

CALL ME GAIA: *The Geometry of Fragmentation or The Geometry of Life?*

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ABSTRACT Many of the “base geometries” found in nature’s patterns are consistent and scalable. Such patterns exist in many mathematical sequences, such as the “golden section,” or the Fibonacci sequence. For the purpose of this article we refer to all of these as part of the Geometry of Life. Both the science and the aesthetics of these mathematical constructs can be seen in physical forms; such as the “math mystery” of the beautiful Nautilus shell, clearly revealing the “Golden Spiral” when sliced in cross section. By applying these kinds of mathematical models to establish a norm, or gold standard, and then populating this design skeleton with data factors (such as aspects of water purity, air purity, resource extraction, etc.) we believe it would be possible to render useful geometric distortions.

By analyzing these visualizations unexpected opportunities to re-balance the natural forms are evidenced by the structure of patterns presented. Importantly, as the renderings may detect emerging problems when they are still small, the system permits which resources are best investigated in order to mitigate greater catastrophe at a later date. This article suggests a concept interface for a Geometry of Life basemap that, when populated with appropriate information, would “distort” in such a way to visually reveal egregious environmental conditions, and the intensity scale of their interdependency.

*Earth, isn't this what you want
Invisibly to arise within each of us?
Is it not your dream to enter us so wholly
there's nothing left outside us to see?
What, if not transformation,
is your deepest purpose?*

Rainer Maria Rilke

CALL ME GAIA

That’s all you need to know about me for the moment. I am here because I have a story for you. Especially for you.

You may wonder what I have to do with you? Why do I—seemingly a complete stranger—have a story to tell you? Confused about how to answer? Well, that is exactly why I need to tell you my story. Lately, we are hearing all sorts of theories, guesses really, about our relationship, but most of them don’t even get close to the heart of the matter.

But before I begin, I am wondering how you are feeling. Have you been paying attention to your vital signs? Have you wondered what these signs say about your overall health and well-being?

How did the heat of the summer affect you this year? What about last winter’s prolonged cold? Did your body temperature swing with mine, with the same ups and downs. And why bother with such minutiae?

How about your pulse? Has your energy been low because you are consuming it faster than you can produce it? Have you wondered what the crazy rhythm of your pulse is about?

Then your breathing? Is it rapid and shallow, cut off from its source, or deep and relaxed, bringing air into the farthest reaches of your entire body, unwinding your tight, nervous coils?

And excuse me for asking, but have you looked at your urine lately to see what it reveals about the fluids moving through you, especially the water in your body?

Then there is that other elusive but critical sign of well-being—your creative force or *élan vital* as the French philosopher Henri Bergson called it. I would even go so far to say that this fifth sign is the most crucial of all. It is the thread constellating the other four vital signs in consciousness. Do you know how your vital impetus is doing?

Before you read further, stop and take the time to consider your vital signs because they are your guides to the story I am telling you. If you don’t even know how you are doing, how can you expect to really know how I am doing?

It is probably not news to you that my vital signs are on red alert. I am in serious trouble. dangerously off balance. I am not just being a hypochondriac. I have NASA’s most knowledgeable scientists with the latest instruments checking on how I am doing. Their satellites have regularly been gathering data about my vital signs for the last fifteen years. Since 2000, NASA’s Earth Observing System, a coordinated series of satellites, has been monitoring how I am. They even

named the system's flagship satellite "Terra," after me, but I prefer being called *Gaia*. My name reminds you of the truth conveyed in the Greek story about how Zeus found my navel. He sent two eagles in opposite directions round my orb in search of the central point from which all terrestrial life originated. The eagles met at Delphi in Greece. Have you been there? Go... and you will know the truth of what I tell you.

NASA scientists have been recording my vital signs because they want to take action to help my systems recover from multiple ailments.

So what have they found?

My temperature, which indicates the health of my physical being, is worse than ever. The increase in greenhouse gases that you are emitting is leading to my temperature fluctuations and an accelerating rate of climate change. Dr. James Hansen, the NASA scientist who first warned Congress about climate change as early as 1988, said recently,

If humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted, paleoclimate evidence and ongoing climate change suggest that CO₂ will need to be reduced from (current levels) to at most 350ppm.¹

Just a reminder,

PPM stands for "parts per million," which is simply a way of measuring the ratio of carbon dioxide molecules to all of the other molecules in the atmosphere. Right now we're at 400 ppm, and we're adding 2 ppm of carbon dioxide to the atmosphere every year. Unless we are able to rapidly turn that around and return to below 350 ppm this century, we risk triggering tipping points and irreversible impacts that could send climate change spinning truly beyond our control.²

How about my energy, my pulse? Isn't this a hopeful sign?

Global energy intensity, defined as worldwide total energy consumption divided by gross world product, decreased 0.19 percent in 2013. That may not seem all that impressive, but considering that energy intensity increased steeply between 2008 and 2010, this small decline continues a much-needed trend toward lower energy intensity, which basically means that people are using energy more efficiently.³

Well, at least that's a bit of good news! Or is it? Should my energy be measured in relation to the marketplace?

What about my air? Is it clean and fresh?

Humanity is losing the battle for clean air. Despite decades of efforts to combat it, air pollution is taking a growing toll on human health, the environment, and the economy. Once primarily an urban phenomenon in industrial countries, air pollution has spread worldwide. More than a billion people—one-fifth of all humanity—live in communities that do not meet World Health Organization air quality standards.⁴

And how is my water supply doing?

Numerous studies have tracked the extent to which our increasing demand on water has made it a resource critical to a degree that even gold and oil have never been. It's the most valuable thing on Earth. Yet, ironically, it's the thing most consistently overlooked, and most widely used as a final resting place for our waste. And, of course, as contamination spreads, the supplies of usable water get tighter still [...]

The availability of clean water has come to be recognized as perhaps the most critical of all human security issues facing the world in the next quarter-century[...]

Aquifers (continue to) become sinks for pollutants, decade after decade [...] on almost every continent, many major aquifers are being drained faster than their natural rate of recharge.⁵

I shudder when I think of my *élan vital*—my creative force. But let's face it, the creative evolution of my glorious orb is in reverse, moving full speed downward.

Land degradation is becoming worse in severity and extent across many regions of the world, with croplands, in particular, declining in function and productivity. FAO (Food & Agriculture Organization of the United Nations) researchers estimate that 24 percent of all land surface area is depleted.⁶

Surely, you must know about The World Wildlife's *The Living Planet Index*? Its October 2014 Report gave more detail about my creative force:

an index that tracks the numbers of animals in selected populations of vertebrates—mammals, birds, reptiles, amphibians, and fish—across the globe. This “Living Planet Index” declined by 52 percent between 1970 and 2010, “a much bigger decrease than has been reported previously,” according to the report. The 52 percent figure refers to a general trend of vertebrate species populations shrinking, on average, to about half the size that they were 40 years ago.⁷

Of course, you don't need a report to tell you any of this. Just listen and look around you. You're seeing the changes.

SPEAKING OF CORRESPONDENCE...

Now you have the facts straight from NASA about my vital signs. Whether you are aware of it or not, all my signs mirror yours. Because you are Gaia.

Over time, your body temperature, pulse, and breathing, your fluids and your creative force—just like mine—have been weakened by the way you live. Need I say more? We are one and the same. The fundamental elements of my glorious orb—Earth, Fire, Air, Water, *élan vital*—all tell the same story, confirming official reports on your and my vital signs. My health and well-being are yours and yours are mine, and let's face it, we are on the decline.

But that is not the end of my story. It's just the beginning. Once upon a time, long, long ago, we lived in balance. It was a time when you recognized that all your signs were congruent with mine, and you knew that we, in turn, *corresponded* to a vast unknown. It was the time referred to as the Era of Mystery Schools. The constructions you built, the words you wrote, the numbers you calculated, the images you made, the sounds you uttered—even what you imagined—strove to be in tune with one another, with me, and with that great unknown. It was the Time of Correspondence.

All your human efforts were keys pointing to a nameless territory. But today you have been looking the wrong way and have mistaken the map for the territory. You have come to view your products, words, numbers, images, your sounds, and so much else as separate from each other as well as from yourself and from me. You have mistaken these fragments for that which you seek.

When astronauts took a photo of me from the Moon, you were left speechless with wonder. Immediately you wanted to seek out other planets. But both the photos of the Earth from the Moon and the desire to explore other planets are keys to a map that you have confused with what you are looking for. If you look at these same keys from another perspective, they can unlock the map and help you understand why you are me—why you *correspond* to me and both of us point to an unknown sphere that is the well-spring of all life. Having forgotten this, you don't fully realize what you are doing to yourself and to me. You even think and act at times as if your mind and your body are separate!

THE GEOMETRY OF LIFE

Let's use geometry to unpack what *correspondence* means. Geometry is a key to a territory you have forgotten, which nonetheless fills you with awe and longing. Originally, geometry meant a human device to relate and connect me to you and both of us to a phenomenon undetectable with our senses.

Let me show you how to situate yourself so you can probe this possibility.

Stand on your two feet outside your constructed environments in a spot on the ground that attracts you. Relax your arms at your sides, keep your spine straight. Now imagine yourself as a mountain. Feel that mountain with the ground below you and the sky above.

Your words separate you from the valley at your feet, yet you know that there is no actual separation: the mountain merges into the valley. The mountain and valley are a continuum. Now focus on feeling the ground beneath you as you take in the energy-rays of the sun, the air touching your skin as it moves into you, and notice how the air meets the waters of your body—waters replenished a short while ago with my waters in the form of tea, or other fluids.

As you rest in your 'mountainess,' allow your feet to expand your awareness below the ground and your head to extend it out and up. Reach for the dome of the sky that matches the dome of your head. You can feel the extremities of your expansion through sounds, smells, tastes, sights both near and far.

Now move your arms slowly upward, straight over your head. Lift your face to gaze into the dome above.

Close your eyes and slowly lower your arms to shoulder height, reaching them out to your sides. Take in fully the space your arms have re-cognized.

Now turn very slowly clockwise, to your right. Your body can begin to feel what I have been telling you:

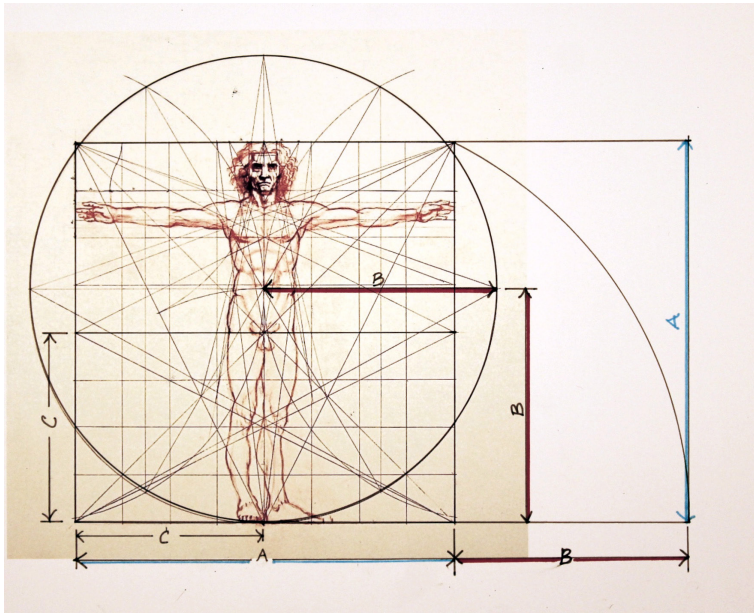


FIGURE 1: *Vitruvian Man: Drawing after Leonardo da Vinci by Jose De Jesus. It shows the relationship between the circle and the square as a result of the Golden Section. The relation: $(A+B)/A = A/B = \Phi$ which is the Greek letter Phi or 1.618...*

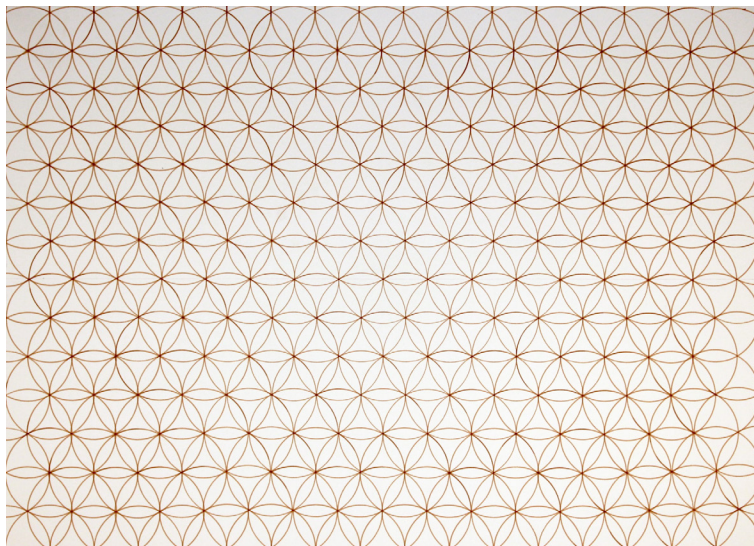


FIGURE 2: *Unified Field Matrix from Which All Emerges. Drawing by Jose De Jesus*

that you are me. Who you are does not end at the surface of your body but extends into the ground under your feet, into the sky over your head, and out into the space beyond the tips of your fingers as you move your body in a circle.

Let yourself begin to recognize that you are merging your physical body with what is not physical in a dynamic continuum. You feel the experience resonate deep within your body. You feel a dynamic balance.

Just like my early inhabitants who first aligned themselves with me, you want to tell others about the relationship you have discovered by standing on the ground and drawing a circle with your body. You mark the spot where you stood and draw a circle around it, using the width of your extended arms from finger tip to finger tip as the circle's diameter from side to side. You bring others to experience this, standing on the spot where you stood, to feel what you feel.

Like you, the ancient inventors of geometry wanted to show the relationship that they had discovered between themselves and me. They drew on something portable what they had marked on the ground. Wherever they went, they told whoever would listen that the drawing was the key to a map that corresponds, in turn, to an unseen possibility. Their drawings showed how they correspond to me, and how we both relate to a forgotten territory. In Jose de Jesus's redrawing (FIGURE 1) of Leonardo da Vinci's redrawing of Vitruvius's image, (which in turn is based on a lost Greek text), the square points to the Earth, and the Circle to the Universe.

The inventors of geometry recognized that the relationship of Homo sapiens to me—which you also experienced standing on the ground—can unfold into multiple relations. Standing on the edge of the circle, you draw again on my ground to make a second circle with the same radius, then a third, and a fourth, continuing as you create a force field—The Unified Field Matrix (FIGURE 2)—that amplifies the power you sensed when standing as a mountain.

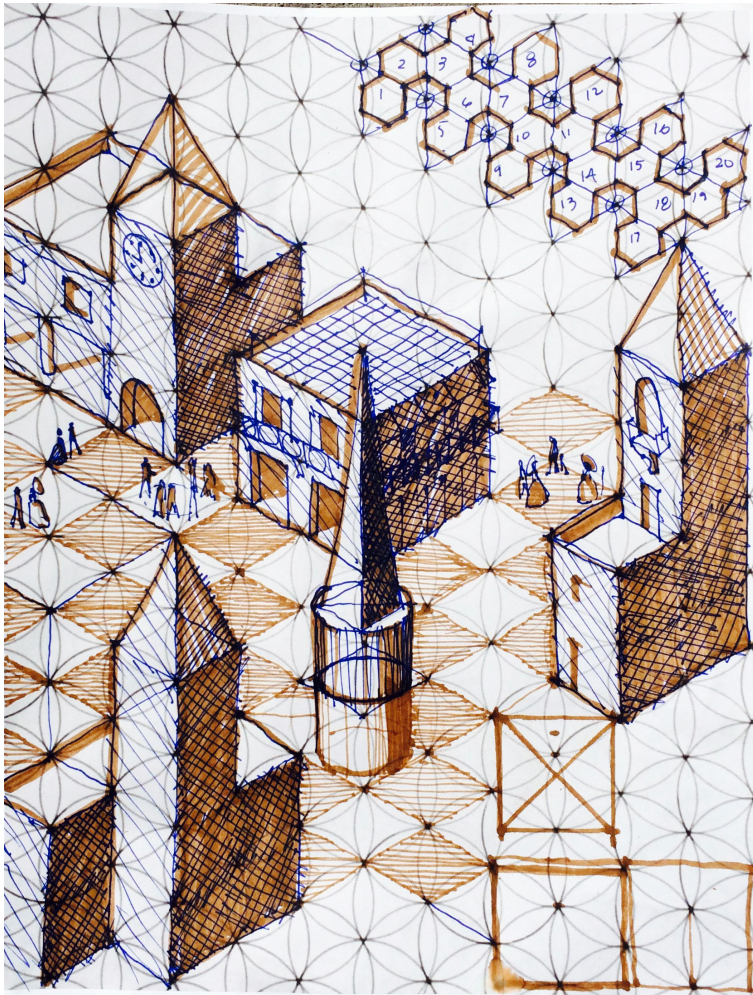


FIGURE 3: Town Sketch by Jose De Jesus, showing how urban relationships of space and form can evolve from the Unified Field Matrix.

If you wish to relate the things you make both to yourself and to me, you use the Unified Field Matrix as a template for your buildings (FIGURE 3). The resulting siting, proportions and overall geometry refers in fundamental, resonant ways to the people using the buildings as well as to me. For centuries people built in this way. As Edward Hyams observed in *Soil and Civilization*, “Everything touched by and serving living beings must either be adapted to the fact that the user’s life is organic, or must corrupt the user by withdrawing his attention from this fact.”⁸

The organic materials used to embody the Geometry of Life came from the surrounding region, making the buildings as integral to place as a mountain is.

Another way builders make evident that “the user’s life is organic,” is by making clear my relation to other planets. In *The Pyramids of Egypt*, I. E. S. Edwards recounts how pyramid-builders carefully aligned their constructions with the cardinal points and the sun. This care in relating you to me continues right up to the present in the contemporary work of ecological designer John Todd, founder of Ocean Arks International; Jason McLennan, Chair, Board of Directors of the International Living Future Institute & Cascadia Green Building Council, and until 1983 in the work of architect, systems theorist, author, designer, and inventor, Buckminster Fuller.

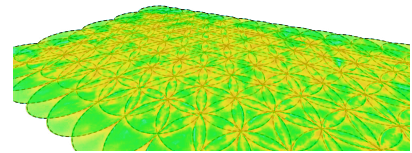
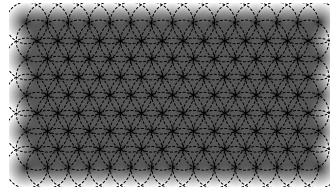
THE GEOMETRY OF FRAGMENTATION

Today, however, most of your buildings have lost all connection to me. We are both suffering as a consequence. Just look at our vital signs if you doubt me.

Particularly revealing is the way even “prominent” architects, let alone developers and other builders, construct. The “Walkie-Talkie” Building in London demonstrates what happens when you think I am a resource to be manipulated according to your will with no attention to *correspondence*. This building won the United Kingdom’s prize for the worst building of the year—the 2015 Carbuncle Cup. According to *The Guardian*:

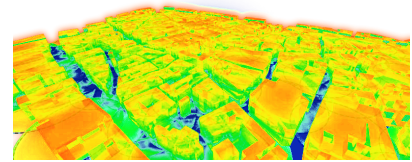
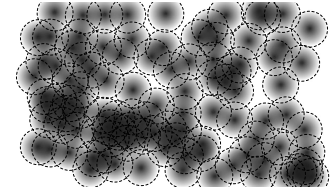
Pre-Industrial

In the pre-industrial landscape, solar radiation was distributed without bias as thermal energy radiated from a wave's point of impact on the earth. The resulting dissipation produced a variegated but proportionately balanced distribution of energy. Here you see that radiation in relation to the Unified Field Matrix.



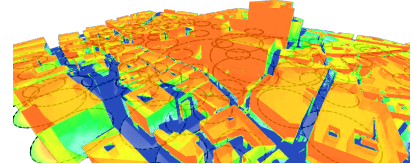
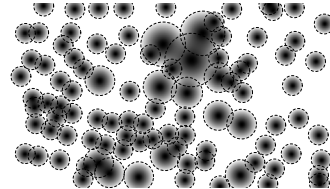
Industrial

As the urban landscape developed, buildings began distributing energy in more discrete patterns through their absorption, reflection, and transmission of energy. While the coherence of early cities maintained a relatively balanced distribution of radiation, we can begin to see certain areas that amassed higher concentrations of energy, and others that were shaded from irradiance.



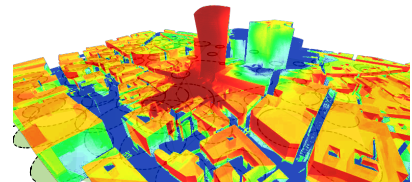
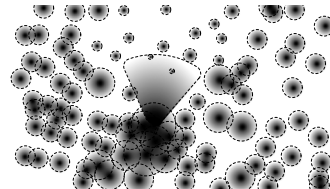
Capitalist

As the morphology of the built environment became more extreme in modern capitalist metropolises, buildings grew to compete for daylight, with their highly consumptive masses becoming more distinct from the natural topography, and from each other.



**Viñoly's
Walkie-Talkie**

Rafael Viñoly's skyscraper at 20 Fenchurch Street, London, exemplifies the divisive nature of such constructions. As the 34-story inflation towers over its surrounding neighbors, it not only shrouds buildings to the north, creating a chasm of solar obstruction, but also magnifies rays to the south with its highly reflective, concave, facade. The imbalance in energy yields damaging conditions at both extremes, and fragments the fabric of our landscape as a whole.



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energy concentration massing influence

0 watts/m² 3,000 watts/m² solar radiation

FIGURE 4: *Computer Modeling by John Dinning.*

The bulbous 37-story building has managed to melt cars and alter weather patterns, earning its place as the top blemish of London's skyline. The concave facade reflected enough sunlight to melt parts of a nearby Jaguar and proved hot enough to fry an egg, soon earning itself another nickname: the "Walkie-Scorchie." Shade structure was later added to the building's side to diffuse the sunrays.⁹

The computer modeling in FIGURE 4 shows the evolution of the region where the "Walkie-Scorchie" sits today. What you see traces the process from nature's pattern of solar radiation on my surface in the Pre-Industrial era, then, the energy distribution during Industrial and Capitalist periods, culminating in today's total disregard for me as a Living Earth. It is an evolution in which you have put your economics before my ecology.

FIGURE 5 (see page 7) is another visual tool dramatically demonstrating how the Geometry of Fragmentation throws me off balance. The economic fracking for natural gas is what drives my exploitation in the Marcellus Shale

region in Pennsylvania. Many still don't realize that I sequestered natural gas deep within my rocky depths so life on the surface of my body would be protected. Brutally extracting this gas with chemical-laced water disrupts multiple systems upon which my life and yours depend—water, air, energy, my body itself and ultimately my creative impetus. By treating me as a dead resource, you are pushing me to a place of no recovery.

THE GEOMETRY OF LIFE

The geometric tool seen in FIGURE 6, visualizes my dynamic condition when I am in balance. My vital systems are in accord. This tool expresses the same *Geometry of Life* you experienced when you stood on the ground and made a circle by rotating your body.

What you see visualized is the dynamic balance forecast in a winning entry in the Rebuild by Design Competition. The design called Living Breakwaters meets the challenges that New York City will face when hurricanes such as Sandy hit again. Rather than trying to work against my powerful forces of wind and water

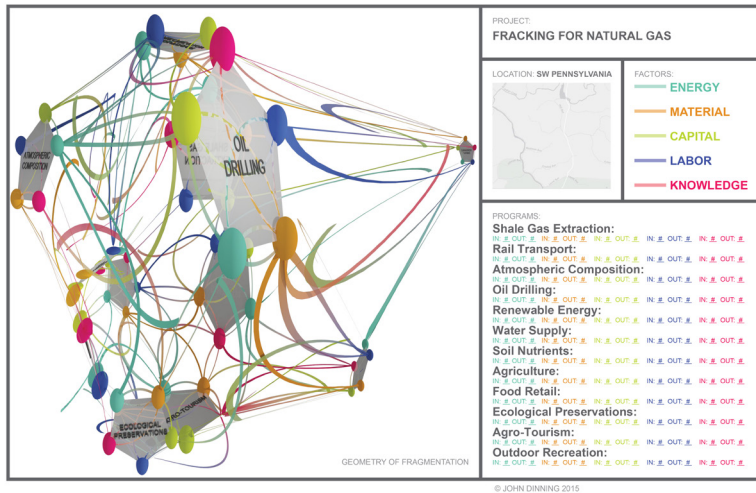


FIGURE 5: Computer modeling by John Dinning. The colors in the key indicate the multiple systems disrupted by fracking.

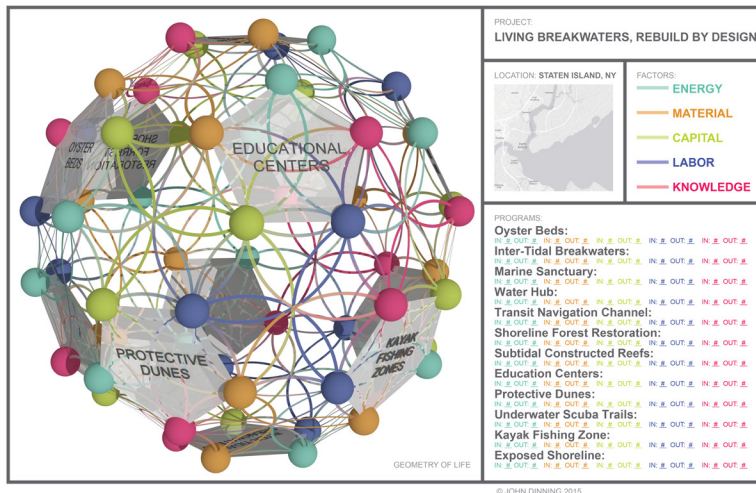


FIGURE 6: Computer Modeling by John Dinning. The colors in the key represent the multiple systems at play in the Living Breakwaters design for the South Shore of Staten Island.

during a hurricane, the winning team (SCAPE/LANDSCAPE ARCHITECTURE with Parsons Brinckerhoff, Dr. Philip Orton/ Stevens Institute of Technology, Ocean & Coastal Consultants, SeArc Ecological Consulting, LOT-EK, MTWTF, The Harbor School and Paul Greenberg) is working in recognition of these forces:

*The Living Breakwaters project reduces risk, revives ecologies, and connects educators to the shoreline, inspiring a new generation of harbor stewards and a more resilient region over time.*¹⁰

This modeling device is inspired by Buckminster Fuller's vision for the Geoscope, an ingenious construction that corresponds to me in shape and orientation:

*When completely installed and ready for use, all Geoscopes are oriented so that their polar axes are always parallel to the real Earth's north-south polar axis, with the latitude and longitude of the installed Geoscope's zenith point always corresponding exactly with the latitude and longitude of the critically located point on our real planet Earth at which the Geoscope is installed. As a consequence of the polar axis and zenith correspondences of the Geoscope mini-Earths and the real Earth, it will be found that the miniature Earth Geoscope's real omnidirectional celestial-theater orientation always corresponds exactly with the real omnidirectional celestial-theater orientation of the real planet Earth.*¹¹

David McConville, Board Chair of the Buckminster Fuller Institute, described his experience of being in Bucky Fuller's Montreal Dome where Bucky's Geoscope was to be built:

I can just say that the framing of what Fuller called the "Skybreak dome" provides a sublime architecture for

drawing attention to our perceptual relationship to the heavens [...] [Fuller] had much to say about the reason for envisioning an omnidirectional “inside-out” view of Earth, not the least of which was his belief that it would enact an intuitive familiarity with the way the metaphysical mind (in contradistinction to the physical brain) perceives the world.¹²

Bucky described the purpose of Geoscopes in his book *Critical Path*, “with the Geoscope humanity would be able to recognize formerly invisible patterns and thereby to forecast and plan in vastly greater magnitude than heretofore.”¹³ Bucky’s words also describe aptly the intention of the Geometry of Life.

But now back to my unfolding story. I am going to reveal to you just how embedded you are with me; also, how the Geometry of Life can help restore our vital signs. The Geometry of Life actually embodies a creation story that takes us up to this present moment in our evolving, ever-changing universe. Although you can glimpse this living universe with your new technologies, you really don’t need them. You can experience the living world you are rooted in by simply paying attention to your own body. Remember that you are inextricably merged within my ever-expanding ecologies. You can flow gracefully from your personal ecology through me to the Universe. Yes, you are me, and we are the Universe.

The Geometry of Life gives you a tool with which to respond to the energies creating our Universe. As you’ve seen, it emerges from the simple act of standing as a mountain, situating yourself. You may want to re-experience this now. Go ahead, try it again. This practice is never the same. Each time you do it, life springs more fully within you.

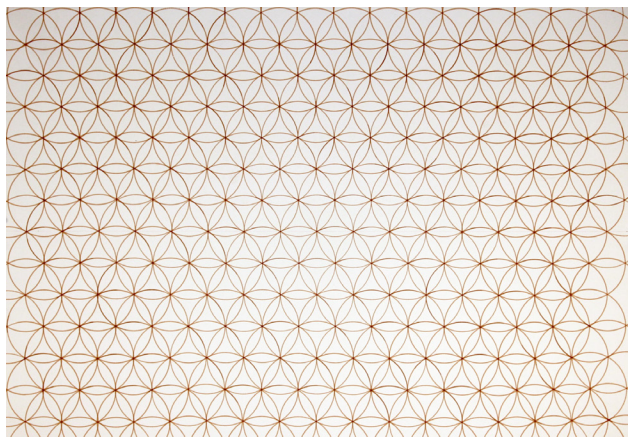


FIGURE 7: *The Unified Field Matrix from which all emerges.*
Drawing by Jose De Jesus

Illustrated in FIGURES 7–17 are the phases of the emerging Geometry of Life. Its implications for what we make, how we make, and what we seek are just beginning to come into focus.

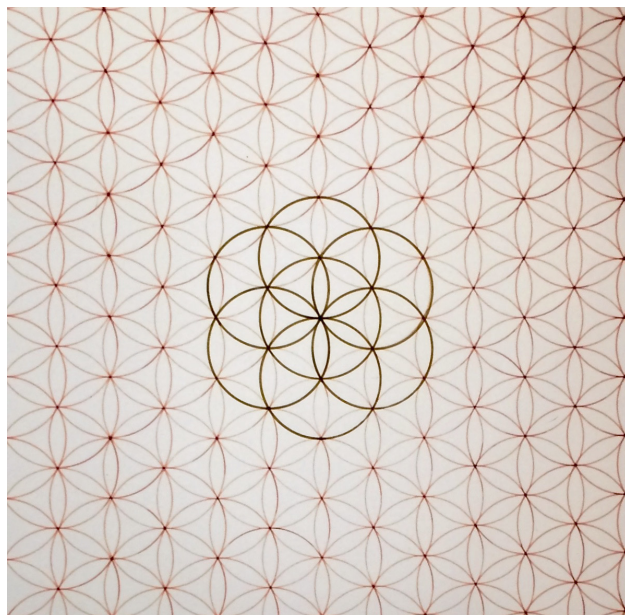


FIGURE 8: *Seed Of Life: The Creation Pattern Emerges from the Unified Field Matrix.* Drawing by Jose De Jesus

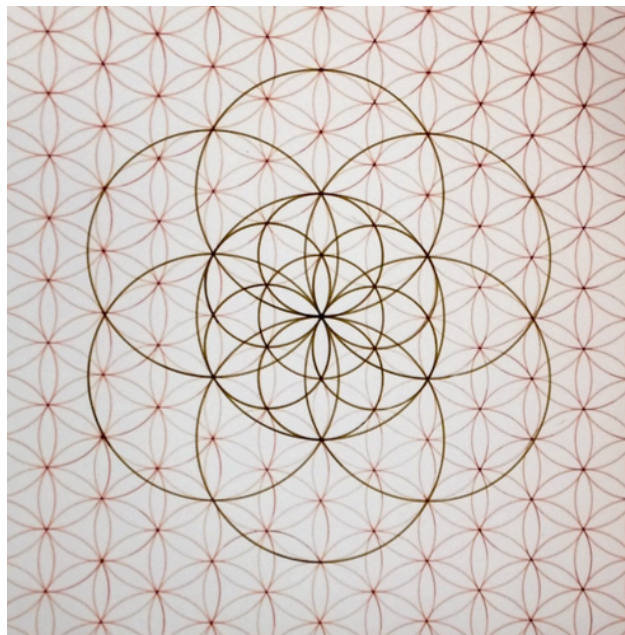


FIGURE 9: *The Seed of Life Evolving.*
Drawing by Jose De Jesus

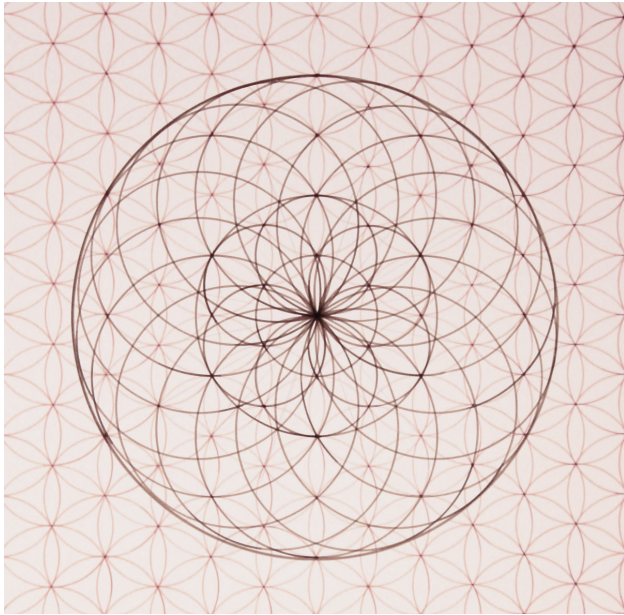


FIGURE 10: *Creating The Spinning Circles' Matrix - The Double Torus. Drawing by Jose De Jesus*

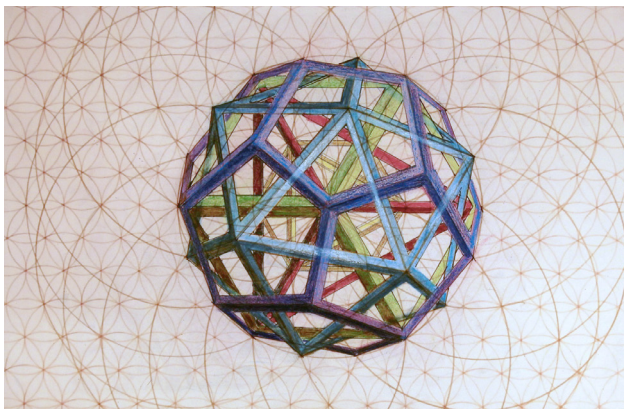
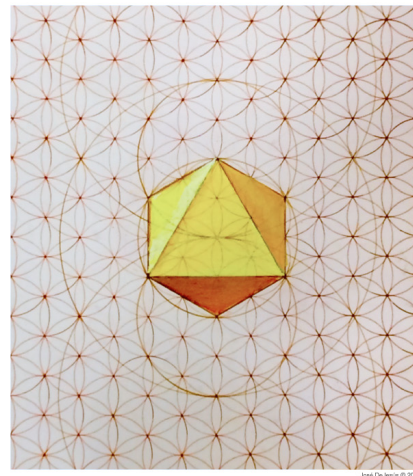
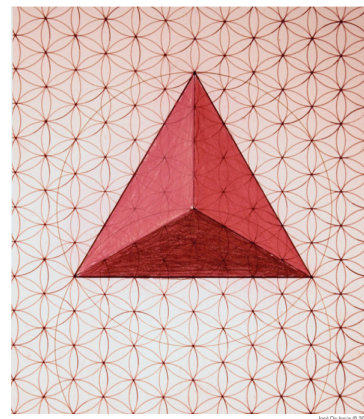


FIGURE 11: *The Spinning Circles' Matrix -The Double Torus contains the geometric scaffoldings to generate the five basic geometric forms that align you in your body and in the living Earth. Drawing by Jose De Jesus*



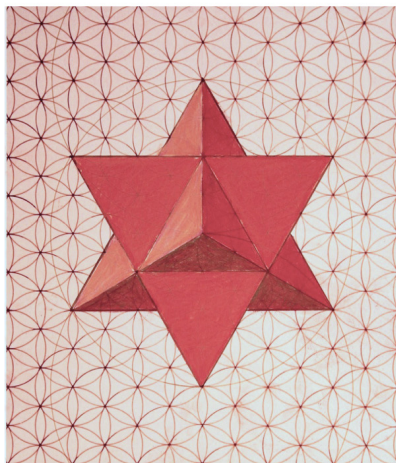
Octahedron
Air

FIGURE 12: *The Octahedron Emerges From The Spinning Circles' Matrix -The Double Torus. Drawing by Jose De Jesus*

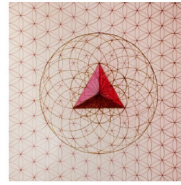


Tetrahedron
Fire

FIGURE 13: *The Tetrahedron Emerges From The Spinning Circles' Matrix -The Double Torus. Drawing by Jose De Jesus*



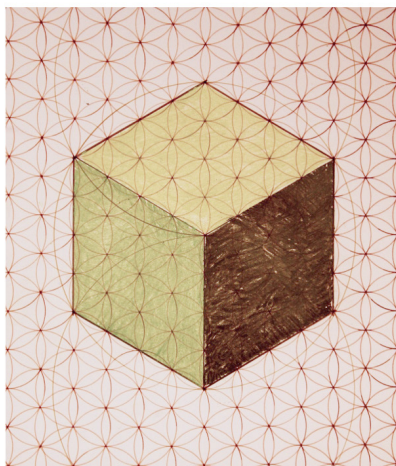
Star-Tetrahedron
Fire



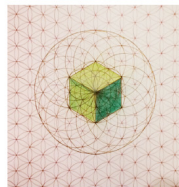
Star-Tetrahedron emerges
From the intersection of two Tetrahedrons

Jose De Jesus © 2015

FIGURE 14: *The Star-Tetrahedron Emerges From the Intersection of Two Tetrahedrons. Drawing by Jose De Jesus*



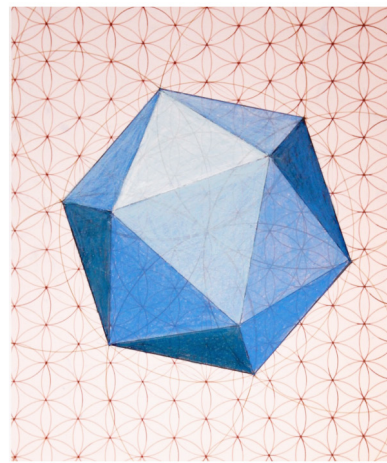
Hexahedron
Earth



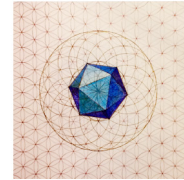
Hexahedron emerging
From The Spinning Circles

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FIGURE 15: *The Hexahedron Emerges From The Spinning Circles' Matrix -The Double Torus. Drawing by Jose De Jesus*



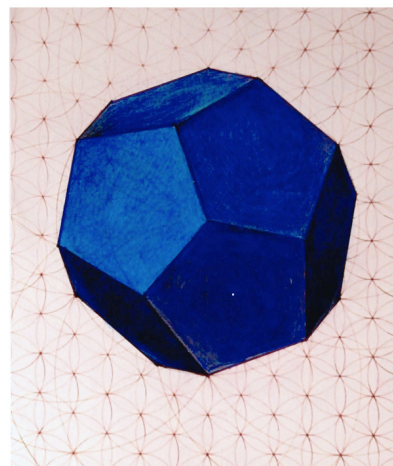
Icosahedron
Water



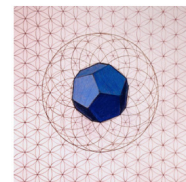
Icosahedron emerging
From The Spinning Circles

Jose De Jesus © 2015

FIGURE 16: *The Icosahedron Emerges From The Spinning Circles' Matrix -The Double Torus. Drawing by Jose De Jesus*



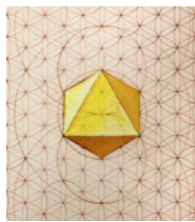
Dodecahedron
Élan Vital



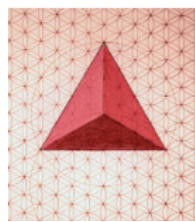
Dodecahedron emerging
From The Spinning Circles

Jose De Jesus © 2015

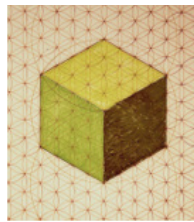
FIGURE 17: *The Dodecahedron Emerges From The Spinning Circles' Matrix -The Double Torus. Drawing by Jose De Jesus*



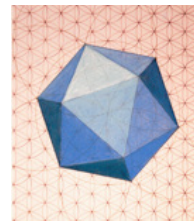
Octahedron
- yellow
- air
- lungs



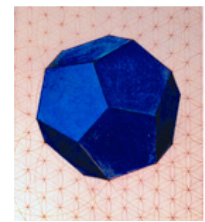
Tetrahedron
- red
- fire
- pancreas
and spleen



Hexahedron (Cube)
- green
- earth
- liver



Icosahedron
- blue
- water
- kidneys



Dodecahedron
- blue-black
- élan vital
- heart

FIGURE 18: *Drawing by Jose De Jesus*

These five basic polyhedrons, seen in FIGURE 18, correspond to five colors, five of our organs and the five primal creative elements—Earth, Air, Fire, Water, *élan vital*. In re-cognizing this, you can begin to understand how pervasive correspondence is. It is what holds together our universe.

The word correspond arises from Indo-European roots, from the Sanskrit word *spend*, meaning “to engage oneself by a ritual act.”¹⁴ When used here in relation to attuning your body to me, correspondence describes the dynamic—once a ritual act—that aligns geometry, color, your body, and the five primal elements to the unseen universal life force.

The five basic polyhedra also contain Phi or the Golden Ratio, which is the division of a line such that the whole is to the greater part as that part is to the smaller part. These forms also hold the Fibonacci series of numbers—a numerical sequence that converges on Phi (Φ). Both the Golden Ratio and the Fibonacci Sequence are tools, seen in FIGURE 19, that uncover patterns of growth in our DNA, other animals, plants, the solar system, and in what we create, such as art and architecture, music, the stock market, population growth.¹⁵

As you can see the linchpin in my story is the Double Torus in FIGURE 20. It depicts the process of the evolving universe. Within the Double Torus are keys to the map of life—the five basic polyhedra, the Golden Section, Phi, the Fibonacci series. This Geometry of Life is the basis of a new story—our story.

You may recall that in *Timaeus* Plato discussed the five basic geometric forms and therefore wonder how I can claim this is “a new story.” The order of the polyhedra is the critical difference between my story and the stories of Plato as well as Euclid (FIGURE 21).¹⁶

The octahedron is the first logical form that emerges from the Unified Spinning Circles’ Matrix. It aligns to the north/south axis, left, right, front and back, which also

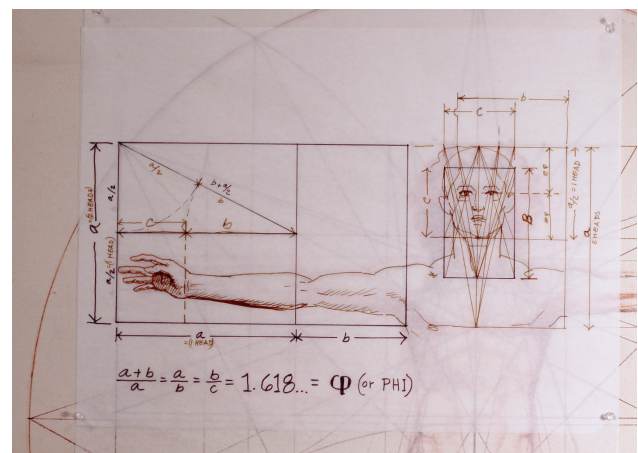


FIGURE 19: *Here Jose De Jesus explores Leonardo da Vinci's Vitruvian Man for the Golden Ratio and the Fibonacci Sequence. If two times the head equals the unit dimension “a”, then $(a+b)/a = a/b = b/c = \Phi$ (or PHI) = 1.618...*

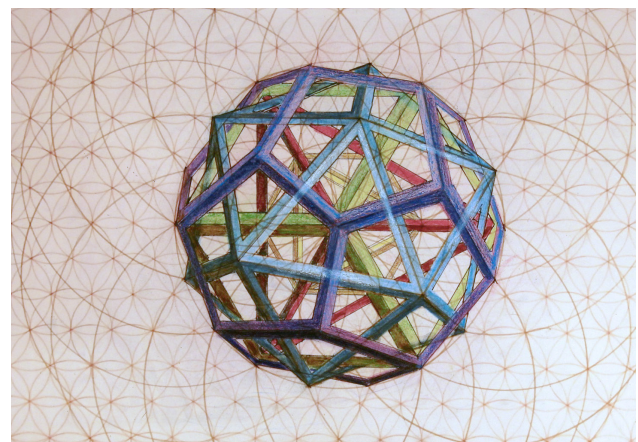


FIGURE 20: *The Spinning Circles’ Matrix -The Double Torus. Containing the five basic geometric forms. Drawing by Jose De Jesus*

POLYHEDRON IN THE ORDER OF THE NUMBER OF FACES	PLATO'S ORDER	EUCLID'S ORDER	JOSE DE JESUS'S ORDER
<i>Tetrahedron — 4 faces — fire</i>	<i>1st</i>	<i>1st</i>	<i>2nd</i>
<i>Hexahedron — 6 faces — earth</i>	<i>4th</i>	<i>3rd</i>	<i>3rd</i>
<i>Octahedron — 8 faces — air</i>	<i>2nd</i>	<i>2nd</i>	<i>1st</i>
<i>Dodecahedron — 12 faces — élan vital</i>	<i>5th</i>	<i>5th</i>	<i>5th</i>
<i>Icosahedron — 20 faces — water</i>	<i>3th</i>	<i>4th</i>	<i>4th</i>

FIGURE 21: Jose de Jesus, who created the drawings imaged here, discovered the natural order of the polyhedra by attempting to draw all of their relationships. He found that the octahedron of Euclid's model does not nest properly within the group, as it does in the model he developed.

aligns to the X, Y, and Z axis. Moreover, the octahedron nests precisely within the tetrahedron, which nests flawlessly within the hexahedron, which nests perfectly within the dodecahedron. The icosahedron is the last of the forms but its reciprocal relation with the dodecahedron makes it possible to alternate between the two. In other words, one can be inside the other, depending on material being used. De Jesus's reasoning is based, more than anything, on the experience of actually drawing the geometry. He constructed the three-dimensional forms so that the nesting is close to what he considers the ideal and is more balanced.

If you contemplate these drawings of the Geometry of Life or even draw them for yourself, you'll find they can unlock the map and help you understand why *you are me*—why you *correspond* to me and we both point to an unknown that is the wellspring of life.

This is really just the beginning of our story together but perhaps you can better understand why we need to work in *correspondence*. Our working together involves an essential shift in how we visualize, how we write, how we draw, how we calculate, how we make and also in how and what we seek.

Before I leave your company, at least for now, let's return to where we started when you situated yourself squarely on the ground. This time, if possible, go outside at night. Find a place where you can see the sky, perhaps on a rooftop if you live in a city amongst tall buildings. Or go to a natural place that opens to the sky, perhaps along a shore.

Let your eyes adjust to the darkness and stand still, allowing yourself to become a mountain again with your feet rooted to the ground. Slowly lift your arms straight above your head. Breathe deeply as you lift your head skyward. Take in the dome of the sky with its brilliant array of stars.

Even if there is ambient light, you will see stars if you let your eyes adjust. Then slowly lower your arms so they are extended out from your shoulders, your slightly cupped hands turned skyward. Continue to breathe deeply, letting your body take in the immensity of the dome you are embedded in. Now close your eyes and turn very gradually, feeling the extent of the sphere you are forming. When you reach the spot where you began, lower your arms to your side.

Now you have drawn a sphere that corresponds to mine, and have drawn me into you.

Again in the words of Rilke:

*Is it not your dream to enter us so wholly
there's nothing left outside us to see?*

*What, if not transformation,
is your deepest purpose?*

BIOGRAPHY

Jean Gardner (MA) is an activist, writer, teacher, public speaker, and visionary on Design for a Living Earth. She is an Associate Professor of Social-Ecological History and Design, The School for Constructed Environments, Parsons School of Design.

José De Jesús, (MFA) is a sculptor, draftsman, teacher, and practitioner who believes in the learning and mindfulness that arises through an immersive studio experience, in other words, learning through making. He is an Assistant Professor and Curriculum Coordinator for Space and Materiality, First Year Program, The School of Design Strategies, Parsons School of Design.

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NOTES

1 350.org, The Science, accessed September 27, 2015 <<http://350.org/about/science/>>

2 Ibid.

3 Worldwatch Institute. "Global Energy and Carbon Intensity Continue to Decline" *Vital Signs*, last modified December 15, 2014, accessed September 26, 2015, <http://vitalsigns.worldwatch.org/vs-trend/global-energy-and-carbon-intensity-continue-decline>

4 Worldwatch Institute. "Air Pollution Now Threatening Health Worldwide," accessed September 26 2015, <http://www.worldwatch.org/air-pollution-now-threatening-health-worldwide>

5 Worldwatch Institute. "Groundwater Shock: The Polluting of the World's Major Freshwater Stores," accessed September 20, 2015 <<http://www.worldwatch.org/node/481>>

6 Worldwatch Institute. "Land Degradation Worse Than Previously Reported," accessed September 17, 2015 <<http://www.worldwatch.org/node/5820>>

7 Christine Dell'Amore, "Has Half of World's Wildlife Been Lost in Past 40 Years?" October 2, 2014, *National Geographic*, <<http://news.nationalgeographic.com/news/2014/09/1409030-animals-wildlife-wwf-decline-science-world/>>

8 Edward Hyams, *Soil and Civilization*, (Harper & Row, 1976)

9 Oliver Wainwright, "Carbuncle Cup: Walkie Talkie wins prize for worst building of the year." *The Guardian*, September 2, 2015. <http://www.theguardian.com/artand-design/architecture-design-blog/2015/sep/02/walkie-talkie-london-wins-carbuncle-cup-worst-building-of-year>

10 Rebuild by Design. "Living Breakwaters: Winning Design," accessed September 26, 2015. <http://www.rebuildbydesign.org/project/scape-landscape-architecture-final-proposal/>

11 R. Buckminster Fuller with Kiyoshi Kuromiya. "The Geoscope," in *The Critical Path* (New York: St. Martin's Press, 1981), 161-197.

12 David McConville, email to author, September 22, 2015. The relevant sections from Fuller's book *Synergetics* are 801.21-801.24. <<http://www.rwgrayprojects.com/synergetics/s08/p0000.html>>

13 Fuller "The Geoscope," in *The Critical Path*.

14 Calvert Watkins, ed., *The American Heritage Dictionary of Indo-European Roots*, (Boston: Houghton Mifflin Harcourt, 2011), 85.

15 Gary B. Meisner, "What is the Fibonacci Sequence (aka Fibonacci Series)?," accessed September 26, 2015. <http://www.goldennumber.net/fibonacci-series/>

16 Plato, "Physics" in *Timaeus* Stanford Encyclopedia of Philosophy, accessed September 24, 2015. <http://plato.stanford.edu/entries/plato-timaeus/#8>; Jose de Jesus, email to author regarding details about Euclid September 24, 2015.