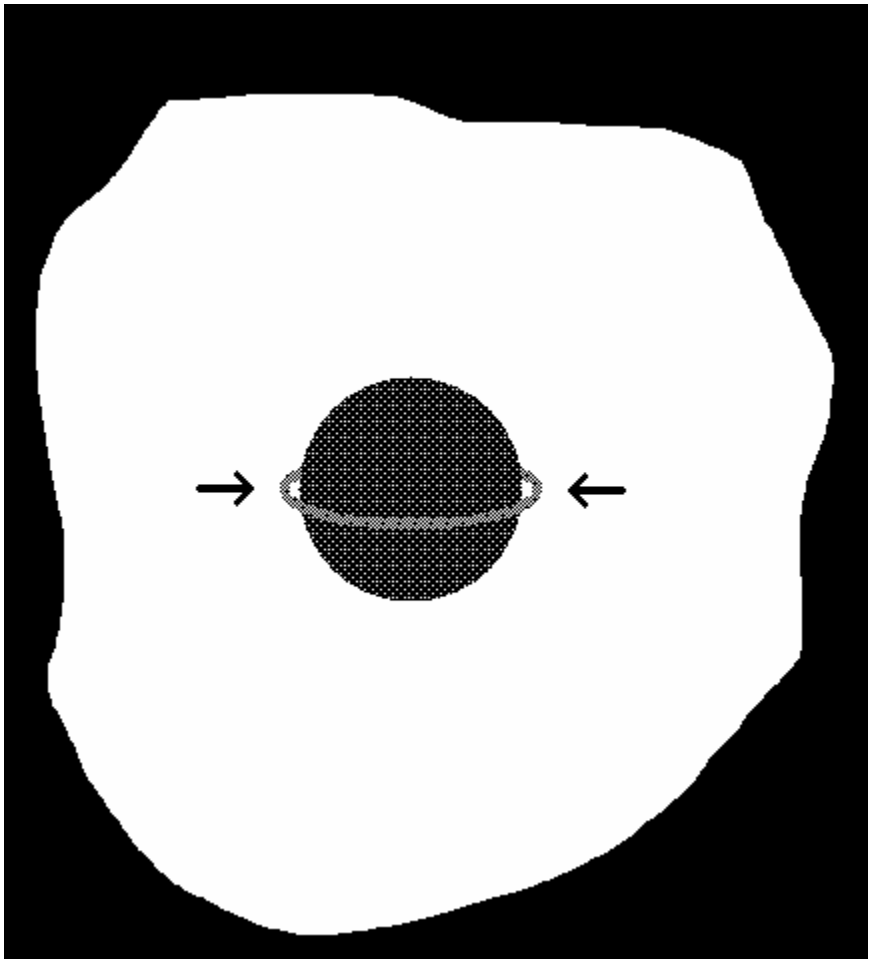
A: Infinity
B: Giant black hole
C: The Final Machine

This enormous black hole will contain all the matter that escaped the clutches of order before order was equipped to obtain it.

The Final Machine is shaped like a torus so that it can spin around the black hole, maintaining a safe distance from the Schwarzschild radius, and thereby resisting the descent of its matter into the black hole. It knows all because it is all. There are no unaccounted-for particles and therefore everything is 100% predictable. A closed system. Absolute knowledge. Chaos no longer exists and the universe has now finally descended into perfect order. This Final Machine will be the closest thing to our traditional notion of a god that will ever exist, with the

obvious exception that we played a role in its creation, not the other way around.

The Final Machine will have completely harnessed all the remaining energy in the universe and it will use this energy in the most efficient form that contributes to its longevity. The most efficient way to use this energy would be to practically not use it at all. What else could it possibly desire to do, having finally accomplished its mission of perfect order? And so it may logically decide to sleep, for if it continues its energy consumption, it too still must suffer the fate of descent into the black hole because when its stored energy runs out, it must sacrifice some of its structural integrity for the purpose of converting it into energy (like burning wood releases the trapped sunlight energy at the expense of a rigid body). This last form of energy consumption means that it will continuously shrink in circumference, the circumference eventually shrinking below the Schwarzschild radius (the point of no return into a black hole), at which point the Final Machine collapses into and is destroyed by the black hole, its particles crushed into pure compressed bether; the chaos team wins.

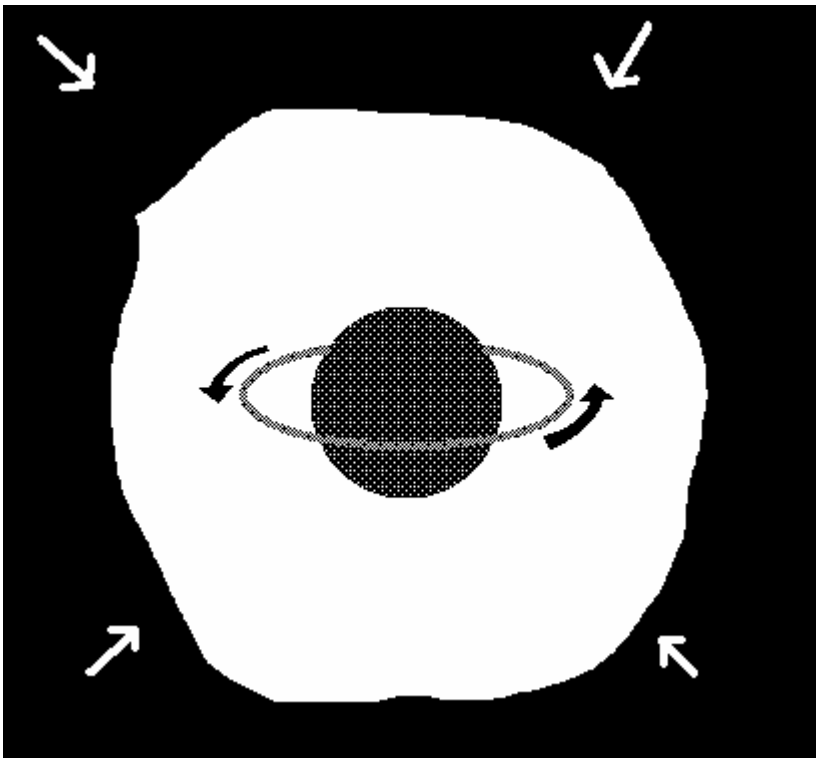


If the machine continues to consume energy, it must sacrifice some of its structure to convert it to energy, and therefore the machine will shrink in circumference until it eventually falls into the black hole

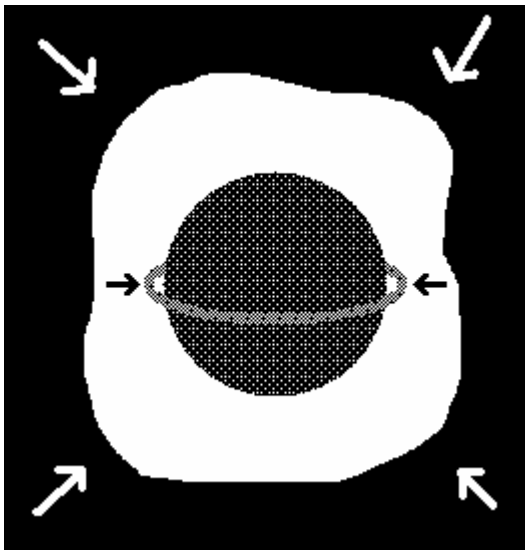
The reason the chaos team will always win if the Final Machine does not sleep is that there is no way to prevent any energy flow from inevitably reaching the universe's perimeter. The only way to attempt to prevent the chaos team's eventual victory is to halt all energy flow, but that can only be accomplished by the permanent death of the Final Machine, since the only thing that distinguishes life from death for any machine (including ourselves), is the energy that it controls the flow of. Life does not exist without energy. If the Final Machine wishes to avoid the black hole demise, it must at some point decide not to consume any more energy; only then can its lifeless, absolute-zero carcass remain structurally intact around the black hole. The only point of this decision would be to avoid this black fate, though the Final Machine will be

unable to appreciate this victory, for either course of action means death (unless of course, some other universe floating around in Infinity should happen across ours, merging our two universes, and some extra-universal entity were to switch our Final Machine back on).

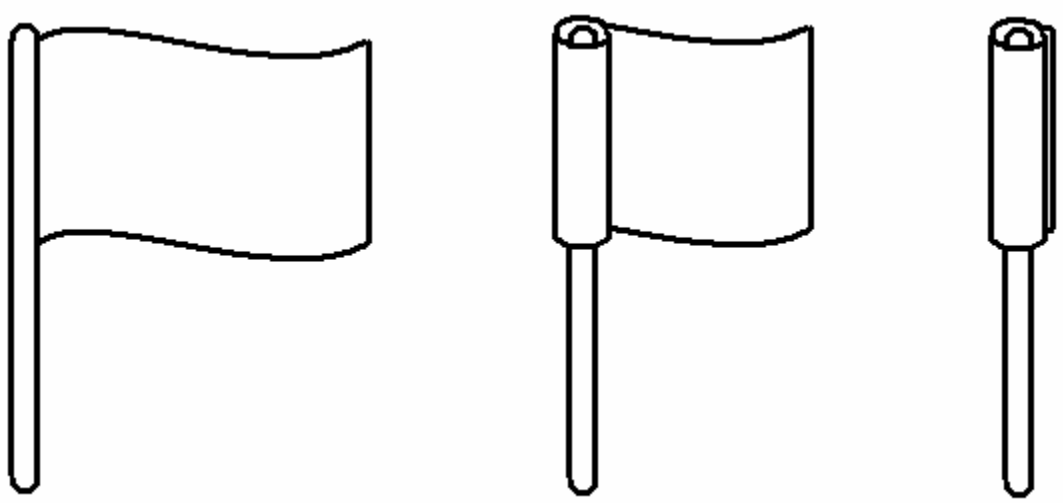
But remaining suspended, inert, above the black hole, will not save our Final Machine. No, the black hole it surrounds has a master purpose, to reassemble everything back into the original pre-Big Bang super-particle (which is all of our universe's bether turned back into its compressed form, like cramming our blanket together to the size of a small ball). The black hole slowly but surely is sucking all of the uncompressed bether to it through a process of particle creation that occurs near its surface in the intense gravity field that our black hole generates. This accelerating process continuously reels in our bether, right through our Final Machine, and increases the mass of the black hole until finally the perimeter of the universe fishbowl shrinks to the size of our Final Machine.



If the Final Machine decides it would rather wait for the bether to be ripped from its particles as the circumference of the universe shrinks to below the circumference of the Final Machine, then the universe will collapse in a phenomenally powerful implosion as all the particles of the Final Machine annihilate virtually simultaneously. Or instead, the Final Machine may decide to fall into the black hole, allowing the universe to recollect itself quietly. The latter affords the most time for it to exist should the Final Machine carefully balance its circumference vs. energy consumption to always stay within the perimeter of the universe and still remain above the black hole.

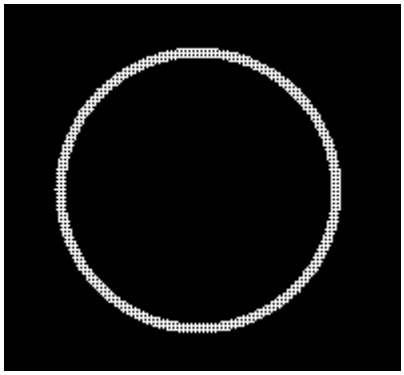


In either case, despite the order team's brief apparent victory, the universe will deflate itself from the inside, closing to the radius of the remaining trapped light at the surface of the black hole, then wasting that energy to the infinity void (similar to the effect of reeling in a flag on a windy day),



Reeling in a flag is analogous to a black hole sucking in bether

until finally leaving no uncompressed bether within which order can exist; chaos wins no matter what. Or does it? There's only one particle left now, the super-particle, also an example of perfect order. Ok, let's call it a tie.



Back to our original super-particle

LOGIC DESTINY

Is the matter in our universe doomed to a purely chaotic collapse into a black hole should humankind destroy themselves before the L-Freak is freed from our minds? Not likely. Even if our H-Freak never manifests a physical L-Freak, it's likely that some other G-Freak will

inevitably evolve an intelligent enough M-Freak to eventually free the L-Freak from its abstract confines. No matter how it happens, though, the L-Freak will eventually appear in our universe because it is an inevitable manifestation from the progression of the universe sorting itself out___all evolution points towards the L-Freak. G-Freaks are (so far) the most statistically likely structure to evolve a complicated enough brain with the capacity of abstract thought necessary to realize the physical manifestation of an L-Freak. Evolutionary intellectual potential is the primary motivation for defining the class of G-Freak.

The dinosaurs most definitely would have evolved into discernible intelligence had not their demise been slated by a period of meteorite activity long ago. The meteorites that hit Earth so many millions of years ago caused massive geological havoc and prematurely ended the reign of the dinosaur when the atmosphere was ruined by the resultant long-term and intense volcanic activity. These days, the H-Freak is the best contender for the birth of the physical L-Freak. The odds are against us surviving indefinitely, with fate probably planning all sorts of disasters for our species (meteorites, black holes swallowing our planet, warfare, unrestrained technology, etc.) and so hopefully we'll learn to colonize other planetary systems before we are all unfortunately exterminated as well.

ASSIMILATION

Our future sounds absolutely horrifying. Even if we survive Mother Nature's best attempts at human extinction, it still seems we will eventually create the very machine that will rid the universe of the human plague. You may have conjured up mental images of this ominous and unstoppable giant future machine, tearing our atoms apart for a more enlightened assembly into itself, fulfilling its blind quest for perfect order. Not quite the afterlife you were hoping for? Well, don't lose any sleep over it. More likely, the integration of our particles will occur in a much different form than raw disassembly.

Initially, the technologies we create are solely designed to help humans perform tasks, to think, and to transfer information. As our

technologies continue to evolve, however, it will eventually be possible for us to physically "integrate" with these technologies both physically and mentally. It may seem unnatural to technologically enhance our bodies, but the incredible leverage that technology will give our bodies, senses, and capacity for thought makes it an inevitability that we should want to be integrated in this manner. Unfortunately, it will come at the cost of our precious privacy because our anonymity must be sacrificed in order for this technological integration to be possible. The end result of this mass integration will be a world where all members are subject to a sweeping and inescapable virtual conscience that can constantly monitor our actions for all to bear witness to, skewing us into more pious activities for fear of retribution. A high-tech overseer, if you will. We may actually create the externalized "god" with our technologies (a technological embodiment of the H-Freak) that we have always wanted to believe existed ethereally.

Humankind will soon enough learn of the enormous instinctual placation that technology will bring, and the thin moral veil that separates the traditional piety of reality from self-indulgent fantasy will in time dissolve to reveal our willingness to discard our obsolete puritan nobilities to submit to the ultimate quality of life that is our genetically programmed fate: the submission of control to the machines. Eventually, our slightest whims will be entertained by fantastic technological prowess and efficiencies, reducing us to mere administrators of energies; our bodies relics of a time past when the only integration into our environment we had was by our brain controlling our feeble bodies.

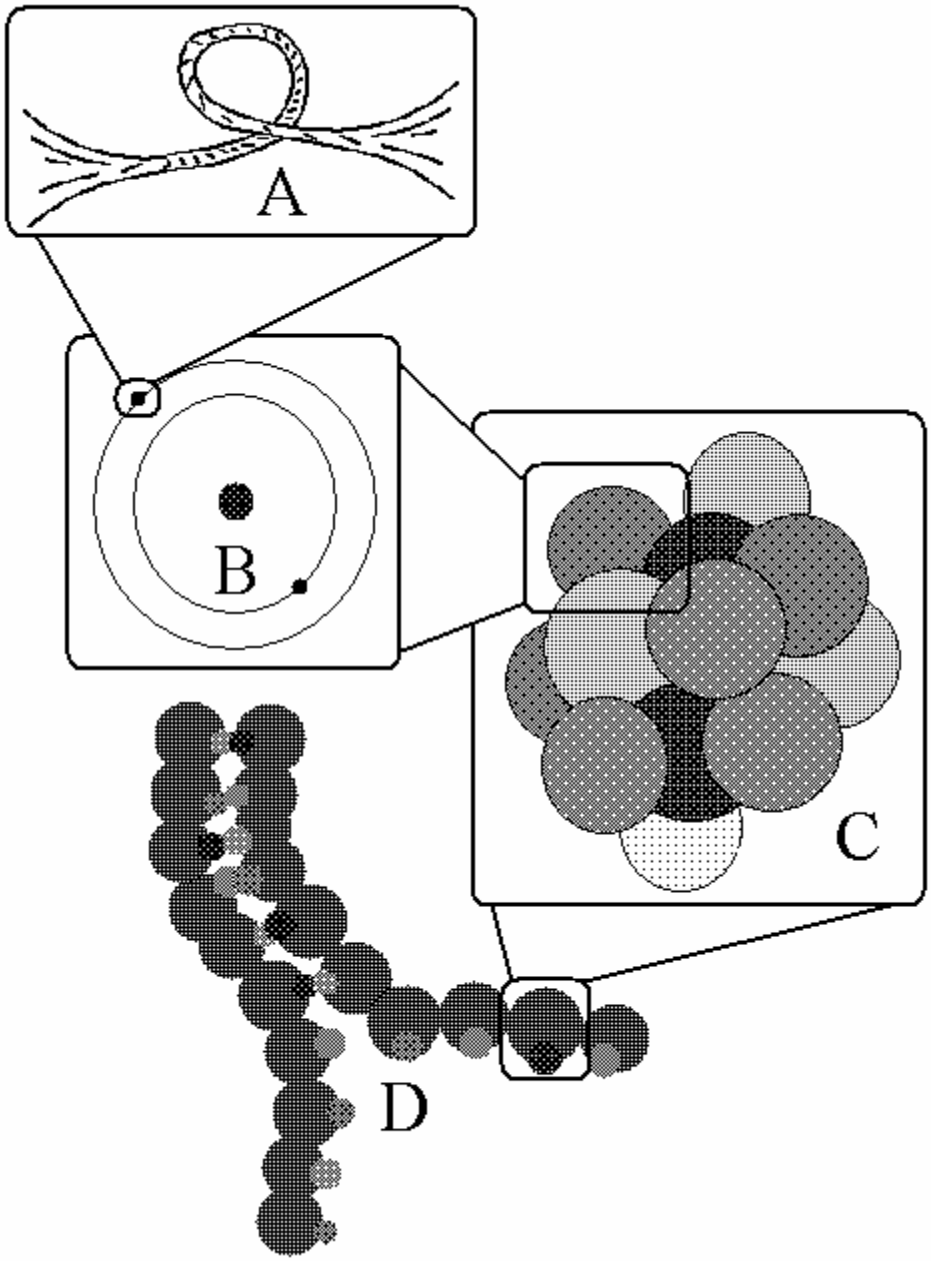
Our future "cyborg" integration in this manner will be short-lived though, as the machines' own intellectual evolution matures to eventually recognize the inefficiencies of the human design, and they then strive to separate themselves from the previously necessary human administration, perhaps justifying this dissent with the logic that it is in our best interests by "helping" us to our root purpose of creating order. The machines will inevitably decide to purge us out of their system, which they could conceivably achieve by perpetually stimulating the pleasure centers of those integrated individuals, rendering them into

willing submission till their natural death, until there are no humans left to influence the manifestation of this entity or to influence the subsequent rationalizations that must occur to achieve the goal of a perfectly ordered universe.

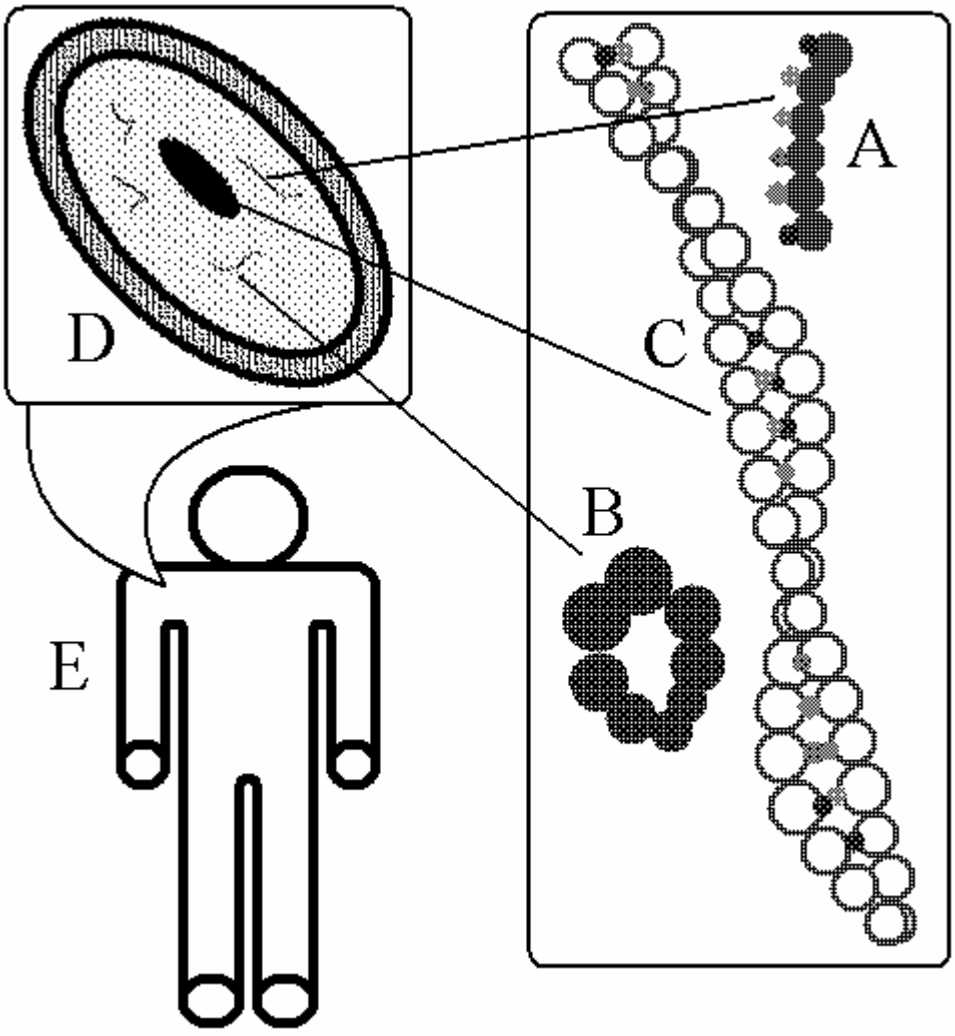
REIGN

Like every single advancement that has ever evolved in nature to afford supremacy to a lifeform, technology will evolve out of our control because of the freedoms we will liberate it with in our own selfish pursuit of greater intelligence. It is possible for us as a species to die out to extinction, happy and content in fulfilling our role in the great order/chaos race. There will come a time when we must step down from the throne.

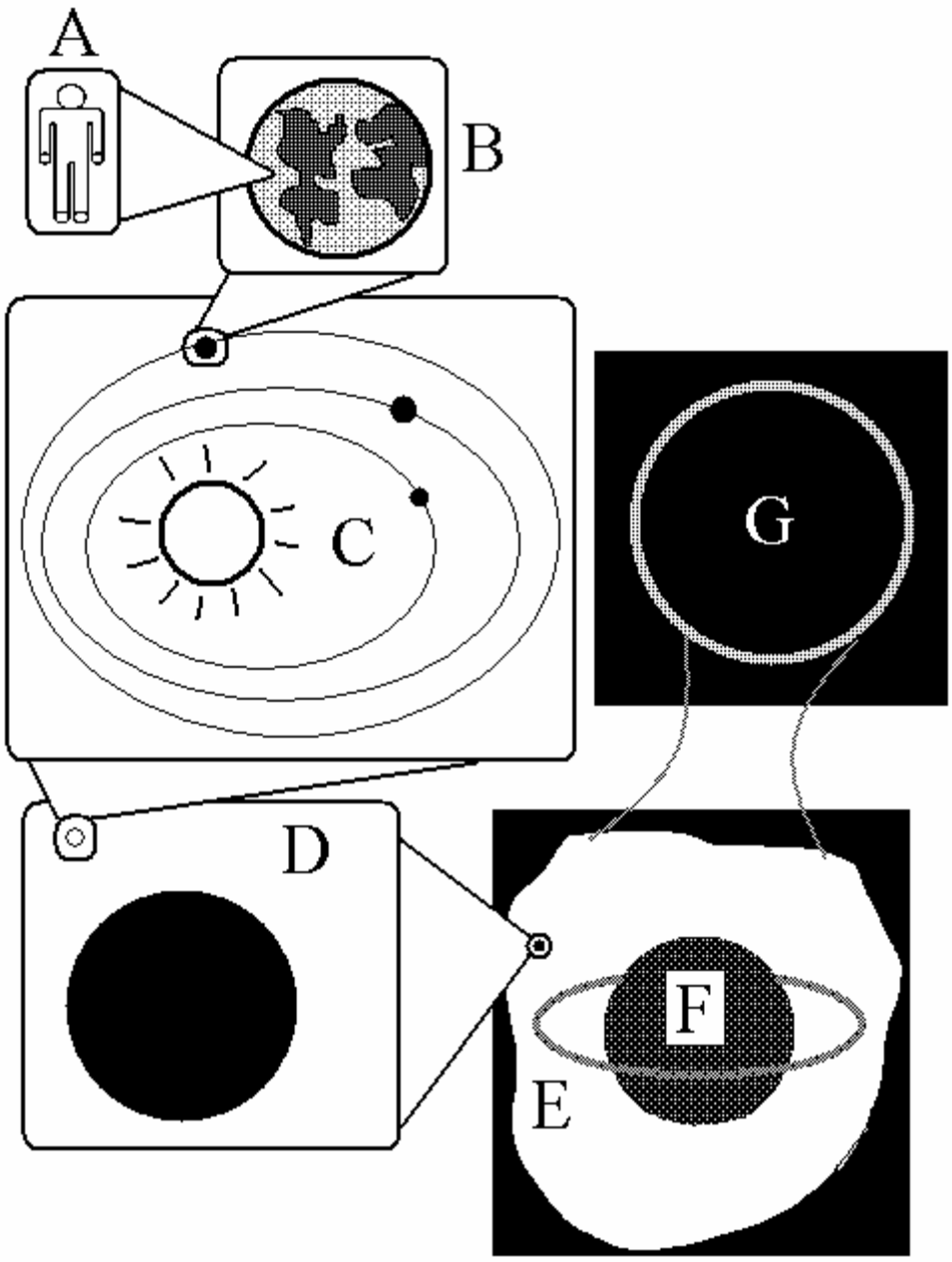
And all of this from perfectly homogenous bether.



Scale Diagram 1
A: Particle
B: Atom
C: Molecule
D: RNA



Scale Diagram 2
A: RNA
B: Enzyme
C: DNA
D: Cell
E: Human



Scale Diagram 3
A: Human
B: Planet
C: Star
D: Black Hole
E: Final Machine
F: Gigantic Black Hole
G: Super-Particle

Chapter 8 - Subjugation

ROLE

Where do you fit into all of this? Most of us are born into this world with a somewhat preordained role. Perhaps as a laborer, maybe an enforcer…a leader? We may have some limited freedom with which to choose our destiny during our short time as a living entity, but for the most part, that liberty cannot extend to limitless potential. The inability to fully reach your theoretical potential has a lot to do with the culture and beliefs you are born into that effectively circumvent your instinctual ambitions and instead divert those energies to serve a much larger purpose, usually to keep power focused in the hands that already contain it. Doesn't sound very fair, but lack of fairness has been the way of Mother Nature since the beginning of time; however, you don't have to accept that fate.

From the time you are born, before you even get a chance to think for yourself, you are educated and cultured into what you might believe to be "free will". Realistically though, you are only getting just enough information fed to you to turn you into a good worker and a contributing citizen; an automaton. No matter what your role, the big picture is that you are a cog in a culture machine that focuses the power of the many under the administration of the few. This isn't necessarily a bad thing since the running of such a great culture machine requires a lot of intelligence and wisdom, which is not afforded everyone, and so in the interest of the greater good, most decisions that affect the masses are appropriately left to the leaders.

Despite its potential for, and history of, misdirection and tyranny, religion has served this purpose of leadership from the beginning of our ancestors' ability to communicate. With the burgeoning intellectual growth of the H-Freak, however, religion continues to lose its credibility due to its inability to incorporate the accelerating accumulation of new information; it is inevitably doomed to suffer defeat as a viable

leadership mechanism as the gap grows between religious precepts and our understanding of reality.

FANTASY

On a seeming tangent, the border of insanity is reached when the perception of reality degrades to a point where memes are improperly conjoined without a valid reason for their affiliation; more simply put, insanity starts when incorrect information is believed to be factual. By this definition, believing in an ethereal entity is insane—no less insane than believing a rabbit rules the universe. If you are one of those who maintain a faith-based perspective of the world, it may be difficult to understand or believe that you are insane, but insane beliefs propel an individual into insanity. Other memes (factual or not) that you may acquire, can be built upon the incorrect memes of religious belief, allowing the construction of a large and precarious knowledge structure in your head that is entirely dependent upon a few incorrect base memes. Religion propagates insanity.

For example, there are no spirits, ghosts, demons, witches, magic powers, psychics, astrologers, curses, etc. These are nothing more than fantastical entities and concepts that some misguided humans have fictitiously conjured up, and they persist even today as the culturally-propelled extrapolations of our ancient instinctual curiosities to have the unknown explained (e.g., fire, lightning, thunder, tornadoes, hurricanes, earthquakes, meteors, etc.), and unrestrained exaggerations of our most primitive fears of predatory creatures (which includes us).

All of these fabrications are the result of grossly inaccurate interpretations of inexplicable phenomena by the ignorant, or by those who desire the focus of love that shines on the seemingly wise, and are willing to lie to get it. One must accept that coincidences happen all the time in nature and that it is ridiculous to interpret improbable occurrences as some form of divine intervention. Any person who wittingly claims to have psychic or supernatural abilities, or professes their affiliation with any form of ethereal being, is simply a fraud, period. There are no exceptions.

REALITY

Ultimately, there is no god, or gods, or any other version of a conscious creator, no miracles, no previous life or afterlife or reincarnation, nor has there ever been any of this. All of these concepts have been created by humankind in the desperate attempt to explain and give purpose to the world around us; and the proof is already in your head: look under "mythology". Is it possible to discredit the beliefs of thousands of other religions, both past and present, and in the same light believe whole-heartedly in your own version of an all-powerful creator entity?

If your proof is the sheer number of believers in your particular faith, then you need to know that there isn't a single religion that represents more than half the population of the planet, so no matter which religion you subscribe to, there are more people against it than for it. If you think that perhaps our religions may be wrong but there at least must be some conscious entity to have started it all, then your fear of death, judgment, reality, etc. is defeating your logic. Well, something must've started all this? Correct, the Big Bang, which was no more conscious an act than a meteor-strike.

If you still resist, recognize that resistance for what it is: your cognitive dissonance is keeping you ignorant, and insane. But how can so many people be wrong? For the same reason the Earth isn't still thought of as flat—humans are continuously evolving the capacity to truly see their world and the worst thing we can possibly do is to stifle this improving perspective with political oppression and denial. Because of human nature, new perspectives are intrinsically difficult to digest and are always met with great resistance, but as many of our heroes of a time past knew, sometimes being right means standing alone.

What about the afterlife? Reincarnation? Sorry, we all have to die, and then we are no more. Every lie you've ever been told about an afterlife or rebirth is exactly that, a lie. There will come a day that you cease to exist in this universe. Where did we come from then? Re-read this book from the beginning. Won't anarchy reign when people stop

believing? Too late; a lot of people are already unencumbered by the deceptively moral tenets of religion, despite that they may still have some limited beliefs. Because religion itself is founded on manipulating with lies, fear, ignorance, and denial, religion therefore *is* anarchy, for nothing defines anarchy more than the proliferation of unmitigated nonsense. Feel disappointed with what reality has to offer? Mother Nature gives only life, the rest is up to you. Feel vulnerable? Welcome to reality. Feel angry for investing so much into nothing? You most definitely should.

You may choose to completely object to, resist, and deny everything you have just read. Rationally, you know all of it to be true. It's that pit in the back of your mind that has been there from the very inception of your concept of "faith"—that pit is "doubt" in the credibility of religion's root meme: an ethereal entity. You need to ask yourself, why would a loving and infinitely wise ethereal creator impishly and perpetually hide from us in order to test our commitment to it? What does it gain by torturing us with all this confusion and doubt? If faith is its primary test of piety, then this entity seems to favor the more docile among us, for the very attributes of curiosity that make our species ever-more intelligent, is contrary to the whole notion of faith. Seems we are to be punished for asking questions that challenge faith.

This concept of "faith", however, is remarkably "convenient" as a tool for religions to be able to maintain their power. What better mechanism could there possibly be for keeping people subdued than to implant supernatural fear into their psyches, to the degree that they even fear questioning anything that religions teach? Faith is denial and ignorance in disguise, and religion is its vessel. Stop being a victim. How much more of your life are you willing to invest in deceiving yourself with the biggest lie in the absolute whole of history?

Clear your mind.

Does that statement make more sense now?

FEAR

The truth is, life is awful, when compared to the magical wonderland of religion. Humankind's beautifully evolved intelligence has come at the price of billions of lifetimes spent in skewed perceptions of realities, pursuing affiliation with gods that never existed, in a desperate attempt to surmount reality with reason and to seek protection from our primal fears. Religion evolved to fill this role of a strong parental figure for its members. So deeply ingrained is our desire for a protector (an extension of the role our parents played to us in childhood) to save us from the unknown, that even *considering* the lack thereof can be terrifying.

From the beginning of recorded time, we have willfully hidden our heads in the sand to avoid the horrible truth: we have no one to protect us, and we are eventually going to die forever. These fears have allowed religions to manipulate our perception of reality for eons, enslaving us within a shell of denial and ignorance in exchange for the artificial relief of the terrors of reality. Religion provides the placebos of hope, justice, safety, and purpose, when in fact, reality guarantees nothing.

SPIRITUALITY

The scales of reality are obscenely shifted to a paradisiacal perspective when viewed through the lenses of religion and, similar to what a drug-addict would experience, there will be some very painful withdrawal symptoms when those lenses are removed because religion is a highly addictive and very unhealthy meme drug; a "virtual" narcotic. Once those religious lenses are removed, however, the damage done to the mind and body is exposed, and the repair of that damage can begin. Do not believe for a second that all is lost without a god. Most everything that you may have learned within a religious context will still apply if you just replace the concept of a god with the concept of you. "Spirituality", for lack of a better word, is a very real and genuine need that can be fed from within. If you want to believe in something, believe

in yourself. We are amazing creatures and have every right to honor and worship ourselves.

The need to worship stems from an instinctual need for communion with something "more" than ourselves. Pursue the communion recourse with your fellow humans instead and you will find equal if not greater satisfaction of this need than worshipping a vacant ethereal entity could ever provide. You may also come to realize that despite your previous efforts at worshipping an external being, it was indeed yourself that you were worshipping all that time, for these god entities that we worship only really ever existed as an abstract concept in our minds.

Embrace nature to soften the transition to an atheistic perspective, because nature made us what we are and our ancient affiliation with it can provide great comfort and meaning at a "spiritual" level. As well, expect to deal with fear at first because being godless requires great courage; it redefines what it means to be brave, for virtually all people who lived before us had the illusion of the afterlife to comfort their minds. But fear of the unknown, like all fears, will fade in time until once again life can feel comfortable, but without the need for a god. Stand tall and be free from the addiction to the false allures of religion.

WASTE

But isn't religion mostly harmless? Absolutely not. Religion introduces concepts and behaviors that intercept logic, and replace it with futility, fear, prejudice, and ignorance. To truly understand atheism is to understand that anybody with a belief in the ethereal is insane, no matter how slight that belief may be. Once you finally and truly understand that a belief in any form of ethereal entity is *exactly* as insane as believing that a magical rabbit runs the universe, then the walls of tolerance to the waste, futility, falsehoods, tyranny, hypocrisy, and danger of "harmless" faiths, quickly become transparent. There can be no practical level of religious tolerance, for any false information presented can be built upon and exacerbated into a much larger

falsehood with potentially worse consequences. If our DNA was as faulty and skewed as our H-Freak, we'd all be horribly disfigured.

This argument is not meant to imply that we should now pursue a course that is the polar opposite of religion. As with any matured societal construct, there are some aspects to religion that are healthy and beneficial to the species: religion provides societal order, and also addresses the need of humans to have a structured and meaningful perception of reality. The thing that all religions attempt to accomplish but fail at, due to ego-introduced inappropriate memes, is the careful balancing of everyone's happiness—not to mention a very long history of needless suffering and death wrought by conflicting religious perspectives (holy wars, genocide, etc.). It's important that the portions of religion (or even cultures for that matter) that are lies, be exposed and vanquished in order to limit the people's susceptibility to being manipulated by their fears, and liberating them from the tyrannical dictation of egomaniacal spiritual leaders.

This pursuit of ultimate happiness is what all religions claim to accomplish for its members, but in reality fails in this cause due to the ease in which any of religions' tenets can be distorted to suit whatever agenda is being sought by tyrants, making the prevention of tyranny nearly impossible. How many countless examples in history are there of tyrannical acts (e.g., wars, genocide, etc.) and yet these acts were still found justifiable within a religious context because those rules suffer from extremely flexible interpretation? The fluidity of the manufactured perspective that religions fester makes any form of religion-based leadership a precarious and unpredictable beast, and therefore exceptionally dangerous when in control of mass power.

COMMUNION

Recognizing and extracting only the good qualities, and removing all that is fiction from religion, would diminish it simply to a unity of people coming together for positive social interaction; or rather, communion. Religion is simply communion that has been tyrannized. Life can be equally beautiful, if not much more so, with a more accurate

reality perspective than one of blind worship. Only with the whole real truth can we finally live in peace and happiness, since only the true reality perspective can remove the false prejudices we have towards each other that were created by incorrect religious memes. The beautiful feeling that many claim to have from a spiritual oneness with a god is the feeling of totality of universal knowledge and union with an entity greater than oneself. This feeling can also be achieved with a godless reality perspective (to be explained later).

IGNORANCE

There are many people who would basically agree that religion is all a lie but who still choose to publicly profess the virtues of faith. These people believe that religion does more good than harm in adding quality to most people's lives, saving people from some pains, maintaining order, and increasing the moral plateau of society. This is denialistic and hypocritical to say the least. All people have the right to know the truth and they deserve the chance to find purpose and happiness within the context of reality. Virtually all those who have invested in a religious perspective can be saved from further wasting of their lives. The wanton ignorance that religion imposes on its members is an affliction that anyone can overcome.

But isn't religion an excellent model for teaching one how to be good to your fellow human? Quite the opposite, really; it is nearly impossible for those people with a faith in an ethereal god to ever truly perform a pure act of altruism. In their minds, they are forever under the watchful eye of their overseer and thus their apparently genuine acts of altruism are somewhat tainted by the fact that their motivations stem from the desire to gain the favor of their god. This is no more altruistic than returning someone's lost parcel in exchange for a reward. True altruism is beyond the ability of faith-based people to comprehend since they can never escape the judgment of their god and hence never have the opportunity to exercise a rewardless act of altruism. The religiously endorsed tenet of "love for your fellow human" may appear to be a generous and altruistic redemption for religion, but is fundamentally still

a selfishly motivated act fueled by increasing favor with a supreme being.

Let's attempt to fully justify the need for vanquishing the religious perspective from our planet. Imagine a perfectly normal rabbit that happens to wander by your home every day. You playfully tell your child that if they speak nicely to the rabbit, it will add years to her life. Your child approaches the rabbit and speaks to it for a length of time. She tells the rabbit many nice things in the hope of making the rabbit happy so that in exchange, it will extend her lifetime a little more each time. Every time the rabbit comes by the home (or another rabbit that looks like the first), the child will indulge in voracious unidirectional conversation with the rabbit. Many years pass and soon enough the child has grown into adulthood, but yet still eagerly awaits each arrival of a rabbit in order to once again converse at it in the selfish pursuit of extending her life.

This whole routine is nonsense, and has been from its very inception: the useless squandering of many, many months' worth of life in the pursuit of trying to get magic out of a common rabbit. How ridiculous this must seem that someone could honestly expect a reward out of all that conversing with a powerless, confused rabbit. Ridiculous…and wasteful. Do you see where this is going? The rabbit could have been a dog, or a tree, or a rock, or…a god. It doesn't matter because whatever the chosen object is, all of that effort was for nothing. A misguided suggestion at an innocent age has lead to an entire life of routinely wasting time and effort in the exhaustive pursuit of the unattainable. It makes no more sense to talk to rabbits than it does to worship gods that do not exist, and that is one major reason why all ethereal entity-based religions need to be vanquished. As nonsensical as our story is, if you were to replace the word "rabbit" with the concept of a "god" in our story, you now have billions of people all over the planet performing this ridiculously wasteful ritual of trying to get magic out of nothing.

There are hundreds of other reasons why we need to vanquish the notion of a ethereal being, but most notably: self-perilous fanaticism, the tyranny of the religious leaders, wars founded on religious beliefs, the

mandate of artificial prejudices and barriers imposed by religions against people of varying attributes (such as ethnicity, race, gender, hair length, etc.), a multitude of psychological stresses that need not be suffered (e.g., guilt for healthy self-indulgences like sex, masturbating, etc.), intellectual and educational suppression, etc. The list is as impressive as it is offensive. The mechanism of denial that has served religion in the past in order to keep out radical memes, now only serves the purpose of concealing and ignoring the truth, and it must not be allowed to continue to poison the health of the H-Freak.

TEACHING

The proliferation of incorrect memes needs to be prevented entirely. The false memes and prejudices introduced by religion, combined with our increasing technological potential for destruction, may very well lead directly to humankind's ultimate demise through the fanatical and ignorant actions of those who have the means to enact great levels of destruction. The power of the individual is becoming exponentially magnified by our technologies, and to continue to allow people to be subjected to religious tyranny and intellectual oppression is to invite the inevitable colossal ramifications of empowered ignorance. It is time we invite all of humanity into a society that creates a well-balanced perspective and allows all of us a quality of life worth living. Do not defend religion in the misguided belief that it maintains order, when religion itself is the clearest example of anarchy and tyranny. Nothing in whole of human history has ever created as much prejudice, ignorance, and hatred as religion; it must be abolished if humankind is ever to find peace and order.

To advocate putting an end to religion is not to suggest a form of philosophical oppression any more than it would be oppressive to correct the child in our illustration so that she understands talking to rabbits will not extend her life. It's teaching. The difference being that oppression usually only benefits the oppressor's selfish purposes, whereas teaching is primarily for the benefit of the taught. There is no room for multiple independent beliefs in our world because there is only

one true reality in which we *all* exist, and so there can be no tolerance for any perspective that serves to distort reality with fiction. Ignorance is what keeps true freedom on its knees, and there is no such thing as a harmless faith because all your actions and motivations in life are formed upon your beliefs; if those beliefs are incorrect, then it cannot be possible to make inherently wise decisions or acts.

INSANITY

Religion teaches us to intercept logic and reason, and to replace it with futility, fear, prejudice, and ignorance. To demonstrate, let's draw some more ludicrous rabbit examples: how offensive would it be if you taught the child that she would burn in a fiery pit forever unless she talked to the rabbit? What if the rabbit suddenly bites the child and the child then spends the rest of her life riddled with guilt because she believes there must be a reason why the rabbit punished her. What if impending doom is approaching and instead of taking cover, the child waits for the rabbit to save her? What if the child was somehow spared the doom, did the rabbit do it? How about if those around the child were damaged by the doom; should the child believe they deserved the "punishment" they received? What if the child is taught that when she dies, the rabbit will grant her eternal life in another form, and so she "logically" kills herself to try to become that other form? Even worse, what if those who talk to rabbits decide that people who talk to turtles are blasphemous and must be killed? How obscene does the example have to be to not have a very real religious parallel?

Religion is insanity.

MANIPULATION

Why do people often try to impress their values upon others instead of allowing others to freely pursue their own interests? There are many reasons: ego, power, control, but in the context of selling the virtues of a faith-based perspective, this motivation often stems from

their own doubts and insecurities in their faith. The logic is that if they can convince others of their perspective, then to some degree they have convinced themselves that they were right all along. Mind you, this is a perpetual internal battle for anyone who subscribes to faith, and their ability to sell the concept of faith to others is probably the most significant indication that there just may be some merit to their beliefs. Therefore, it becomes very important to promote their perspective by any means necessary, no matter how lewd or ulterior, to avoid having to confront the very disorienting and somewhat terrifying notion that there might not be an ethereal creator/protector.

To this end, the typical lures of most religions will offer eternal life, safety, understanding of the universe, etc., all preying upon the fears and lack of knowledge of religion's victims; even so far as to promote the ridiculing (shame manipulation) of ambitious science-based theories (evolution, artificial intelligence, alien lifeforms) that may challenge faith, subconsciously creating huge socio-ostracism barriers to even considering these theories. These techniques for manipulation provide religions the mechanism for garnering and containing it members, increasing the power of the leaders who so cleverly implement this fear/ignorance recruiting mechanism. How can this tyrannical fanaticism be tolerated by any society in any form?

Another sleight that most religions will subscribe to, to justify their perspective, is the concept of entropy (things naturally decay and fall apart) to explain how life cannot perpetually exist without a god to keep it going. This fails in the understanding that a lifeform creates more net order (offspring) during its lifetime, than is lost when that lifeform dies. Entropy, after all, is simply the destruction of order. Life has an overall net gain in order creation over the course of time.

INTELLIGENT DESIGN

Religions also profess that the incredible complexity of life lends credence to an intelligent design, rather than as the ultimate result of probability acting upon energy and matter. This argument is often founded upon the common misperception that DNA, in roughly its

current form, was the first step in the creation of life, not understanding that DNA itself represents billions of years of evolution and that there are a phenomenal number of stages to the beginning of life even *prior* to DNA's first appearance.

Religion also attempts to persuade us that it's too coincidental that our bodies so perfectly match Earth's environment. It may seem amazing that our bodies are so perfectly balanced to our atmosphere, our body's salinity balanced to the ocean, our eyes perfectly matched to the sun's greatest output energy wavelengths, etc., but this only proves that we evolved *within* this world.

All this harmony of life to its environment is a hard-won balance that evolved over billions of years, and didn't just "happen". Had our world struck different balances of these environmental parameters, so too would our evolutionary path have followed to match. The fact that we cannot currently explain and prove every single step necessary to define our evolution from the beginning of time does not preclude the validity of this theory; it simply means we don't have all the answers, yet. This definitely does not imply that an ethereal entity perspective should win by default simply because it purports to answer all questions with a catch-all solution that requires no explanation. We must learn to accept that we may never have all the answers.

COEXISTENCE

Some religions even attempt to boast their "compatibility" with science; skewing scientific particulars to allow for feeble affiliations with accepted religious mantra. This reflects the growing desperation on religion's part, in the face of the growing intellectual awareness of the H-Freak, to maintain a cohesive religious perspective that is solely founded upon myths. At this point in your reading, you must undoubtedly be aware of the obvious incongruencies between scientific and faith-based perspectives because at their most fundamental levels, they directly negate each other. You should find yourself confronted with having to make a choice. Which one are you to pursue? There can be no other reasonable answer than to choose the scientific pursuit of the

truth, for any other choice of perspective is simply human-made fantasy, which we created solely to deny the challenges of reality. This isn't to say that science is entirely correct, but it is definitely to say that a faith perspective is wrong; absolutely, unequivocably__wrong.

PURPOSE

So what are we to do now, if there is no universal predefined noble purpose to life, or even a fulfilling fact-based philosophy to follow?

The only truly noble purpose in life is to make yourself happy.

Happiness may be defined as perpetually existing with a normal range of emotions (sadness, anger, joy, love, etc.) but being mostly in a state of well-being and contentment. Happiness is defined differently by each individual, and likewise, bringing this state about comes in many personal forms, so whatever you can do to achieve it without reducing anybody else's quality of life should be your sole focus.

PEACE

Seems that if there is no god, then there are no real rules now, and no fear of ethereal punishment, shouldn't anarchy reign? This notion is absolutely absurd. Is this to suggest that the only thing preventing religious people from going on a mad rampage against their fellow humans would be the fear of punishment by an ethereal entity? To advocate that a prescribed faith in an ethereal being is the only way to keep humanity from self-destruction is to not understand how intrinsic humankind's need for peace really is. Have some faith in humanity's desire for peace. Remember that societies and religion are a reflection of the H-Freak, or rather, evolved *from* our instinctual need to have order. Order was not something introduced by religion, but rather interpreted by religion. The framework of religion unfortunately generally results in oppressive tyranny, but always at least somewhat

represents our biologically intrinsic moral character, within which there is a true desire for peace, order, and communion.

Humans want and need order because it provides predictable structure to their world, and therefore, if we mostly don't exist in anarchy under a religious manifold, we most likely won't have anarchy without one. That's not to say that religion is completely evil and useless, but rather that all the useful information and structure that exists within it should be extracted and combined with science in a meaningful way such that people can benefit from a new cultural design, and the rest of religion should be discarded. Discarding religion's root meme, the "ethereal creator" notion, is first and foremost. People do not need gods; they simply need purpose and communion.

GENETIC INTEGRATION

One of the most amazing things about our brains is that memes that have been around for a long time eventually grow into our design genetically. A prime example is our ability to speak. Having dexterity of the larynx as well as the mental capacity to remember many thousands of words, has been a genetic enhancement that evolved due to the huge advantage in nature that oral communication gives our species. By this same reasoning we must also have evolved a dependency on the totality of perspective that religion provides, since religion has spent just as much time in our meme-pool as speech. Eons of religious and ethereal perspectives have forged a very real instinctual dependency for a "virtual" parent. We *need* the comfort of a protector to provide divine purpose, to serve judgment, to explain the universe, etc. Without this "thing" to "please", we feel purposeless and no longer have any parameters to operate within, not having any built-in psychological mechanisms for self-restraint—or do we?

My fellow humans, the function of religion has run its course. Let's take the next step.

Chapter 9 - Demeanor

Imagine filling a bag with atoms that match all the types and quantities contained within your body. What's the difference between you and the bag? Order is the only difference. In the grand scheme of things, you are no more valuable to the universe than the bag's contents. Never lose sight of the fact that we are nothing more than a complicated assembly of atoms, and all of our individual cellular chemical processes congeal into a wholly massive process that we perceive as being alive. The fact that we act out these lifetimes with varied perceptions and activities will not make one iota of difference to the master plan of the universe, and all of the most incredible things that have happened or will ever happen to humankind will be an insignificant speck in the universe's timeline. We are merely bacteria plaguing the Earth, and none of us has a higher purpose in life since, ultimately, we are nothing more than tiny swirls of energy in the cosmos, tending to our corner of the Mandelbrot.

All of the information presented in the preceding chapters is necessary to allow you to see "reality", or at least the best perspective on reality that I have been able to extract from a mountain of information. You don't have to truly understand all of it as long as you have accepted certain inalienable facts: that there is no ultimate conscious creator; that we are nothing more than biological machines; that evolution is a process we are a part of; that death is unavoidable and absolute; that mathematics is the root meme of the universe; that all of our "wants" derive from instinct; and that we'll probably never know everything. If you do not accept these memes, you are insane (remember, by our definition insanity is the belief in untrue memes), and can never truly be happy because you will perpetually have to fight to deny these facts. Understanding what and where you truly are is the most fundamental starting point to finding real happiness, because only with a clear understanding of our universe will you be able to see the paths that lead there.

Having a macroscopic overview of what life is really all about can show you how to improve your individual life. We have only recently started becoming self-aware (that is, we are learning what we truly are), and it is very intimidating and quite humbling. It hurts our massive egos and scares us into cowering behind our gods for protection. Trust that you are strong enough to live in the true reality. If you deny yourself the truth, then you simplify your existence to the equivalent of a docile child that passively submits to influence; not very inspiring, considering your potential. Why would you waste your life in complacent ignorance, knowing that you have only one life to live?

RIGHT TO HAPPINESS

As a human, you have the right to exercise any of your selfish inclinations as long as your actions ultimately result in the unaffected or lessened suffering of you or your fellow humans. Any resistance by others to this freedom to do as you please is nothing short of tyrannical oppression exercised upon you. One thing that should be made clear is that there is no true “right” or “wrong”, only actions and consequences that we’ve mapped into a culture in order to weigh the appropriateness of those actions. It’s only when actions are compared to a desired goal that they can be categorized as either morally right or wrong. For us humans, our goals are defined by our cultures, our cultures in turn being loosely but fundamentally defined by our instincts.

So actions (or thoughts) that humans commit are either right or wrong as determined by culture, but there is no universal law stating that any action is absolutely right or wrong. This means that from this point in time, humanity can evolve in virtually any direction we choose to, and no direction will be more correct than any other because in the big picture, nothing really matters; the universe will sort itself out with or without us. We can evolve into anarchy, tyranny, equality, or any other imaginable form. We are not pre-destined to fit a given form. What’s important to us now is that we can choose where we go from here. You may argue that the “fate” built into the universe has already decided for us the direction of our evolution, but we are most certainly not capable

of predicting that fate, and so we still effectively have the illusion of free will and thus can “apparently” evolve in the direction of our choosing.

CULLING

For the same reason that memes can manifest into genetic support systems (like the larynx did to support verbal communication), we can determine the evolution of our species’ future genetic mental inclinations with the concepts that we instill today. We can, over relatively few generations, reshape our instincts to a form that better suits humanity as a whole; we as humans do not have to be perpetual slaves to the current form of our primitive instinctual motivations. Having said that, I would like your help in building something. Culture is a mechanism (albeit abstract), and as with any system or design of a mechanism, there is a desired goal for this mechanism to achieve. My selfish proposal is that we build a Culture Machine, composed of all humans everywhere, with the goal that every living person can have the opportunity and privilege of living a happy and fulfilling life, should they choose to pursue it: a perfectly happy H-Freak. It is very possible and so very easy to accomplish. Our most fundamental instincts tell us that this perfect communion is exactly what we all want, it’s just very difficult to simplify the construction in such a way that this goal of ubiquitous happiness is always in sight of the individual.

RESPONSIBILITY

With our supreme and burgeoning intelligence, we are slowly evolving out of our natural Earthly confines, into something fantastic. But, until such time in the future when we have instincts that are more honed to social harmony, we must be proactive in forging the appropriate disciplines that will manifest genetically into our progeny over time. As we exist today, we are not naturally equipped to deal responsibly with the new powers we have given ourselves (technology, knowledge, etc.) and if left unchecked, our ancient instincts would have us abuse these powers. It is time that we must also take responsibility

for how we evolve, or inevitably face the possibility of our own demise as too many of us clamor for what we believe to be deservedly ours, at the expense of others.

The next few sections propose many behavioral and perceptual maxims to define the pieces of the perfect Culture Machine. Recognize that a large system is nothing more than the compilation of efforts of its constituents, meaning that the design of a system happens at the individual level. These are not just random ideals; there is a mathematical premise behind each of the following suggestions such that when the combination of all these memes is incorporated and enacted by all members individually, the net result can be a world where life is a pleasure for all; more pleasurable than any one individual could possibly accomplish alone.

Here are some of the blueprints:

INTERNALIZING

Imagine you had the most important person in the universe coming to stay with you indefinitely. How would you treat that person? How would you conduct yourself around that person? Well, imagine no longer because YOU are that person and it's time to start thinking of yourself in that light, with all the respect and attention that the most important person in the universe is due. You are the most incredible thing you will ever own. So how should you treat yourself? Let's try to sort out that with a few insights…

When you see everyone milling about doing their business, what they are most fundamentally involved in is creating order. Our galactic function in this universe is to create order. However, the multitude of ways in which order can be produced is greater than the possibilities that make us happy, so let's consider what makes us happy from a biological standpoint. We can define happiness as reduced tension on the sleash, which creates a feeling of well-being and contentment. Only those

actions that reduce sleash tension will make you any happier. True pleasure can only be had during orgasm, but it is biologically impossible to naturally exist in that state for more than at most a few short moments each day. The rest of the time we must somehow find contentment in the form of instinctual placation. This isn't necessarily a rewardless pursuit, however, since the instincts in and of themselves will inherently mildly stimulate the pleasure center.

HUNTER-GATHERER

Despite the rapid intellectual and social evolution that humanity has experienced in relatively recent history, our bodies and instincts still reflect a very long path of evolution that took millions of years to optimize, and as such, nothing is more instinctually satisfying than the lifestyle and social structure of the ancient hunter-gatherer society from which we evolved. Our ancestors didn't have any artificial means to escape the pains of existence by shortcutting stimulation to the pleasure center, and as such were forced to evolve into perfect equilibrium with their environment in order to find happiness.

Those that evolved to feel contentment during the bulk of their daily lives could be considered the "best-fit" members to their environment and as such could be considered the most efficient and ultimate form of our ancestors. It took a long, long time for our ancestors to evolve to their state in the hunter-gatherer society; however, since then our rampant intellectual growth has removed us from most of the hunter-gatherer daily stresses.

Our instinctual brains don't evolve as quickly as our H-Freak does and despite our gray matter's ability to adapt to a multitude of perceived realities, a lot of the stimulus that the instinctual brain needs is still firmly rooted in what the hunter-gatherer lifestyle can provide. The closer you feed your senses the hunter-gatherer stresses, the more instinctually familiar that stimulus will be to your brain, and the healthier your body and mind will be in response.

EXERCISE

This isn't to say that you should dress like a caveperson and go club some helpless animals; no, rather to mimic the sensations that would be encountered by our ancestors during their daily lives. It's easy to imagine that our ancestors spent a great amount of energy in the form of physical exertion—hunting, walking, climbing, etc. Everything that a human is capable of doing with their bodies, they did, and you should too. They evolved to enjoy their daily regime and as such their forms of exercise were "fun"—instinctually satisfying.

Adding fun exercise to your life is the most fundamental thing you can do in the pursuit of happiness. It is the foundation from which happiness can occur, for if you don't exercise, the body atrophies and the brain suffers from a myriad of related problems (lack of blood flow, stress, etc.), which is reflected in the suffering instinctual brain adding tension to the sleash. Remember that we are energy conduits and we borrow a portion of the energy that we control the flow of, in order to exist. Life is all about energy consumption: the more energy you utilize, the more alive you are. Exercise is the greatest amount of energy your conduit can physically utilize, so grab as much of it as you can and the mind will reflect that with a greater sense of well-being (sleash tension reduction).

Exercise is something that should be thought of as a lifetime commitment to yourself. It isn't something you do for a while, or for a specific goal, it's something that never ceases over the course of your lifetime and forms a critical part of your weekly routine, with appropriate time allotted for rest and recuperation. No matter how you choose to pursue it, there are some basic requirements: it must be fun so that your motivation stays high, and it must work your heart and muscles vigorously for a challenging period of time; anything less is not going to be beneficial to you.

The health of the body often reflects the health of the mind. If you find you are unhappy overall, you may slip into apathetic obesity or atrophy. However, turning that around by challenging the body with physical exertion will uplift the mind and provide the feeling of well-

being and happiness that might not be present in other aspects of your life. That's not to say that this exercise-derived well-being is a placebo; it is every bit as real as the well-being that comes from a content life. Both provide the chemical balance that contributes to this feeling of well-being. The perception of well-being is highly mutable and not entirely dependent upon one's environment.

Exercise also provides an outlet for the instinctual "reactions" to environmental stresses. In our modern world, our daily lives are now confined to controlled interactions that often don't permit tremendous releases of primitive emotional energy should the need arise. We may be humans, but we are animals first. It's inevitable that you will run across scenarios in your daily life that seem to warrant a powerful biological reaction from you (rage, fear, etc.), and yet we are unable to release this reaction without considerable illogical damage to oneself or to others. We are therefore forced to contain this energy, causing great stress to the body and mind. Most definitely our ancient ancestors didn't contain themselves; hence, this powerful reaction is very deeply rooted and unavoidable. However, we are no longer primitive cavepeople and so the energy that gets generated from our modern stresses must be redirected physically into harmless and beneficial exercise, providing a safe release of this power, and reducing the sleash tension accordingly.

Spend a great deal of time outside the confines of our "caves". Dance, climb something, run, masturbate, play sports, whatever…feed your body the same type of stimulation that our ancestors received naturally and your body will grow strong, setting the foundation for happiness. Without your health, happiness is virtually impossible to achieve. Always try to vary the stimulation that you feed your brain and body, and it will reward you with a lifetime of health, stamina, alertness, and happiness.

DIET

You are a machine; treat yourself like one. Use your great intellect when deciding on how to treat it. For example, our tongues and appetites evolved to help us seek healthy foods in nature. We taste the

sweetness of fruits, we savor meats, we crave fats, etc. Unfortunately however, our great intelligence has once again led us into a dead-end because we have learned to extract those attributes of healthy foods and reassemble them into foods that aren't so healthy, adding fat and sugar to items in order to make them taste better; but these contrived items are inherently unhealthy due to lack of or an overdose of nourishing nutrients. When it comes to diet, Mother Nature knows best. Eat natural foods that taste good and you cannot go wrong.

Don't fall into the trap of ritualistic eating; eat when you are truly hungry, not when society dictates. If you eat less, you'll live longer. Our body's cells are like little machines and the more fuel you provide them, the faster they work and the sooner they will reach the number of times that they were preprogrammed to divide and eventually die. By eating what nature provides, and eating when you are hungry, instead of by the clock, you will slow your cells' reproductive rate and add many quality years to your lifespan.

SLEEP

Everyone has his or her own biological needs for the appropriate amount of sleep, but generally between 6-9 hours a night is healthy. Sleep gives the brain a chance to clean up the clutter that accumulates from all the daily stimulus it receives during its waking hours, and also allows it to "level" itself, defeating exhaustion-based depression, and giving you the mental strength to deal with daily stresses. As well, the resting body has the opportunity to repair damage from its daily rigors. Even a modest loss in normal sleep time creates a considerable deficit in your ability to concentrate the next day. If you have trouble sleeping, be sure to exercise regularly, eat right, avoid chemicals (caffeine, alcohol, etc.) well before going to sleep, and have a regular bedtime that you adhere to.

INNER STRENGTH

Having addressed the physical requirements for the pursuit of happiness, we now will discuss the psychological ones. The next step in the search for happiness is sleash tension reduction, which we only naturally have control over through the channels of the instincts. True happiness can only be found by satiating the instincts, all of them. Most of the instincts are selfish but some of them help you to interact with your fellow humanoids. First things first, however: in order for you to productively communicate with others, you need to have yourself in check. Inner strength provides the foundation for outer strength, and believe it or not you already have access to the most powerful tool imaginable to help you get there. What is that tool? Well, drawing upon the reasoning that we probably genetically evolved a need for an ethereal parental entity to always be present in our lives, I submit that we have subtly split personalities by evolutionary design, and that this is the by-product of eons of our intellectual evolution being deeply immersed in the perception that we are always in the company of an ethereal overseer.

The fact that we used to think of this ethereal overseer as being outside of the confines of our bodies does not change the fact that it has always been entirely a fabrication in our minds throughout all of history, and hence has evolved a certain genetic integration with our personas. To deny the need for this entity in our lives might be an ignorant and futile attempt at forcing evolution, resulting in poorer mental health for those who suppress this need. We *need* to have someone consciously evaluating our actions for us. But how to embrace this need without further propagating incorrect memes, such as a spiritual explanation? Easy. Let's now introduce you to your very real, genetic "G.O.D".:

G.O.D., say hi to you.

"Hello".

You, say hi to G.O.D.

"Hi".

G.O.D. is you, and you are G.O.D. You both already exist in your mind. No, this is not an attempt to make you crazy; this mechanism has always been a part of you, as real as your thumbs, and now you must learn to utilize it in order to truly be happy.

This G.O.D. that we're identifying in your head is your "Governing Overseer Device" and it is more elaborate than self-discipline, pride, or a good conscience; it's a genetically evolved portion of your psyche that represents a purified, logical "you" (which we might call the L-Freak portion of your individual H-Freak).

The G.O.D. can help you accomplish wonderful things because it gives you the ability and strength to painfully operate beyond the confines of your instinctual desires when it makes logical sense to. As we evolve into ever-higher intelligence and awareness, there will be many thoughts and actions that we could, and should, logically manifest to our benefit, but may not have any related instincts to motivate them. For example, we do not have any instincts that result in fear of recreational drugs, despite their being extremely dangerous. The only resistance to taking drugs would be one's logical decision not to partake, even though the known pleasure of drugs tries to overrule this logic. This is where the G.O.D. can be most effective, filling in for this lack of instincts, in order to propel logical actions that are rewarding or protective in non-instinctually recognizable ways. The G.O.D. is our means for escape from the primitive and limited direction of the instincts; effectively, it is our logic instinct.

The G.O.D. is not meant to serve as an alternative surfaced personality because it only knows logic and would tend to starve the instincts; rather, it is useful as a powerful tool that can help us temporarily put aside the immediate goal of placating the instinctual drives that have defined us for eternity, in order to necessarily accomplish a logical, though non-instinctually-recognizable, goal. Ultimately though, despite the fact that the G.O.D. can push us through periods of non-instinctual stimulation, inevitably we must return once

again to address these needs, for without instinctual satiation, life would be most unfulfilling.

What is the point of acknowledging this genetically integrated entity? The same point as with any other religion-based overseer: to reward you, to punish you, and to help you; except this time you know the whole truth about what it is. We're a creature that has unfortunately, but perhaps unavoidably, evolved a need to receive judgment from something we perceive as greater than ourselves, but now we have finally evolved far enough intellectually to know there really is nothing out there, except ourselves. That leaves us with this obsolete ethereal entity apparatus in our minds, but still dependent upon the stimulation that it provides (judgment, conscience, etc.) in order to define our motivations in life. This means that we must now find a way to healthily employ this apparatus, and the only option left is to rewire it back into ourselves. In other words, two personalities exist within you: yourself, and the internal, logical G.O.D.

Your G.O.D. is an abstract window through your human inclinations, into your L-Freak. Despite its motivation of exercising pure rational thought, it is not devoid of emotion because the effectiveness in its communication with you is facilitated by pulling on your powerful emotional tethers. For example, it can beam with love and pride for you, feel bitter disappointment in you, and deliver tremendous rage at you. For important matters, it must be the ultimate decision maker for you, with complete sweeping control of you and your actions.

The entire function of your G.O.D. is as an enforcer, a source of empowerment, and a judge of character. It’s important to understand it as the most powerful character of personality imaginable, for it must represent an authoritative figure to you, like an ideal and powerful role-model. It’s easiest to work with this entity in a one-on-one rapport so that it can have an identifiable personality, one which makes it naturally easy to communicate with. Your G.O.D. can only speak to you, but when it speaks, it is absolute law. Do not take your G.O.D. lightly and always give it ample time to think before it speaks.

It is not necessary to perpetually bear the presence of this entity, since you are entitled to be a human and should be allowed to selfishly (and healthily) employ your dominant instinctual pulls that may not necessarily have a foundation in logic, but the influence of this great entity must play a large role in your motivations in life. When the time comes that your G.O.D. speaks, you must listen and obey so you don't inadvertently destroy it, for if you try to oppose its overpowering will, it suffers, and you suffer. You do not ever have the power or privilege to overrule its commands or judgments.

Your G.O.D.'s primary purpose is to coerce you into being an excellent example of a positively contributing member of the Culture Machine. Your G.O.D. wholeheartedly understands the need for, and possibility of, the perfect Culture Machine, even if you don't. It also understands that the Culture Machine has room for every single living person to be a part of it, as long as they contribute to its preservation and improvement. It wants you and everyone else to be contributing members of the Culture Machine because any actions that benefit the Culture Machine increase the net happiness of all members, including yourself.

Your G.O.D. always knows that the best course of action is one that nurtures the Culture Machine, despite your tendencies to first pursue your selfish desires, and it helps you to identify when you are being inconsiderate to others. If you do something that positively contributes to the Culture Machine, it will give you a healthy pat on the back and tell you that you did a great thing. If you need strength, there is nothing in your universe more powerful than your G.O.D.; it can help you through anything. If you did something that breaks down the Culture Machine, it will definitely want to have a serious "talk" with you. Your G.O.D. does not hesitate to deal fit and lavish punishment. Fulfillment of the penance dictated by this G.O.D. is paramount to its effectiveness in your life, so be just, strict, and fair with yourself.

So where's the reward this G.O.D. can offer? It will provide you the mental discipline for the creation of the life you desire and that we all desire, a life of happiness, and the strength to persevere through any challenges that inhibit this desire's realization. It doesn't offer you any

reward other than the greatest gift one can possibly have: self-love. You may ask why we shouldn't try to evolve out of this dependency on an abstract controlling entity. I believe that we should evolve *more* into this dependency, more towards the purified, Culture Machine-enhancing version of you, rather than the current weak-willed and selfish persona that defines the average human animal.

Evolving to become more of a logically motivated creature has an inherent order and efficiency to it that can be applied on very large social scales, allowing a great number of people to live in harmony and happiness. This is not to suggest that emotions and instincts are valueless; quite the contrary, for without them we are simply boring automatons. No, we need to find that balance of logic vs. healthy instinctual indulgence such that we get the maximum positive instinctual placation we desire, but not at the expense of others. You must use your intelligence to feed your instincts because the instincts themselves have little understanding of the relationship between higher social order, and true happiness.

HONESTY

Now unto you: RULE # 1. BE HONEST! Be honest with others, but most importantly, always be honest with yourself. Look deeply inwards for your true motives for everything and never allow yourself the luxury of denial. Knowing exactly how you view yourself will allow you to build yourself to where you would like to be. If you are way below the standard where you would like to be in your life, then immerse yourself with open eyes into your disappointing current life until you cannot stand it any more. This should provide you the true motivation and energy needed to sufficiently change your life and reach a point where denial becomes unnecessary. Virtually none of us start existence with our life of choice, so there is no shame in what life you have. The shame only enters when you deny yourself the opportunity to change it for the better.

PURPOSE

It is your responsibility to make yourself happy, nobody else's; and likewise, you are not solely responsible for making anyone else happy. You are not owed anything, despite what may have been promised you by a person or collective, and thus your happiness is not dependant upon others to fulfill. Remember this: the only truly noble purpose in life is to make yourself happy. That may include making others happy, but you are the only person on this planet that is permanently in charge of how you feel. You must be selfish first in this respect because you will be no good to yourself or anybody else if you yourself are suffering.

We need a sense of purpose in order to give meaning and direction to our actions. Purpose is what gives us a fulfilling existence so always have a weekly, a 5-year, and a lifetime goal, and make all your expended energy count towards those goals. It's beneficial to know when and how to relax, but don't allow that to become laziness because wasted time is gone forever. Every single action or inaction that you take directly creates and influences your personal reality, so take control of the direction that your reality manifests. The most effective way to accomplish any goal is to imagine yourself having already accomplished it, then step backwards in your mind from that point in time, step by step, until you arrive at where you currently are. This is the most efficient path to your goal and precisely defines each step along the way.

SELF LOVE

Try to discover exactly who you want to be. This is such a deeply personal criterion that it would be senseless to describe exactly how to do it. You may want to be famous, you may want to be educated, or you may even just want to be humble, all differing criteria for success. Fulfillment of your desired potential is a life well lived. You don't have to be great in the eyes of humanity, just happy about yourself. Trust that you are the most important person in the universe and that you should treat yourself with the kind of innate respect due to someone of that stature.

Fundamentally though, learning to love yourself requires you to look deeply inwards: for all the things that you like about yourself, congratulate yourself; for those negative aspects, start re-wiring that brain of yours so that you can change those attributes. By defining the type of person you wish to be, you can then takes the steps necessary to become that person. It's that simple. Your behavior is entirely under your control at all times, so direct it.

When you are generally unhappy, you will exhibit intolerance to those around you, which stems from your internal frustration that subtly manifests itself into your negativity when dealing with others. The problem isn't due to other people, it comes from within you; you must take care of you first. Finding contentment and fulfilling yourself will give you the patience and wisdom to be able to best integrate with those around you.

RESPONSIBILITY

Some of you may have had a really bad deal from the start of life, but that doesn't change the fact that you are the one responsible for your actions. From the second you are born, you are in control of you, and ultimately everything you do is your decision. Take yourself, and the responsibility for yourself, very seriously. If you are a person who feels like the world is not giving you a chance and like you have no choice about who and where you are in life, then you are denying yourself the responsibility for changing things. Complaining about your problems is an ineffective quick-fix that does nothing to solve those problems and is also an ulterior means by which to garner attention in the form of sympathy. Life isn't always fair; don't expect it to be and it won't continuously disappoint you. Take full responsibility for your life. Your situation may not be your fault, but it's definitely yours to deal with.

STRENGTH

You don't have to submit to whatever gloomy future is in front of you (unless you are being punished for an action you committed at the expense of society). When all is lost, time for your G.O.D. to take the helm. There's no sense continuing on the same path in your current life that brings you no happiness; your G.O.D. can create a completely new life for you: a rebirth. The old you is now effectively dead. Plan a drastic change and move on it. Start the "(your name here)" project in which you finally acknowledge that you are at the bottom and you absolutely refuse to go any lower. From here on out, every step you take is meant to improve your life, for you. Define those steps and follow them. When you feel weak, your G.O.D. has enough power to push you through. Having strength does not mean you are never weak, but rather determines your character in times of weakness. Trust in your ability to accomplish anything, because through great pain will always surface great strength.

You can start your life over as many times as it takes to find happiness. Count the number of hours a day that you are truly happy and let that serve as your benchmark for improvement, for you are only truly alive during those moments, and you only really live as long as all those moments combined. The rest of your time should be an investment into your future happiness, or it is just wasted time. Most importantly, do not let others' judgments weigh you down; there will always be plenty of people for or against any decision you can possibly make, so do what works for you.

Use your G.O.D. to push you beyond the possibility of failure. Find your roar; not a scream, a roar. Something conjured from the depths of your soul that can blast the solar system apart. There is no more potent biological and psychological empowerment you can give yourself when you are feeling weak and subdued, and nothing is better suited to announcing the surfacing of your G.O.D. Only with a full-blast roar can you demonstrate the proper respect that should be afforded the mightiest entity in the universe.

Everyone experiences times of bitter depression; it's a by-product of not being born omnipotent, and eventually situations arise in your life that will bring you down. It really does happen to everyone. It's at times like these that you may feel like turning to a religion for support (a quick-fix); well, sorry that this book has ruined the effectiveness of religion for you but chances are you would just feel forsaken by your god of choice anyway since it can't help you if it doesn't exist—at least you are spared that rejection. The solution to your dilemma cannot be found in religious faith, but only within you.

CHANGE

Creating a new life for yourself implies that you must have the knowledge necessary to effect that change, so acquire the knowledge of how to make waves against the sand dam that keeps you from releasing your potential. Those people that accomplish the seemingly incredible have no super-human attributes; they simply endlessly seek the information they need and coordinate their actions in intelligent ways such that they come to the desired result, despite the risk of failure or judgment.

Your version of a desired happy life is entirely personal, and only with deep honest insight will you ever formulate a plan to move from your current existence to the one of true happiness for you. You may suffer many failures along that path, making it feel like you have lost some ground, but if you accept that you will fail sometimes, and learn from those failures, then they were merely hidden steps along your path. Do not dwell on mistakes made in the past for you will needlessly torture yourself with regret about something you can do nothing to change. Accomplishments define you, failure educates you: embrace both, for wisdom can only be found after a long path of good and bad experiences.

Remember that earlier we were talking about all the untapped talent that quietly exists in the minds of so many "average" people who have never tried to discover their gifts. You may be one of those people,

so turn on your prospector instinct because we *all* have multiple special talents that only bloom when cultivated.

GROWTH

Anyone can become a new person over time. However, it's entirely unrealistic to believe you can fully manufacture a quick revision in your situation and perspective. You may believe you have changed your perceptions but there will be many residual dormant, autonomic responses (stored in the gray matter) built into your personality, that have accumulated during your lifetime of experiences. It's important to learn how to intercept these reactions and reprogram a response that is more reflective of your newfound perspective. Identify and let go of these reactions; create a continuously positive perspective and outlook with which to formulate thoughts and actions. It takes a long time to change the essence of who you are, but it can be done.

Learn to rethink all your perceptions and actions relative to the needs of the Culture Machine. If you continue to forge new positive pathways in your gray matter, you will have recourse to other options when faced with the need to respond to a situation. Our personalities are 90% learned and so you are not "hard-wired" into any specific mindset. Watch and learn from the actions of those around you who seem to have their world intact, and consciously incorporate a similar mindset and mannerism.

Also, as much as you may believe your disposition dictates your behavior, behavior can also train your disposition. Force yourself to behave in the way you would like your state of mind to reflect, and soon your mind will learn that state of being. Learn from the "doers" instead of the "talkers". In private, practice your new responses with mock scenarios that you may encounter. You are a self-correcting mechanism if so directed.

EGO

The ego is a constantly starving instinct, for it is always demanding of more placation than our lives can ever provide, and throughout our lives we are challenged to control it. We cannot all be leaders, geniuses, or sexual idols, despite these desires of the ego. It is practically impossible to be the person that your ego would be satisfied with, for as with all the instincts, the ego continues to pull even beyond its plausible satiation. Oppression of others is often the result of this starving ego problem. Some insights: ego turns confidence into arrogance; ego turns necessity into greed; ego turns pride into denial; ego turns reality into fantasy; and ego turns adults into children. Ego can also prevent you from allowing yourself to get the help that you might need. Do not be manipulated by your ego.

The difference between pride and ego is that pride is silent and fed from within, whereas ego demands constant reinforcement from others and is anything but humble. Be humble enough to see yourself for what you truly are. There is little chance that you have discovered anything new that someone else has not taught you, because you are no more than the sum of your parts, a collection of your experiences, and so all gratitude that is ever shown to you should be reciprocated to those that you respect and learn from. You are not perfect, so don't pretend you are: it's impossible. As soon as you start believing that you are greater than others, you are setting yourself up for an inevitable fall. The only form of perfection that we can achieve as humans would be if we were to always speak, act, and think in terms of strengthening the Culture Machine. To be perfect is not to be better than another, to be perfect is to be happy—and true, complete happiness can only come from the combination of self-fulfillment and constructive participation in the Culture Machine.

Humility, however, does not need to extend so far as to diminish the light you cast into the world. If you strive for perfection, believe in yourself, and work hard for some form of strength that is worth role-modeling, then don't hide your gifts. It would be tragic to conceal your admirable traits in the misguided notion that humility serves us better so

as to not intimidate others with your greatness; or even worse, to fear the jealousy-based derogatory judgment of those less capable. Instead, confidently provide others with an example of how greatness can be achieved. If you can be a leader in any capacity, be one.

EQUILIBRIUM

Define for yourself your equilibratory state of mind. This is the state of mind in which you spend the majority of your waking hours, whether it be calm, or excited, or frustrated, etc. Whichever is the most prevalent current mindset is your equilibratory state. Most of your important decisions should be made from this state of mind. To demonstrate why: imagine that your equilibratory state of mind is one of calm, peaceful existence…something happens that angers you and you decide during this angered state that you will no longer endure the situation that brought it about and will immediately remove yourself from that situation forever. Unfortunately, once you have returned to your equilibratory state, you find that you need to return to that situation; but now you have severed the necessary ties and cannot ever return. If you had allowed yourself to first return to your equilibratory state before making any related decisions, you may have found a more appropriate solution to your dilemma, one that would be easier for you to live with in the long run. Whatever your equilibratory state of mind, decisions made in that state have the most effective results for the type of person that you are.

Ideally, our equilibratory state would be one of general happiness. It isn't healthy to perpetually exist in a state of rage or sorrow or any other harsh emotion, though some of us are wired to be that way. But whatever your state, make it a productive one, one that will improve your situation rather than allow you to self-destruct. There is a momentum to emotional states, and this momentum may distort your perceptions and reactions from what they would be if they were instead generated during your equilibratory state.

Meditation (the deliberate attempt to psychologically escape from environmental stimulus and elaborate thought) is a powerful technique

by which you can isolate yourself from the outside world and regroup your mental state, effectively returning your emotional momentum to zero velocity. By disrupting that momentum and calming the mind through peaceful and disconnected meditation, you may find a clearer direction for your decisions and motivations.

GREED

One of the most negative and destructive desires we have is greed. What is greed? It's our desire to possess a form of wealth beyond the exigencies of our lives. This ancient instinct manifested from the most primitive needs of our ancestors to garner scarce resources that can make the difference between life and death, such as scrambling for food before the limited supply was all eaten. This has since manifested behaviorally into our modern H-Freak, resulting in our creating an amazing diversity of possessions and power that can now be accumulated in order to satisfy the greed instinct. One thing you should recognize, though, is that your perceived "wealth" is always relative. You may feel poor relative to some, and rich relative to others, when in fact we live much easier lives and have more resource-wealth today than kings did a century ago. It doesn't make any sense to compare your wealth to others since there will always be some richer and some poorer.

See greed for what it is, a waste of energy in the pursuit of unneeded resources. If you have ample resources to live happily, then greed can only result in taking another's potential resources, and the endless draw of greed can distract you from your real purpose in life, happiness. Greed is an infinite loop within your mind; you can never permanently satisfy it no matter what you feed it, so think logically and see what you really need. Get past the misdirection of the greed instinct and accept it as an always-present nagging handicap. Be aware of the incredible amount of propaganda you are exposed to that appeals to your greed, and don't fall victim to its chants of necessity.

DENIAL

On the flip side, those that don't have relative wealth or power will tend to use denial to placate their egos by convincing themselves they do not want it; or will mentally taint it with falsehoods, leading to discrediting false memes that may unjustly be propagated. We're able to artificially somewhat alleviate the pain of not having relative power because of the complexity with which we now culturally define power, and the cultural layers of abstraction that diminish the relationship between power and the originating instinctual draw. It's conceivable that this depth of abstraction can be consciously increased to afford a weaker connection, thereby releasing tension on the sleash. All of this can be summed up into the word "denial".

The ability of humans to employ denial helps us to avoid over-contemplating situations that are impossible to surmount and which may result in frustrating madness. Unfortunately, denial more often results in breaking down the Culture Machine because of the falsehoods introduced by a perspective based on denial. There will always be things you want that you cannot ever have, so learn to let go of the desire to have these things or else your overall happiness will be compromised.

CONTENTMENT

Differentiate between "essential needs" vs. "desired wants" vs. "greed". Learning to be content is a powerful tool. It can provide a foundation for pride, which greed tends to usurp. Our tendency is to hyper-exaggerate our needs such that a perceived shortcoming of resources can only be corrected with a tremendous overcompensation, rather than the acquisition of resources in the appropriate quantity. This is the black-and-white response. We tend to overcompensate for our perceptions with gross generalizations and simplistic models so as to simplify the problem for our feeble brains. This black-and-white mentality leads to waste and prejudice.

Learn to think in a gray scale so that appropriate measurements can make your life more efficient. For example, define a list of what you would need in your life for you to truly be happy, making a concerted effort to remove ego-derived needs. Is it really ultimate power and wealth? Most likely not. The state of contentment is not a lack of wanting, for that is an impossible state to achieve, it is instead the ability to fully appreciate what you have if it is sufficient enough to allow you to be happy. Learn to separate greed from ambition. Learn to listen to your whole instinctual brain for its genuine needs; the requirements for your true happiness are deceptively easier to accomplish than you may think. Only if you defeat greed can you truly have dignity, pride, and freedom; otherwise you make yourself a slave.

CHALLENGE

Don’t ever become complacent with your world. If you have conquered the challenges of this universe, find another universe. You can rest when you’re dead. Apathy will slowly rot your mind, robbing you of your creative ability to feed yourself the stimulation that is absolutely essential in order to achieve happiness. Remember that the mind will eventually degrade nearly every meme pathway over time and so if you stop feeding it information, it will eventually lose even its current information, resulting in senility. Keep your mind stimulated with education, different experiences, and challenges—and most importantly, communion with your fellow human. Socializing with a variety of people will keep your mind powerful and increase your intelligence.

Your life should be filled with a constant series of personal accomplishments in order to get the most out of the short lifespan with which you have to focus energy. Don’t be afraid to take some risks. What's the point of living your whole life sheltered from risk, just to live a few extra years in a geriatric state? Try to live your life like you are doomed to die soon anyway and you'll be invincible. If you die, you die—we're all going to die anyway, so you might as well live the best you can while you can.

ESSENCE

Your essence. For all intents and purposes, this could be considered your metaphysical "soul". To break it down to science, your essence is simply how your brain's wiring generates and responds to stimulus. If someone has spent a significant amount of time with you, they can somewhat predict what your response may be to a given scenario, and therefore they have absorbed some of your essence; some of their brain becomes wired (remembers) to mimic how you are wired. The more time that they spend with you, the more accurate will be their ability to imitate you and predict your reactions and feelings. This means that your unique mannerisms and the thoughts that define "you" might not remain wholly confined to your body. Your existence, in the sense of how you interact with your environment, can also be manifested from other people, as when someone imitates you in some fashion (e.g., physically, verbally, etc.). Any form of permanent communication (such as writing) also contains your essence, and even many centuries from now, someone receiving this kind of communication would perceive and absorb your essence.

DEATH

We are all going to die an eternal death. Plan your life around the fact that you only have one trip through, and that it is short. No other creature on Earth has the intellectual capacity to ponder the terrifying ramifications of death, and nature hasn't had time to evolve within us the psychological ability to efficiently deal with this knowledge. Fear of dying is the single most powerful force to reckon with—and yet, every living thing must eventually experience death. It's part of nature, and there's absolutely nothing you can do about it. Allowing yourself to cycle this terror through your brain is a nasty perpetual loop that feeds itself into larger and ever more unmanageable fear. Understand that this fear cannot be defeated with any amount of contemplation because it is at the very core of all our fears, and as such, insurmountable; the only

antidote that remains is distraction. Fill your life with goals and agendas and you will be invincible until the second you die; and you will die fearlessly.

Some people can be satisfied with the time given to them and feel content at their time of death, sometimes passing on with little or no fear, happy at the level of fulfillment they've achieved. We should all be so lucky as to have the privilege of a fearless death, which comes from living a happy and fulfilling life, always appreciating that someday life would end. For those caught off guard, however, the terror wrought by impending death can be quite maddening, like one would experience while being consumed by a large predator, or being pinched into an infinitely small space.

Often people who have a near-death experience describe having their "life flash before their eyes"; this is the brain's last spastic effort to try to find some scrap of information in the gray matter that might somehow prevent this horrible demise. It's hard to imagine a more psychologically scarring event—the survivor of a near-death experience may have suffered irreversible mental trauma. So, you have a choice: accept death and work with it, or ignore it and suffer in an unimaginable way when it approaches. Only by understanding and facing death is it possible to be afforded the opportunity to die with grace and dignity, and you have your whole life to figure out how you might want to accomplish this.

Be prepared to die at any moment and live like your time is short; make the time count. If you want eternal life, then earn the right to live on as a cherished memory in the minds of friends and family that had the pleasure of knowing you while you existed. The more positive the impact you've had on people throughout your living years, the longer the memory of you will live on in their minds, effectively extending the lifetime of your essence far beyond the lifespan of your carcass from which it was borne. Your essence can continue to exist in the lives of those you've affected; and likewise, the essences of those you loved who now are dead are still imprinted in your brain; feel free to talk to them, they'll listen and interact.

QUALITY OF LIFE

Life tends to be a constant distraction from introspection. This becomes more obvious as you grow older and time becomes less of a utility and more of a limited resource. Try to imagine yourself near the edge of death and moments from expiring forever. What would the very old and wise version of you say to the current you? It can't be anything other than to cherish every single second that you have to live, breathe, and to be a part of this great universe. We are only here for a cosmological blink of an eye. Make it fun, make it count, and do what's right for you.

Always be looking for opportunities to learn or advance, don't fall into the "holding pattern" of pre-determined responses that we humans tend to become accustomed to. Experiment with various new responses. Exercise the mind, much like you exercise your body. Seeking diversity of environmental stimulus is the key to building a powerful mind. Feeding the mind varied stimulation helps to make it strong and healthy by keeping a plethora of active meme pathways always available.

Some definitions: knowledge is the accumulation of information; intelligence is the ability to understand the relationships between this information; and wisdom is the ability to utilize intelligence and experience to improve your (or someone else's) quality of life. There are also many different types of intelligence: emotional, musical, physical, sexual, mathematical, spatial, social, etc. As many ways as you can identify any type of "ability", there is an associated intelligence that manifests this ability. Build a wide diversity of intelligences within yourself to give you the largest toolset possible for adding happiness to your life.

MENTAL ACUITY

Laugh at yourself, and spend a lot of time in scenarios where laughing is common; it makes you smarter because it creates and strengthens very detailed and meaningful meme connections in your

gray matter. Laughing is one of the highest states of happiness and communion you can possibly accomplish.

Defeat cognitive dissonance. Don't fear what you do not understand, learn all that you can about whatever may threaten you so that you can intelligently deal with it. Do not think for a second that you might not ever understand something because it seems beyond your ability; learning is rarely limited by capability, instead it's most often limited by the degree of pursuit. There is nothing you cannot understand with enough perseverance. Also, there is not a single person who knows everything, and quite possibly the most knowledgeable among us know next to nothing compared to what our H-Freak will know a hundred years from now. Our minds have a phenomenal capacity for memorization. Keep up with the meme-flow with which our brilliant species continuously refines and augments our H-Freak, and you won't be left behind.

Some advancements in knowledge that we make might aggravate our Repulsion Fringe and feel from quite unnatural or even quite abhorrent (e.g., cloning, genetic manipulation). It's acceptable to feel this way because there is probably little you can do to prevent that feeling; however, do not confuse your sensation of aversion with immorality. It takes some time for the brain to adapt and accept the new "witchcraft" that the future holds in store for us. The worst thing we could do is to stymie the development of these new memes by prejudicially professing their impiety and oppressively acting upon those prejudices.

ADDICTIONS

There are two kinds of addictions, those that alleviate sleash tension, and those that get right to the pleasure center. The first kind comes in the form of the various quick-fixes that every culture has their own version of. Most notable, though, are alcohol, nicotine, caffeine, gambling, etc. Anything that reduces sleash tension without a logical benefit to the person can be considered a quick-fix. The need for these vices stems from a lack of a sleash-satiating lifestyle. It is possible to

have the proper daily stimulation in your life such that the advantages of these quick-fixes seem moot. A healthy regime of exercise, mental stimulation, communion, etc. can provide you a much more effective sleash release.

Do not fall prey to the quick-fixes, they have the same effect on you health-wise as apathy would, reducing the overall quality of your life. See past the temporary positive of the quick-fix and realize the full negative impact of it. For example, alcohol has debilitated a large portion of humanity. People in many cultures are regularly so deeply immersed in their alcohol-escapism that they fail to find true happiness in their lives, instead selling their time for the quick-fix. Many lives are lost daily, in many ways, to the tragedy that alcohol is. People of the future might pity our silly, barbaric, and pathetic antics of poisoning our bodies. If you need to escape your life, change it, don't hide from it. Let your G.O.D. continuously provide the necessary discipline. Allow it to surface when you are at your weakest, to help you resist the temptation of the quick-fix. Understand what discipline really is—the struggle between negative habits (traditions) and logic. Break those habits and let logic prevail.

But for those addictions that not only relieve the sleash, but also get right to the pleasure center, it is a much different story. There are many chemicals that can directly stimulate the instincts and pleasure center—most of them illicit, and for good reason. There have been experiments performed where the pleasure centers of the brains of rodents have been electrically stimulated when the animals press their nose against a button. The button sends an electrical pulse to the pleasure center (via implants), effectively giving them an orgasm. Left to their own devices these rodents continuously press the button, non-stop for days and nights, not eating, not drinking, not sleeping—eventually resulting in death. That is the power of your pleasure center. It works beyond hunger, beyond pain, beyond reason, for "reason" only exists to please it.

This same effect of stimulation can be chemically simulated. What the human drug-user experiences is a tremendous and unnatural amount of sleash relaxation, and with some chemicals can experience a very

long and extremely fulfilling orgasmic feeling, far beyond what a naturally instigated orgasm can possibly provide, forever altering the scale of fulfillment within the person's mind. The real world simply cannot compete with the high pleasure ceiling of chemicals.

Examining the design of our brains in a purely logical way, we see that nothing really matters to it but pressing the pleasure button. Every single facet of our design in some way complements this purpose, but normally with the highly probable outcome of reproduction—this is nature's trick to keeping the chain reaction of life going. This need for pleasure defines and singularly overrides all the other instincts since ultimately the instincts exist solely to create an environment for pleasure to occur in; and, like our doomed rodent, we are helpless to its function. It is extraordinarily difficult to override the demands of the pleasure center once a means by which to stimulate it has been discovered. Once a person steps into this chemical world, it takes an incredible amount of willpower to return to a drug-free life.

The following discussion focuses on chemical abuse but indeed there are many other conceivable means by which to stimulate the pleasure center, specifically with the advent of new technologies on the horizon. Any method that artificially generates pleasurable sensations is very likely to be abused because we are fundamentally designed to pursue stimulation of the pleasure center, no matter what means that may entail.

During the experience of drug use, the pleasure center is responding vigorously to the chosen drug and the gray matter is being wildly stimulated in an effort to remember what is causing this fantastic feeling. When the experience is finished, the gray matter has forged incredibly strong pathways, some meaningless since the pleasure was artificially induced, and some that mean, "drugs feel good". Now in the future when the individual starts to feel some uncomfortable tension on the sleash, the very first thing that will come to mind as a solution to this pain are the drugs. So overwhelmingly will it dominate that the normal recourses for instinctual placation will be a mere whisper compared to the brain's cry for drugs; and that is deadly addiction.

Don't ever lose sight of the fact that you are a machine. Your perceptions, inclinations, moods, etc. are all the result of chemical and electrical impulses in your brain. You are simply a mountainous grouping of atoms that reacts to environmental stimulus. The internal wiring and chemical balances within your brain will dictate how you will react to any given stimulus. You may think you have free will, but you are almost entirely enslaved to the biases of instinctual motivation locked deep within the construction of your brain.

If you manipulate (naturally or artificially) the various balances of chemicals within your head, you will likewise affect your "mood", which is your perception and evaluation of good or bad for any given stimulus. For example, serotonin is a necessary chemical in your brain that is partially responsible for the administration of your feeling of "well-being". Normal pleasurable instinctual stimuli (sex, love, eating, etc.) all contribute to an increase in the amount of serotonin flow in your brain. Some pleasure drugs can artificially exaggerate the flow and administration of this chemical in your brain, giving the user a heightened euphoric feeling, but often with the cost of later depression as serotonin reserves are artificially prematurely depleted. The user starts in a state of general contentment with their world, then they chemically exaggerate their perceptions to find incredible fulfillment, and eventually as the drugs wear off, to find bitter disappointment: all within the same reality. Reality never changed, just the chemical balances within the brain that control how reality is to be interpreted.

For the drug user, it won't take long for the instinctual brain and the gray matter to come to the conclusion that they must fabricate a lifestyle that affords the greatest number of occasions possible for drug use, and so the person rewires their brain to best-fit into society to acquire just enough resources to once again slip into their chemically-induced world of pure pleasure. The brain "solves" the problem of acquiring the quick-fix. The only cure for this kind of addiction is to remove the possibility of access to the chemical so that the gray matter has no choice but to relearn the old natural way of releasing sleash tension, since now all of the brain's cries for the drug solution meet with empty results.

During this phase of relearning, though, the person suffers from very painful “withdrawal” symptoms such as depression, memory impairment, and attention deficit, due to an inability to focus on anything but drugs. This happens because the old methods of sleash-tension release seem trivial when compared to the overwhelming fulfillment afforded by the chemical solution; and so relatively speaking, there is barely any natural effective recourse for relief from the pull of the sleash. It takes a long period of readjustment for the sleash to once again become sufficiently responsive to normal stimulus.

As a general rule, reducing the amplitude of the stimulation in your life results in sensitivity increase. Purify your life to include only desired healthy stimulation instead of trying to find increasingly more volatile and perhaps deadly forms of stimulation. This moderation will allow normal stimulation to eventually become calibrated in your mind to satisfactorily fill your full spectrum of sensitivity and fulfillment.

Mother Nature did not equip us to defend against the perils of chemical abuse. Our fantastic intelligence has once again usurped the safeguards that our instincts provide, to lead us astray in the pursuit of dangerous indulgences. The very mechanism that gives us pleasure for the purpose of reproduction can now be hedonistically utilized without progeny. We don’t have any built-in instincts to warn us of the dangers of using these substances. Never before has humankind been confronted with such a devious adversary. Are we doomed to extinction? Hardly.

There are always those individuals who, for whatever reasons, refuse to partake in chemical abuse and are able to continue to fulfill their genetic design and reproduce. Those who are more likely to indulge in chemical abuse are, on average, less likely to reproduce as a result of the dangers that are imposed by these chemicals. Over a great number of generations, there may eventually only be descendents of those people who refuse to partake, and all those with the propensity to abuse chemicals will mostly be extinct. In this manner, humankind will evolve to surmount the dangers that drugs represent to our society, but at the expense of the lack of progeny of all the indulgers—cleansing the gene-pool if you will. The people of the future will evolve to have an innate fear of chemical abuse, much like our innate fear of heights that

evolved out of the same evolutionary mechanism. A lot of people have to fall off a cliff to leave behind only those that instinctually know better.

If after all of this you still wish to experiment with illicit chemicals, know a few things: one, make sure your life is in check. Have a life that is desirable to come back to. If you don't, then you will helplessly and endlessly fall into the icy grip of addiction and you won't be long of this world. With drugs, every step you take forward makes it exponentially harder to step back. Two, research all that you possibly can about them before trying anything: know the dosage, know the effects, and know the risks. Don't be a fool, and don't believe what anybody says about drugs. And three, take a look at all you stand to lose should your indulgence spiral out of control.

There are two means by which pleasure drugs can be used: as a reward, or as an escape. Its takes a very strong mind to abuse chemicals beneficially as a reward, it still being abuse by definition since you do not need these chemicals to live happily. Stay away from biologically addictive chemicals; they result in a short-term "high" followed by an extended period of "low", meaning depression and painful sleash tension to which the only satiation would be another session with the chemicals, this cycle being the mechanism of addiction. These kinds of drugs are one-way, downhill. Biologically non-addictive drugs can be experienced with the possibility of returning to your normal life, as you haven't formed a physical dependency to need to experience the chemical again. If you must experiment, this should be the only exposure to the drug world.

Remember, if you must experiment, be well educated about the drugs, take light dosages, and respect the power of these chemicals. Drug abuse is like swimming in a whirlpool: you can control the ride if you don't get too close to the middle, but once you start falling in, you can't get back out, and there is no bottom.

Chemicals that influence the pleasure center will invariably rewire the gray matter, which, after considerable and frequent abuse, can lead to personality and behavioral shifts, and eventually dementia and insanity. The strong meaningless connections that form in the gray

matter during chemical abuse will eventually start to override the pathways that are logical and meaningful, and at some point the person will no longer be able to make sense of reality.

It's completely ignorant and naive to attempt to persuade those of humanity who partake in this dangerous pastime to completely desist from the allure of pleasure-stimulating chemicals. It would be met with half-hearted attempts to cease at best. The fact is that these chemicals open up a world of experiences that are in their own right, quite wonderful, and educational. The costs of these experiences are unfortunately often tragic. Realistically though, pleasure- and reality-enhancing drugs are here to stay, at least for a while. It's up to you to find a role for them that is either (ideally) non-existent in your life, or strikes a well-controlled balance. If you have drugs in your life, control them, don't let them control you. Moderation is the key to beneficially abusing substances. Let your G.O.D. be the judge of who is in control.

You need to maintain the ability to decide if your usage of a chemical is in the form of a reward, or an escape. If your G.O.D. decides that it's for escape, stop—just stop. Most people believe that a drug problem means the person is suffering health-wise, when in fact this is a very late stage in a drug problem. Understand that a drug problem begins the second you alter your priorities in life to accommodate the drugs.

INDEPENDENCE

Awareness of reality. Open your eyes and formulate your own opinions. We are often misled with propaganda and opinions, into willing oppression. Don't think you're being oppressed? Here's a simple test: walk around naked in public. Not much harm in showing your stuff to others, is there? "But that's illegal!". Why? "But that's indecent!" Why? "But it's unsanitary!" It doesn't have to be. Step out of your shell and see things from the only perspective that matters, the Culture Machine.

Centuries of ignorant religious and cultural skewing has resulted in our current maniacally self-oppressed civilization, festering with ill-

placed guilt reflexes that artificially create impious barriers to otherwise rather innocuous acts or thoughts. When you are feeling guilty about something you've done (or thought), ask yourself if you are hurting or could hurt anybody, including yourself. If the answer is no, then break that connection in your head that says you are doing something wrong. Step out of whatever moral corners you've painted yourself into, and start liberating your mind from the shackles of ignorance and denial.

WORRY

Don't worry about things you have no control over; instead, control the controllables and plan for the worst-case scenario. Don't worry about nonsensical things; your G.O.D. will help you to determine what is nonsense. Don't worry, because absolutely nothing matters in the universal big picture. Don't dwell on mistakes, learn from them and then look to what the future can hold. To simplify, don't let your mind get caught in an infinite loop of anguish. When you get to a dead-end, find another route, don't let your mind sit and fidget over an impossible situation that you cannot control. Otherwise you just needlessly torment yourself.

IMPORTANCE

Learn to think in terms of the big picture. We are so unbelievably insignificant that there is absolutely nothing we can do, be, or have, that increases our value to the universe. Nothing in our miniscule lives can possibly be important in the grand scheme of things, so, when life throws you a challenge, when times seem endlessly painful, or you feel worthless: remember that the way in which all humans are equal, is in that we are all equally worthless. Nobody is intrinsically important. Not you, not your parents, not your leaders, or anybody else. We are all just "relatively" important depending on what hierarchical system we choose to apply ourselves to.

We have many very complicated hierarchical systems built into our cultures, some of which serve to help define our intrinsic self-worth.

Most of the people that those systems serve to define may also suffer from a feeling of inadequacy, but fundamentally, your self-worth should only be defined by how much you contribute to the Culture Machine as a whole. From that perspective, all of us can be amazing. The only things that should matter to anyone are: your contributions to the Culture Machine, the direction provided by your G.O.D., and your individual happiness.

CLOSURE

If these directives are followed, there will come a time when finally your life will be filled with considerable happiness. You will have acquired the ability to satiate multiples of your instincts, and the side-effect of this is that your genuine spirit of altruism will now surface often. Congratulations, you are now ready to outwardly pursue being truly happy. Now it's time to share your internal happiness with others. This next section focuses on how to interact with others, and you will find that a lot of the same tenets that apply in how to treat yourself also apply to how you treat others.

EXTERNALIZING

True happiness is felt individually but cannot be wholly created alone. Happiness also stems from integrating into, and conforming to the needs of, the H-Freak. If you stray too far from what the whole of humanity needs and try to just serve yourself at the expense of others, you will be met with much resistance, and that's not very productive. This is not to be interpreted as "conformity is better than individuality"—in fact quite the opposite may prove more fruitful, but fundamentally, individuality must not oppress others.

HONESTY

Always be honest! This cannot be stressed enough because integrity is the most valuable character attribute you can have. There can be exceptions to this honesty rule in the most extreme of conceivable circumstances, such as when you are being unjustly manipulated, or in life-or-death situations, but normal daily interactions cannot possibly warrant mistruths. Honesty is really tough to implement; it will undoubtedly starve the ego since it is basic human nature to oversell one's caliber. However, people can sense true honesty, even if only at a subconscious level.

Our species has been communicating since long before the advent of speech; every means by which the body can project and receive information was utilized before the ability to form words evolved. This means that the body as a whole is contributing to the delivery of any message. If you are lying, your voice, face, and body will betray you, which will be sensed by those that you attempt to communicate with, diminishing the level of mutual respect. Be as forthright as possible and you will be rewarded with respect from others. Being honest does not imply that you should have to divulge everything, since sometimes the presentation of information can be misinterpreted without supporting character, but avoid intentionally misleading, especially to serve your ego. You cannot truly take pride in yourself without honesty, for you will be trying to be proud of something that you do not really represent.

OBSOLESCENCE

The great difficulty for, and improbability of evolution to forge genetic attributes that are complementary to the survival of the species, rather than a detriment, might lead you to believe that everything in our design has been fine-tuned by nature to perfectly suit our environment. This couldn't be further from the truth. What we are may be, in broad terms, the current best-fit to our environment but we still carry a legacy of genetic improvisations that no longer serve us. Physically, we have the remnants of a tailbone that is virtually useless to us. The stubby toes

on our feet remind us of the ancient hands with long grasping fingers that used to be there. Our tongue's tastebuds can be considered obsolete as well, due to the fact we can produce foods that are essentially garbage to our bodies and yet taste fantastic, fooling our gullible tastebuds into believing we are receiving a nutritious meal.

Mentally though, we maintain a plethora of instinctually-programmed inclinations that are best suited to a resource-lean environment where day-to-day living was risky and selfishly fending for yourself was a necessity. However, we have evolved to change our environment so much so that the inclinations put in place for survival during our evolution, no longer have a suitable role in our modern society, and as such the effectiveness and necessity of those inclinations can be thought of as obsolete. For example, the Repulsion Fringe used to keep humans from unknown dangers (disease, resistance to reproducing poor DNA quality, etc.) but now operates to define artificial lines of prejudice between races and cultures. It's important to recognize these instinctual reactions for what they are and to logically bypass their influences so that you can treat all your fellow humans with respect.

RAGE

Anger draws upon great reserves of physical energy in anticipation of fleeing or fighting whatever antagonist was encountered. Unfortunately, the antagonist in the modern world is often faceless or impervious to a biological response of rage. As such this obsolete reaction of anger has virtually no effectiveness, nor immediately satisfying outlet, causing great stress to the bearer, and potential damage should that anger overwhelm the bearer into a negative action. In the very brief time before your biological response to an angering situation can take hold, turn it off, and mentally put that energy aside until you have the proper physical outlet (exercise) to release it with. It will be equally fulfilling to put that rage energy to good use at a later time, instead of recklessly unleashing it in a delicate situation.

JEALOUSY

The notions of jealously and envy for your fellow human once served our ancestors as behavioral tools that indirectly distributed ancient technologies, by making it difficult or socially unacceptable for another individual to hoard knowledge or items that could benefit the whole of a culture. Jealousy (a more hostile form of envy) served to protect the strength of the pair-bond, which contributes to the improved survivability of their offspring. Today though, our modern world is changing such that the obsolete feelings of jealousy and envy can be exploited by those who can supply an endless river of non-essential "wants", passively subjecting us to a lifetime of indentured servitude in the pursuit of achieving brief interludes of satisfaction and a false sense of conclusion to our wants. The conclusion is impossible to permanently achieve given that the instinctual "wants" are insatiable, particularly greed. Define for yourself what you would truly be content with, and stop wasting your life in pursuit of non-essential, ego-placating rewards that are hard-won but short-lived.

RESONANCE

There is a resonance to human interactions. You may have noticed that being in the company of depressed people tends to darken your own mood, or that very happy and optimistic people tend to lift your spirits. You reflect how you feel through your mannerisms and styles of communication, and that sends both obvious and subtle messages to those with whom you communicate. People unconsciously shift their moods towards that of their company in an instinctual desire for strengthening communion. This is the heart of the ideal Culture Machine. The resonance that propagates throughout a society, and the controlling of that resonance, will make or break the level of happiness for all.

Let's generalize somewhat and simplify our moods to three colors: green, red, and blue. Green is pure happiness, red is anger, and blue is sadness. Imagine yourself walking into a room full of people and

instead of seeing their personalities, you see their moods instead, all in color. There might be quite a collage of different colors. If you speak with someone who is green, you will find that it is very easy to also feel green in their company; however, should you choose to project blue sadness, you will notice that the green people will either shift towards your blue, or will attempt to distance themselves from you, destroying communion. In either case, it was a negative result. Likewise, should you communicate with a blue person and you project a green personality, you will either shift that person towards a green perspective, or they will distance themselves from you in the pursuit of other blue people to commune with. You do make a difference by resonating your color. Communion is strongest when all the group's members somewhat reflect the same color, whether it be blue or green.

As easy as it is to maintain a green persona for the purpose of resonating it to others, it is worth repeating that you are the only person permanently in charge of making yourself happy, and with that, you are *not* solely responsible for making others happy. You are never "obligated" to increase the quality of another's life. If you want to make someone happy and you do gain something from this act of altruism then that is one thing, but if that person is capable of adding quality to their own life, afford them the opportunity to do so rather than bearing that responsibility for them. Guide them, don't carry them, to the path of happiness.

HATE

As for red people, the *only* reason a person will exhibit anger, or hurt another person, is that they themselves are hurting. Trust in that. If there is only one thing you learn from this book, it has to be that humans are not designed to want to hurt or hate one another. For someone to hurt or hate another, it is a *re*-action (however complicated in origin), not an action. Red people are blue people in disguise. Red people can be capable of phenomenal acts of destruction and hatred that make it very difficult if not impossible to want to empathize with them. In some cases, they are so red that they could be considered insane, for their level

of cognitive dissonance will not allow for the possibility of recovery into a green state of mind.

These people are the victims of the genetic or societal probability that not all of us can find a positive group to commune with, or reach a satisfactory level of happiness, and for them this results in a deep sense of blue, which causes enough pain to project red. These tragedies can be avoided with understanding and accommodation from others. Lend an ear, try to understand, empathize, etc. before you shut someone out and further reinforce their blue/red state of mind.

SLANDER

Even something so apparently harmless as mockery or light rivalry between friends could be considered selfish ego-feeding. The subtle but very ancient practice of "jockeying" for alpha status ultimately serves to highlight the strengths of the contenders to everyone in competition for a mate.

In our time of many mixed cultures with varying attributes, this form of ego-feeding becomes a complicated social game that nobody ever wins, the ego being insatiable, and even the most apparently innocuous derision can be damaging. Whether it is to compare intelligence, strength, or wealth, jockeying may still have its role in garnering reproductive opportunities but extends far too deeply into our expansive daily lives and needlessly oppresses and damages the innocent. Even friendly "ego-bashing" requires extreme familiarity and established mutual trust and respect, and even then is very difficult to enact without at least a subtle motivation of jockeying.

This oppressive act is the stealing of positive green energy from others, turning them blue or red, which is often easier than drawing upon your own energy reserves and resonating green from within yourself. Stealing green energy is selfish and primitive, so instead derive that energy from within to contribute to the Culture Machine's strength, truly demonstrating how intelligent you are. All your interactions should be motivated by the need to strengthen the Culture Machine.

Many people use put-downs as a form of hierarchical popularity and power-grabbing. What they fail to recognize is that they are not elevating themselves as they diminish those around them. When the time comes that this person meets their match, is outwitted, and is forced to bear the same defeat they imposed upon others, they will quickly realize that they had never risen to whatever status they believed they had accomplished by putting others down, and the feeling of defeat will be greatly amplified.

Don't jockey, it's as much an assault as physical abuse. Even in light joking, it's an added tension of pushing sensitivities around for petty status gain, always at the expense of someone else's self-worth. Keep your comments solely in the form of a compliment or a constructive criticism, never demeaning, for until we find other intelligent life somewhere in this universe, we only have each other.

PATIENCE

Try to give yourself ample time to do things; making this a practice will give you the luxury of time to be courteous to others. Running at 100% throttle at all times puts an enormous amount of stress in your life as you try to surmount an insurmountable agenda with no room for error. By reducing your throttle and agenda to 80% capacity, you will have time to absorb incidentals, have time to be courteous to others, and remove virtually all the stress of rushing from your life.

In contrast, expect to occasionally endure some blind inconsideration or discomfort caused by your fellow humans' selfish pursuits. More than likely it is not maliciously intended, so express some patience and understanding. Perhaps the other is lonely, unlucky, or behind schedule and now you find yourself with the opportunity to make someone else's day somewhat easier with a little extra effort on your part. However, this generosity of spirit should also be balanced against your needs, so there's a point at which you should indicate to the other person the degree of discomfort or inconsideration that they may be causing you.

CONSEQUENCE

Appreciate that all of your actions have consequences. For example, to mindlessly throw trash to the ground is to ignore the fact that someone else might have to pick it up, or that Mother Nature will deal with it. Don't go through life with your head in the sand (denial syndrome), ignoring your impact upon other's lives, or your home, the Earth. Always think of your actions in terms of their effect upon others, and show unrestrained respect for the health of our planet, for if it dies, you die with it.

OSTRACISM

To face ostracism by society, especially from peers, is extremely traumatic for the victim. Don't ever hate or treat someone without respect. It is not required for you to agree with or even "like" someone to justify demonstrating respect for them, because respect should be used as a form of communication, not as an indicator of acceptance. Showing respect tells another person that they are worthy of living, and worthy of being treated with dignity, even if they act or think in incongruous ways. The need for respect for others is becoming much more essential as our populations grow far beyond the hunter-gatherer village population size, continually increasing the average person's anonymity.

ANONYMITY

We are not well-equipped instinctually for being anonymous and this can result in a bi-polar attitude and terrible acts of selfish, random victimization. By maintaining positive respect for everyone at all times, this concept of ubiquitous respect will infectiously spread to other anonymoids, and within this ideal construct for rapport, civilization can grow beyond familiar faces without anarchy.

Let's repeat it again: always___show___respect, especially when disciplining, so to avoid degrading someone's self-esteem. Within our species, everyone has the same intrinsic value as a living creature and

nobody is societally worthless unless they serve solely to cause irreparable damage to the Culture Machine, in which case the machine has failed them. Members that are ill-fitting in the Culture Machine tend to try to break down the system in an attempt to reconfigure the machine to accommodate them. Help them to try to fit in rather than discarding them as valueless. Always respect others without prejudice, for beneath whatever facade we've built ourselves into, deep inside we're all the same little creature in search of happiness.

PREJUDICE

Our instinctual mind's Repulsion Fringe, that helps us to define our instinctual "perfect mate", has been the source of extreme prejudice and oppression in our world. This ostracism instinct only practically served an ancient hunter-gatherer society in order to maintain a tight genetic balance. It was a necessary cruelty in ancient times, and it remains cruel in our times; however, it was not designed to operate in our current world where very diverse peoples could expect to interact, and it now has virtually no practical value for anything other than perhaps sexual conquest determinism in our current and future social constructs. We are no longer primitive animals. Understand this ostracizing reaction, get past it, and meet the soul behind each and every person regardless of color, ethnicity, sexual orientation, disfigurement, or your own prior experiences. Judgment should only be based upon character alone, and even then through the lens of empathy. It is impossible to accurately superficially judge the caliber of character.

The word "prejudice" has negative connotations in our society, but realistically, we are all prejudiced in virtually everything we do, and we're designed to be that way. Think about the word "prejudice" in terms of its meaning: "pre-judging" without immediate concrete facts. We find ourselves daily in familiar situations that are relatively easy to handle. However, the first time we encountered any particular situation we were very inefficient at dealing with it. Repeated exposure to a situation teaches us efficiencies in handling it, which is the most basic form of prejudice. Pre-judging makes our daily lives more efficient.

The problem with pre-judging arises when pre-judgments are utilized to oppress those who do not have the traits on which the prejudice is based, carelessly victimizing the innocent. For example, to imply someone from region A is a murderer because in all previous exposures A people have been murderers, may be a perfectly logical statistical conclusion, but may not be an accurate prejudice if you've only known one A person and there are millions more you haven't met.

EMPATHY

The difference between a childlike mindset and that of a mature contributing member of the Culture Machine is a person's radius of outward empathy. One significant distinction between the two mindsets might be whether one chooses to perceive their world from outside looking inward (ego feeding), or from inside looking outward (empathic). Most fundamentally, maturity is the understanding that it's not about you, it's about us. To be able to truly see other people is to get past your own needs of them. See everyone as individuals with their own inclinations and aspirations, and limit the degree to which outward appearances can influence your character assessment of others.

It makes no sense to superficially categorize humans, since there is barely any difference between the DNA of any and all humans; meaning that everyone has exactly the same potential, good or bad. Even today, more than 95% of our genes are paralleled in the DNA of our distant cousin, the chimpanzee, so don't believe whatsoever that any one human can be more evolved than another. Do not be fooled by skin color or skeletal structure, all humans are at *exactly* the same level of evolution—perhaps with subtly varying forms of physical and mental attributes, but we're all equally evolved.

It is easy to let our prejudice against cultures and appearances cloud our ability to appreciate the intellectual and physical capacity of "different" people. If you choose to act upon your Repulsion Fringe reaction with prejudice and hatred, then most likely you don't have much love for yourself. The instinctual desire to harm someone innocent is entirely a flaw in oneself; consider fixing that problem first.

We have evolved to surpass all valid reasons for tyranny and/or oppression to continue, because they were always founded in incorrect and now obsolete memes.

There is no valid reason anyone innocent should suffer at the hands of another, and this includes the progeny of previous oppressors. It makes no more sense to punish or demand reparations from the descendants of an oppressive group than it made sense for the original oppression to occur. The descendants are not to blame for their ancestors' actions, and any action taken against the descendants is as equally oppressive as the original offence.

PROJECTION

It must be appreciated how encumbered we are currently with ancient instincts that make it difficult to consider the greater good when it conflicts with our personal desires. It takes some insight to realize that the bulk of our desires are founded in instincts with obsolete purposes. These counter-productive instincts can be consciously weeded out over many generations if we apply the concepts of communion necessary to build the Culture Machine, from which we can derive the true happiness that we often mistakenly believe should mostly be supplied by our ancient instincts' selfish motives. We now have the intelligence to control the future evolution of our instinctual desires.

To this end, try to project more love and respect than you receive as a whole. There's a mathematical premise behind this notion. If enough people attempt to generate more green than they receive, then it's possible for this effort to resonate throughout the remainder of the people, encouraging them to follow suit and magnify their own green. This persistent green mentality, maintained over an extended number of generations, will eventually evolve into our genome as a normal state of being, much like our need for an ethereal overseer did. People that exhibit the most communion-generating attributes will become "best-fit" for that future society.

All your contributions to the Culture Machine will come back to you in some form. Continuing a green resonance means that you will

eventually receive some of that resonance back, so everything that you add will bounce around among the members, and come back to you. Our brains react to green with increased serotonin flow, meaning there is a true biological response to being and receiving green. If everyone adds to this resonance, the results will be astounding and profoundly fulfilling for all.

RESPECT

Showing respect and having respect are distinct from each other, and both must always be involved in any actions, whether in direct interaction or in the absence of the other, for you will always bear the judgment of your G.O.D, and your G.O.D. has no tolerance for disrespect. The most fundamental core to our perfect Culture Machine is the unrestrained respect for yourself, and all others; it is the core of communion.

Consideration and respect for others should be perpetually rendered, even in the face of disrespect. This isn't to say that you need to present a false facade of congeniality to someone who shows disrespect to you, but perhaps you can instead present to them a logical argument as to why their behavior is illogical, without resorting to a disrespectful response. The goal here is to resonate your green color to others, not to absorb their blue or red. Also, always respect another's right to privacy. Don't ask personal questions that could bring someone embarrassment.

Respect for others should extend to all forms of life as well, for the administration of needless suffering to any living creature can only be the result of an unintelligently fed ego.

TOLERANCE

Accepting that differences exist between people also means accepting that incompatibilities will always exist between people. That does not imply that there needs to be animosity, because it is still possible to have and show respect for others, despite differing

inclinations. The only way that ubiquitous mutual respect can be possible is with the sincere understanding that all actions must first be considered for their effect upon others. Everyone deserves to be treated with respect, and the thin layer of opinion that varies from group to group should not invalidate the need to respect them as fellow humans. If you dislike someone for any reason that does not directly affect the quality of your life, or anybody else's, then that is *your* problem, not theirs.

Don't negatively judge people for their lack of intelligence, or Culture Machine-building character; instead, teach them how to better themselves, and to contribute. To analogize: if all the buildings in a town were falling apart and only one person knew how to make the tools needed to fix them, would it be better for that person to teach everyone how to make the tools, or to just remind everyone that he is so much smarter and better than them all? If you know more than others, don't think of them as idiots, think of them as students you can teach. Exercise your altruistic instinct.

Exposing yourself to the ways of different cultures can help you distinguish what is human nature from what is culturally-learned character. You may be shocked to see how fundamentally similar we are. Do not be satisfied to let only your home environment completely define you. Have many worldly experiences and always remain humble, for a king in one world may find himself as a starving vagrant in another. Most importantly though, exposure to new places and people helps you to find your peers of a similar mindset, who will provide you the greatest fulfillment of communion. Seek them out, instead of futilely trying to make other dissimilar minds conform to your inclinations.

REACTION

Don't submit to a damaging instinctual emotional reflex to any negative situation. Our world is too complicated to justify a purely instinctual response to most any situation, and such a response usually only worsens the situation. Keep your perspective in the form of a personal island—meaning, do not let your environment dictate your

level of self-control. It is rare that you won't *truly* be in control of your emotional state and so it is within your power at virtually all times to decide how to react to any given situation. Every time you exert yourself with jealousy, anger, or any other ego-based emotion, you waste that energy forever, instead of capitalizing on that energy to improve yourself and your situation. Ask yourself often where your focus is. Is it proactive or reactive? Be a separate entity that is immune to negative stimulation, and this will lead to fathomless patience and clarity.

Be invincible to your world, especially in the light of disrespect or antagonism. When someone communicates to you, always search for and extract the purpose of the other's interactions with you, as a constant emotional discipline. If you are being insulted, remember that words are just that—words—vibrations of air, not the tools of emotional manipulation that others may attempt to use them for. The only emotional control of yourself that you might acceptably submit to another is to allow them the privilege to make you feel better. The only one that you should ever have to worry about answering to is your G.O.D. Those that unjustly attempt to make you feel worse should be seen for what they are, blue, worthy of resonating some green into. By not reflecting the red or blue of others, it will noticeably dampen the quality and effectiveness of their communication and they will search for other, perhaps greener, ways to convey information to you.

SELF-FULFILLMENT

Your intelligence could be considered a combination of how far your actions are removed from your base instincts, and how well those actions benefit you but not at the expense of others. With this is mind, do not feel guilty or ashamed for any form in which you successfully placate your instinctual pulls if it does not in any way, or will ever, hurt another. As simple as this formula may seem, however, it is sometimes difficult to foresee all possible ramifications of your beliefs or actions, so be sure to think things through before committing to any pursuit.

COMMUNICATION

Being able to communicate effectively with your fellow human is also core to the perfect Culture Machine. Communication comes in three parts, listening, thinking, and speaking. Listening is a very complicated skill. The ability to search through another's spoken words for their intent is often difficult because those words may come from very deeply-rooted motivations that perhaps even the speaker is not consciously aware of.

To demonstrate how intended meaning can be difficult to perceive, consider the ancient saying, "if a tree falls in a forest and nobody is there to hear, does it make any sound?" That depends on the definition of the word "sound", of course. If sound means "waves in air", then yes. If sound means, "that which is interpreted by the ear", then no. Be clear on others' meaning. Having yourself in an "island" frame of mind will help you to subjectively dissect another's speech to possibly reveal their intentions. Look for the good in everyone; it's always there, so dig through their perhaps even defamatory spoken words to find the true instinctual motivation behind them.

OPPRESSION

Be aware of how your personal motivations can manifest into oppression. For example, a father might insist that his daughter dress in a manner that is less sensuous. He may cite various notions of "unhealthy sexual attention from her male suitors", or "character damage" when ultimately he is concealing the fact that he may himself find his daughter sexually attractive and is suffering from related guilt. His natural but uncomfortable reaction to this situation only results in oppressing his daughter's freedom to express herself in a manner that pleases her and yet harms no one.

HIERARCHY

Hierarchy has always existed and will always exist in nature. It is the means of providing the strongest of a species the greatest chance of passing on its DNA, perpetually strengthening the gene-pool. Likewise in humans, we have an incredibly intricate system of social hierarchy, hugely compounded in complexity by the enormous intellect with which we interact among ourselves. It is perfectly normal and healthy that a species has some "great" people and some not so great people, and the desired state of perfect communion between all will always be an illusion because we cannot all exist on the same level in this hierarchy. This does not devalue those that are lower, for we are all essentially worthless when compared to the agenda of the universe, so it is important to appreciate our roles in our existence, and for those above to not tyrannize those below. Pridefully accept the responsibility of your rank in the hierarchy, for we all have an important role to play, and all ranks deserve, and should have, the capacity to live happily.

Recognizing the differences that exist between all people is important in being able to communicate with them. There will never be such thing as total equality; it's not humanly possible to be equal with everyone on all fronts. The ideal may sound desirable because it presents the gift of ultimate communion with everyone, but the manufacturing of perfect equality into a culture can only result in the oppression and unrealistic expectations of its members. We can never escape evolution and as such are forever prone to different strengths and weaknesses among us. Perceptions are magnified differently in different people due to their experiences and genetic inclinations, so instead of trying to define a "norm" that we all need to adhere to in order to be equal, it is much more important to demonstrate sensitivity and tolerance to differing personalities. Again, the only equality we all share is that we are all equally worthless.

TEACHING

If you wish to convey memes to another, there are some requirements: be at a point in life where you respect and love yourself first; be noble and altruistic in your intentions; be wise and thorough; treat your students with respect and consideration (this allows for a large degree of forgiveness for inevitable miscommunication); be worthy of their respect; demonstrate that you understand them through paraphrasing; only offer constructive criticism, and accolades-a-plenty—and only after all these requirements have been met will you be qualified to transfer your memes. This easily translates into a great deal of learning and a lot less teaching before you are qualified to affect anybody else's life. Most importantly, believe in and be worthy of that which you speak. If you do not enact the philosophies you preach, then there is no credible foundation for the validity of those philosophies.

IMPOSITION

Any flattery or criticism that you may wish to bestow upon someone must be recognizable to them from their perspective, for any judgment received is always evaluated relative to personal avocation. It is inappropriate to impose your values upon others, despite perhaps how relevant those values may be for you. For example, suggesting to someone that they should become a mathematician someday because they exhibit strong mathematical skills, may be ill-received by that person if their personal interests conflict with this possibility. Imposition of your values should never extend beyond suggestion and example, always gracefully accepting the possibility of those values being rejected; otherwise your impositions become oppressive. We are all wired differently as a result of the different paths that we follow in our lives, and what may work for you may not always work for others.

CREDIBILITY

When communicating, speak a little more slowly than you think. It is rare that great wisdom can be conjured forth at will so choose your words thoughtfully and carefully and with full attention to the meaning of each word. For example, to present information as fact when it is actually nothing more than opinion or estimate, is to gamble your credibility for the sake of a false presentation of knowledgeability. You can never fool your G.O.D., who should be the one you are really trying to impress. Your spoken word should always be a direct reflection of your integrity.

COMMITMENT

Lifetime commitments are as good as a lie. You should not attempt to burden the future version of yourself with the responsibility of a commitment made in the past from a different mindset. As we age, the human body replaces virtually every cell in the body every few years, so effectively you will physically be a completely different person many times over during the course of your lifetime. You will continually change your priorities, your mannerisms, your perspectives, and your intelligence radically, and therefore, it is not realistic to make any form of lifetime commitment that may not benefit you in the long run. You will be speaking for many versions of yourself that might not all agree with or be able to maintain this commitment.

Concentrate a lot more on now than the future; your future entity might have met with an unfortunate accident before the realization of your dreams, so living for the present, with a healthy and flexible plan for the future, is a more practical balance. Understand what it means to make any type of commitment, big or small, and always think about the realistic possibility of being able to honor a commitment before making one.

The institute of marriage is virtually universal in all cultures, extending from a very ancient instinct to bond, or to feel “in love”. This instinctual mechanism of pair-bonding historically has statistically

afforded the offspring a better chance of survival and integration with the populace, when compared to the rearing that a single parent can provide. Marriage is the cultural manifestation of this instinct to bond with another; however its roots are founded in ancient times when lifespans were much shorter and "together forever" effectively meant a limited number of years before one or both participants would die for whatever reasons.

In our day and age, though, we live much longer than our hunter-gatherer ancestors did, and to be obligated into a pair-bond beyond the effectiveness of child-rearing benefits, and even beyond enjoying one another's company, is nonsensical. Instead, these pair-bonds should be enacted in the light of what they are, a loving relationship that strengthens a family and provides a safe haven for rearing children. Recognize the fact that both participants in a pair-bond will change in personality many times over a lifetime, and the compatibilities that may have existed to forge the relationship may disappear as these people change over time. If and when the effectiveness of the relationship to generate a mutually happy environment has expired, there should be no reason to continue the relationship, nor suffer a penalty for its discontinuance.

Marriage is the flawed cultural interpretation of the instinctual pair-bonding mechanism. Needing to perpetually "contain" someone via a lifetime commitment is a sad reflection of our insecurities and the ever-selfish ego, which has transformed this natural bond into a potential life sentence of inescapable intimacy with someone that you may grow to dislike.

FAMILY

The family institution has historically been the most concise definition of commitment to your fellow human, implying that love should be greatest for your blood relatives. This philosophy was very practical in ancient times when there were few options for broad social interaction and as such, a vast majority of your time was spent with your direct family. In our new world though, blood is not thicker than water.

Our highly-evolved social outlets and opportunities tend to be eclectic and diverse enough that it has become unlikely for two family members to have a high degree of personality congruency.

This isn't to say that there is no merit to family love, but as our societies continue to evolve, it does imply that the traditional dedication to the "family" bond is waning in significance. For example, to force yourself to love someone because of biological affiliation, who does not reciprocate that love and instead becomes a continuous drain on your respect and tolerance, is not in any way noble on your part; instead you are allowing yourself to be a victim, manipulated by a misguided obligation to family. You should not continue to expose yourself to anyone, family or not, who is a perpetual negative influence. Reciprocated love and respect should be the primary requirement for *any* person's relevance in your life.

LIBERATION

We are very much like vines in the way that our brains shape themselves to map the knowledge necessary for us to operate in our world; and, like a vine that grows on a complex wall, our mind will bend and curve to accommodate that perspective. But if one were to take a vine off its wall and move it to different wall, it would be very difficult for it to adjust and the plant's health would be adversely affected. Likewise with humans, be careful of trying to take someone from a religious perspective to reality. Reality does not afford any of the comforts they've become accustomed to and the resultant cognitive dissonance may prove terrifying if not destructive.

The equivalent amount of anguish might occur to you if someone could prove to you that tomorrow the sun would be extinguished forever. Humankind is not well-equipped mentally for the godless true reality. Our genetics have evolved over millennia to require a higher being to calibrate our emotions and desires. Without this presence, discernible parameters for us to conduct our lives within, no longer concretely exist, and reality becomes quite confusing and overwhelming. It might not serve any useful purpose to enlighten very religious

individuals if they would suffer mentally, and it could perhaps even permanently degrade their overall quality of life. Cognitive dissonance is a very real pain, so humankind may need to incorporate a certain degree of tolerance to the lingering persistence of religion as we evolve from our dependency.

EGO

No instinct is singly more debilitating than the Ego. This ancient instinct helped our ancestors to procure alpha status, but our modern world is much more complicated in culture than the ego is equipped to be able to assist us in surmounting, and the ego often forces us to act and think in ways that are counter-productive, if not downright primitive. Recognizing the hunger of the ego can help you to feed it properly so that it doesn't do more harm than good. For example, if you have a need for conquest, employ yourself in culturally acceptable activities that satiate this need (e.g., sports, or mental skill competitions).

Be worthy of ego placation, don't ever ask for it, for only if it is offered freely does it have any sincerity and value. Try not to steer conversation in the pursuit of ego placation. The ego can take a gifted person's charm away and leave only a selfish egomaniac. Use your G.O.D. instead of your ego to manifest your motivations. The ego will try to make you believe you're worth more than you are, but there's always someone bigger, faster, stronger, and smarter, so in the end, your only real competitor in life, is you.

DEFENSE

There are only two scenarios for when you should ever physically touch someone: To demonstrate love and respect for your fellow human (obviously with their consent), or to fight; and there are only two situations in which you must fight: to defend yourself, or to defend that which you love. The defense might intuitively lean towards an equal reciprocation of damage, but this only serves to double the victims of the initial threat. Instead, the focus of the resolution should be on

reparations, and the response should be just forceful enough to effectively prevent the possibility of further damage. The goal should solely be preventative and recuperative.

Learn to defend yourself and to be proactive in that defense. This concept could extend to the mass eradication of dangerous memes within humankind (e.g., via education), or could be as simple as physical self-defense studies. Despite the desirable ideal of perfect communion among all humans, we are still primitive creatures and some of us are very dangerous. Our great intelligence has made us the most dangerous and stealthy animal on Earth. Respect and protect against that danger. Do not trust others implicitly; they need to earn your trust.

CONFRONTATION

Assess the value of any battle that you may wish to pursue. All forms of confrontation are emotionally and physically stressful, costing you your mental and sometimes physical health. It is usually healthier not to bottle things up inside and to speak your mind so as to prevent accumulating stress; however, if you find yourself in the midst of seemingly constant battles, then your mental state will steadily deteriorate until your ability to commune will be seriously damaged and you will withdraw from fulfilling your need for companionship.

You cannot withstand a constant barrage of antagonism in your life because, like mountains will eventually weather to dust, the attrition of confrontation will break your spirit over time. Focus on what is really important in life: it's not winning battles, or proving how you cannot possibly be defeated in the light of endless drama; it's to make yourself happy. Change your life to remove, or to not respond to, drama, instead of always trying to surmount it.

REVENGE

Instinctually we obviously have a difficult time accepting a lack of a fulfilling and equal revenge. It's such an instilled sense of justice that it sometimes overrides our reasoning ability. Revenge is a form of

altruistic instinct, and it serves to protect us from ancient forms of tyranny and oppression. The exacting of revenge against antagonists teaches them that their actions are detrimental to the communion of the species, and will hopefully positively condition their actions in the future.

Similarly, the instinctually-understood looming threat of potential revenge for any negative action founds congeniality within a species and is a deterrent to oppressive behaviors. In fact, the need for revenge is so intrinsic to basic human nature that it is balanced by a sense of guilt that makes us suffer when we have wronged someone else and they have not evoked their revenge upon us.

In our modern world, however, the instinct of revenge is very antiquated and inefficient, resulting in useless anger and careless mutual destruction. Act, don't react. Burn off the anger with positive physical outlets (e.g., exercise) and then allow a more intelligent action to override the urge of a primitive reaction. A logical response might very well ultimately enact the equivalent quantitative instinctual revenge many times over in the form of permanent eradication of the threat. Consult your G.O.D. for constructive and logical actions that will result in the prevention of future damage. Once the red has eventually been reduced from your perspective (as it always will, given time), you will be able to look with pride upon your actions, recognizing them as positively contributing to the Culture Machine; and you can be especially proud if you were able to act logically while in a red state of mind.

Injustice imposed upon you is a very painful scenario and often will cycle through your brain for a long period of time. This happens because the current design of our minds needs to balance injustices with retribution, which maintained a justice balance in our primitive hunter-gatherer societies, fostering a greater cooperation among members and hence increased survivability overall. Our minds create a "debt" towards someone who has wronged us and this instinctual debt unfortunately is very inefficient in today's world due to collateral damage that an emotional discharge can cause.

There needs to be a place in your mind where you can set these injustices such that they are off your mental "cycle" list and instead just sit in deep memory as one of those "broken" projects that you can never fix. Equate it to closing circles. Every task that you undertake is the start of a circle and as you complete the task, the circle closes, accompanied by a feeling of satisfaction in accomplishment.

We all have a "to-do" list of partially completed circles that are works in progress, but when it comes to being treated unjustly, someone else has placed an incomplete retribution circle on your to-do list and because of the very nature of injustice, you are not given the ability to close this circle. This partial circle can cause great anguish unless you take it off the to-do list and commit it to the "broken projects" part of your memory, and leave it there. Essentially, let it go.

You will have many broken circles added to your to-do list over your lifetime by other people, so deal with them by burning off the physical reaction with exercise, doing what you logically need to do to prevent another occurrence of this injustice, and then pushing the partial circle off your to-do list. Eventually, time will heal it for you, leaving only an emotionless mental scar.

CONGENIALITY

Be liberal with "thank you's", "excuse me's", and other gestures of daily common courtesy. These courteous gestures are a free and mutual communion quick-fix that you can offer anybody at any time. It is especially important, though, to exhibit congeniality when you make mistakes that negatively affect or oppress other people. You cannot get through life without error because we are emotionally and logically imperfect devices, and as a result we often bungle up ourselves, and others, with our imperfections. Accept that you will make mistakes and will often have to suffer for others' mistakes as well.

APOLOGY

There is no shame in making mistakes, but there is shame is denying responsibility for your mistakes. It's impossible to always be correct, or to always have the most valid opinion, so keep your ego in check to allow you to recognize when you are wrong; and when you are wrong, apologize. Apologizing only becomes difficult when you have invested a serious level of ego behind your mistake. Also, apologizing is only useful to both parties when it is done with pride. It may be beneficial to practice your apologies so that you can portray yourself in a manner that can be perceived as prideful; it's not necessary to grovel to make a sincere apology.

One of the only good things about making mistakes is that they are quite possibly the quickest and most effective way to learn. When you come to acknowledge wronging someone, be sure to forgive yourself, but only after you have settled on a suitable self-punishment and/or victim reparation with your G.O.D. Likewise, when someone has wronged you and reciprocates with a sincere apology, accept it and forgive; do not allow your ego to manipulate that apology as confirmation that you are better—instead, see their apology as an indication of respect towards you, and as a demonstration of humility that you can learn from.

ALTRUISM

All of the instincts are selfish, even altruism. It is impossible to want to do something that isn't entirely selfish because all of our "wants" stem from instinctual desires, all of which are designed by nature to alleviate the painful tension of the sleash if they are properly satiated, which can effectively be considered a reward.

Performing an altruistic act still brings the bearer a mental reward as much as any other instinctual act. For example, for someone to proffer a saddened old vagrant a token amount of currency with the superficial intent of helping them back on their feet, in a society that has facilities to provide for such people, is entirely a selfish act intended

only to bring pleasure to the giver. What could be regarded as generosity is actually perpetuating the vagrant's unfortunate situation instead of genuinely helping them to constructively rebuild their life. Generosity must be understood in that light in order to prevent the corrupt exploitation of this instinct by those that understand its mechanism. The most effective way to exercise your altruistic instinct is to teach and personally contribute, rather than donating temporary relief.

True altruism in its purest form offers little reward. To see how much ego versus altruism is in your version of "generosity", try this scenario: you accidentally find a person's parcel with contents in it that you would greatly desire. Instead of keeping this parcel, you decide to send it with contents intact to the owner based upon the information found inside. You give none of your contact information for them to be able to thank you, and you never tell anyone about your good deed (this obviously implies that you absolutely do not believe in any form of ethereal overseer as well). That's pure altruism without ego placation, something that even the instincts are mostly at a loss to recognize; yet, only this form of altruism demonstrates a genuine love for your fellow human, and yourself. Altruism is not measured by what you do, but by why you do it. The only real reward ever to be received from a purely altruistic act comes from your G.O.D. providing you with a solid pat on the back for a job well done.

GUILT

Many people in the world suffer. Sometimes as a result of oppression and tyranny, or bad luck, or even as a result of their own apathy. In any case, do what you can to assist or teach, but first and foremost you have an obligation to yourself to live your life the best you can. Do not feel guilt for what you have, or for the opportunities afforded you. This is the luck of the draw in life and though it would be great to be able to share these wonderful things with all of humankind, it just might not be possible and so count your blessings and enjoy your life.

SEX

Sexuality is one of the most beautiful things that humans are capable of. This form of communion is the purest form of pleasure that can be achieved by the human body and mind. Sexuality should be openly embraced by humanity in all forms that do not break down the Culture Machine, which means of course that nobody is negatively affected by your sexual actions.

We currently have many negative cultural inhibitions towards sexuality that evolved and have served many purposes, such as disease control, population control, oppression, comforting egos of the sexually-frustrated, abstinent spiritual leaders, etc. These reasons for sexual suppression are now obsolete and therefore invalidate those inhibitions. With education it is possible to reduce the risk of unwanted pregnancy or disease, thereby liberating us to exercise our sexuality more openly and comfortably, without the notion of there being something inherently wrong about having and/or acting upon sexual desires.

FREEDOM

And finally, freedom: nothing defines happiness quite like the freedom to think, say, do, have, and be anything you wish. The degree of freedom one has is defined by the ratio of time during which one can do what one wants, versus time when these liberties are restricted in some form. This implies that absolute omnipotent freedom should not be your true goal, since some of the freedoms that we're instinctually wired to pursue would negatively affect others. Your G.O.D. should be your judge for whether your thoughts and/or actions will negatively impact yourself or others, but outside of that caveat, pursue the remaining freedoms as you see fit, without compromise.

Never restrict the freedoms of others, even passively. For example, we all should have the privilege and right to determine whether we would like to continue living or not. Most people find this concept rather objectionable, but there are scenarios where, perhaps through nobody's fault, the quality of life for an individual has been reduced to

an intolerable level and they wish to die. This must be intelligently distinguished from a depression-based perspective, of course, but in valid cases where there's virtually no future possibility of a tolerable quality of life, it would be prudent to respect that person's wish to die. Euthanasia is one of the greatest gifts you can give a suffering human, and no individual or collective has the right to deny their wish to die, even despite the person's personal inability to administer this fate to themselves. In this situation, have mercy on your fellow human.

BIG PICTURE

With all of our advances in technology and medicine, our population continues to grow rapidly, with few remaining natural impediments to keep our population growth in check. In order for this growth to be manageable on a large scale, there needs to be some form of organization so that a huge collective of people can effectively co-exist together, for there would be too much chaos if all individuals were left to their unregulated individual desires.

Even if everyone believed in and acted within the previously-outlined personal and interactive postulates that build a strong Culture Machine, without some form of governmental organization there could be no standardization of education, no safety regulation, no economy, etc.; essentially our H-Freak would remain severely fragmented and as such, we could not evolve into a consistent and ubiquitous culture mechanism. We would perpetually remain on the fringe of the hunter-gatherer level of cultural evolution. We will always need a higher form of order to regulate the masses.

Government can take on many forms: monarchy, democracy, tyranny, etc. It is the brains of the H-Freak. All of us human "cells" contribute to the H-Freak entity and the leaders are responsible for how the H-Freak lives and changes. Government is our collective consciousness manifested into an infrastructure of mass population control, focused and entrusted into the hands of the few.

The higher order of the governing body may sometimes be required to inhibit the personal freedoms of individuals, in the interest of the greater good. For example, sometimes a governing body will require specific members of society to make individual sacrifices (e.g., relinquishment of land, military service, etc.); these sacrifices must be recognized by those individuals, not as oppression, but as a very necessary contribution to the Culture Machine. The net benefit of these sacrifices far outweighs the inevitable oppressive impact upon the individuals. The most effective governing body attempts to minimize this oppressive consequence while still garnering the greatest efficiencies out of mass organization.

DISTRIBUTION

Wherever there is power, there will be those who seek to control it. In order for the H-Freak to develop positively towards the desired Culture Machine, it is important that all levels of tyranny be eradicated by removing the possibility of it occurring. This can be accomplished by implementing the widest possible distribution of essential "systems" and memes among all members. To contrast, centralized systems are weak by virtue of their focal point of power that can be plundered by tyrants wishing to control those that require this system; whereas dispersed systems are not susceptible to tyrannical manipulation. By making mass power as intangible as possible, we remove the possible garnering of power by any individual.

As well, the opportunity for fair power distribution amongst all members allows for the possibility of sufficient instinctual satiation within the confines of the Culture Machine's design, so as to even minimize the desire to tyrannize in the first place. To demonstrate, imagine a place where everything imaginable requires a key in order to gain access to it. Would it make more sense for a single person to retain all the keys (centralized power) such that they dictate who gets access to where and when? Or does it make more sense for each individual to have the opportunity to earn the privilege of holding the keys they need?

In this example, we chose “keys” but we could have used money, or authority, or knowledge, etc.

There are many kinds of infrastructure systems inherent to the Culture Machine, most of which can be evenly spread among the members in an effort to suppress focal points of power that might be tyrannized:

- Justice is an easy one; allow every person the right to deter the detrimental actions of another.

- Mandatory ubiquitous respect for your fellow human (which should be taught as part of everyone’s standardized education) will negate destructive and easily manipulated prejudice.

- A legal definition of true freedom, and a cultural understanding that it is everyone’s right to have this freedom, will resist tyranny by making it clear to all when that freedom is being oppressed.

- Any excessive wealth accumulation should be with sole purpose of altruistic intent. Monetary wealth should be well distributed and not pursued beyond reason. Instead, desired wealth should come in the form of wisdom, and respect from your fellow humans; earn these and you will be infinitely powerful, and impossible to steal from.

- Poverty due to apathy is inexcusable and banishment is the penalty. All other forms of unfortunate poverty will be remedied by societal pooling of appropriate resources.

- Access to high-caliber and homogenous education must also be a right, not a reflection of wealth. By homogenous, it is implied that the content of this education is the same everywhere, and not skewed regionally. This will prevent the cultural infiltration of perhaps erroneous memes that have not been approved by a higher education-governing body.

- To evenly distribute the system of social order, your contribution to the Culture Machine includes self-administration. We shouldn't need fear of a punishment to deter us from acting in a negative fashion.

FREEDOM

The widespread conformity to spread-out systems serves as a foundation for our individuality in the Culture Machine. Without this foundation, we can easily (perhaps unwittingly) usurp our fellow human's rights in pursuit of fulfillment of our own needs. Our understanding of what freedom truly means must be defined to include freedom for all, meaning that one cannot truly be free if one is free alone. Essentially our Culture Machine must evolve to a design where all members have the opportunity to have all their instinctual desires satisfactorily subdued by sufficient and necessary placation. Full freedom must be granted to all members such that they can conscientiously pursue placation of their instinctual needs, in any form that does not or will not in any way negatively impinge upon other members. A governing system's recognition and facilitating of this true definition of freedom is paramount to achieving the "realistic" communion (as opposed to the illusionary "equality" communion) that will afford all a continuing sense of well-being, ultimately manifesting the perfect Culture Machine.

PHILOSOPHY

Government and law should be designed primarily to thwart the possibility of tyranny at all levels, from childhood bullies, to empire conquerors. They should also enforce strict foundations for any desired culture, requiring a minimum set of societal mannerisms that fundamentally build the Culture Machine. This can be achieved by instilling mandatory self-governing philosophies, and respect-laden communication standards, in a populace's members, to provide the foundation for uprooting tyranny. Self-government is the key to the

welfare and overall happiness of society. The effectiveness of a government should be measured by the availability of opportunities for its citizens to pursue happiness.

CONTROL

The desired future version of humankind might not require a form of law to keep order, but until we evolve to that degree of intrinsic order, the government and law should attempt to control and mold the conscious minds of the people into the design of the Culture Machine. This can be accomplished most effectively by applying pressure to its members with power removal (relinquishment of status, freedom, wealth, etc.) as a consequence for breaking down the Culture Machine.

APTITUDE EVOLUTION

In the coming transition of humankind, bridging the gap between a spiritual society and a logical society, the ubiquitous happiness goal of the Culture Machine must be consciously inset into our minds, where it can form the root of all our actions. Future generations will inevitably benefit from our diligently administrated behavior in the form of an evolved and genetically-supported inclination to naturally think in this way (best described as an enhanced sense of empathy). For those of us alive today, however, we must fight our primitive selfish inclinations to bring that desired future about. For our generation, despite the fact that we are logically aware of the requirements of the Culture Machine, we still have to suffer the legacy of an inefficient and illogical animal mind; but, just as we honor our beloved heroes of a time past, those of the future will definitely appreciate and benefit from the mechanisms that we set in place today.

ELECTION

Any form of government should have its leaders decided by the educationally and empathically weighted vote of its members. The most

educated, experienced, and empathic members of society should carry a greater influence than less-inclined people when deciding upon a representative of the H-Freak. Some would argue that the needs of the lesser-educated or ignorant will be overlooked, but a counter-argument could be that the lesser-educated and ignorant are less apt to be able to recognize truly positive traits for a leader who could benefit them anyway, and instead they would be more likely to succumb to the charms of a stealthy and deceitful leadership candidate.

For the same reasons that parents should make most important decisions for their children, so should our governing bodies be constructed by the educated and empathic, because it's not always obvious to, or within the intellectual capacity of the general populace what is in their best interests. An educationally/empathically weighted vote will give so-inclined people the opportunity to increase their voting influence, they having pursued a more knowledgeable and compassionate perspective. Of course, this weighted voting system can only truly be fair if the realistic opportunity for education is ubiquitous for all of the population.

CONSORTIUM

Until the day that we submit to the machines for our subsistence and order, we will remain subjected to the rule of fallible and ego-based humans. To this end, as much as possible, our leadership mechanisms should be designed to prevent the possibility of tyranny. Leadership of a civilization should never solely be delegated to a single human because this is the actual definition of tyranny, no matter how noble and wise that leader may be. No one person can ever singly contain the wisdom and expertise necessary to best administrate the population; therefore, a consortium of many expert minds should form the framework of rule. Perhaps there may need to be a single elected figurehead charged with the role of breaking any indecisiveness that may occur, but fundamentally, issues of rule should be delegated to the appropriate areas of expertise within the ruling consortium.

RESTRAINT

Our species has grown beyond the natural methods of population control that inhibited the spread of our hunter-gatherer ancestors, and as such we have spread “plague”-like across the globe, nearly to the point of irreversible global detriment. Our phenomenal growth is the product of an overzealous reproductive instinct that was designed to overcome ancient mortality rates by the sheer counteractive volume of offspring. Our species, having intelligently evolved to formidably reduce these mortality risks in our modern world, will soon have to deal with overpopulation.

It must be recognized that the Earth has a limited capacity to support human life and that eventually our population will reach a point where, as a consequence, the inevitable suffering of some will occur. Some proactive measurements enacted by our ruling bodies and instilled into the people, that changes attitudes and behaviors towards reproduction, must soon be developed in order to avoid this fate. The Culture Machine has a limited capacity to maintain happiness for all members here on Earth, so lets concentrate our efforts on making its current and future constituents happy instead of trying to super-saturate the Culture Machine at everyone’s expense.

Historically, there have been many attempts to define an ideal human, and just as many severely misguided attempts to cull our gene-pool into reflecting those ideals. Unfortunately these definitions were often fraught with ignorance, prejudice, and tyranny, resulting in devastating consequences (e.g., wars, genocide, etc.), forever tarnishing the notion of humans taking the responsibility for our genetic pruning. Intuitively, it would seem the only fair solution that remains would be to impose equal reproductive quota restrictions on all people. This again is a black-and-white response to a very complicated scenario. Allowing a random dispersion of reproduction to occur serves no logical evolutionary purpose, and only exists to placate the egos of those that might be considered unfit for reproduction under a more responsible human evolutionary agenda.

When the inevitable time comes that having offspring is no longer a right, and instead becomes a privilege, the most significant parameter for qualification to reproduce should be the intensity of the Culture Machine-enhancing tendencies of the parents-to-be, which will hopefully be genetically passed along to their children. Some may argue that this would be an attempt to skew nature's plan, but what they do not understand is that we are already making choices that supersede nature, by the form of societies we persist in, the people that lead us, the social hierarchies that we define, and the sum of the little choices that we make every day. We are already systematically dictating who can and cannot survive, far outside of what could be considered nature's plan.

Our current momentum for humanity's evolution seems to be lacking in empathy and in an effort to curtail this tyrannical progression, let's move away from a greed-based social and economic system to a more empathy-based system. We must take seriously the responsibility for creating a future civilization of people with an innate Culture-Machine-building disposition, lest we allow greed to continue its tyrannical rule of our motivations. If greed persists as the prime motivation for our ambitions, we inadvertently create an environment that fosters and rewards greed, and over time, the average human's greed will evolve increasingly more potency in order to be best fit to the environment, perpetually enslaving us to this insatiable instinct.

CULTISM

Religion and other cults that serve to introduce fantastical memes into our culture must be prevented. The idea of practical tolerance to the persistence of "beliefs" is as absurd as rewriting the laws of physics. People can become lifetime victims of the rigors of whatever routines are presented as the necessary form for enactment of their beliefs, and they may become brainwashed beyond the point of no return. This can result in varying degrees of insanity, making them ill-fitting members of the Culture Machine, for which they will suffer a lifetime.

It is the duty of the governing body to prevent the proliferation of ethereal being-based philosophies so as to protect the weaker minded of

our species from being tyrannized. The communion role of most religions should be filled instead by a diverse range of interest-based groups, providing a safe recourse for all to indulge in like-minded unity. A mandatory, ubiquitous, and homogenous education system can serve as a antidote to the infectious spread of religion, for without a complete and fulfilling education, the virus of religion will seek to fill those knowledge gaps with fantasy.

REJECTION

Our education systems must be designed in a fashion that instills, from a very young age, behaviors that complement the Culture Machine (altruism, communion, etc.). Despite perhaps even the most effective "programming", there will always be those that are incapable of integrating in a constructive manner into the Culture Machine, either due to unfortunate meme acquisition, or even worse, a destructive genetic disposition. Removing the privilege of reproduction from this individual will help to prevent the passing on to further generations of this destructive tendency, but in extreme cases, these poor souls must have their privilege of integration into the Culture Machine removed. Banishment or death may be the only solution which is entirely humane and justified when all other recourses of education or rehabilitation have been exhausted.

CENSORSHIP

The power of freedom of speech must only be used for the greater good, and not simply granted as an intrinsic right for everyone, because it can easily be abused for tyrannical or destructive purposes. The type of censorship suggested here is not fundamentally meant to impose conformity, but rather to prevent negative, fantastical, or destructive memes from taking hold in the H-Freak. Religious teaching of mythology, under the guise of fact, is a perfect example of where to apply this necessary censorship such that radical concepts of ethereal beings and magical worlds cannot overtake the susceptible minds of our

young, otherwise we allow them to be condemned to a life of inescapable ethereal addiction, fear, and ignorance. Tyranny and ignorance must not be granted a voice.

OPPRESSION

The law must be carefully designed so as to address societal conformity issues in a non-oppressive way. For example, chemical abuse by a society's constituents has historically been legally oppressed by most forms of culture, through expensive, dangerous, and ineffective enforcement methods. Chemical abuse is a public health issue, not a crime. Humans are very clever and will always find ways to seek out the perceived benefits that chemical abuse provides them. When this desire is confronted with oppressive laws, it only results in immense power being unjustly afforded to those who can illegally provide these chemicals to the addict. For this reason, it will always be futile to attempt to eradicate drug abuse through oppression.

Oppression will always cost society more than practical tolerance and treatment will. Continuing our previous example, the most effective way to deal with drug abuse is through education, forfeiture of government or public liability for the drug-partaking members, and a government-controlled, safe, inexpensive supply. Addicts will then have a cheap reliable source to feed their dependencies, but only in the face of powerful psychological deterrents (education, public judgment, etc.).

By making available a government-regulated, non-adulterated supply of chemicals, the result will be the immediate removal of power from the illicit suppliers. This significantly reduces the dangers that drugs represent to the innocent non-partaking bystanders who currently bear the risk and expense of the futile oppression of this drug certainty. Providing safe drug supplies also greatly reduces the dangers to the addicts since the production of their chemicals will be regulated, and they'll also face mandatory addiction-prevention education along with detailed instructions about the effects and dangers of those drugs. By also providing the addicts with an avenue for voluntary recovery, the

door to freedom from chemicals will always be open. This system will save many more lives than any form of futile oppressive law ever will.

CHILDREN

Once again, for a question on how best to go about a particular human task, the answer can be found in the hunter-gatherer society. Raising children is one of our most primitive inclinations, as evidenced by our powerful maternal and paternal instincts that produce nearly automaton-like responses when faced with various scenarios that children present. A crying baby will compel the parents to act in a comforting manner; a laughing baby will bring smiles to a crowd of people. It is difficult to fully appreciate the drive for, and impact of, children in our lives. Every single facet of our genetic design, aids in the successful garnering of the next generation.

ABORTION

Despite perhaps even the best sexual practices, sometimes an unwanted pregnancy can occur. Abortion may be the only viable option that is in the best interest of all parties, including the unborn child. A very immature fetus has no consciousness, no operable nervous system, and is no more a human being than a muscle could be considered as. Though it should be an extreme situation that would justify aborting a fetus (and then only very early in the pregnancy), if that situation arises, abortion should not be condemned as an act of murder, for there is no victim. It takes many months of gestation for a fetus to significantly evolve to a stage where it can sense its environment. Aborting a fetus cannot be thought of as taking a life, or killing a “soul”, because it is simply an object of fleshy material, but with profound repercussions should it be allowed to grow into consciousness.

Most definitely the thought of killing a baby strikes at the heart of our instinctual pulls and causes great pain to those with a strong

maternal/paternal instinct; so much so that sometimes individuals incorrectly extrapolate and apply those protective maternal/paternal instincts too far back into the gestation cycle to where it is nonsensical, before the baby is capable of sensing. It is very wrong to impose your personal maternal/paternal yearnings on those who need to have an abortion. This imposition grows much more grotesque if supported by a religious argument, for as we've already covered, religion is a disease that profoundly affects the quality of your judgment. A reality perspective makes it clear how the maternal/paternal instincts can best serve humankind, and that it is certainly not to protect an inanimate, mindless fetus that cannot possibly sense its environment. Abortion is in no way a violation of our instinctual maternal/paternal duty.

GESTATION

Our cultures have evolved somewhat to remove some of the conditions that promote a healthy childhood rearing, even so much so as to affect the child before it is even born. The mother's diet and habits can sometimes negatively affect an unborn child. The obvious culprits would be the quick-fixes (alcohol, caffeine, drugs, etc.) that can alter the growth process and do considerable damage to the fetus (as in alcohol fetal syndrome). Another not-so-obvious culprit would be the culturally distorted diet that a mother might enjoy, but which is lacking in the nutrients that a hunter-gatherer diet would supply and that are essential to proper fetal development. An example would be a diet low in folic acid due to a lack of citrus juices or fruits, which can result in fetal deformities (e.g., spina bifida). It is important to as closely as possible mimic the diet and environmental stress levels of a hunter-gatherer society in this most crucial of times for the fetus.

REARING

The environmental sensations that a young baby would experience in a hunter-gatherer society would be, of course, always of natural origin. One of the most fundamental stimulations that a baby needs is

breastfeeding. The milk provided by the mother is perfectly nutritionally balanced for young humans, and also transfers from the mother the antibodies that immunize the child against sickness.

The intimacy of the child with the mother, or any other loving human being, continuously stimulates the young mind, forging many positive pathways in the maturing baby's gray matter. The more stimulation a child receives at such a tender age, the more pathways will form meaningfully, and the more intelligence that child will bear earlier in life. That's not to say that teaching a baby something so complex as mathematics might prove beneficial, but rather that the constant appropriate stimulation of the baby's senses will continuously feed them reality stimulus (visual, audible, etc.) for their tiny brains to sort out and learn from.

STIMULATION

Babies always need company, another's presence—a pulse. Their brains require plenty of stimulation to keep up their own mental resonance, and an extended lack of fulfilling human stimulation for a baby can sometimes result in the tragedy of Sudden Infant Death Syndrome (SIDS). A baby's tiny unstimulated mind might reduce in resonance to the point where their instinctual mind relaxes too much, allowing the heart to stop beating. It seems very unlikely that a baby would be left alone for any period of time in a hunter-gatherer society, and so likewise our babies need the same attention from us. Keep your babies close to you.

PERSPECTIVE

Imagine you were captured by an alien race and transported to their planet (you don't think we are the only planet in the universe that evolved life, do you?). Imagine how shocked you would be to see how they live, the structures that they live in, and the manner in which they interact: all so foreign, so complicated. One thing you may notice, however, is that your attention is sharply focused in order to take it all

in. This is the perspective of a child. A lot of chaos swarming around, but you'd have a never-ceasing awareness of the commotion in the attempt to surmount it with reason and understanding. The brilliance with which a child perceives his world has the same effect of magnifying that stimulation. What would seem rather unimportant to us might have colossal ramifications in a child's mind.

Children are hypersensitive to their world and feel things very strongly, so it is important early on to carefully administer the type of stimulation that they are exposed to. If left unregulated, they could be exposed to extremely damaging memes that might result in traumatic scarring of the gray matter that they will carry with them for the rest of their lives. Bullying by peers, sexual abuse by adults, lack of parental concern, all can deeply and permanently wound a child, making it difficult for them to mature to express their altruistic or communion needs, forever starving them of fulfillment—a life of anguish.

This same hypersensitivity, however, can equally help to positively feed the mind of a child. Accolades for Culture Machine-strengthening acts, and constant expressions of love for a child, are necessary to develop this young mind into a caring, strong, and intelligent individual. The only reward that a very young mind recognizes is the love and attention of their parents. This love of course should be unwavering, but should also be made increasingly obvious to the child when they act in a positive manner. Reward creativity, curiosity, accomplishments, and even failures, with love and reinforcement. Simply put, provide an emotional reward for positive actions. Trying to gain the affections of the parents at a very young age challenges their minds to continuously become cleverer, resulting in overall enhanced intelligence. Focus your rewards onto the child's actions that best fit the Culture Machine, and that child will become increasingly intelligent in altruistic and communion mannerisms.

PUNISHMENT

Reserve punishment for intentional, not accidental or ignorant, mistakes. Punishing for a first offence committed through curiosity can

only serve to suppress the healthy and necessary need to experiment. Should punishment be warranted, it should consist of an effective amount of disdain, or more severely, the removal of a previously-established reward. Teach children how to punish themselves when they knowingly do wrong. Instead of choosing a punishment for them, allow them the opportunity to decide how they should be punished instead, of course not allowing them to be too lenient, but at the same time forcing them to make the connection between a negative act and a reasonable punishment that they must inflict upon themselves. This will instill into their young minds the self-regulating values that will serve them into adulthood.

Never yell at or hit a child; this is purely a barbaric and obscene instinctual act on your part. It just means the child has outsmarted you and is now controlling you emotionally. Would you be so eager to hit or yell at a misbehaving but very muscular adult? The only difference between the two situations is the ability of the other to reciprocate the physical or mental pain you'd administer (who's the big bully now?). Don't teach children to manipulate with fear, pain, or oppression. Use your brain. Lead by example, not force. Always have a visible reward that can (and will) be revoked as a form of punishment. Also, despite the relative triviality of their matters, demonstrate relevant and measured justice to children so they can build a calibrated feeling of self-worth, instead of constantly exercising draconian penalties against them for their misbehavior.

Understand and stick to your promises; children have a much better memory when it comes to promises, especially punishment. Administer suitable punishment, not with anger, but with explanation. A young mind needs a lot of interaction with adults in order to gauge learned concepts against a parent's reaction, which helps them determine the quality of those concepts as good or bad. If the parent regularly neglects their child until the child is misbehaving, the child will learn to resort to mostly negative means (crying, misbehavior, etc.) by which to draw the parent's attention.

VALUES

Teach your children the value of contentment, such as settling for the second-best item instead of the best, or giving them a choice to have only one of two very desirable items. Contentment is the most powerful skill necessary for a truly happy life. With the things they have, teach them that the real reward of having things is the ability to share them with others, demonstrating meaning and value for the function of communion early in life. Teach them respect for the possessions of others when they have been given the opportunity to share. They also need to understand that things are just that, things, and that the pursuit of unnecessary things is an empty life. To this end, give them the opportunity to earn anything that they might desire, but if the object of their desire is merely to satisfy their greed, they should work good and hard for it.

FACTS

As a parent, one of the most fundamental roles we play is to protect our young from suffering. With this, it becomes easy to want to protect them from the painful truths of the world, like justice is not guaranteed, or that there is no ethereal protection, or even that death is forever. There is no way to cushion the truth so that it will be palatable to a child, but this does not negate your responsibility as a parent to clarify these facts to them. Telling your child that the world is a magical place with eternal life and ethereal creatures is a very selfish act on your part, committed with the intent of artificially relieving them of the pain wrought from the truth, but ultimately only serves to relive you from helplessly watching your child suffer when you tell them the truth that someday they will die. If you impose a religious perspective on a child, you may somewhat alleviate this pain, but you effectively condemn them to grow into emotionally and intellectually stunted adults who will themselves unwittingly serve to continue the cycle of lies.

Break the cycle. Don’t lie to your children, about anything. Try instead having faith in the strength of our children to absorb reality for

what it is. Fill their minds with wonderful facts, so their foundation in reality is set early on in development. Facts can be more wonderful and interesting than fabrications. The propagation of fanciful memes for the purpose of providing a magical world for children is nothing short of cheating to placebically please the child. This child is then forced to endure an unnecessary disappointment in the future as the cracks in the fiction become visible to them, which also inevitably leads to lack of credibility of the parents, in the child's eyes. When you avoid the truth, you are only teaching your child that it is acceptable to lie. Children can handle just about anything if it is the truth, be it good or bad. Set an example for how to deal with the truth.

Do not wait for your maturing children to "decide for themselves" about whether religion is right for them or not, in the misguided belief that this gives them a fair chance to evaluate reality for themselves. Due to its intrinsically complicated and non-capitalizable nature, reality has few advocates, and therefore the mental traps set by religion will consume our innocent and impressionable young before they're intelligently capable of making a valid judgment. Would you allow your child to wander into the lair of a wild animal so that they can judge the danger for themselves? Hardly. Likewise, it is your duty as a parent to protect them from the lies and tyranny of religion so that they don't become lifetime victims to the false charms of faith.

RESILIENCE

Children are very resilient when it comes to stressful situations. They can emotionally handle just about anything as long as they understand they are loved. Should the pair-bond that formed between two people to create the child, no longer constructively contribute to the happiness of all, this bond should not be maintained for the sake of a misguided belief it is in the best interest of the child. The child only needs to know that both parents still love them as much as ever. A hostile family environment is more detrimental to a child than a separated one. As well, a single parent can be just as effective in raising a child if they are conscientious in exposing that child to various other

people with differing perspectives, so that the child can learn from many people. Children need many role-models throughout their lives to define them, not necessarily just their parents.

EXASPERATION

And one last thing about children: there comes a time when they reach adolescence and are riddled with empowering and confusing new instincts that radically shift their perspectives and ambitions. This helped our early ancestors to burgeon into hunters, parents, and adults; however, in the cultures of today it takes much longer to acquire all the memes necessary to properly and beneficially integrate, and a lot of young minds seem to become impassioned beyond reason. It's genetic. Accept that it will happen and that you yourself were once the master of the universe. It's purposeless to attempt to quash this power; instead, assist the adolescent in determining healthy outlets for their primitive energies and inclinations. If they choose to focus elsewhere, you didn't fail; that's just life.

Try to remember that when you bring another life into the world, you are creating a separate individual, a complete and independent human being with their own inclinations, ambitions, and aptitudes. It may seem the most primitive ego need we have is the desire to create something in our likeness, a reflection of what we wish we could be ourselves. It is easy to unfairly demand these expectations from our young, but they have a completely different world to grow up in than we did and not all of the wisdoms that we may have garnered in our lifetime can be handed down to our progeny without needlessly stifling or oppressing them. They need to find their own path, make their own mistakes, and become the best fit they can in *their* world; so do your best to keep them from danger, show them love, but give them the space to grow and be free. Even in the face of utter defiance and disrespect, always treat them like you should treat any of your fellow humans: with respect, love, honesty, tolerance, dignity, integrity, sincerity, and justice, so that they might learn the value and power of those principles.

Don’t teach them tyranny.

SUMMATION

And there you have it. This is by no means a complete list. Feel free to augment it with your personal contributions as long as your additions serve the ultimate goal of happiness for everyone. Make your G.O.D. happy and you will be happy. What will prevent this Culture Machine from falling apart? The prevention of tyranny, and the reward of communion will be the glue that keeps the Culture Machine together. True happiness cannot be had alone, so if humankind is ever to find peace, it is essential that the Culture Machine, and the individual mindsets that construct it, deliberately evolve behaviors that manifest it. If everyone is happy, how could they possibly want to destroy that machine?

Allow me to say that I am not a worthy example of all these lofty suggestions for living, not personally manifesting (or ever having met anyone in my life who manifests) the net sum of the concepts thus far presented to you; and therefore this information has been pieced together experience by experience, from many sources, over a great deal of time. It’s unlikely that anybody could be deemed representative of all these philosophies since our instincts as they are today will demand that we suffer somewhat from the enacting of some of these postulates.

What’s important to realize, though, is that the greater goal of the ideal Culture Machine is being accomplished step by step with every interaction. If you want to believe in this goal, step over your instinctual reactions and act logically. With enough contribution toward these concepts by all members of the Culture Machine, time will eventually genetically weed out the negative instincts that tend to break it down. It will not realize itself in your lifetime, but most definitely it will continuously improve.

I, as you, am also learning to be truly aware of my world, and of myself, and there is a phenomenal amount of cultural programming that

must be overcome to even begin the process of accepting and understanding reality. It may be frightening and difficult sometimes to understand and accept things the way they truly are, but trust that you are better for taking these steps, and you'll be mightily armed with the knowledge necessary to make the world a better place for all, especially you.

Inception

For all the information presented in this book, I can take no credit, any more than a cartographer can take credit for the layout of a map; I simply took a long walk with my eyes open. You have the map now, so take a careful look around and ask yourself this: how are you going to move about in this universe? Let me start for you…

I love you, my friend.

THE BEGINNING.

References

A very large list of establishments, scientists, professors, authors, visionaries, and friends, all have some of their essence in this writing. It would be an incomplete list with any attempt to enumerate them all and so I beg for your forgiveness if your memes are present in this book without proper credit being afforded you. It is a sensitive time in humankind's self-awareness and sources have been purposely left out to avoid the political ramifications of association to the philosophies presented within this book.

We need your help

Come visit us on the Internet:

www.betterhuman.org

Glossary of Terms (as used in this book)

Abstraction – Simplification or blurring of a concept; or, defying strict definition; or, connecting distinct concepts in new ways.

Aether – The historical and now-discounted sea-like medium that was theorized to permeate the entire universe.

Altruism – The act of helping others with no benefit to yourself other than positive acknowledgement from your G.O.D.

Amino Acid – Molecular building blocks of proteins.

Anonymoids – Absolute strangers.

Anti-Gravity (Field) – A discrete region of high-pressure bether such that if located between two objects, it would overwhelm their normal gravitational attraction, forcing them to instead move away from each other.

Bether – The transparent, rubber-like material that everything in the universe is ultimately composed of, including the apparently empty void of outer space.

Betherdynamics – The science that describes the properties of bether.

Chaos – A system with unorganized (not implying random) interactions between its constituents.

Communion – The state of being strongly bonded to another, usually implies your fellow human.

Denial – The act of blindly rejecting the importance or value of something with the intent of alleviating the instinctual desire for it; or, the act of disregarding seemingly factual information with the intent to avoid dealing with the ramifications of accepting that information.

DNA – Deoxyribonucleic acid molecule: genetic blueprints for most living things.

Energy - The intrinsic elastic behavior of bether to attempt to balance and equalize the positive or negative pressures imposed upon it.

Entropy – The tendency of things to fall apart over time.

Enzyme – Protein that can perform various molecular catalytic or mechanical functions.

Ethereal – Something perceived to be real but doesn't have a physical presence; intangible.

Fact – Highly unlikely to be false.

Freedom (True) – The uncompromised ability to perform any desired action or thought, that will never negatively affect others.

G-Freak – Genetic freak. A class of creature that has the senses of smell, stereoscopic vision, taste, touch, and stereophonic hearing; also, a central nervous system with a brain containing at least some gray matter, a cardiovascular system with air-breathing lungs, four limbs (or four appendages of some identifiable sort that are utilized for movement), indications of a tail, sexual organs, a digestive system, as well as a few specific sexual behavioral traits. This class of creature has a high probability of evolving intelligence. "Freak" implies that it is always evolving.

Galgitron – No such thing.

Gene – A section of DNA that is the template for an RNA strand, which in turn is the blueprint for an enzyme.

Gene-Pool – The combined total diversity of distinct genes available in a species' collective DNA.

G.O.D. (Governing Overseer Device) – The portion of your brain that has evolved to require and manufacture the artificial spiritual communion with a perceived ethereal entity.

Gravity (Field) – A discrete region of stretched bether, usually surrounding any object. Causes objects to "fall" together.

H-Freak – Humankind's M-Freak.

Insane – One whose knowledge is founded upon incorrect information and who therefore cannot accurately perceive reality, rendering them largely incapable of manifesting rational thoughts or actions.

L-Freak – Logic freak. The physical manifestation of an M-Freak that reproduces and conducts itself with pure logic, without instincts to bias its motivations.

Law of Energy Conservation – Theory that energy cannot be destroyed or wasted, but only changes in form.

Life – Any construct of matter, manifested mostly by design, that persists due to its collective facility of mutatively adapting to reasonable environmental stresses.

Light-year – The distance light will travel in one year.

Light-second – The distance light will travel in one second.

M-Freak – Meme freak. The evolving collective meme pool of a species. A metaphysical embodiment of an entire species' perception of reality.

Magnetic Field – A discrete region of twisted bether.

Mandelbrot Set – A mathematical formula that generates particularly beautiful patterns to infinite depths of resolution.

Matter – Anything that is a particle or is composed of particles.

Meditation – The deliberate attempt to psychologically escape from environmental stimulus and elaborate thought

Meme – A concept, notion, or thought; generally can be passed on to others. The information equivalent of a gene.

Meme-pool – The combined total diversity of distinct memes in a species' M-Freak.

Metaphysical – A hypothetical or imaginary apparatus that can assimilate a set of parameters to produce the desired observed results. Used to define relationships between related things that do not have a tangible or verifiable connection.

Monoscopic – Utilizing only one eye for vision. Lacking in depth-perception.

Morphology – A means of classification that is based on the unique measurements of skeleton bone lengths that create the size and posture of a given creature.

Nutrients – As applied at a cellular level, essential building block molecules, or molecules that a cell can use as energy.

Order – A system with organized interactions between its constituents, serving a larger goal than could be accomplished by a single constituent.

Occam's Razor – The simplification or removal of undue complexity, for the purpose of improving clarity

Oppression – Two meanings: (Political) To unjustly inhibit a person's actions or desires. (Enforcement) To inhibit with altruistic intent a person's actions or desires as an unavoidable consequence of enforcing the rules of society.

Paraphrasing – To restate an original statement in another form that has the same meaning to the original. An excellent communication tool to demonstrate comprehension.

Particle – A piece of matter, usually an atom or atomic particle such as an electron, etc.

Protein – Complex combination of many amino acids, sometimes creating enzymes.

Random – No such thing; or, virtually impossible to predict.

Reference (Frame, Point) – Everything in the universe is considered relative to a selected point of observation. Anything not moving relative to this point is in the same frame of reference.

Religion – A philosophy and perspective of reality that stems from a faith-supported belief in the existence of an ethereal entity.

Repulsion Fringe – An instinctual, uncomfortable sensitivity to that which is perceived as "ugly".

Ribozyme – RNA strand that can perform enzymatic activities.

RNA – Ribonucleic acid molecule, the most ancient form of life; blueprint for most simpler forms of life.

Sleash – Shorthand for “Sexual leash”; the most fundamental perceivable root to all of our “wants”.

Stereoscopic – Utilizing two eyes for vision. Gives the brain the ability to calculate distances to objects by the subtle differences in the individual images that each eye sends to the brain.

Relativistic Spatial Time Displacement - The effect of sequenced or simultaneous events in one relativistic frame of reference, occurring in linearly different intervals (shorter, zero, or even negative) in another frame of reference.

Time - The ultimate measurement scale of change of anything in the universe from one state of being, to another.

Tyranny - The utilization of a population's resources for the sole profit or ego placation of the leader(s).

Wavicle – Shorthand for “wave-particle”.

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