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The higher plants: beauty and intelligence

Abstract

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Two are the best paradigms used to define the plant's beauty: the colors and the shapes. The color strikes the human imagination directly and it elicits strong emotions. The shapes of plants are less obvious, and only a trained eye is able to separate them from colors. By studying the shapes one realizes that it does not exist randomness in the plant kingdom, but shapes are often characterized by a limitless repetition of units being always the same. The shapes of higher plants can be often mathematically diagrammed onto the Fibonacci Sequence (1, 1, 2, 3, 5, 8, 13,...) and the Golden Ratio ($3/2=1.5$; $5/3=1.6$; $8/5=1.6$; $13/8=1.6$;). Recent studies have shown that these specific shapes represent the result of a long evolutionary adaptation which provides the best developmental conditions that could not be obtained by different shapes. However, one question arises: beside being beautiful, are plants also intelligent living beings? The answer to this question starts with an examination of the most accepted definition of intelligence. A second step forward is represented by a comparison between the most simple living beings (unicellular) that show an intelligent behavior even if they lack a brain tissue. Finally, the presence of intelligence in higher plants is demonstrated with examples of how they are capable of: cognition, communication, information processing, computation, learning, and memory. The hypothesis of occurrence of a plant tissue able to provide intelligent responses to environmental stimuli is presented.

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