Decalcomania

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Abstract

Decalcomania was originally a term that referred to transferring designs from specialty paper to pottery or glass. In artwork, decalcomania means transferring art material from one surface to another. When the surfaces are pulled apart a beautiful fractal pattern results. The process was invented by the Surrealists and has been reinvented by some contemporary artists. This workshop gives an introduction to fractals, a brief overview of the history of decalcomania and the opportunity for participants to create decalcomania.

Introduction

Fractals are objects that have a rough surface made from shapes that are self-similar at varying magnifications. They can be created on a computer or found in nature. There are five components used to identify objects that are fractal. These components are self-similarity, scaling, recursion, infinity and the fractal dimension. These components can be observed in visual art. This presentation will look at the five components, show where they are found and demonstrate a way to create your own fractal.

The Five Components

Self- similarity. Self-similarity means all parts of the fractal look the same. When a fractal is generated on a computer the parts are strictly self-similar or exactly the same. Nature is less perfect so its fractal parts are generally self-similar.
Scaling. The component of scaling refers to the fact that the small pieces of a fractal look like the larger parts, and visa versa. The twig on a branch looks like the tree. The tree looks a lot like the twig. Same look, different scale.
Recursion. Recursion describes a system that builds upon itself. The last output is the next input. It is a bank of clouds, one self-similar shape on top of another and another.

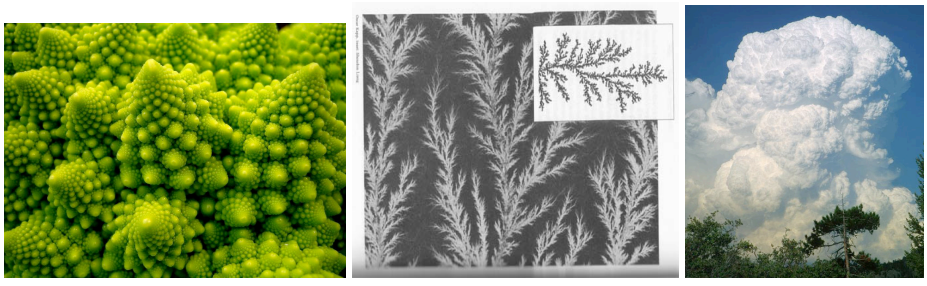

Figure 1. *Objects from nature showing self-similarity, scaling and recursion.*

Infinity. Infinity is not found in natural fractals, but it is easily acquired in computer fractals. When viewing a fractal on a computer one can zoom in at every increasing magnification.
Fractal Dimension. A line is a one-dimensional object. A square has two dimensions. Fractals have a dimension that lives between one and two and is called 'the fractal dimension'. Studies show that humans enjoy viewing this fractal dimension and our favorites lie between 1.4 and 1.7

Figure 2. *Perennial plants attempt infinity and a child's scribble approaching the fractal dimension..*

The art of Jackson Pollock was found to be fractal in nature by using a method called box counting. Box counting is a procedure that uses a series of grids of decreasing caliber. Each time a grid is laid over the fractal, the numbers of boxes that cover some portion of the fractal are counted. Every time the caliber of the grid decreases the number of boxes increase. This ratio of changing detail with changing scale infers a value of complexity. Once the ratios are determined, the slope of the logarithmic regression can be found. This method showed Pollock's work to have a fractal dimension of approximately 1.6.

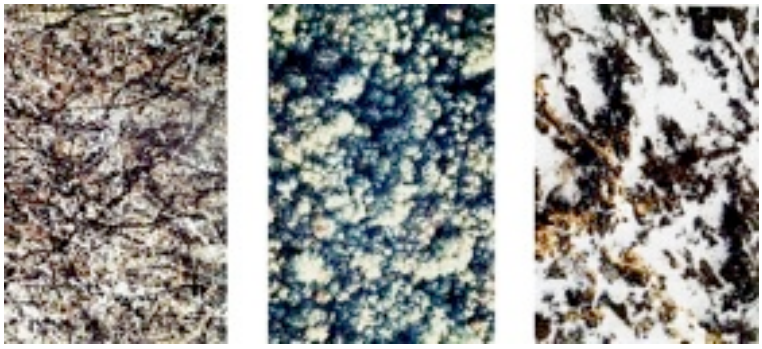

Figure 3. *A comparison between Pollock's work, an aerial view of trees and snow on the land.*

Discovering Decalcomania

I discovered fractals in an art technique called decalcomania. Decalcomania refers to a process of transferring art material from one surface to another by pressing the surfaces together. When the surfaces are pulled apart the tension between them causes the art material to branch in a fractal pattern. The branches display the components of self-similarity, scaling and the fractal dimension. Each time the surfaces are pressed together the fractal pattern becomes smaller, eventually disappearing. Like the fractals found in nature, decalcomania is finite.

The Artists

Dominguez. The Surrealists are responsible for developing decalcomania. Spanish Surrealist, Oscar Dominguez, invented the process in 1936. He used a thin coat of gouache spread on a piece of paper then pressed it onto his canvas. Removing the paper created an interesting pattern. Dominguez originally worked in black but eventually added color. His work reflects self-similarity and scaling.

Figure 4. *Decalcomania by Oscar Dominguez*

Ernst Max Ernst perfected decalcomania. He used oil paint instead of gouache. The decalcomania was applied to the canvas and then Ernst would paint portions out and add details.

Figure 5. *A sample of decalcomania by Max Ernst.*

Flexner. Roland Flexner is a contemporary artist who has rediscovered decalcomania. He works in sumi ink. Flexner applies techniques he learned while in Japan studying suminagashi. He has taken

decalcomania to a new level.

Figure 6. *A decalcomania drawing by Roland Flexner.*

Decalcomania Workshop

Decalcomania is a fractal mono-printing process that is never the same twice. There are influences that can be controlled. The viscosity of the paint or ink, the type of paper used and the direction the paper is pulled from the plate.

During this workshop two types of decalcomania are explored. The first process uses tempera paint and art paste. A tacky mixture is brushed onto a smooth surface. Paper is laid on top with no additional pressure. Variations can be created rubbing, poking or drawing upon the paper. The directionality of the pulling process can be altered, all of which influence the outcome of the print. These prints are fractal in nature due to the branching self-similar patterns that are created in the paint. Each time the paper makes contact with the paint the pattern decreases in size.

The second process uses sumi ink and water instead of paint. The paper used is also specific for this technique. Non-porous paper is used in this process. These prints are influenced in different ways than the paint prints.

Both types of print can be enhanced using paint, pen and ink or colored pencil. Ink and paint can also be removed with water increasing white areas.

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