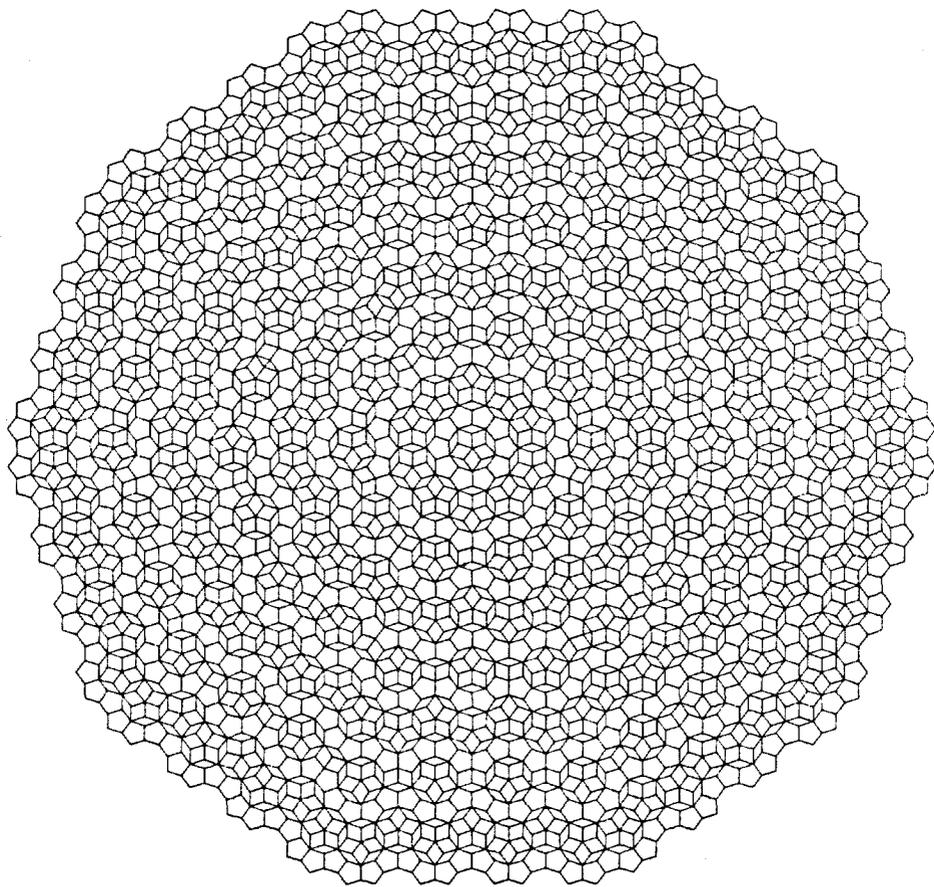


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COVER DESIGN

PATTERNS

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My fascination with patterns has followed me through my careers as botanist, architect and sculptor. In 1957, while designing the floor plan for a geodesic dome, I created a pattern that I had never seen before. Upon investigation, I realized that this pattern was new and unique.

As a student of botany at Cornell University I responded to the structure of plants and the patterns of leaves and flowers. This strong interest in structure and pattern was to become a part of my visual vocabulary as an architect and sculptor. At architecture school these interests also led me to investigate and study the Golden Section and Islamic patterns.

It was at the Institute of Design in 1950 that I first met Buckminster Fuller. I responded to his poetic language and provocative ideas. Bucky's talk of great circles and patterning felt in tune with my own view.

In 1954, two partners and I opened the architectural office of Geodesics Inc. in Cambridge Massachusetts. This was the first independent office dedicated to designing Geodesic structures. Bucky was our honorary president.

Although we were all architects and hoped to develop residential domes, our first commission was to design and manufacture reinforced plastic domes for radar enclosures. These domes, including the "DEW" line domes, were the first commercial use of geodesic structures.

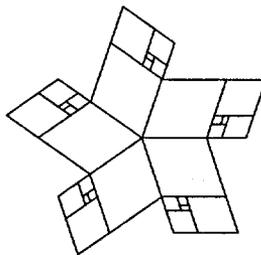
Geodesic domes were then designed by tiling a regular polyhedron, usually an icosahedron and then projecting the tiles onto the circumscribed sphere. In the 1950's tiling was an expanding area of investigation and we were exploring all the possibilities.

In 1957 I moved to New York hoping to find a way to build a geodesic dome house. I eventually hoped to develop mass produced dome residences. In planning residential domes I was looking for a module or 'generating line' that was sympathetic to the circular space and had the pentagonal symmetry of the dome structure. I did not want to warp a rectangular conceived plan into the circular space of a dome.

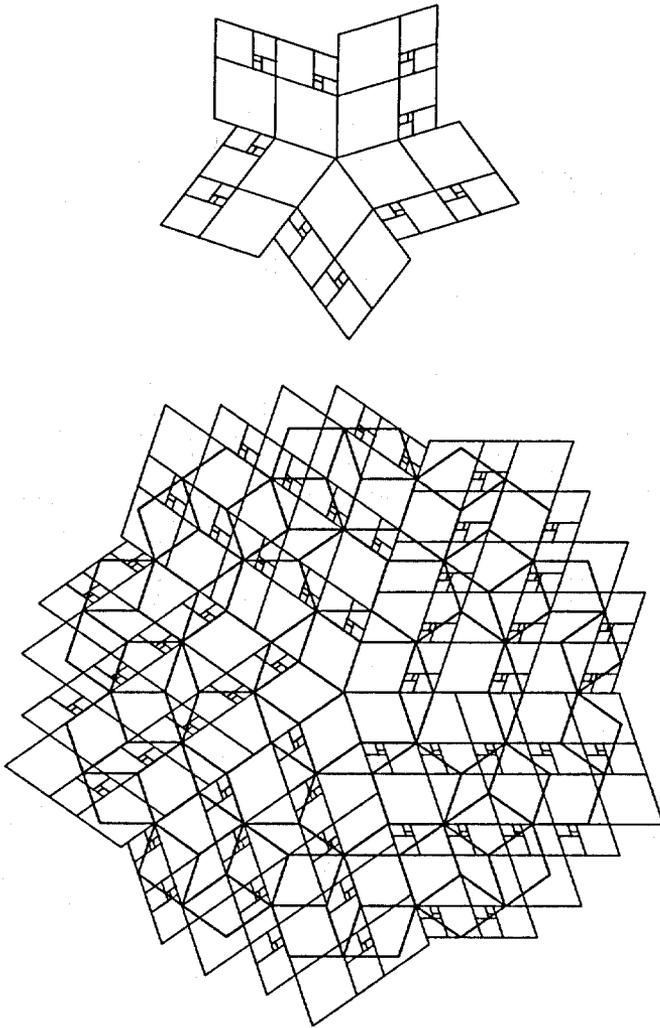
I had decided to use the golden ratio because it was inherent to the icosahedron and pentagon. I started with a golden rectangle that was divided into successive squares. The rectangle was then transformed into a parallelogram with angles of 72° and 108° . The squares then become rhombii.



Finally the parallelogram was made into a polar array. The center of the array forms a star consisting of 5 golden rhombii.

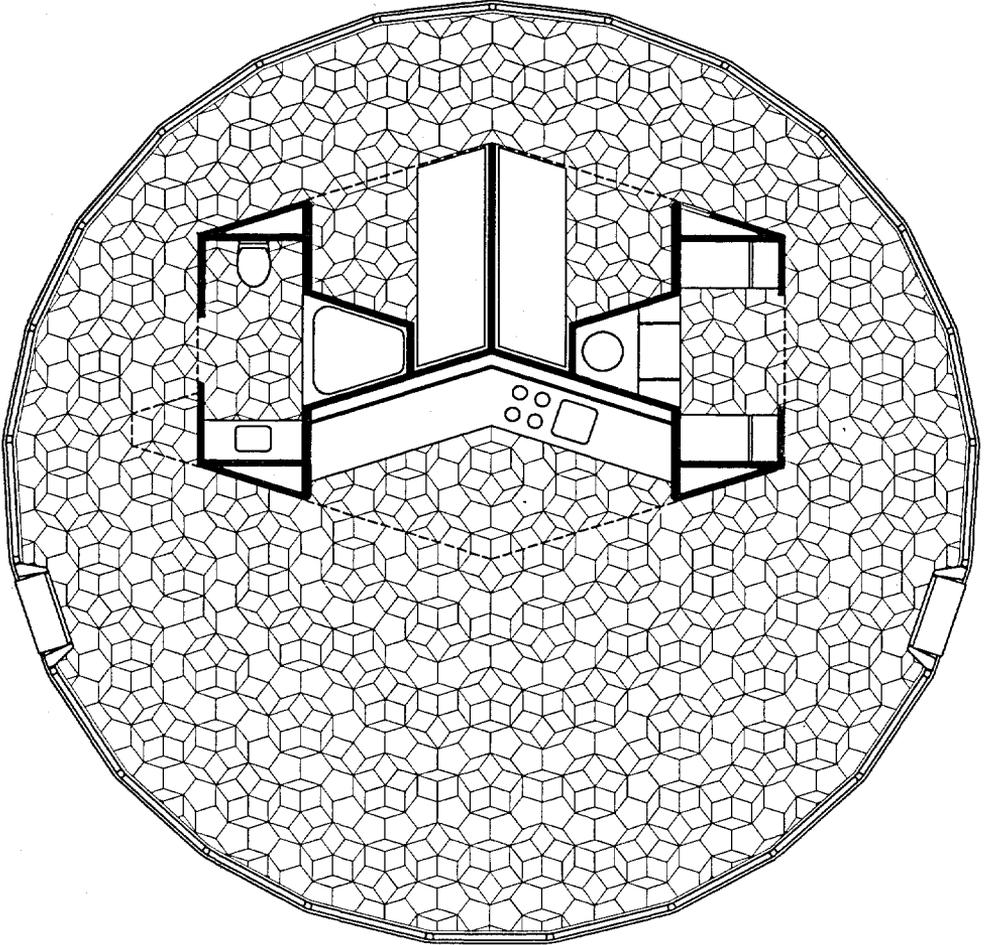


From this beginning I developed schemes using only golden rhombii, golden rhombii with 36° rhombii, golden rhombii with 36° rhombii and pentagons, and other variations. These variations created patterns that I had never seen before. After more investigation I realized that these patterns were unique.

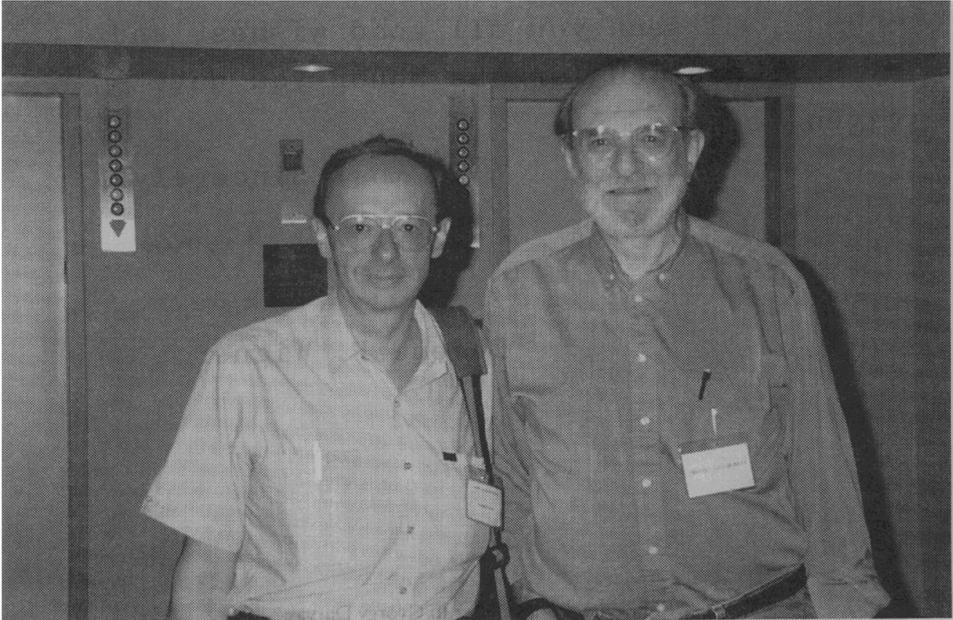
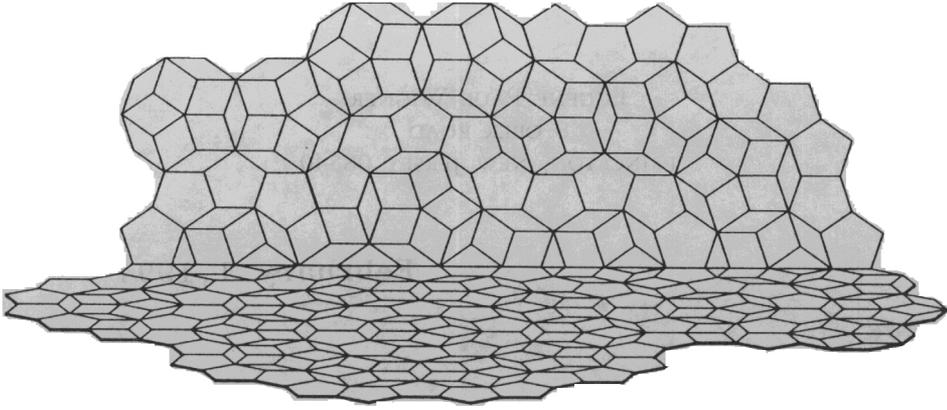


Although the impulse for this exploration was for the design of a dome house, I was also interested in creating a grid that could be applied to city planning. I wanted a more complex pattern than that of only the golden rhombii and one that was more useful for design purposes.

Later in 1957 I finally had the opportunity to develop my prototype dome for Susan Weil. The structure of this 34.5' dome was based on a new 5 frequency parallel geometry. The plan of the dome house was based on my 3-element pattern. Construction began in 1958.



In 1966 I mounted an exhibition of 1/4 scale model domes at the Park Place Gallery in New York. A drawing of the 3 element pattern, now called "3 Element City", was shown publicly for the first time. A few years later in 1969, at the Paula Cooper Gallery, I exhibited 3 sculptural wall and floor installations based on these patterns. One installation was based on my 3-element pattern, one on the 2-element pattern and the other on the two kinds of rhombii. As an architect and sculptor, it seemed appropriate for me to go public with my discovery through visual presentation.



B. Kirschenbaum (right) in the company of G. Darvas at the 3rd ISIS-Symmetry Congress in Washington, August 1995. (Photo: R. A. Wiggs)