

Dryden Goodwin's Breathe: art, science and the invisible

Sasha Engelmann explores the ways in which artists are bringing the work of scientists to the attention on the public.

Art and science have always been fluid, porous entities. From the chemistry of Da Vinci's paints to the craftsmanship of the earliest microchips, the inter-permeability of art and science has driven progress in the world. Despite a modern institutional compartmentalization that distances the arts from the sciences, they revolve within a shared history characterized as much by negotiation, mutual learning, and symbiosis as by declarations of difference. But in recent years the relationship between arts and sciences has altered dramatically. Today, scientists, who are both creative and innovative in their experiments, must justify their methods to a critical and informed public. So too are artists encouraged to support their gestures and performances with formidable research. We live in an age that no longer questions the art of science and the science of art, but demands that such relationships

be made even more explicit, and even more relevant to our everyday lives. This shift towards an increasingly public presentation of research and a trend toward interdisciplinary work is described by scholars as 'Mode 2' science and society.¹

Moreover, today we are witnessing phenomena that would have been highly unlikely a few decades ago: scientists and artists actively collaborating on public projects. The scale of such projects is often breathtaking. Olafur Eliasson, an Icelandic installation artist based in Berlin, collaborated with several engineers to create his Manhattan Waterfalls Project, a series of 30-m-high waterfalls on the Lower East River between Brooklyn and Manhattan in 2010. Helen Mayer and Newton Harrison recently worked with scientist Robert Nichols to create Greenhouse Britain, a series of installations that imagined how Britain's coastal cities might be adapted to rising sea levels. And Maya Lin, in her last memorial *What is Missing?* is working with computer scientists to complete the world's first virtual database of the species, habitats and systems that are *disappearing*.²

In October 2012, London saw another manifestation of the increasingly public resonance of science and art: Dryden Goodwin's large-scale video installation, *Breathe*,

In much recent art, air has become the marker, not of the difference between art and life, but of the aspiration of art to trespass beyond its assigned precincts, to approach and merge into the condition of 'life'.

Steven Connor⁴

on the roof of St Thomas' Hospital. The installation was the result of collaborative research between Goodwin and lung biologist Frank Kelly of King's College London. Goodwin and Kelly met through a mutual acquaintance, Alice Sharp, who is the curator and director of Invisible Dust, a non-profit arts organization founded in 2010. Invisible Dust is actively involved in the dialogue between art and science, pairing leading contemporary artists with scientists to draw attention to air, atmosphere and climate. When Sharp invited Professor Kelly to participate in a project on air quality with Invisible Dust, Kelly welcomed the idea but had no experience working with artists. However, through initial conversations Goodwin and Kelly arrived at several ideas that would explore the visibility of the issue of air pollution in London. Sharp suggested that the two might work together to investigate and express the recent findings of Kelly's air-quality research and his contributions to the London initiative EXHALE (Exploration of Health and Lungs in the Environment), a programme undertaken by researchers and clinicians supported by the Biomedical Research Centre.

The dialogue between Goodwin and Kelly is one example in a series of art-science collaborations that Alice Sharp and Invisible Dust have catalyzed in the UK. Invisible Dust aims to generate art-science collaborations on issues that do not lend themselves to immediacy or visual clarity. The concept of invisibility is therefore at the heart of the organization's purpose. Invisible Dust sprang out of a belief that some artists are skilled in exploring the

ephemeral, and do so through close observation as well as, more recently, employing new technologies such as hidden sensors or cameras. Sharp cites Joseph Amato as a thinker who articulated the importance of visual imaging of dust and small airborne particles for our perceptions of reality.³ By pairing artists who research the transient and hidden with scientists who routinely use technologies to probe microcosmic systems, Invisible Dust aims to multiply opportunities for perceiving the invisible, and for articulating important environmental themes to the public.

INVISIBLE SERIES

Breathe is one project in a diverse series of works called *Invisible Breath*, which included Faisal Abdu'Allah's *Double Pendulum*, a film exploring the affects of air quality on high-performance athletes, and a semi-aquatic performance by HeHe (Helen Evans and Heiko Hansen) called *Is There A Horizon in the Deepwater?* that replicated the explosion of the Gulf of Mexico oil spill in the space of a swimming pool in Cambridge. But what can such novel projects offer the rigorous studies performed by scientists? How do art-science projects affect new forms of public engagement with the chemistry, physics and ecology of the invisible?

Air pollution has a famous history in London, and has been a point of engagement for artists for decades. Monet and Turner were drawn to London to paint the striking colours of the skies above Waterloo Bridge and the Houses of Parliament (the result of pollution from



▲ Figure 1. Using the HORIZON disaster as a way of raising awareness.

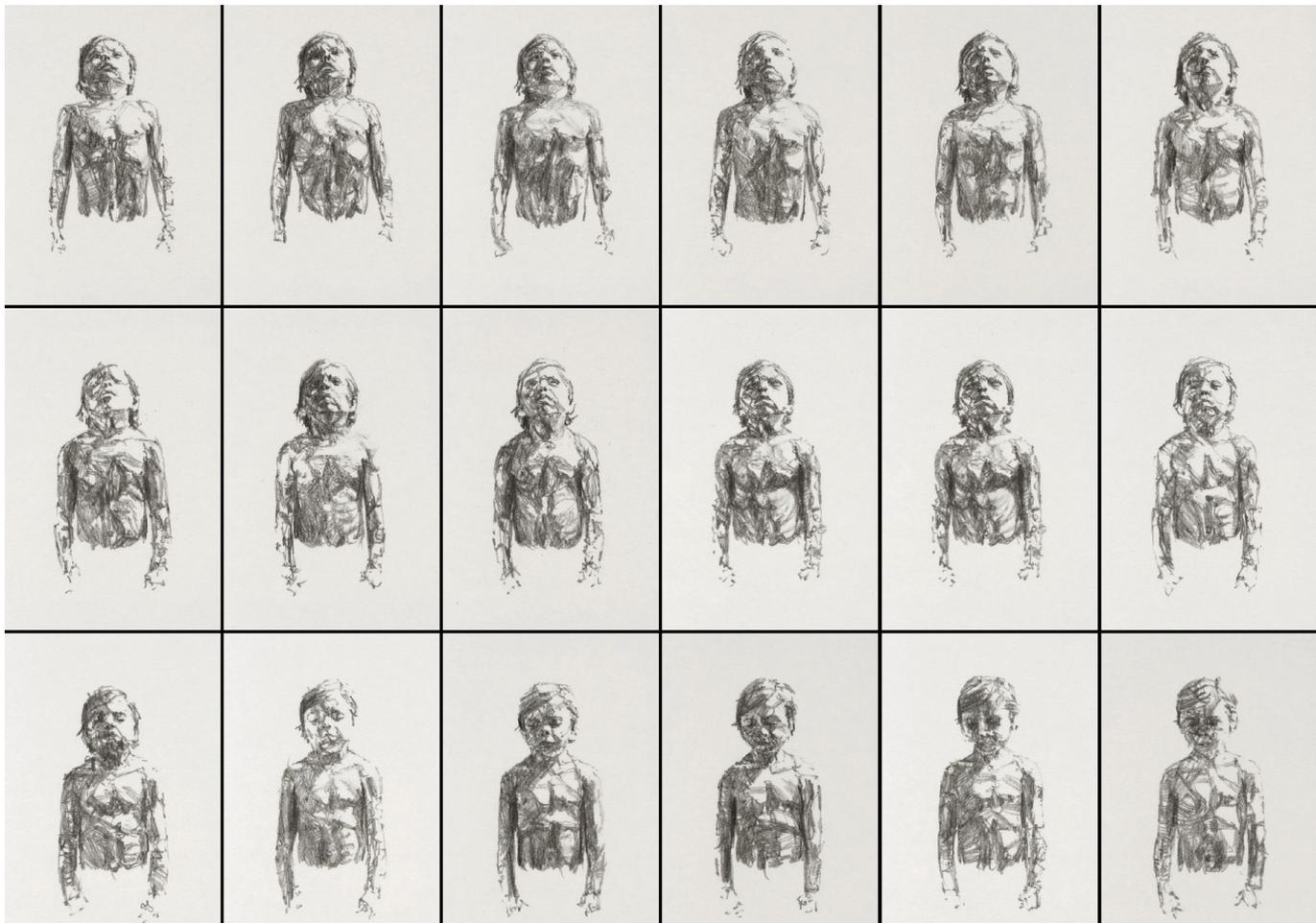
coal fires).⁴ Today, London's air is now mostly free from black smog, but as Professor Kelly and his team affirm, contains respirable particulate matter (RPM) generated by car exhausts, industrial burning and aerosols cans. Kelly is the head of the Environmental Research Group (ERG) at King's College London. The ERG monitors air quality across 33 London boroughs at over 160 sites, coordinated by the London Air Quality Network. Professor Kelly and his team have found that the smallest particles, PM¹⁰s, can accumulate copper and other metals on their surfaces, with severe consequences for human lungs. Moreover, their research shows an increasingly clear connection between particles released in diesel fumes and acute respiratory damage. Such evidence is especially relevant to the work of EXHALE, as it suggests new perspectives on the causes of respiratory illness in London.

The dialogue between Kelly and Goodwin came at a time when the EXHALE team had launched a series of innovative studies with primary schoolchildren. The partnership of King's College London with the MRC-Asthma UK Centre in Allergic Mechanisms of Asthma, Barts and The London School of Medicine and Dentistry involves seven- and eight-year-old children who are

believed to be most at risk from the negative effects of pollution. Children attending schools located close to main roads are studied to establish the consequences of traffic emission reduction, using comparative pollution and respiratory health data from before the introduction of the Low Emission Zone. EXHALE represents scientific research at a direct interface with the public, and is exemplary of the contexts in which researchers increasingly operate.

The creative collaboration between Goodwin and Kelly was not necessarily radical; instead, it might be seen as another step in the larger commitment to public engagement already inherent in the EXHALE project. Moreover, Professor Kelly emphasizes that the creative collaboration has potential to extend the socio-political reach of the scientific research. He feels "a new hope, as through art I have a new language, to convey important message about air pollution in our cities. Hopefully this new 'language' is understandable by everyone, including politicians, who have the power to improve our urban environments." (pers. comm.).

Public engagement with both art and science is at the core of Invisible Dust's aims. As *Breathe* took shape,



▲ Figure 2. Breathe composite: Dryden Goodwin.

Goodwin's and Kelly's work sparked new ideas for engaging schoolchildren with the EXHALE study: another artist, Effie Coe, joined the project and worked with the EXHALE team to develop primary school modules on atmospheric chemistry, as well as a number of art activities including ink breath drawings (shapes made when a straw is used to blow ink across paper). The initiative has been extremely successful: Effie Coe is now starting her third year with the EXHALE research group. Such projects seem to develop naturally in the space between art, science, and the public. In the last year Invisible Dust organized the View Tube Youth Project, where artist Faisal Abdu'Allah worked with scientists from the Centre for Sports Medicine and Human Performance at Brunel University to teach 15 young people from the London Borough of Newham to create their own film. At the British, Bradford and Cambridge Science Festivals in 2012, Invisible Dust designed workshop activities for children relating to breathing patterns and physiology. And in October

OUTCOMES OF THE BREATHE PARLIAMENT DISCUSSION

During the afternoon of 16 October 2012, Dryden Goodwin and Professor Frank Kelly discussed their recent collaboration *Breathe*, this time looking back across the river from within a committee room in the House of Commons. The *Breathe* Parliament talk was hosted by Joan Walley MP, chair of the Environmental Audit Committee together with the Parliamentary Office for Science and Technology (POST). An audience of close to 100 people shared their stories and viewpoints related to air quality in London, and many asked probing questions about the dialogue between the artist and scientist. Kelly stressed that it had been a "refreshing" experience for him to work with Goodwin, both because he learned to explain and view his own work differently, and also because he witnessed how his scientific findings were received and re-translated. Goodwin emphasized a more haptic, diagrammatic interest in the body, especially in the way breathing involves a collapsing and expanding of the human form, saying, "there is a matrix of scale in *Breathe*." Other notable comments were made by representatives of Friends of the Earth, the Clean Air Campaign, a BBC journalist and students from universities in London and elsewhere. In closing, Walley was very supportive of the art-science relationship in aiding our understanding of the environment, and she echoed Goodwin, Kelly and others in suggesting that both educational and awareness campaigns might be effectively transmitted through new social and mobile technologies.



▲ Figure 3. *Breathe* in situ in London, UK.

of this year, Invisible Dust hosted a talk at the Houses of Parliament, where the Chair of the Environmental Audit Committee Joan Walley MP discussed *Breathe* with Dryden Goodwin and Professor Kelly. (see **Box 1**.)

AIR MADE VISIBLE

Dryden Goodwin's involvement with Invisible Dust's wider efforts to engage the public with the issue of air quality and human health seems rather appropriate in retrospect: the task of rendering unseen relationships tangible is at the core of Goodwin's aesthetic practice. The artist's work is grounded in the experience of the city – airport terminals, underground lines and ghostly urban worlds. He has investigated the intimacy that develops between people in the urban environment through both installations and sketches, and has consistently focused on the portrait form. For *Breathe*, Goodwin created over 1,000 rough pencil sketches of his five-year-old son that frame his head, face and torso, layering them to form the semi-transparent animation. The installation is a striking new element in a heterogeneous urban space: walking along Westminster Bridge, viewers will see a luminous projection high up on the roof of St Thomas' Hospital. Activated every day at dusk, the figure of the five-year-old boy appears to fade in and out periodically, changing with the light, weather and the quality of each sunset. *Breathe* is unique in Goodwin's body of work: while his previous projects explored humanity in urban microcosms, the boy in his sketches faces, and even breathes with, the city of London as a whole. Moreover, this portrait is not only descriptive of a human form, but of the non-human elements that flow through it, and us, every day.

The animating gesture in Goodwin's sketches is, of course, respiration. Dryden Goodwin's drawings of the boy inhaling and exhaling convey a pneumatic energy. But their most startling quality is their ability to evoke the materiality – the heaviness – of the invisible substance. In Goodwin's sketches, air is not unremarkable, transient or still. Rather, air is an object that permeates the human figure, carrying with it the hybrid and even harmful residues of the city of London. Notably, *Breathe* will incorporate a digital component: viewers will be invited to download the *Breathe* mobile web app, from which they will be able to watch a high-resolution clip of the animated projection, access localized data on air quality provided by London Air, and upload their own photos or responses to the artwork.

In first viewing *Breathe*, a viewer's response might be overwhelmingly emotional. The boy appears solitary, vulnerable, even transfixed in the effort of breathing. And for some, this is precisely what art might offer a scientific subject: a degree of sensibility and feeling. One needs little evidence of the power of art to move and inspire people. Perhaps more convincing is an assertion by French philosopher Gilles Deleuze. For Deleuze,

the role of art is, "to create sensations that draw humans and nonhumans into encounters with material vitality⁵." Art can create certain conditions that force humans, non-humans, and materials into immediate and unusual contact. Dryden Goodwin's scientifically informed installation is a resonant example of the way art stages an encounter between humans (viewers, pedestrians, readers), non-humans (the buildings, creatures and things of the city) and matter (air alive with organisms and particulates). The artwork brings the invisible qualities of air into a lucid encounter with humans and with city life.

Art-science projects might affect not only the emotional communication of science, but also something completely new: the production of experiences that unravel the very real but often unrecognized friction between people and the living world. Air, a substance we consider to be weightless, is rendered heavy and textured. Our lungs are re-pictured as complex systems of mediation between our bodies and the atmosphere. And the act of respiration, a subconscious rhythm, becomes symbolic of a shared fate in our air and climate. *Breathe*, then, is not just a medium for communicating a scientific



▲ Figure 4. Ink drawing demonstrations.

topic, nor is it purely a creative gesture. It demonstrates a new form of knowledge production through both creative and scientific engagement with the invisible, and brings the tools of both art and science to bear on an issue that belongs to neither discipline alone, but to the public of London.

FUTURE DIRECTIONS

While air quality has been a recurring theme for many of Invisible Dust projects, this area of focus will be broadened in 2013. New projects include collaborations between astronomers, deep-sea and climate scientists, and several artists including Mariele Neudecker and this year's Turner Prize nominee, Elizabeth Price. **ES**

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Alice Sharp is the Director and Curator of Invisible Dust, that in 2011 won a City of London UK Sustainable City Award. As an independent curator since 1997 her previous projects include Bicycle Wheel with Gavin Turk and Ben Wilson by the Olympic Stadium and the Fourth Plinth.

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▲ Figure 5. Breathe: Dryden Goodwin.