Air of the Anthropocene

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Anthropogenic contamination of the atmosphere is causing both climate change and air pollution, which respectively represent the greatest long term and short term environmental risks to human and planetary health. The contamination is largely invisible and hence difficult to contextualise for non-expert audiences. This can lead to the problem being ignored; or where it is acknowledged, leading to feelings of helplessness and a lack of agency.

This project uses digital light painting to visualise and explore responses to particulate matter (PM) air pollution, in a variety of global locations, as a method for both public engagement and campaign work. This photographic technique combines long exposure with light sources digitally controlled by sensors, it builds upon the prior work of electronic pioneer Steve Mann (e.g. Mann et al. 2019) and more recent work visualising wifi strength (Arnall et al. 2013).

The five year art-science collaboration between Price and Pope has been highly successful. The Air of the Anthropocene project resulted in multiple gallery shows (including Los Angeles, Belfast and Birmingham). The media publicized it heavily, including Source Magazine, New Scientist and the Guardian. The physical art works were acquired by the Arts Council of Northern Ireland's public collection.

In this presentation, we will highlight the scientific and aesthetic underpinnings of the use of low cost air pollution sensors for data visualisation through light painting. Locations for visualizations were guided by expert advice from environmental scientists in global locations, including those in Europe, Africa, Asia and South America. In this sense the science informed the art. Also, since the code from the project ended being used by scientists, the art informed the science (e.g. Crilley et al. 2018).

We will highlight the efficacy of this image making approach as an engagement and advocacy tool, through case studies of its use in field campaigns in Ethiopia (2020) and Kampala (2018), investigating both indoor and outdoor air pollution. Future possibilities of the approach to air pollution visualization will be discussed. This will include expanding the approach through open sourcing the project and its adaptation beyond lens based techniques into augmented reality camera phone use.

The projected next phase of the collaboration will work towards empowering interested citizens of

the world to make their own creative, aesthetic representations of their environment and use these images as citizen activists to affect transformational change in their own localities. Through adopting open source methodologies it is hoped that sustainability beyond the timescale and budget of the initial project with lasting legacy will be achieved.

Arnall et al, 2013. Immaterials: light painting WiFi. Significance, 10(4). https://doi.org/10.1111/j.1740-9713.2013.00683.x

Crilley et al, 2018. Evaluation of a low-cost optical particle counter (Alphasense OPC-N2) for ambient air monitoring. Atmospheric Measurement Techniques. https://doi.org/10.5194/amt-11-709-2018

Mann et al 2019, June. Making Sensors Tangible with Long-exposure Photography. In The 5th ACM Workshop on Wearable Systems and Applications. https://doi.org/10.1145/3325424.3329668