



Lucy Crouch &  
Matthew Vaughan

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# TRACING MATTER

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GLOAM



## Foreword

The production of charcoal is one of the world's oldest industries. It was used not only for cooking and craft, but essential for the bronze and iron industries as it could burn at a higher temperature than normal wood. Charcoal production is the process of removing all moisture and volatile constituents, such as tree sap in wood, through burning in a low oxygen setting.

Since at least the 14th century charcoal has been produced above ground, rather than in a pit which was a process undertaken during the Roman and preceding Iron Age periods. To achieve the low oxygen setting above ground, a charcoal hearth would be constructed. This could be achieved in four broad phases:

1. A timber upright flue or chimney would be constructed from the available wood.
2. The remaining wood to be converted to charcoal would be stacked around the flue to create a solid iglu or dome shape.
3. The whole stack would then be sealed in earth, turf, and vegetation to reduce air flow to the fire.
4. The charcoal hearth would be lit by dropping embers down the central flue or chimney. Monitoring the burn to completion could take two to four days depending on the size of the charcoal hearth.

Archaeological evidence of charcoal production survives within woodlands across the UK today in the form of monuments called Charcoal Burning Platforms. These monuments are officially described as:

'An area of flattened or compacted ground used for charcoal burning'

They are best observed in woodlands occupying moderate to steep terrain, where the need to create charcoal required the initial construction of a sturdy and level platform. These platforms are frequently round or oval in plan and are constructed into the hillside by digging into the slope, and then using the excavated soil to build up the platforms downslope edge. On particularly steep slopes, the platforms may have included the construction of a drystone wall to ensure the monument does not collapse or subside. The platforms range in size, but often cover an area of around 6.0metres diameter.

Hundreds, if not thousands of these monuments have been found within woodlands located around Sheffield, with the largest concentrations within Ecclesall Wood and Wharnccliffe Wood. In some instances, the charcoal burning platforms continue to survive in areas now cleared of trees, such as in the Upper Derwent Valley, near the site of Slippery Stones.





There are two distinct ways these features are discovered by archaeologists. The most traditional and preferred method is through field survey, whereby an archaeologist would walk through a woodland during the winter months, recording any humps and bumps (earthworks) which signify human activity in the past. Charcoal burning platforms stand out particularly well on hillsides when viewed from either upslope or downslope, as the platform stands out as a distinct break in the natural slope. On the surface or downslope edge of the platform it is also possible to find fragments of charcoal, a sure give away that the platform was used for creating charcoal. CBP Cold Side Oaks Photo

Charcoal burning platforms can also be identified from an office environment using digital mapping software known as GIS. One of the datasets that can be used to map landscapes is Light Detection and Ranging (LiDAR). This is a survey technique which allows for the creation of 3D models of the landscape, and importantly offers the ability to visualise the landscape without tree cover. As a result, the location of possible charcoal burning platforms and other archaeological features can be identified from an office setting. CBP



The archaeological excavation of charcoal burning platforms can significantly enhance our understanding of not only charcoal production in the past, but also how the woodland itself has changed over time. Shipley Glen Ex 1 & Shipley Glen Ex 2

By analysing the charcoal retrieved during an excavation under a microscope, archaeologists can identify the age of a piece of wood when it was converted to charcoal, they can also identify the species of wood. This can immediately provide archaeologists with an idea of not only the fuel selection choices, but also of the types of trees growing in the wood. The charcoal itself can also be radiocarbon dated to determine how long a site has been used for charcoal production. It is not impossible for a site to have been used to produce charcoal for hundreds of years.

As well as the analysis of charcoal, pollen may also be preserved within the soil. Not only will tree pollen support the results of the charcoal analysis, but the pollen may also indicate other trees that were growing in the woodland, but not chosen for the creation of charcoal. The pollen may also indicate what plant species were also growing.

If multiple samples are taken from different depths in the soil, the combined pollen and charcoal analysis may also indicate how the character of the woodland has changed over time. For example, a predominantly oak and hazel woodland may regrow after felling as a birch woodland.

**by Chris Atkinson (PhD researcher at University of Sheffield, Archaeology department)**



# “Bringing our ways of thinking together pushed us to have conversations about different timescales of charcoal production and the life of the wood we were burning...”

**Gloam:** Could you both give us a brief outline of your individual practices?

Lucy Crouch:

The concept of drawing is the subject of my work, which encompasses drawings with paper, print and spatial installations. For me drawing lies in the imprint, the trace of an action, evidence of two materials touching, and may be non-human. Through explorative play with materials my expanded drawing practice focuses on how the drawn gesture is embedded within natural materials and processes, paying attention to the physical substance of drawing and qualities of materials.

Matthew Vaughan:

My practice is centred around exploring the physicality of sound with a specific interest in resonance, and the affect of vibration on materiality. I work predominantly in sculpture and multimedia installations with materials that are still in a process of change. These pieces tend to be staging grounds for exploring the material relationships that emerge, using sound as a way of perceiving those relationships.

G: How has the collaboration of your practices, thinking and skills been beneficial to the project?

LC & MV:

We came together through a shared curiosity about materials as active more-than human agents, with both of our practices being influenced by New Materialist theories. Lucy's interest in the idea of sound as drawing – the action of drawing being in the vibrations that make up sound - overlaps with Matt's teasing out of inherent sounds from within a material.

Matt's technical skills as a musician and sound artist enabled us to explore different materials as sonorous objects in a playful way. Bringing our ways of thinking together pushed us to have conversations about different timescales of charcoal production and the life of the wood we were burning, considering all aspects that might affect the sound produced by the wood.









G: You mention charcoal production, could you talk us through your process?

LC & MV:

Our method of charcoal production is the same as historical and contemporary practices of heating greenwood in a man-made kiln. Our kiln was a 40 gallon metal drum that we tightly packed the pieces of oak

into and then sealed so that limited oxygen could be drawn into the drum. We then arranged the kiln over a pit and lit a fire. This is where processes diverge as some techniques light fires within a kiln instead, our technique was easier to set up and maintain in our inner city context. The fire was tended to all afternoon and evening then left to cool overnight. To create charcoal you are trying to initiate the process of pyrolysis: the heating of an organic material in the absence of oxygen, in which the molecular composition of the material changes through deconstruction. This process of material transformation is hidden

“...you are trying to initiate the process of pyrolysis: the heating of an organic material in the absence of oxygen, in which the molecular composition of the material changes through deconstruction.”

and hard to control, the only evidence it is taking place at the time is the steam and then flames being released from the small vents on the metal drum indicating the different vapours that are emerging. This signals that the wood inside is being deconstructed as the water is vapourised as steam, and then hydrogen and methane and other volatile chemicals which is what combusts, leaving you with carbon. At this stage you then leave the kiln to cool and hope the transformation has been successful.



# “...charcoal is a traditional mark-making tool and part of the history of drawing practice.”

G: In Tracing Matter you explore the materiality of charcoal, could you discuss the significance charcoal has for you, as artists, and your reasons for intimately investigating it?

LC & MV:

It is important that charcoal is a traditional mark-making tool and part of the history of drawing practice. We naturally came to working with charcoal after testing a collection of drawing materials in the studio for their potential as resonant objects. Some small lumps of charcoal were the most interesting acoustically. The sound of charcoal continued to change depending on its relation to other objects in the space, Placing the microphone under its surface unearthed the hollow brittle sounds within the material alongside other noises in the space that are picked up through the charcoal.

The possibilities of charcoal as a material are explored beyond the sonic investigations, pushing the uses of charcoal as artistic medium by making printing ink and emphasising the beauty of the material through the large sculptural pieces of charcoal. We are also interested in how the culture of charcoal production, once very common, has left a mark in the landscape over the time, with some of the implications of this still seen in local woodlands today.

G: The materiality of the wood and charcoal is highlighted within the installation, and the immaterial sound fills up the negative space. Could you briefly talk about materiality and immateriality within the work?

LC & MV:

The work highlights the matter of the immaterial, understanding both the charcoal and the sound waves vibrating in the air to be equally material. Air is by all means material, the particles of nitrogen, oxygen and hydrogen to name but a few are what transfer sound waves in a pressure wave of compression and rarefaction. If the immaterial was not in fact material then we could not perceive sound from distances as there would be no material to vibrate through, as in the vacuum of space. In Gloam the sound waves intersect and touch both other physical surfaces and each other creating unique sound phenomena. To listen to sound through charcoal is another way of knowing the material, understanding it as not fixed but unfolding and becoming. Sound is a key method in challenging the perceived notions that materiality may only apply to the visible, or what we as humans can see, and is another way of generating knowledge.









G: When entering Tracing Matter viewers experience an interaction with the materials and space, could you discuss the importance of these relationships?

LC & MV

The sound picked up from the charcoal makes audible what would otherwise be unheard, including the tremors from inside the material itself. The resulting sound is manipulated by the process of amplification to make audible the sonic information from the charcoal and all sound that travels through it. The charcoal is both amplifying its own sound and the external sounds pulled through it. We hear the exterior space through the inside of the charcoal which is then played out into the space as another feedback loop. The composition of the charcoal is dictated by the pyrolysis (burning) process that produced it; the heat of the fire and how long it was baked for, as well as the type of oak timber, the forest it grew in, how it was transported, treated, and cut.

“...[the] sound is greatly influenced by the architecture...”

The interior gestures of the charcoal ‘draw’ onto exterior sounds that pass through it, collapsing the distinction between exterior and interior. The sound heard through the contact microphone in the charcoal contains the incidental sounds of the space but also of the viewer within that space. When the visitor enters the space they hear themselves alongside the strange interior of the charcoal.

G: Does the sound from the microphones in the charcoal resonate differently within different spaces, say Gloam compared to your studio, thus producing site-specific works?

LC & MV:

This way of making live sound in a space is always site specific. Specifically the way in which we perceive the generated sound is greatly influenced by the architecture of the space and its acoustic footprint is unique to that

time and space. Although the core concept of generating resonant feedback loops sounds similar in each site, the sonic phenomena that emerge are site specific. We can only anticipate how the charcoal will resonate differently at Gloam from the architecture of the space. The microphones in the charcoal pick up both the sounds the charcoal itself and its environment - we are curious to hear how the charcoal will sound at Gloam and how Gloam will sound when heard through the charcoal.

GLOAM is a collectively-run exhibition and studio space located in Sheffield City Centre by co-directors Stu Burke, Thomas Lee Griffiths, Victoria Sharples & Rose Hedy Squires

Tracing Matter is part of the Sheffield Showcase 2023

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Past Exhibitions:

2023

Courses for Dis-course(s) with Roo Dhissou

Mirror with Jack Ginno

Bogland with Jonny Davey & Sam Francis Read

Welcome to Map Making Guide of Drystone Walling  
One-Eyed Giants with Dale Holmes.

Undress me with your eyes... with Nisa Khan.

2022

Creating Patterns with Dr. Harold Offeh.

Beneath the Pewter Sky - Dan Chan, Charlotte Cullen, Gusty Ferro, India Garry, Kumbirai Makumbe, David Reynolds, Will Hughes, Conner Shields, Danielle Williams

Offering from the River with Dr. Victoria Sharples.

Forehead on Glass with Celeste McEvoy.

An Expanded Field - Nicola Bolton (UK), Kieran Brimm (UK), Stu Burke (UK), Deb Covell (UK), Ronan Dillon (IRL), Charlie Franklin (UK), Jack Ginno (UK), Philipp D Göbel (DE), Dan Hamer (UK), Alys Kuu (ES), Jane Morter (UK), Aslıhan Mumcu (TUR), Beth O'Grady (USA), Ismael Ortiz (PAN), Sean Pearce (UK), Molly Thomson (UK), Alison Tirrell (USA), Mark Titmarsh (AUS), Kees Van De Wal (NL), Wilma Vissers (NL), Just Yvette (NL)

Two Queens Member's Show - Gino Atwood, Daniel Cowlam, Mateus Domingos, Jack Halford, Daniel Sean Kelly, Shivani Khoshia, Nick Mobbs. .

Doves & Crossbones with Alistair Wood.

2021

Blood from a Stone with School of the Damned - Mollie Balshaw, Maddie Banwell, Rebekah Beasley, John Carney, James McColl, Thomas Griffiths, Campbell McConnell, Grace Collins, Imogen Rough, Liam Cosford, Natasha Eves, George Gibson, Liam Newnham, Craig David Parr, Luke Routledge.

FOCM: Spring-Summer with Flo Main.

Method-Lab Part Deux with General Practice - Nathan Baxter, Andrew Bracey, Rob Britt, Kate Buckley, Joana Cifre Cerdà, Ross Oliver, Nick Simpson.

The Magician with Dr. Stella Baraklianou.

MTPA (million tons per annum) with Joe Singleton.



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