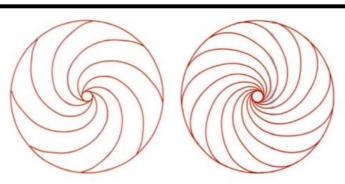
## **EXAMPLES**



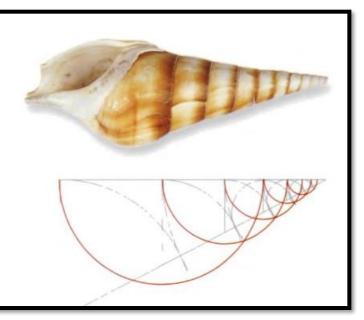




## **Spiral Growth Patterns**

Similar to the pine cone each seed in the sunflower belongs to both sets of spirals. 21 spirals move clockwise, and 34 spirals move counterclockwise. The proportion of 21:34 is 1:1.619 which is very close to the golden section proportion of 1:1.618

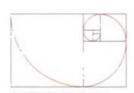
Comparison of Tibia Shell Spiral **Growth Pattern and Golden Section** Proportion



## Spiral Growth Patterns of **Pine Cones**

Each seed in the pine cone belongs to both sets of spirals. 8 of the spirals move clockwise and 13 of the spirals move counterclockwise. The proportion of 8:13 is 1:1.625 which is very close to the golden section proportion of 1:1.618





Golden Section Spiral Construction diagram of the golden section rectangle and resulting spiral.

**Chambered Nautilus** Cross section of the Nautilus' spiral growth pattern.





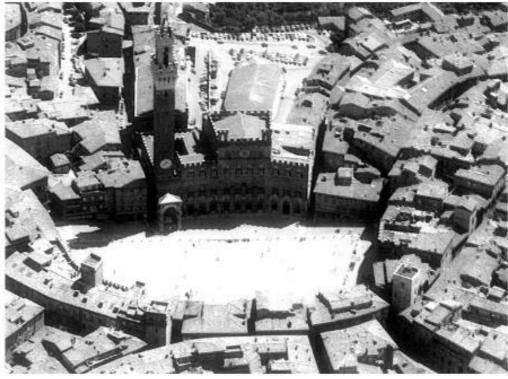


Figure 2: Geometric order and chaos in urban structures: the square on the front of St. Peter's basilica in Rome from 1656–1667 (left part) and Piazza del Campo with surroundings in Siena, Italy, from 1289–1355 (right part)



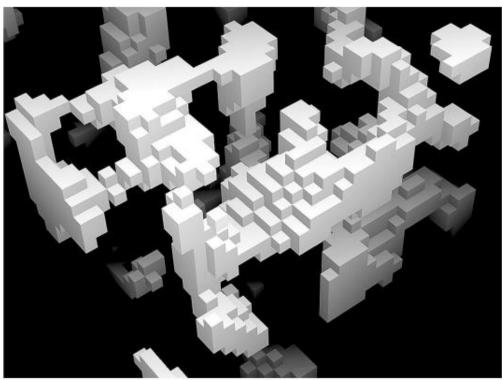


Figure 12: Cellular automata and their analogies in architectonic space: "Habitat 67", the residential building designed by Moshe Safdie on the Expo world-wide exhibition in Montreal in 1967 (left part); and the cellular automaton in 3D made using the computer program Model [10] (right part)



