

## Artist Case Study

### Sound Form: Katie Davies and Peter Walters (2008)

#### Context

Katie Davies is an art practitioner whose work encompasses video, digital media and sculpture. She has exhibited internationally, at such venues as the Istanbul Biennial; Mains d'Oeuvres contemporary art space, Paris; Badhaus, St Gallen, Switzerland; and in the UK at major arts festivals and events in London, Manchester, Glasgow and Sheffield. She has an educational background in both fine art and three-dimensional design (metalwork and jewellery). Peter Walters is RCUK Fellow in Rapid Prototyping, based at CFPR. Davies and Walters enjoy an ongoing collaborative relationship, through which they exploit new 3D technologies within the context of a Fine Art practice which focuses on processes of technological transformation.

*Sound Form* is the result of an enquiry into the transformation of sound to three-dimensional form. The work came about through a number of discussions between the artists as to whether it was possible to translate “the invisible” or more specifically invisible information into visible and tangible three-dimensional form. *Sound Form* aimed to decode audio information and most significantly, create a physical manifestation of sound.

In the development of this artwork, Davies and Walters took inspiration from historic sources – the pioneering 20<sup>th</sup> Century Modernists László Moholy-Nagy, Filippo Tommaso Marinetti and Luigi Russolo. Moholy-Nagy's *Telephone Paintings* (1922) are an early example of Telematic Art. Moholy Nagy sketched the paintings on graph paper, then dictated the designs over the telephone to the supervisor of a sign making factory, where they were produced in porcelain enamel [1].

Moholy-Nagy's artwork involved the encoding and decoding of information and translation over distance, with the sign factory supervisor performing a function much like that of a machine.

*The Futurist Manifesto* was written to provide a concise collection of the Italian Futurist's thoughts beliefs and launched an art movement, *Futurism* that rejected the past and celebrated speed, machinery, youth and industry. The Foundation and Manifesto of Futurism indicated a sharper comprehension of a cultural evolution in Italy at the beginning of the 20th century. The Manifesto of Futurism outlines its agenda with eleven steps, one of particular interest to us was:

*“Time and Space died yesterday. We are already living in the absolute, since we have already created eternal, omnipresent speed.” [2]*

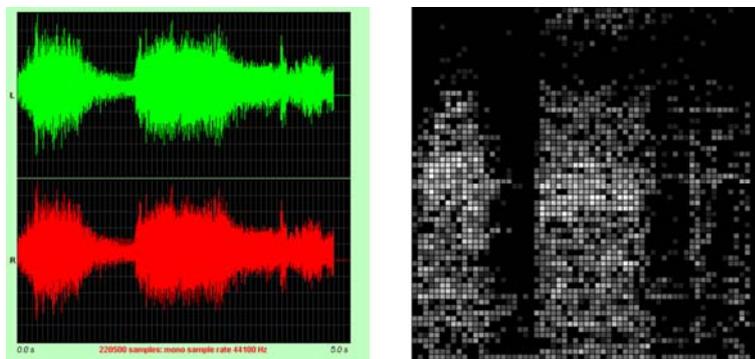
Luigi Russolo, a member of the Italian *Futurist* was a painter and composer, and the author of the manifesto *The Art of Noises* (1913). He is often regarded as one of the first noise music experimental composers with his performances of “noise concerts” in 1913-14 and then again after World War I. Russolo stated “*Noise is triumphant and reigns sovereign over the sensibility of men*” and constructed noise intoners *Intonarumori*, intended to reproduce a variety of industrial noises. These box like instruments with an amplifying trumpet like cone at the front, contained motors and mechanisms driven by protruding handle, while pitch was varied with a lever and sliding scale. Instead of conventional ordered melodies he proposed what he called “*Musique Concrete*” including noise, din and cacophony based upon the roar of machines in the modern city [3].

Taking inspiration from the Futurists' sound machines and fascination with speed and technology, and the translation of information from Moholy-Nagy's Telephone paintings, *Sound Form* explores the potential of Rapid Prototyping technology which itself operates within the paradigm of modern, high-speed industrial design and production.

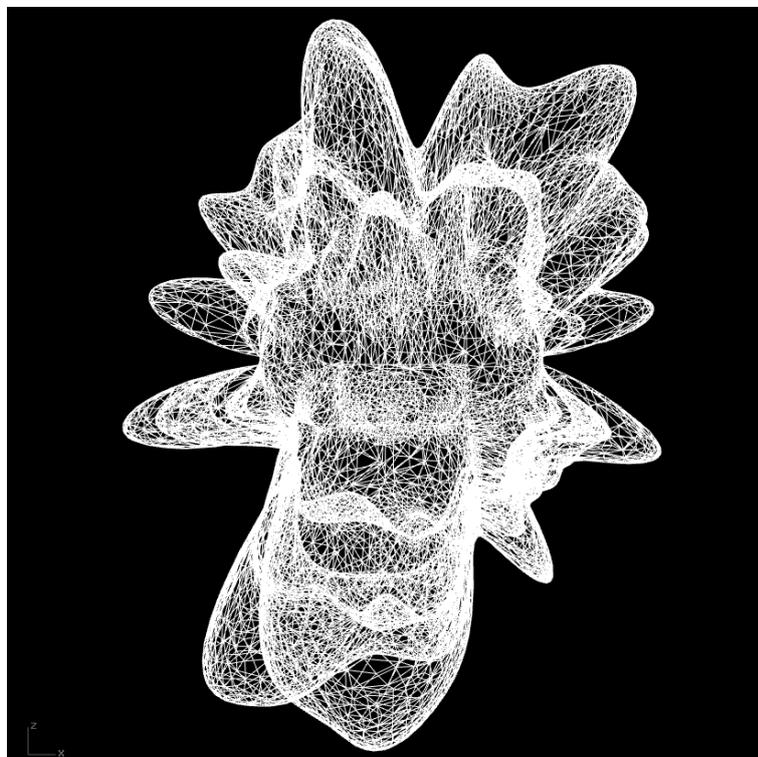
## Creative development and realization of Sound Form

To test the possible applications of this relatively new 3D printing technology, we wanted to print objects whose form was dictated by the “shape” of the sound and to see if we could get a 3D printer to print an object whose form was dictated by the sound of the machines own printing process so that the 3D printer “printed its own sound”.

The experimental study involved capturing the sound made by the 3D printer (Z-Corp Spectrum 510 Powder-Binder 3D Printer) as it deposited a single layer of material. This recorded sound was inputted into the audio-visual software “the vOICe” [4] where it was represented as a 2-dimensional “spectrogram”, in which the vertical axis corresponds to pitch, the horizontal axis to time, and brightness corresponds to volume (loudness) of sound, figure 1. Then, using 3D CAD modelling software (Rhinceros) the 2D spectrogram was translated into a 3D NURBS (Non-Uniform Rational B-Spline) heightfield surface, whereby the surface is displaced in proportion to the brightness of the image. Finally the heightfield surface was wrapped around a sphere, so that the resulting shape appears to radiate out from its own centre, analogous to sound from a single point source – figure 2. The 3D printed artworks are shown in figure 3.



**Figure 1** Recorded sound from 3D printer and Spectrogram in The vOICe software [4]



**Figure 2** **Sound Form**  
Katie Davies and Peter Walters (2008)  
3D polygon mesh generated from Rhinceros NURBS model



**Figure 3**      **Sound Form**  
 Katie Davies and Peter Walters (2008)  
 Z-Corp Powder Binder 3D print 18cm x 13.5cm x 13.5cm x 13.5cm

The process utilized to produce Sound Form is just one example of the many possibilities afforded by 3D printing as a new medium within the creative arts. The significance of Sound Form's research here is that Marinetti's predications about technology and that "*we already live in the absolute*" is no longer a prediction but becomes a present day observation and is at the core of this research. Aiming to explore a poetic use of 3D printing within the creative arts, Sound Form hijacks this industrial process and creates a homage to the work of Marinetti, Russolo and Moholy-Nagy, as 3D printing opens up the possibility for remote artworks instantaneously in multiple locations. One hundred years after the publication of the *Futurist Manifesto*, we can only begin to imagine how pioneers of early 20<sup>th</sup> Century art and design such as Marinetti, Russolo and Moholy-Nagy would have responded to these 21<sup>st</sup> Century technologies, and what new kinds of art they would have been inspired to create, striving to marry the poetics and speed of this industrial process.

#### References:

- [1] Moholy-Nagy, L. (1947) 'The New Vision and Abstract of an Artist' Wittenborn, New York p 79
- [2] Marinetti, F. T. (1909) 'The Futurist Manifesto' <http://www.cscs.umich.edu/~crshalizi/T4PM/futurist-manifesto.html> (accessed 2 Jan 2010).
- [3] Russolo, cited by Hayward, J. (2004) *Musica Futurista: The Art of Noises*, Compact Disc Salon LTMCD 2401
- [4] 'The vOICE' Peter B.L. Meijer (1996-2010) <http://www.seeingwithsound.com/javoice.htm> (accessed 2 Jan 2010).