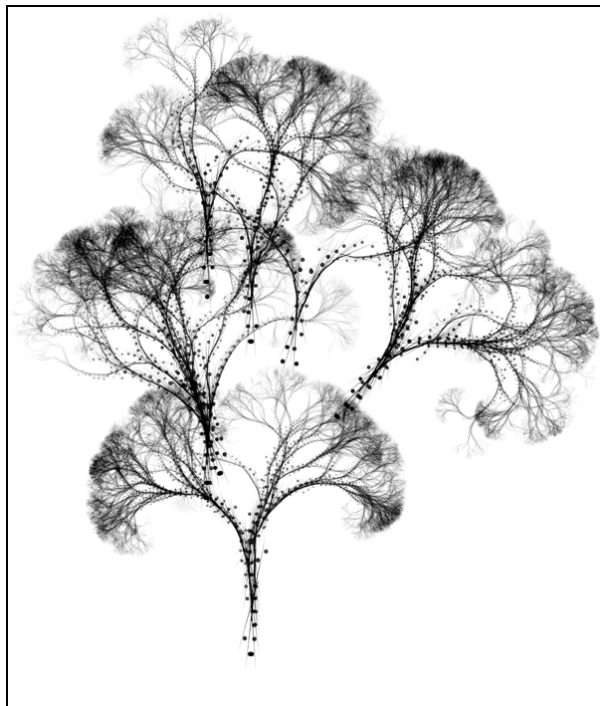


## Computer generated art using context-free grammars

An LKL Maths-Art seminar by Brock Craft

Tuesday 9 October,  
6.00–7.30pm  
London Knowledge Lab, WC1N 3QS



© Brock Craft

This tree-like structure contains over 56.8 million distinct shapes and 2.1 million branches, but was produced with only 16 instructions. The reduced-size reproduction, if printed at full size, would be several meters across. It was created with software that uses a “context-free grammar”.

Context-free grammars are logical constructs that can be used to formally describe programming languages and other complex entities. They are useful because they can very economically describe highly complex processes and structures, such as the one that produced this picture.

In this image, the 16 rules describe how to build the structure rather than describing the location and characteristics of its branches and leaves. Besides generating elegant images, research in complex grammars can lead to more efficient and powerful techniques for computation.

In this seminar, I will discuss the application of context-free grammars to computer based art and show some of my work which uses software employing this technique.

*Brock Craft is a Post-doctoral Research Fellow at the London Knowledge Lab, working on problems of visualisation and multimodal representation. For more information about his art work, see [www.brock.craft.org](http://www.brock.craft.org)*

All welcome. No registration or ticket required, but an email to [lkl.maths.art@gmail.com](mailto:lkl.maths.art@gmail.com) is appreciated to assist with planning.

## **LKL Maths-Art seminar series**

Website and archive: [www.lkl.ac.uk/maths-art](http://www.lkl.ac.uk/maths-art)

This seminar is part of a regular series of maths-art seminars held at the London Knowledge Lab, usually on the second Tuesday of each month during term times. To receive email announcements about events, subscribe to the mailing list at [www.dcs.bbk.ac.uk/mailman/listinfo/lkl-maths-art](http://www.dcs.bbk.ac.uk/mailman/listinfo/lkl-maths-art).

Next seminars:

- November 13<sup>th</sup>: Susan Tebby on constructivist art [[www.susantebby.co.uk](http://www.susantebby.co.uk)]
- December 11<sup>th</sup>: Meurig Beynon on model making and music making [[www.dcs.warwick.ac.uk/~wmb](http://www.dcs.warwick.ac.uk/~wmb)]

We propose these seminars as explorations of the connections between "mathematics" and "art", where both terms are understood broadly: art implies visual art (painting, drawing, sculpture, computer graphics, video), architecture, music, textile art, literature/poetry (and others), and mathematics implies both mathematics as a discipline and the related disciplines in science and engineering for which mathematics is an essential means of expression and communication. Seminars are normally video-recorded for viewing on the website, and may also be web-cast live. The seminar organisers are John Sharp and Phillip Kent. We welcome your suggestions about speakers or topics for future seminars; email us at [lkl.maths.art@gmail.com](mailto:lkl.maths.art@gmail.com).

## **Getting to the London Knowledge Lab**

Nearest tube stations are: Holborn (Central, Piccadilly lines), Russell Square (Piccadilly line). Approximately 10-15 minutes walk from either station.

