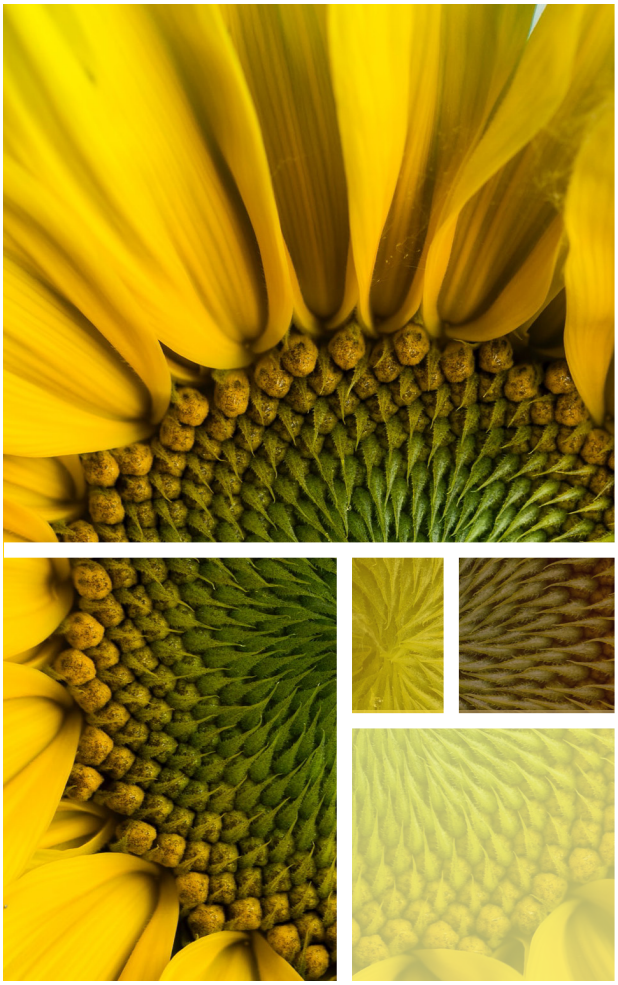
Sacred Geometry & The Art of Urban and Community Design to Create Meaningful Places

By Vashon Marie Sarkisian



You may have heard of sacred geometry, and you may have heard of urban design and community planning. But most of you are probably wondering what does one have to do with the other?

Did you know that sacred geometry, which means 'the measure of the earth', is the building block of all of life? Yes, there are specific ratios, formulas and proportions that are consistently found in plants, animals and all life form. This geometry is found in weather patterns, the rotation of planets, cosmic alignments and even our DNA.

Ancient civilizations, architects, philosophers, musicians and artists used sacred geometry and celestial alignment in the layout of many new towns, in the construction of temples and cathedrals and the proportions and execution of calligraphy, pottery, sculpture, paintings and murals.

For some of you, this may be the first time you've heard of this and for others, it may sound familiar, but you're not sure how this applies to the design of neighborhoods, villages and towns.

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Before we dive into this particular approach, let's back up and explore how sacred geometry fits into our biology, the cosmos and the historical application to the placement of monuments and town planning.

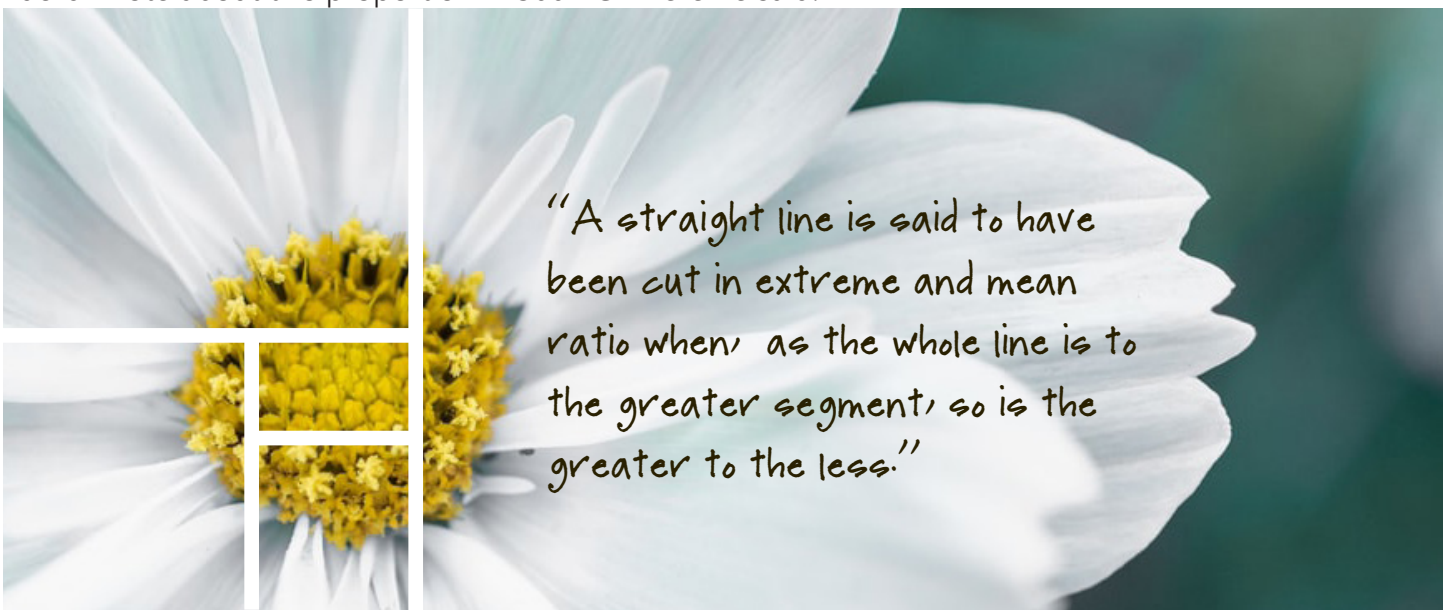
It should be mentioned that sacred geometry is a vast subject, and many have spent a lifetime studying this multifaceted discipline. I'll be sharing just a fragment of this comprehensive topic in order to give you an overview of its complexity, where it shows up in our lives and the benefits of incorporating symbolic and sacred geometry into the planning and design of new neighborhoods, villages and towns.

THE PERFECT RATIO

There is one ratio that consistently reveals itself in all life form. The interesting thing about this ratio is that it is an irrational number, meaning that it never ends; it is boundless. This reminds me of the infinite possibility of all life; a life without limits. Life that has no beginning and no end, life that is continually expanding, always to the infinite . . .

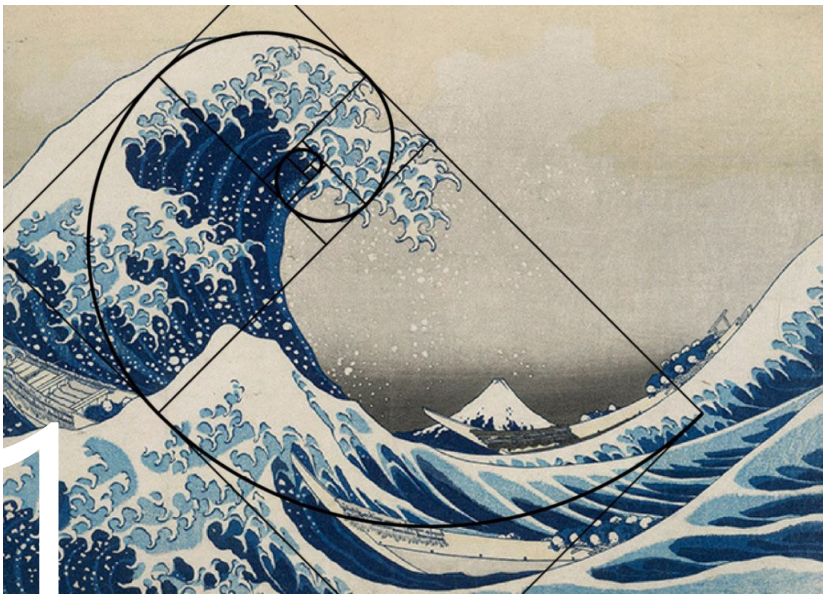
This ratio is called Phi, and it is commonly represented by several different names: the Golden Ratio, the Golden Section and the Divine Proportion and is signified by the numerical expression: 1: 1.61803– where the proportion of one segment of an object is in perfect proportion to the other object. For instance, where the segment of one joint of a finger on the human hand is proportional to the adjacent joint on the same finger.

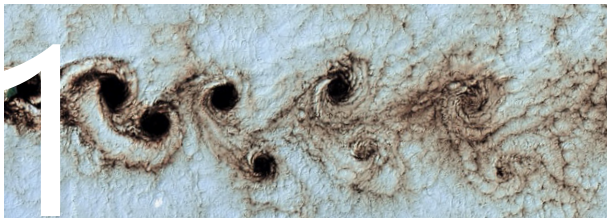
Euclid wrote about this proportion in 300 BC where he said:

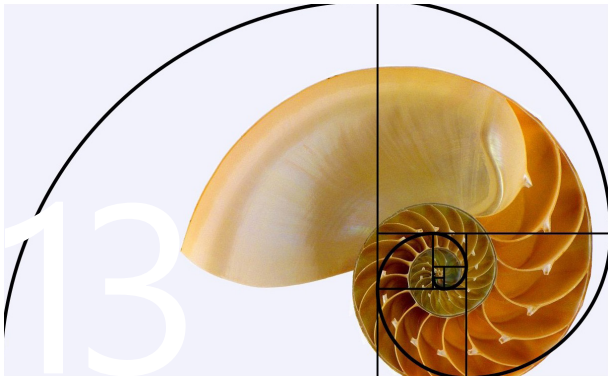


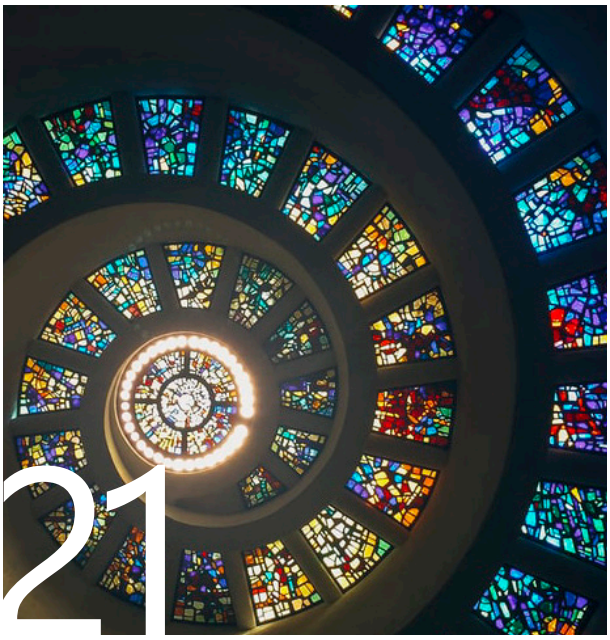
In plant life, the Phi ratio is displayed in the growth of plants, in the arrangement of leaves on a stem, in the number of seeds in a sunflower, in the spiral alignment of a pineapple, the nautilus shell, and the hexagonal structure of beehives–just to name a few.

What these all have in common is the Fibonacci Sequence. The Fibonacci Sequence was popularized by Leonardo Fibonacci in 1202 AD. Fibonacci was a mathematician who theorized how rabbits reproduce. He saw that the reproduction pattern created a sequence of numbers 1, 1, 2, 3, 5, 8, 13, 22, 35. This sequence is created by adding the previous number to the last number. When two consecutive numbers are divided, for example, 8/5 = 1.6, you will get very close to the Phi ratio.









3 Application of the Golden Ratio on Hokusai painting obtained from https://www.ucsart.com/learn/blog/learn-the-golden-ratio-for-your-artworks-on-canvas; Original painting photo from British Museum. Application of the Golden Ratio to nautilus shell obtained from https://kiwihellenist.blogspot.com/2019/02/golden-ratio.html

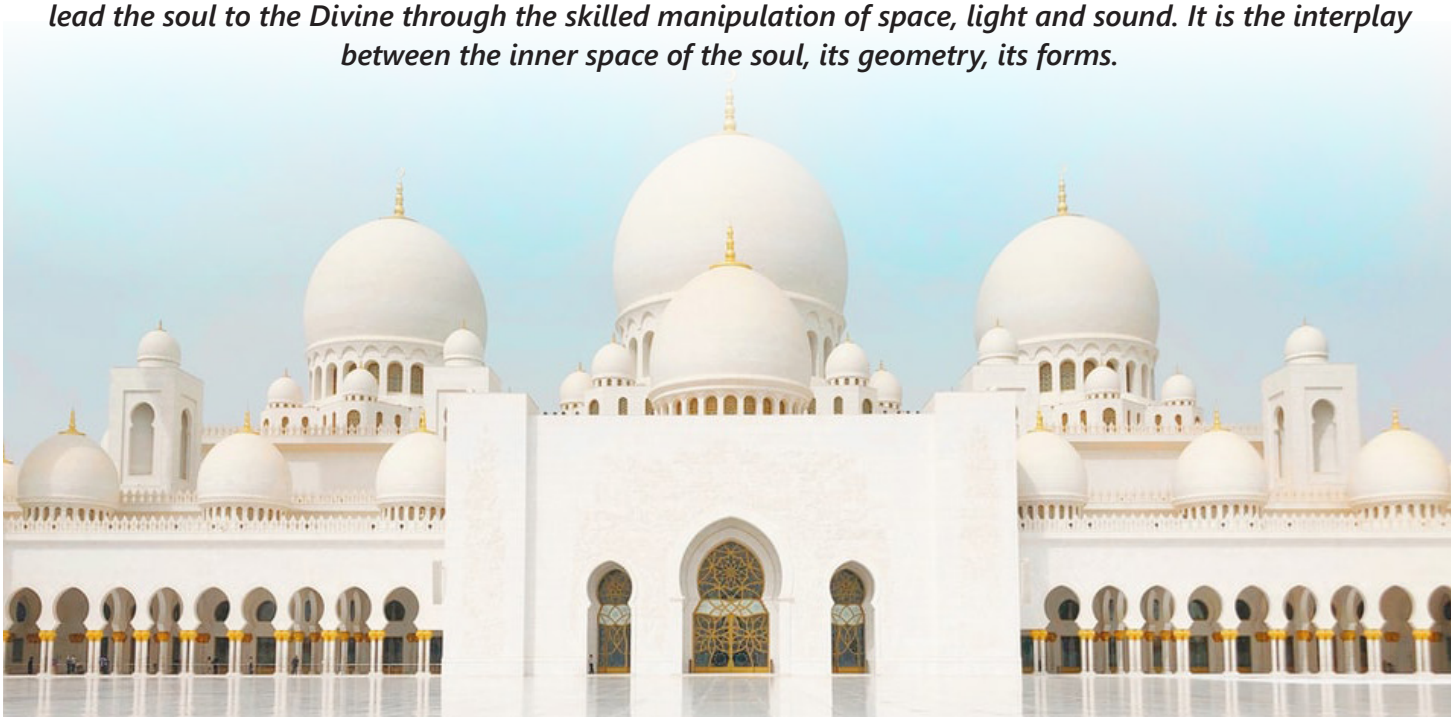
PHI IN ART AND ARCHITECTURE

The phi ratio is found in ancient art and architecture. The Great Pyramid of Giza (2560 BCE) and Stonehenge (3100 BC–2200 BCE) are some of the earliest structures to contain specific geometries and mathematical ratios that correspond and have a relationship with Phi. These ratios have also been found in the proportions and relationship with the moon and earth to each other.

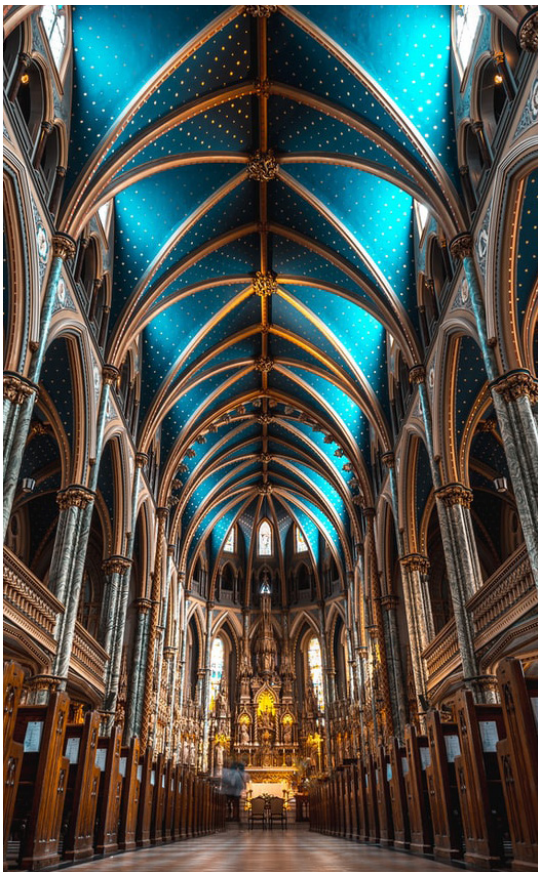
Jumping to ancient Greece, the dimensions of the Parthenon (447–438 BCE) approximate the phi ratio where the height and width of the face of the structure are in direct proportion to each other. When measured, the size of the columns and the spacing between them are also in a phi ratio.

This ratio as well as additional formulas and symbolism were built into the construction of many cathedrals, temples and palaces throughout the world. It was common practice to utilize sacred symbolism in the design of religious buildings fostering alignment with the 'Master Builder' thereby allowing humanity to be elevated spiritually when they entered these structures. In eastern Asia, sacred geometry was prevalent in the architecture of temples, mosques and in calligraphy, which was specific to Islam. Annalisa Orselli-Dickson writes:

As a form of art, sacred architecture is regarded in Islam as second only to calligraphy, its purpose being to lead the soul to the Divine through the skilled manipulation of space, light and sound. It is the interplay between the inner space of the soul, its geometry, its forms.

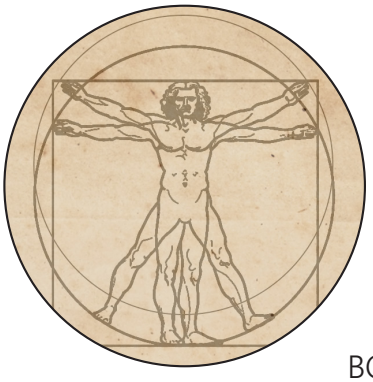


Gothic masons of Europe in the 1100s were influenced by the Sufis in what they refer to as "the New Style" of architecture. This "new style" created a renewed wave of architectural practice that incorporated sacred and symbolic geometry in the design of cathedrals. The purpose was to "enhance the possibility of a spiritual journey from the seen to the unseen world." (Chartres - Sacred Geometry, Sacred Space, Gordon Strachan, p. 39). Chartres Cathedral in France (1194–1220) is one of the first cathedrals to embrace this innovative style of architecture.



"For without geometry, ideas, archetypes and sacred concepts cannot be transformed into three-dimensional templates, and it is only through these templates that the work of the carpenter can be transferred to the mason. It is only in this way that the idea or concept can be transferred from the Divine Mind to the material world, and then transformed into built form. It is for this reason that geometry was considered to be the closet Liberal Art to the Divine Mind, and also why the stern injunction over the door of Plato's Academy in Athens said:

'Let no one who is not a geometer enter.'"



The Vitruvian Man, named after Marcus Vitruvian Pollio (80-70 BC – after 15 BC and made famous by DaVinci, wrote in his work De architectura, how the proportions of the body should be a guide to the proportions of architecture.

The earliest records of geometry date to around 3000 BCE in both Egypt and Mesopotamia. We can see this in the construction of specific structures such as the pyramids as well as in the ancient tablets written at this time. The ancient Greeks developed modern geometry with Thales of Miletus (624–547 BCE), Pythagoras (569–475 BCE) and Euclid of Alexandria (325–254 BCE).

How did the ancients know about these particular geometries and ratios and why did they use them in their compositions and buildings? In ancient times there was a blending of disciplines. Pythagoras of Samos (570–495 BC), known for the discovery of the Pythagorean theorem (though we have evidence that it was being used by the Babylonians and Chinese 4000 years ago, was a philosopher as well as a mathematician. Many ancient people traveled to Egypt and studied various disciplines such as philosophy, mathematics, physics, numerology, music, astronomy and others including mysticism.

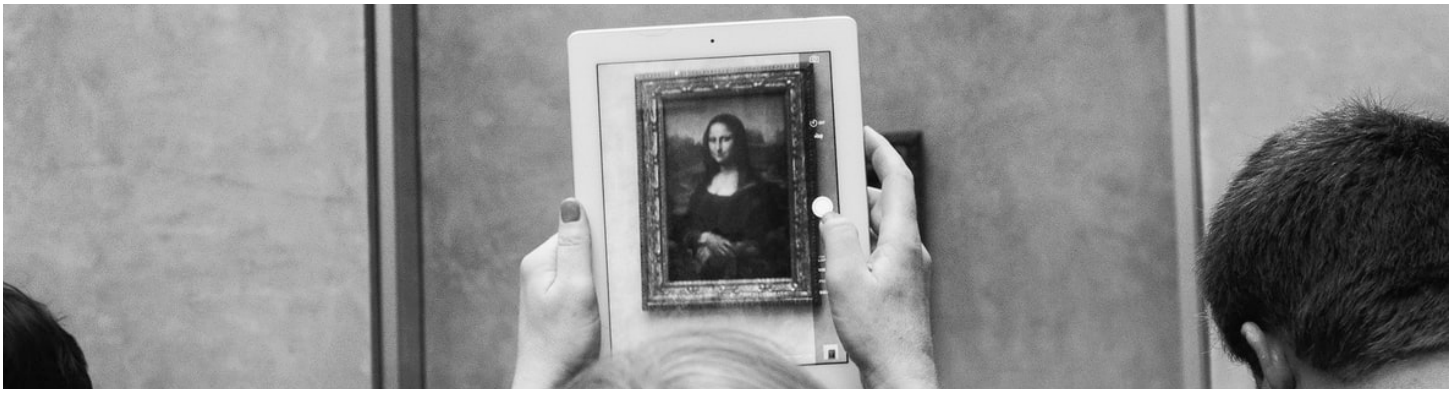


Image of Leonardo DaVinci's Vitruvian Man obtained from https://www.cup.com.hk/wp-content/uploads/2018/05/Da_Vinci_Vitruve_Luc_Viatour-e1527161174647.jpg

Ancient Town Planning

In ancient town planning, significant buildings were often located according to cardinal directions (north-south and east-west axis and astrological alignments. For example, Stonehenge is thought to have been built to align with the summer and winter solstices.

Without going into a lengthy discussion on the history of town planning, it is known that many ancient cities were designed using a cardinal orientation, a standardized grid of streets, a centralized location for the temple or palace and often, an axial processional street leading to a centralized significant building. Evidence of this can be found in South America, Mesopotamia, Pakistan, China, Greek and Roman development and dating as far back as 4000 BC.

Temples and monuments around the world, such as Stonehenge in England, the Ring of Brodgar, Scotland and the Great Pyramid of Giza, Egypt were created using the alignment with the summer and winter solstices. In addition, they were found to be located along energy lines, earth grid lines or "ley lines" as they are commonly referred to. Ley lines are straight lines found running throughout the earth. Ancient temples and significant buildings are found to be located at the intersection of two ley lines and these intersections were considered 'energy centers'. When looking at ley lines or the earth grid lines on a global scale, they are said to be in a defined geometrical grid pattern, which follow the shapes of the five platonic solids. The five platonic solids consisting of the tetrahedron, cube, octahedron, dodecahedron and icosahedron are the foundational sacred geometric shapes of all matter.

NATURAL LAWS
THE MARRIAGE OF ANCIENT PRACTICES AND NEW URBANISM

We have seen that ancient builders, architects and astronomers were in tune with the earth energies, the land, and had a keen understanding of astrological alignments and measurements of the earth. Ancient civilizations throughout the world embraced the physical and spiritual realms and incorporated a practical, mathematical and specific structure to the development of their places of worship and town planning. One that was based on nature, earth energies, cosmology and a reverence for living in harmony with spirit.

Are there ancient principles that have been lost to humankind that may inspire and even guide the way we design neighborhoods and communities of the future?

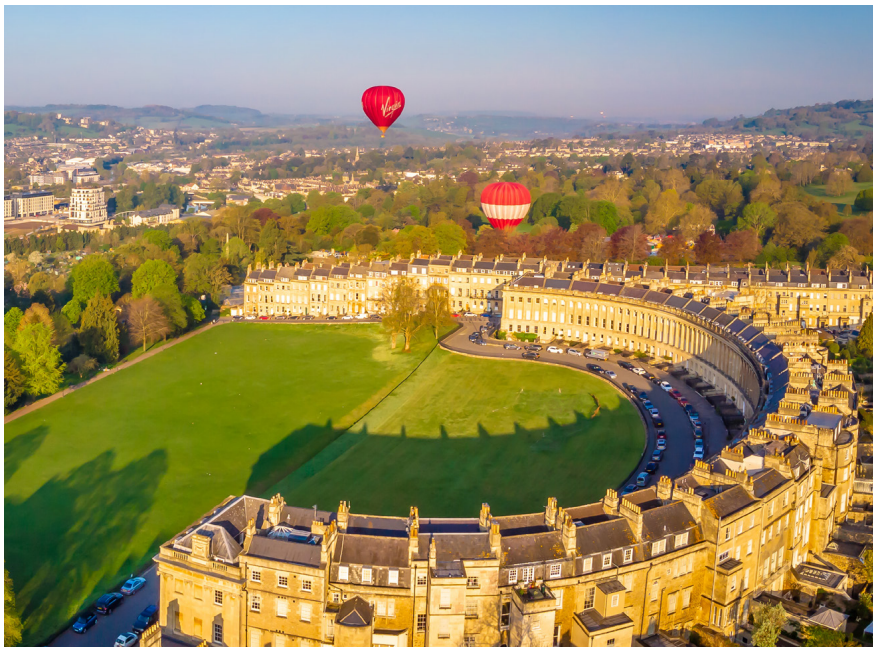
We have seen that many ancient temples, monuments and special buildings were located at specific energetic points along the earth's surface. Can we utilize the energetic pathways and centers to locate significant buildings and an open space network to enhance the design of our communities? Can the utilization of this dynamic geometric framework enhance the evolution of humanity by being more in alignment with nature and the energies of the earth?

Is there and modern approach to the marriage of ancient town planning practices with time-tested 'good' planning principles? Let's explore what this might look like:

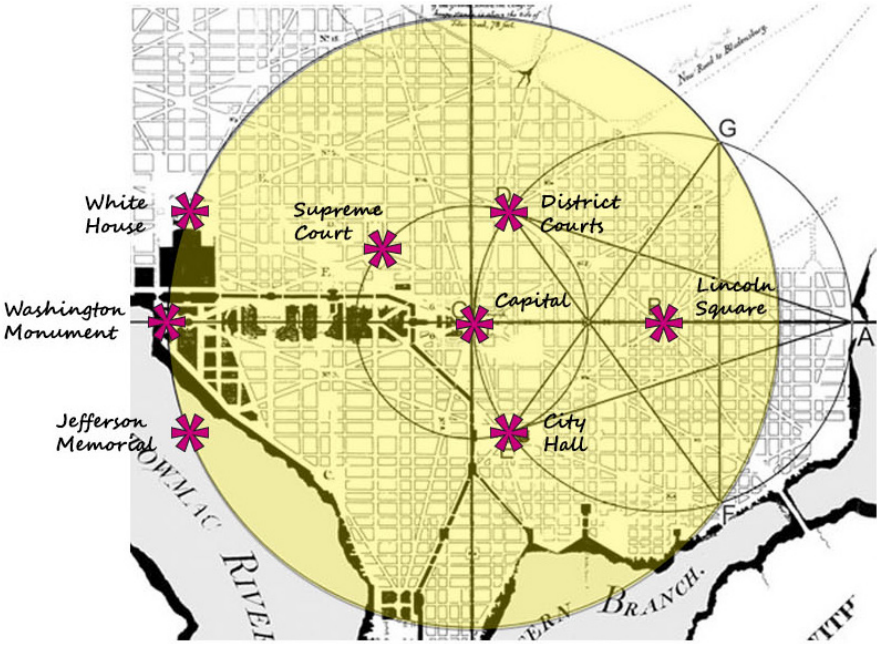
- Create walkable communities
- Create neighborhood identity
- Create places for people to gather
- Utilize the transect
- Preserved and enhance health ecosystems
- Allow for mixed-use development
- Provide quality architecture
- Provide for diverse economic opportunity
- Provide a mix of transportation choices
- Incorporate design principles of symbolic and sacred geometry.

CONTEMPORARY EXAMPLES

Bath, England, a World Heritage Site, redesigned by the architect John Wood (a Freemason) in the mid-1700s is said to mimic the dimensions of Stonehenge with the Circus or circle of townhomes which has a diameter of 318'. The diameter of Stonehenge also happens to be 318'. The Royal Crescent represented by the moon is at an axial alignment to the Circus. Some say that these two symbols represent and honor Prince Bladud, who some claim was the original founder of Bath in 860 BCE.



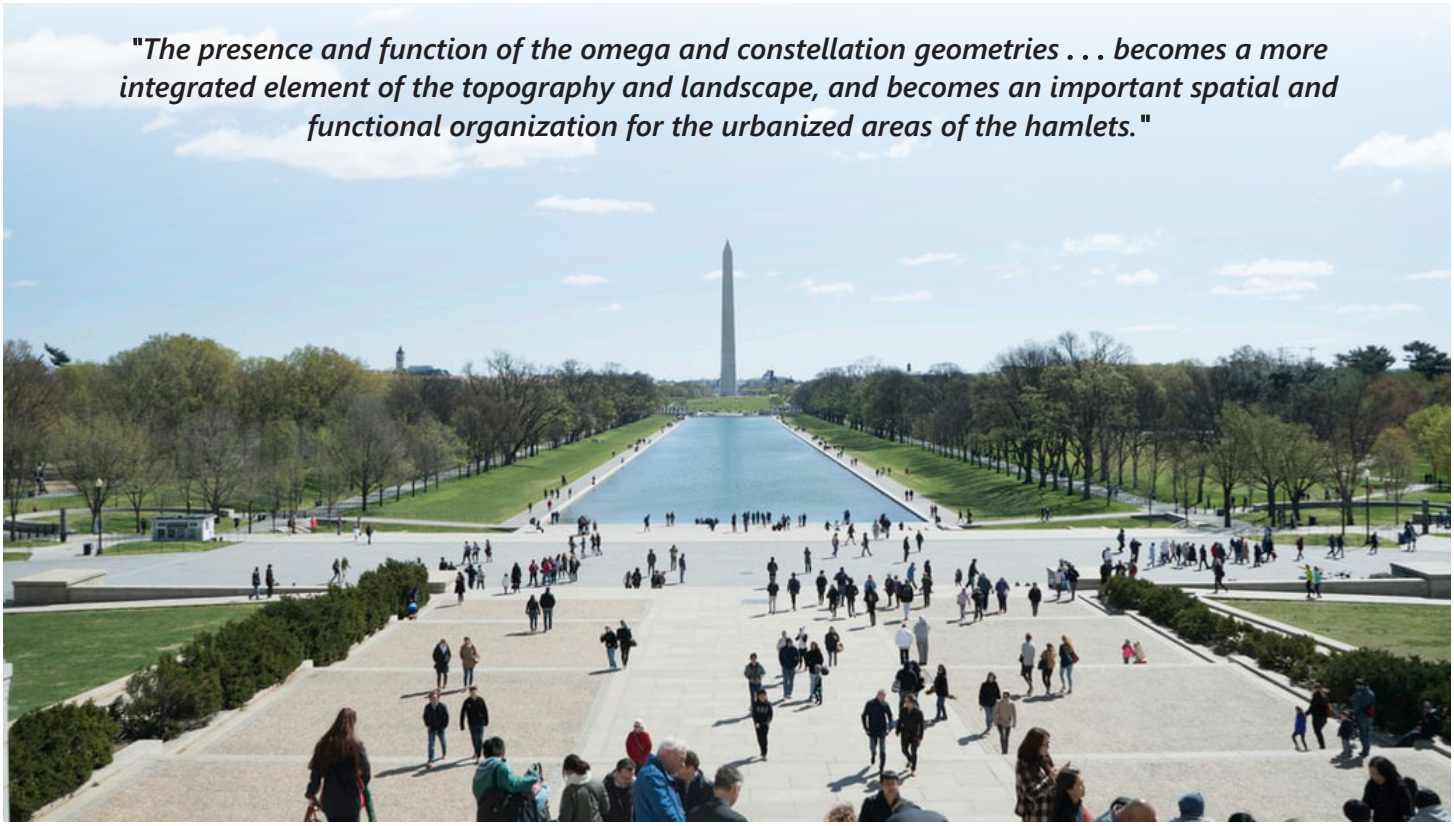
Pierre C. L'Enfant was commissioned by George Washington in 1792 to design Washington DC, our capitol city. This is the best example of the utilization and implementation of sacred geometry and urban design in the United States. In the book, The Sacred Geometry of Washington DC by Nicolas Mann, he theorized that L'Enfant used the pentagram along with the siting of significant buildings and plazas at the corners of various pentagrams for his original design. The founding fathers and L'Enfant were Masons and their ideology was based in mathematics and geometry with God being the Master Builder.



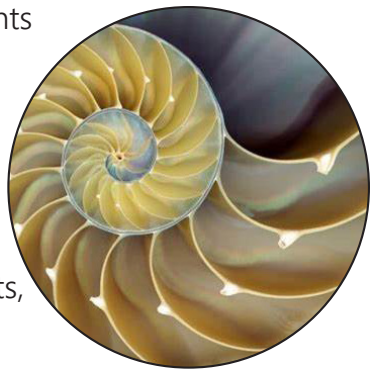
In 1912, Walter and Marion Burley Griffin won the international design competition for Canberra, Australia, the new capital city. Sacred geometry is imbedded in the alignment of natural features, roadway configurations and the placement of significant buildings, parks and plazas throughout this built city.

Serenbe, built in 2004, is a 1,000-acre conservation community located southwest of Atlanta, Georgia. The development pattern is made up of four mixed-use hamlets, each in the shape of an omega, which is the sacred geometric organizing element of the master plan and bore out of the natural topography of the site. It was founded by Steve and Marie Lupo Nygren and designed by the architect Philip Tabb. Tabb states in his article Serenbe and the Serenity of Place:

"The presence and function of the omega and constellation geometries . . . becomes a more integrated element of the topography and landscape, and becomes an important spatial and functional organization for the urbanized areas of the hamlets."



In the case of Serenbe, sacred geometry became one of the organizing elements along with sustainability, placemaking, active living and social activities and respect for the land and the preservation of natural resources–to name a few. How can we learn from Serenbe and what other symbolism might we include to celebrate and honor the land that we are tasked to design and plan for development for our exclusive use? It is not that we should prescribe a "one size fits all' solution to land planning and urban design, but can we create a set of guiding principles that are varied and particular to the localized elements, 'genius loci' of place?



What are the benefits of incorporating symbolism and sacred geometry in the design and planning of neighborhoods, villages and towns? Remember, sacred geometry the foundational structure of all life form. It was used by the ancients in their art, architecture and the layout of new towns. These principles were utilized to link heaven with earth to each other and provide harmony to what may be perceived as chaos. When we visit places built with sacred geometric formulas and shapes, visually they envelop a timeless beauty, evoking reverence as we gaze at the wonderment of these structures. When we step inside these buildings, we are energetically transported as our beings are activated to feel a greater connection with our spiritual selves. We become resonant with the energies of the space just as two mechanical clocks in the same room become resonant with each other.

We are all spiritual beings living a human life. Designing communities that incorporate the geometries that structure our human selves is the ultimate expression of sustainable urban design. It is this expression that will assist humanity to live the full expression of who we are and live more holistically with the natural environment.

DESIGN WITH NATURE

All nature, including plant, animal, human and cosmic life form revolves around a set of universal principles and laws. As Ian L. McHarg so eloquently stated in his book, *Design with Nature*, "Man is that uniquely conscious creature who can perceive and express. He must become the steward of the biosphere. To do this he must design with nature." By embracing these laws, we are able to create a new dimension of consciousness and elevate all. Biophilic design is the integration of the built and natural environment and has a positive impact to our individual and societal health and well-being.

Serenbe Community Master Plan obtained from https://serenbe.com/about

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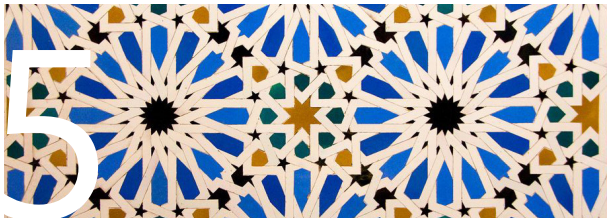

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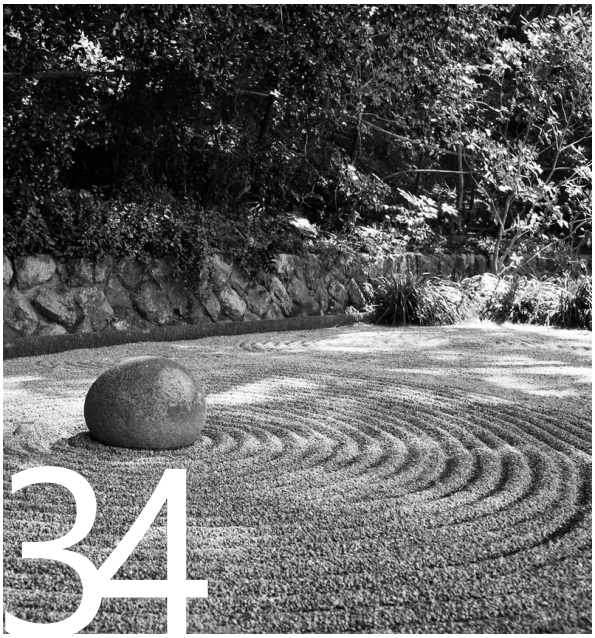

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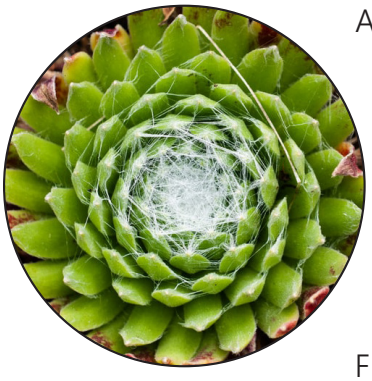
Master Plan of Canberra, Australa obtained from https://amp.theguardian.com/cities/2016/apr/07/story-cities-17-canberra-capital-australia-walter-griffin-ideal-city; original illustration courtesy of Getty Images.

Instinctively we know that when we spend time in nature and in aesthetically attractive built environments that we feel restored. Science now shows that spending time in nature balances the sympathetic and parasympathetic parts of our brain helping us to reduce stress, live healthier lives and helps us to be more productive at work. In addition, buildings and places that incorporate access to nature, whether visually or physically in their designs, have shown to have more value.



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From the article Biophilic Design Applications: Psychological and Physiological Health and Well-Being, the authors state:

"Exploration and elucidation of the connection between aesthetics and nature reach back to the ancient Greeks and mysteries of sacred geometry and the divine proportion. The concept of biophilia extends this philosophical inquiry about nature and aesthetics scaffolding scientific support for its validity."

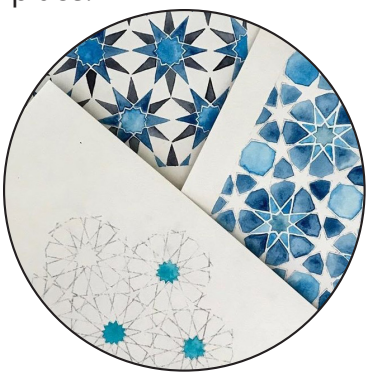
Image of the Thorncrown Chapel, designed by E. Fay Jones, obtained from https://thorncrown.com/

Nature can be our teacher and our guide. To honor nature by celebrating her through the marriage of the natural laws, ancient practices and the built environment can have profound positive results. The application of sacred geometry is one of these modalities to 'Design with Nature.'

Embedded in every thriving system in nature and virtually every building, work of art, and cities that have stood the test of time, behind everything we regard as "beautiful" is a set of principles that serve as the foundation of harmony and balance. This is the foundation of the "new style" of urban design throughout the world. This is how we design the next generation of development responsive to the new economy. To create lovable communities that nurture the best in our natures by virtue of the next generation of integrative design.

Benefits of Sacred Geometry and Urban Design

- Geometry allows for a sense of order, structure and beauty to a given place.



- Sacred geometric community design is the next evolution of the style" of community design.

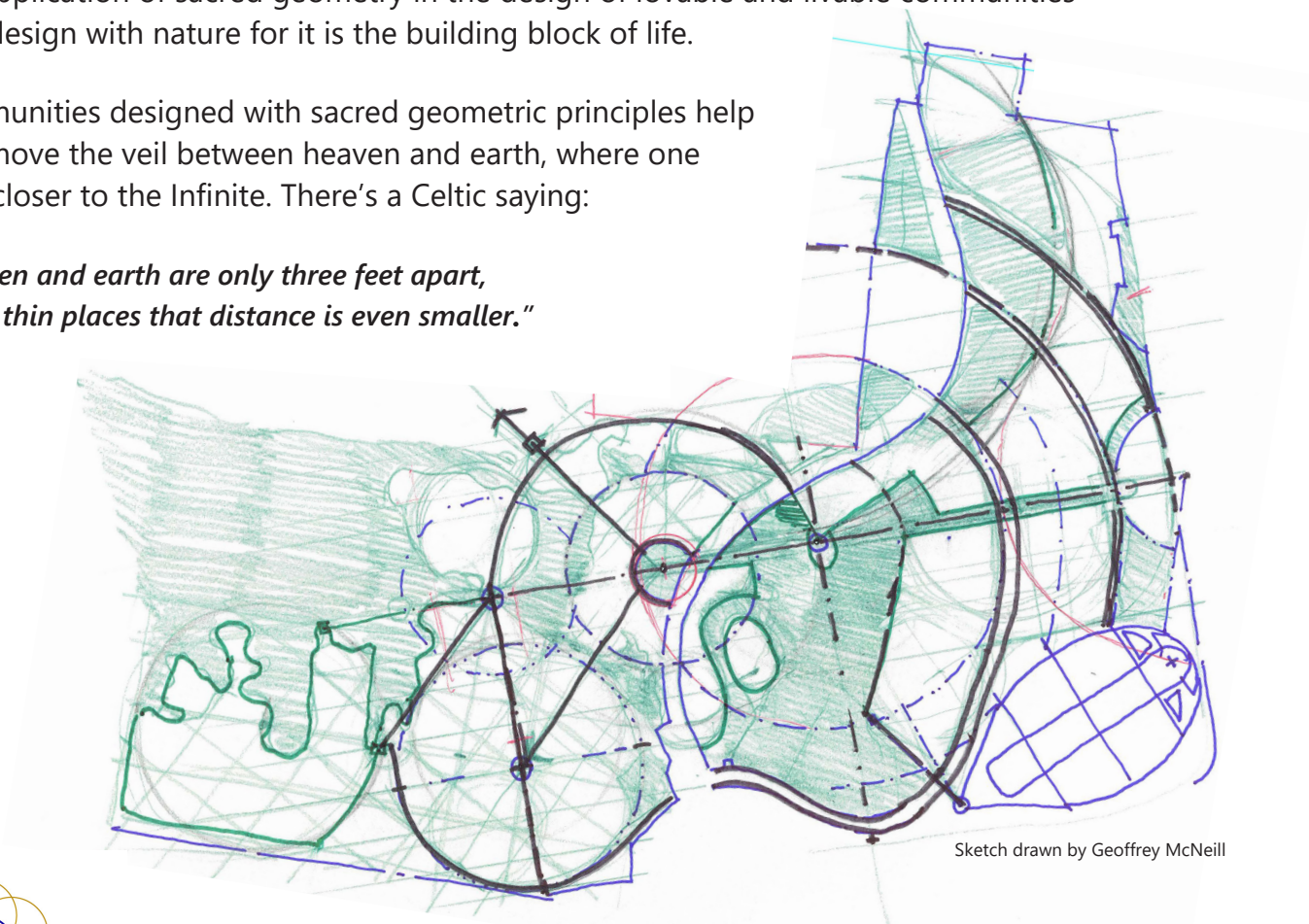
- The future of urban and community design is an integration of proven best practices with timeless natural geometry embedded in nature.

- The full structure of the geometry does not have to be seen for the energetic principles lie within.

- The application of sacred geometry in the design of lovable and livable communities is to design with nature for it is the building block of life.

- Communities designed with sacred geometric principles help to remove the veil between heaven and earth, where one feels closer to the Infinite. There's a Celtic saying:

"Heaven and earth are only three feet apart,
but in thin places that distance is even smaller."



Sketch drawn by Geoffrey McNeill

Principles, 18 Steps to Designing the Land with Sacred Geometry, Tools, and A Pattern Language for Designing the Land with Sacred Geometry will be discussed in further detail in an upcoming book of the same title.

VASHON DESIGN GROUP