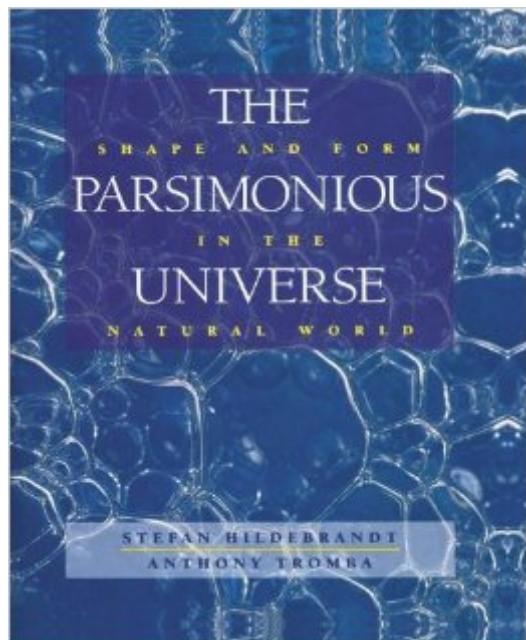


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# The Parsimonious Universe: Shape And Form In The Natural World



## Synopsis

Why does nature prefer some shapes and not others? The variety of sizes, shapes, and irregularities in nature is endless. Skillfully integrating striking full-color illustrations, the authors describe the efforts by scientists and mathematicians since the Renaissance to identify and describe the principles underlying the shape of natural forms. But can one set of laws account for both the symmetry and irregularity as well as the infinite variety of nature's designs? A complete answer to this question is likely never to be discovered. Yet, it is fascinating to see how the search for some simple universal laws down through the ages has increased our understanding of nature. The Parsimonious Universe looks at examples from the world around us at a non-mathematical, non-technical level to show that nature achieves efficiency by being stingy with the energy it expends.

## Book Information

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## Customer Reviews

If any artists are exploring reference material on shape, form and design in nature, this book explains why nature does 'create' its unique self. It does tend to explain and breakdown natural shapes into mathematical equations and theorems. Still the photos they provide and the line drawings help you to understand why things are the way they are. Useful if you want to create hybrids of these forms. A intelligent imagination is useful. My applications for this are from a 3D fine arts point of view. The info in the book has provided me with inspiration in my 3D artwork. Sincerely Andre Ribuoli  
dreko@aol.com

Soap bubbles, hanging cables, tent-like structures in modern architecture, animal forms and more. All these share a common principle which involves minimizing something-usually an energy principle. This book explores the mathematics behind these. Soap bubbles are spherical, of course. But ask yourself why. And consider what other shapes are possible if the bubbles are restricted in some way -for example, if one side touches a plane. In the book, we see beautiful photographs of soap bubbles along with discussion of mathematical attempts (some still unsuccessful) to describe these shapes. As the first reviewer mentioned, artists can benefit from the ideas and structures in the book. Mathematically minded persons will also find the book very interesting. I have some minor criticisms: The intro chapters on history were too long and covered basic ideas that are well known to almost anyone reading this book. Also, a key principle involves the calculus of variations. More could be done to make clear what this means. Yet, overall, the authors are successful in going from experiments with soap bubbles to mathematical theory to aesthetic values and back and forth. The chapter near the end on optimal design is excellent. I highly recommend this book.

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