Good afternoon, I am Dr. Victoria Sharples. I am an artist and researcher in the School of Arts at the University of Derby. As a brief introduction, my practice meditates on posthumanist performativity and ecological philosophies relative to macroscopic and microscopic matter. I often work with people and non-human bodies across spatial, temporal and linguistic situ facilitating international and interdisciplinary practice-led research projects with artists, scientists and spiritual practitioners. For this, I have worked with participants across Saudi Arabia, the Russian Federation, Turkey, the Republic of Korea, Norway, Nepal, and the UK. The works produced as part of this practice often take the form of time-sensitive performances where video, artefacts, photography & scores account or record the project through phonetic, numerical and audio-visual matter. For this CivicLAB symposium, I want to share with you two bodies of work which were presented at Artcore yesterday. These are *Watercolour* (2017–2018) and *Ash* (2018–2020), which focus on, through participatory methodologies, the imperceptibility of materiality through infinitesimal and international scales.

Watercolour is an international (e)mail art project in which five pieces of white A4 paper are placed on five coloured seas around the world – the Red Sea, White Sea, Black Sea, Yellow Sea and Green(land) Sea – to create five conceptual 'watercolours. This was a score-based performance, which was informed by Fluxus, Mail and Net art strategies. And the aim was to make that which was imperceptible perceptible through XRF Spectrometry. Invited to contribute to the project through email, participants performed the action of laying their paper substrate against the surface of their nearest 'coloured' water mass. Once the paper had dried, each participant sent their contribution to the UK, using their closest postal service. On arrival, each substrate was chemically analysed for (a)biotic trace elements using an X-Ray Fluorescence Spectrometer (a non-destructive test that quantifiably determines material composition). This experiment was carried out by Senior Laboratory Technician Robert Ashurst at The University of Sheffield. Over the duration of the project, contributions were received from: Dr Ramona Marasco at the King Abdullah University of Science and Technology, Saudi Arabia; Professor Alexander Tzetlin, Dr Anna Zhadan, Dr Nickolay Usov, and Konstantin Biyagov at The White Sea Biological Station, the Russian Federation; Professor Ali Muzaffer Feyzioglu at Karadeniz Technical University, Turkey; Nick Hobbs, an artist based in Istanbul, Turkey; Yujin Ju, an artist based in Seoul, The Republic of Korea; and Professor Lena Håkansson at The University Centre in Svalbard, Norway. Participatory Scientists included: Senior Laboratory Technician Robert Ashurst at The University of Sheffield (XRF), Professor Clare Woulds and Dr Karen Bacon at The University of Leeds who analysed the samples using Electron Microscopy and an Optical

Microscope. X-Ray Fluorescence Spectrometry is a quantitative approach used for non-destructive chemical analyses on rocks, minerals, sediments and fluids. It is used to determine the chemical composition of material samples with abundances measured in the perceptible of PPM% (parts per million) which signified the number of units per million units of the sum mass measured. The XRF data was then recorded in the form of a postal publication which could be sent to readers in the mail. This again seemed appropriate given mail art methods used in the production of the overall project. And, as these envelopes were subject to the effects of courier transportation, their stamps, tracking numbers and human handling were implicated in the condition of receivership and form part of the work's publication. In this publication, the XRF analysis data enumerated the composite elements of the paper's materiality as inseparable from matter found on the substrates through their permeation, transportation and analysis. Here, I refer to the placement of the papers on each body of water; an action which held onto algae, mineral sediments, and minute pieces of driftwood, but also to the envelope's postage, shipping, and human-handling; an approach which allowed microbes, human pathogens, skin cells, and 'air miles' to imperceptibly accumulate on their surface.

Ash is an international (e)mail art project in which three pieces of Lokta paper were placed on the surface of the sacred and contaminated Bagmati River; downstream from Pashupatinath Temple: an open-pyre cremation site in Kathmandu, Nepal. Considered holy by Hindus and Buddhists, the polluted Bagmati River flows through Pashupatinath Temple, which was built for the godhead Shiva (known as 'The Destroyer'). Pashupatinath, located on either side of the riverbank, and connected by a series of bridges, is held by many as one of the most sacred sites on the Indian subcontinent. To the West of the temple, cremation pyres and ghats can be found, with steps leading down to the water's edge. Here, relatives and the deceased are prepared for cremation; the water used for washing and bathing, to spiritually cleanse their bodies. Before the realisation of the project, I travelled to Nepal to stay at Kopan Monastery, a school in the Gelug practice of Tibetan Mahayana Buddhism, and home to a monastic community. At the monastery, I learnt about 'impermanence', 'egolessness' and 'emptiness', as told from the Buddhist perspective. I also learnt about the cycle of 'reincarnation' and visited Pashupatinath Temple. Their affiliated nunnery is home to 300 nuns, many of them refugees from Tibet. Like Kopan, the nunnery practices the *Dharma* (the ethics and teachings of Gautama Buddha). I also studied the *Dharma* for the purpose of this project and took part in a silent retreat and was schooled by the spiritual practitioners onsite.

Following my stay and back in the UK, I invited artists from Kathmandu to participate in the same action performed as part of the *Watercolour* project. Unlike *Watercolour*, that produced conceptual 'watercolours', *Ash* was guided by the site itself and the feeling that anthropocentric contaminants could be found on the substrates following their permeation. In simple terms, the project surfaced from a place of speculation and sought to call attention to the harm caused by spiritually cleansing practices which are in ecologically destructive. Again, participants were invited to contribute to the project through email and performed the action of placing their paper substrates against the surface of the water. Once dried, participants sent their contributions to the UK using their closest postal service. On arrival, one piece was saved for exhibition, the second was reduced to ash and the third was chemically analysed through Gas-Chromatography Mass Spectrometry and Inductively Coupled Plasma Mass Spectrometry: destructive tests that quantifiably determined their material composition. It seemed appropriate to use a destructive approach with reference to Shiva (The Destroyer). Over the duration of the project, contributions were received from artists Sagar Manandhar and Pratima Thakali, from the Kathmandu University School of Art and Design, and Nepali musician Anil Shahi and Andrew Hobson from the University of Leeds (ICP-S), and Andre Smith from SGS laboratories (GC-MS & ICPMS). The paper's spiritual status was also considered by the monks at Kopan Monastery. That is, I asked them to consider the possibility that, through the process of the paper's saturation on the sacred Bagmati, if they had become imbued with the aura of Shiva, or if this was displaced in the process of evaporation.

In terms of approach:

1. One piece was placed into a galvanised incinerator and set on fire. As the substate burned almost imperceptible clouds of smoke ascended from the bin and an orange glow from the interior radiated through the oxygen holes.

2. GC-MS – the process begins with a liquid sample being injected into the GC injector port where it vaporised and turned to gas. The gas flows into the GC column which has a thin film of material coated on the internal surface and the components of the vaporised sample interact with this film, depending on their chemical properties and are separated from each other into discrete parcels of like compounds. The electron ionisation begins when these parcels flow out the GC column and into the Mass Spectrometer. They then collide with a beam of ions, and the energy of these collisions shatters the compounds into fragments. Over the years, labs around the world have been

acquiring fragmentation spectra submitting them to a large library and archive to provide us with an ID for the compound.

3. ICP-MS – which is an elemental analysis technique which can be used to determine concentrations of elements in liquid samples. The sample is injected into plasma at circa 10,000 degrees where it is atomised, and the atoms are separated and counted. As ICP-MS is used for liquid samples, the piece of paper saved needed to be reduced. To do this, I was recommended either sample dissolution (also called wet digestion) and an ashing process in which the substrate would be heated to decompose into non-combustible ash. In simple terms, wet digestion involves treating the paper with concentrated acids and the analysis the resulting solution. And ashing involved putting the piece of paper into a crucible-furnace until the sample is reduced to ash. The ash is then dissolved in acid and the solution analysed.

Through the ICP-MS analysis, we found presence of substances which are found in salt, whole grains, diary, detergent, soap, paper, plastics, textiles, rubber, inks, toothpaste, dental alloys, bricks, ceramics, nuclear agents, petroleum, human sebum among others. Again, the information found from this process was published as part of a postal edition and functioned as an archive of the river, enumerating the composite elements of the paper's materiality.

I further want to share with you how these practice-led projects informed the production of *Material, Economics & Ecology,* a public-facing symposium which I convened at Derby's Museum of Making this past Wednesday in the Museums' Italian Mill. As a place of material, economic and ecological significance, Derby's former Silk Mill was chosen as a significant place to hold the event: a former factory sitting at the Southern end of the UNESCO Derwent Valley Mills World Heritage Site. The event contributed to contemporary dialogues concerning human and non-human ecologies, labour, trade & material resources. For this, I called on national and international Guest Speakers: artists, videographers, activists and anthropologists, to share their work with civic audiences. To open the symposium, Jumana Manna's award-winning documentary film *Wild Relatives* (2018) was screened in the Italian Mill. Laura Wilson's site-specific performance-for-video *Deepening* (2020) was also shared, and during the afternoon Sonia Levy's *Creatures of the Lines* (2021) was screened alongside a pre-recorded presentation. Guest Speakers included: Dr. Onya McCausland, Laura Wilson, Rafael Pérez Evans, Sonia Levy & Ravi Agarwal.

For context – *Wild Relatives* focuses on the Svalbard Global Seed Vault which provides a backup in the event of humanitarian and ecological disaster. The film starts from an event that sparked media interest worldwide: in 2012 an international agricultural research centre was forced to relocate from Aleppo to Lebanon due to the Syrian Revolution turned war and began the laborious process of planting their seed collection from the Svalbard back-ups. Following the path of this transaction of seeds between the Arctic and Lebanon, a series of encounters unfold a matrix of human and non-human lives between these two distant spots of the earth. It captures the articulation between this large-scale international initiative and its local implementation in the Bekaa Valley, carried out by migrant women.

Dr. Onya McCausland makes work that examines the materiality of painting. Investigating earth pigments that form paint, the work closely attends to distinct geographical regions, following histories and socio-economic legacies of land use. McCausland is also Co-Director of *Turning Landscape,* a Community Interest Company that makes paint from waste streams permeating from UK coal mines. The local production facility, based in a former mining town in South Wales, has developed a circular economy through the re-use and distribution of waste material as pigment for paint._Rafael Pérez Evans is a Spanish–Welsh artist and educator. For MEE, Pérez Evans shared research focusing on material gestures and processes from sites in Southern Europe, specifically sites and lands connected to agriculture which have been pushed by market fluctuations and devaluations. Laura Wilson was born in Belfast in N. Ireland and is interested in how history is carried and evolved through everyday materials, trades and craftsmanship. For *Material, Economics & Ecology*, Wilson talked about ancient salt making along the Lincolnshire Coast and her research into Must Farm, a Bronze Age settlement located on the edge of a working brick quarry in the Fenlands._Sonia Levy is a French-born London-based artist whose research-led practice considers shifting modes of engagement with more-than-human worlds. Levy's work operates at the intersection of art and science. For *Material, Economics & Ecology*, Levy shares dialogues on *Creatures of the Lines* (2021), an artist film and collaboration with anthropologist Heather Anne Swanson._Ravi Agarwal (from New Delhi) has a long-standing interdisciplinary practice as a photographer, artist, environmental campaigner, writer and curator. For *Material, Economics & Ecology*, Agarwal presented *Ecologies of Landscapes, Labour and Livelihoods* which, through artistic explorations of landscapes of labour of small farmers on rivers, and fishers on the sea, shared the entangled ways in which ideas of nature are intertwined with livelihoods and traditions.