

Plenary Address

Breathtaking:

Media Art and Public Participation in Climate Issues

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The accelerating crisis in climate change and the realization that humans are the primary cause of this change has raised questions about ownership and responsibility. Who “owns” the climate change crisis and who is responsible for mitigating and reversing it if possible? The overwhelming response to these questions by governments on an international level has been to propose a market solution, in essence, to sell the atmosphere.

This article explores the idea of air for sale from an economic, political, and cultural perspective. Contemporary art projects that attempt to address the politics of air will be discussed in the context of the author’s experiences while curating the online *Aer* exhibition for the Green Museum in California. These projects highlight the evolving role of art in affecting public participation on climate change.

Introduction

In this article, the author will examine how the concept of the carbon trading market, or the buying and selling of air, has gained cultural acceptance and how works of art may have contributed to the public’s comfort with this absurd notion, and how contemporary works of art are now challenging the ethics of such markets. The author will first outline several models for the carbon trading market, including not only other emissions trading systems but also the market for broadcasting rights. Next, she will discuss cultural examples of buying and selling air, including those in the contemporary art movement referred to by Lucy Lippard (1973) as “the dematerialization of the art market.” Finally, the author will examine several artists’ works that challenge the market notion and promote other solutions to the anthropogenic climate change problem.

The Buying and Selling of Greenhouse Gases

Economic super-powers have been as successful today in their disproportionate occupation of the atmosphere with carbon emissions as they were in their military occupation of the terrestrial world in colonial times. (Andrew Simms, 2006)

The Kyoto Protocol required 35 industrialized countries and the EU to reduce greenhouse gas emissions by an average of five percent below 1990 levels by 2012. Despite, or perhaps because of, being the world’s biggest emitter of greenhouse gases, the United States

is not a part of the protocol. In the Kyoto Protocol, the main “basket” of greenhouse gases to be reduced are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride (The United Nations Framework Convention on Climate Change, 2007).

The Kyoto protocol includes a global greenhouse gas emissions trading system that has now been in place in Europe for almost three years. This emissions trading system could also be called a “cap-and-trade” system. In the first year, credits are generous and the total amount of emissions for each company is determined. Each company has to achieve no more than that amount. Then, each subsequent year, the amount of credits allotted to each company is reduced, allowing companies to slowly lower emissions. This cap-and-trade system is, in essence, allowing polluters to “own” parts of the atmosphere. This article explores how the concept of owning the air we breathe has become culturally acceptable, and how contemporary artists have responded to the idea of air as a commodity.

Models of Commons Trading Systems

In 1990, the US launched a cap-and-trade program in sulfur dioxide as an amendment to the Clean Air Act. An initial objective of the program was to reduce sulfur dioxide emissions from utilities by 8.5 million tons below 1980 levels. To accomplish this, electric utility plants above a certain size were given an initial allocation of emissions allowances based on historical patterns. The Act included stiff penalties for excess emissions, at a value more than 10 times that of reduction costs. The program achieved a very high degree of compliance and the US Congress considers the program a success (US Congress, 1997). The current European greenhouse gas trading system is modeled after this system, but can it work in every situation?

Another model for carbon trading is the 1989 Montreal Protocol on Substances That Deplete the Ozone Layer, designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion, in particular CFCs and halons. This Montreal Protocol created a system for the international trading of allowances. In the protocol, trading is combined with a tax, to offset any large profits from allowances that might discourage the reduction of CFCs. Since the Montreal Protocol came into effect, the atmospheric concentrations of the most important CFCs and related chlorinated hydrocarbons have either leveled off or decreased. Kofi Annan, Former Secretary General of the United Nations calls the protocol “[p]erhaps the single most successful international agreement to date.”

However, by 1997, smuggling of CFCs from developing nations, where they were still permitted, into the US and other developed nations had become big business. In Miami in 1997 smuggling of CFCs was believed to be second only to cocaine. Although the protocol’s goal was to completely phase out these gases by 2000, as recently as 2005, several companies in Eastern China were found to be involved in illegal international trading of CFCs. A market solution can be very susceptible to this kind of exploitation.

The difference between a potential CO₂ market and both the CFC and sulfur dioxide markets is that technology exists to clean up CFC and SO₂ emissions and applies only to a relatively small number of companies with outdated technology, while the CO₂ system applies to thousands of companies and, despite optimistic talk of “clean coal,” there is presently no existing technology to make coal burn more cleanly or sequester carbon emissions more safely on a large scale.

Another model for distributing air rights that can be examined is the right of the airwaves, or broadcasting rights. The US Federal Communications Commission (FCC), which was created out of the Communications Act of 1934, regulates all non-government wire and wireless com-

munications. The Act specified only that broadcasting be in the hands of American citizens, and left it up to the FCC to decide how to license broadcast rights. In the past, applicants were required to describe plans for programming to be judged on general usefulness to the public and on its practicality. In practice, this resulted in a combination of private and governmental control.

However, since 1994, the FCC has conducted auctions of licenses for the electromagnetic spectrum, open to any eligible company or individual that submits an application and an upfront payment. According to the FCC, the auctions more effectively assign licenses than previously used hearings or lotteries (The Federal Communications Commission, 2007). This system created a broadcasting sphere widely dominated by the large commercial interests with the resources required to win this bidding war for the airwaves.

In 1996, the FCC relaxed the rules that restricted broadcasters from owning several radio or television stations in one market, allowing broadcasters, for example, to own an unlimited number of radio stations. This move has created an increase in advertising prices and caused an unexpected outcry from communities who have found that the consolidation of the media within the hands of a few large corporations has resulted in a loss of quality local programming, with corporations instead polluting the airwaves with homogenized, computer controlled broadcasts. The lesson to be learned here that might also apply to a market in greenhouse gases is that the de-regulation of the market, allowing the unrestricted purchasing of air rights, be it polluting or broadcasting, could well result in a disastrous reduction of the quality of air and the airwaves.

A fundamental aspect of the greenhouse gas emissions trading system is the granting of property rights to the air. The idea of ecological economics, as illustrated in Garrett Hardin's essay "The Tragedy of the Commons" (1998), came from the understanding that environmental resources are finite, and since these resources can be destroyed, there should be incentives for protecting them. The question of how these incentives should be created, however, whether through a trading system or through regulations or some other means, is a topic of great controversy. What follows are some of these conflicting viewpoints.

Air and Property Rights

Ecological economics provides both a mechanism for the valuation of environmental resources and an incentive for keeping within an established environmental "budget." In 1997, the US Congress described it in this way:

A primary and appropriate role for government in supporting the market economy is the definition and enforcement of property rights. Defining rights for use of the atmosphere, lakes, and rivers is critical to prevent their overuse. Once legal entitlement has been established, markets can be employed to exchange these rights as a means of improving economic efficiency. (US Congress, 1997)

Emissions trading systems have been criticized for a long time. At the 1992 Earth Summit in Rio, the NGO Global Forum emphasized avoiding pollution trading schemes that "perpetuate or worsen inequities hidden behind the problem or have a negative impact." Later, arguments escalated, calling trade in greenhouse gases a new form of colonialism. Arguments for and against this system range from concern about flaws and possible abuses of the system to criticism of its fundamental assumptions about ownership.

The biggest beneficiaries of a greenhouse gas emissions trading scheme can be found in the banking industry (in the US, this industry is currently lobbying heavily for the implementa-

tion of a carbon cap-and-trade system) and the nuclear power industry that stands to gain a loosening of restrictions on the production of new power plants.

However, despite the support of banks, not all economic experts support the use of such a system. Many would rather see a carbon tax in place. In practice, a carbon tax functions very much like a trading system because polluting companies either pay a tax or pay for carbon credits for their emissions. Both systems will also raise consumer prices on fossil fuels. However, critics of the tax system say that it does not provide the incentive or “race for the pot of gold” that the carbon trading system instills by financially rewarding companies that can substantially cut emissions (Solomon, 2007)

There are critics of the trading system on both the political right and the left. From the right, Nicole Gelinas, a journalist of *The Wall Street Journal* argues against a trading system in the US by stating that the global competition created by the system will hurt US-based corporations. If US energy companies can not limit emissions, the international cap-and-trade system would require them to buy emissions credits from other countries. Interested in protecting the financial interests of these US corporations, she calls the trading system a “direct subsidy to developing nations by paying for their power-plant upgrades.” She argues that a Federal carbon tax, an alternative to the international carbon cap-and-trade system, would provide revenue to the US government that could then be used to subsidize US power plant upgrades, while an international cap-and-trade system could put this revenue in the hands of other countries, particularly those that already have reduced emissions. Gelinas’s views seem to be in line with those of the US government. In fact, one of the reasons the US has stated it is against the Kyoto Protocol is that it provides exceptions for developing countries, the countries that stand to benefit most from the protocol and lose the most from the consequences of global warming (Gelinas, 2007).

Arguing from the political left in *Carbon Trading*, Larry Lohmann (2006) is critical of the hopeful attitude held by many industrialized countries about technological developments, which would allow continued use of fossil fuels such as carbon sequestration as the solution. He devotes a chapter to analyzing how these technological solutions are nothing but a smokescreen used to distract public attention away from the government’s lack of necessary action. He calls this distraction the “second strategy.” He calls the first strategy the public denial of the existence of anthropogenic climate change:

The first strategy works to reshape or suppress understanding of the climate problem so that public reaction to it will present less of a political threat to corporations. The second strategy appeals to technological fixes as a way of bypassing the debate over fossil fuels while helping to spur innovations that can serve as new sources of profit. The third strategy appeals to a “market fix” that secures the property rights of heavy Northern fossil fuel users over the world’s carbon-absorbing capacity while creating new opportunities for corporate profit through trade. (Lohmann, 2006, p. 34)

In *Earth in the Balance*, Al Gore (2006) embraces in part what Lohmann critically calls the “second strategy,” proposing an SEI (Strategic Environment Initiative) which, like the existing US SDI (Strategic Defense Initiative), would require a major national effort, but with a focus on the environment rather than the military. Although he does emphasize that any new technologies should be evaluated, his focus is primarily on developing new technologies to combat climate change.

Finally, Lohmann is very critical of what he calls the third strategy, the “market fix,” primarily because of the property rights issue, the privatization of the air. Like Flannery, he is concerned that if a “top down” creation of a greenhouse gas emissions market is created without public debate, it will result in a market filled with distrust, including a lack of faith in both the structure and the implementation of the market.

The bottom line according to Lohmann is that the current emissions trading structure allocates the most allowances to the biggest emitters, effectively giving a handout of billions of dollars to the most egregious polluters and providing incentives to them to keep polluting.

In *The Great Emissions Rights Give-away* (2006), Andrew Simms, policy director of the NEF (New Economics Foundation) and Feasta (The Foundation for the Economics of Stability), proposes an alternative structure for EU carbon trading. In his structure, the EU’s emissions allowances would be divided into an equal per capita basis and distributed to every EU resident. Residents would then be able to sell these allowances to companies or keep them off the market, thus actually promoting cleaner air.

Simms compares this approach to some other alternative approaches—for example, Dr. David Fleming’s proposed Tradable Energy Quotas, which allows governments to provide each citizen with a portion of carbon units equal to the amount of the general public’s fossil fuel use. Each citizen can use these units to purchase energy and fuel, or sell unused units on an open market. Carbon units used by industry are sold at an auction similar to the FCC broadcast rights auction. The proposal of NEF/Feasta is based on the fundamental principle that the atmosphere belongs to all people equally and not to any governments or corporations (Simms, 2006). Artist Amy Balkin has created an artwork critiquing the greenhouse gas trading system. Her work will be examined later in this article.

Selling Air

One might think that the idea of “air for sale” is absurd; however, it is in place in the abstract arena of the market. After all, no one would *actually* pay for the air they breathe. Culturally, this may no longer be the case, as evidenced by the rising popularity of something called the oxygen bar and portable canned air.

In both the cases, oxygen is touted as a cleansing medical “therapy.” Advertisements focus on the healing power of air, using aromatherapy or “oxygen therapy.” Advertisers promote the air as energizing for exercise, effective in combating cigarette smoke and curing a hangover. They sell air based on the idea of being pure, fresh, and clean, and many promote it as an escape from the smog of city life. The oxygen bar started as a trend in the 1990s in Japan, Mexico, and South America and quickly spread to nightclubs, spas, casinos, and malls in Europe and the US. Portable canned air is becoming just as popular and widespread. In Japan, a recent large-scale commercial venture is O2supli, a portable can of oxygen.

How could our global culture have gotten to a point where the absurd notion of buying and selling the air is acceptable on any level, corporate or individual? Perhaps the arts, specifically conceptual artworks, have played a role in making buying air a culturally acceptable activity.

Air for Sale in Contemporary Art

When art becomes idea, idea becomes commodity. (Alberro & Buchman, 2006)

As creative works, art and architecture have value in society, not just cultural value (although they have that too), but monetary value. In the 50s and 60s, Yves Klein's concept of *Air Architecture* challenged the definitions of art and architecture by building with ephemeral materials, but on a wider scale it may have contributed to the idea of commodifying the public resource of air. Klein was interested in the ways that humans can use science and technology to conquer the ephemeral, even to the point of turning air and fire into building materials. Klein saw science and technology as the savior of architecture, because they promoted new forms and structures made from sculpting the air and other "immaterial-materials." He believed that *Air Architecture* would actually improve the environment, positing that "*Air Architecture* must be adapted to the natural conditions and situations, to the mountains, valleys, monsoons, etc., if possible without requiring the use of great artificial modifications" (Klein, 2004). By creating *Air Architecture*, Klein radically redefined the limits of architecture, asking why solid materials like stone, wood, and brick should be the only materials in an architect's palette. By developing technologies for using (or, some may say, misusing) ephemeral materials for building, Klein created an alternative pathway for the architectural imagination.

In the late 1960s, a group of artists including Robert Barry started producing work that questioned the limits of art. Barry's series of works, known as "invisible" art, included *Inert Gas Series* (1969), in which a specific amount of gases (neon, xenon, and helium) were released "from measured volume to indefinite expansion" in the Mojave Desert (Wood, 2002, pp. 35-36).

Lucy Lippard observed in *Six Years: The Dematerialization of the Art Object* (1973) that "novelty is the fuel of the art market," and at the time of Robert Barry's *Inert Gas Series*, this "fuel" was being burned at a rapid pace, constantly stretching the boundaries of the definition of art. By using the term "dematerialization," Lippard attempts to remove art from its status as commodity by creating such ephemeral "objects" of art like those including the natural expansion of gas, a substance that would be absurd to commodify. Artists like Barry were reacting against and attempting to create an alternative to the art market. However, over time, this work has not been removed from the art market. The ephemeral art movement was actually embraced by commercial galleries and dealers. As Lippard (1968) suggests, this market needed the fuel of these increasingly novel ideas (p. 31).

A connection to the market may have been necessary for the creation of the art and the survival of the artist; nonetheless, it created a paradoxical situation in which the immaterial was moved into the object realm. The critical stance of the artist on the art market was compromised through the positioning of the work within the art market.

In 2005, Tue Greenfort made *Bonaqua Condensation Cube* as a homage to Hans Haacke's *Condensation Cube* from 1963. *Bonaqua*, a popular brand of bottled water as the water of condensation, was meant to directly address the issue of ownership of both the natural resource of water and of an ephemeral artwork. Water was considered in 1963 to be a public resource. However, by the early 21st century, it had become a commercial product. Like the earlier work, the piece was positioned in a gallery as an artwork that could be attributed with a monetary value. Like the earlier work from Haacke, *Bonaqua Condensation Cube* was a satire about the absurdity of the art market, but unfortunately by being exhibited in a gallery, both works remained a problematic part of that commercial system.

The Aer Exhibition

Today there are a growing number of contemporary art and social media projects from a multi-disciplinary perspective that represent the beginning of an effort to give a voice to each one of us affected by poor air quality, to highlight the flaws in the current system, and to empower individuals to preserve and protect our fragile atmosphere.

The *Aer* exhibition was curated by the author as part of her research, and the featured artists are far from neutral about the issue of air and air quality (Polli, 2008). The artists in *Aer* all look critically at air issues and use various methods to raise awareness among the public. Some also take an active role by directly affecting the air quality and therefore human lives. Because air is invisible, artists are faced with the challenge of making the intangible real. Air pollution is a silent killer, and it is challenging to give a voice to the body's dependence on clean air. Most of the featured projects blur the line between art and activism, and all the projects aim to change public understanding of air as well as question accepted norms of ownership and responsibility.

Los Angeles based artist Kim Abeles created her *Smog Collectors* series in order to make the invisible visible by literally using the air as an almost photographic medium, placing material surfaces on her rooftop and allowing particulate matter to collect on these surfaces over time. The resulting images look like beautiful photograms, but they present the shocking effects of particulate pollution. The *Presidential Commemorative Smog Plates* were also made as part of this series. Abeles exposed each plate to actual smog for amounts of time that corresponded to the environmental record of each US president. This process caused the resulting images on the plates to darken with each successive president, and strongly illustrates the tragic decline in US air quality with each new presidential administration. Abeles used a playful method of illustration as an alternative pathway for informing the public of the relationship of governmental policies to air quality.

Another project that uses the visualization of the air to make a powerful statement was *Pollstream*, a series by Hehe (Helen Evans and Heiko Hansen). Using interactive media and sophisticated visualization of the composition of air and smoke, these works inform and alert the public to real-time, local air quality. Monet found the skies of European cities awash with unusual colors caused by human-made pollution. In a similar way, Hehe's *Champs D'Ozone* overlays a real time image of Paris skies with colors representing the unseen pollutants contained within. On the one level, Hehe's *Pollstream* projects pay homage to Monet's 19th century works by aestheticizing the air and smoke, but on another level, unlike viewers of Monet's paintings, *Champs D'Ozone* viewers can directly link the colors to actual levels of pollutants. Hehe's work forces viewers to pay critical attention to what the colors represent: a deteriorating quality of air.

Another elegant example of local air visualization is Sabrina Raaf's *Translator II: Grower*. In this project, a tiny robotic rover drew a simple green line at the bottom of a white wall perpendicular to the floor. This line indicated the level of CO₂ in the room: the taller the line, the more CO₂. The rover moved around the room creating a horizon of tall and short grasses, a history of the changing airscape around us. This interactive work responds directly to the number of people in a room, since we all exhale CO₂.

Australian performance artist Sarah Jane Pell has also highlighted the body's transfer of air and our dependence on air as living, breathing beings. Her works explored the physical and emotional limits of the body. For example, *Interdepend* creates a closed-circuit life support system between Pell and artist Martyn Coutis, and *Undercurrent* presents a single performer contained within a sealed transparent dome with a finite amount of breathable air. These works are physically demanding for the performers and created an overwhelming emotional intensity for

the public. In *Fumifugium*, Evelyn refers to the air as the soul or spirit of man, and Pell's works seem to give that soul or spirit a physical manifestation. This can be witnessed either through human interdependence or through a single womb-like containment that without breathable air would become a tomb. Like Raaf's work, Pell's works seem to hold a vision of the future. For example, in *Translator II Grower*, Raaf presents a robot that methodically records the human imprint on air. This rover, which can continue to perform its duties even when the air becomes toxic to humans, questions our future on the planet if we continue to poison our air. In Pell's case, this vision is apocalyptic: one in which the very air we breathe is a limited commodity. In the future, will the earth's fragile atmosphere continue to sustain us, or will we be forced to remain contained in controlled environments while our machines roam freely, reporting to us the world outside? By suggesting an alternative future of limited air, these works by Raaf and Pell created a pathway that forced audiences to consider the important reciprocal relationship between humans and the earth's atmosphere.

In *Fumifugium*, John Evelyn called air "the vehicle of the soul," and the author concluded that the term "vehicle" was appropriate for defining air in the context of the *Aer* exhibition. Many of the various definitions of "vehicle" fit not only the specific artworks in *Aer*, but many contemporary artworks. For example, a vehicle can be a means of transmission and a medium of communication, a means of accomplishing a purpose, and also an idea to which the subject of a metaphor is compared. The "vehicle" can be a means by which the idea is transmitted, through some kind of tangible art medium like a painting or sculpture, yet in our current artistic climate (the age of the dematerialism of the art object) air has become a viable art medium. Although air is as fleeting as an idea, and perhaps even because of this, it can also be the vehicle through which an idea is expressed, as has been shown through the work of Yves Klein and Robert Barry.

A series of artworks featured in the *AER* exhibition that functioned as both vehicles of wireless communication and literally floating vehicles using the transportation medium of air were Jed Berk's inflatable *ALAVs 2.0* (Autonomous Light Air Vessels). These human-size floating vessels communicated with the audience using mobile devices, and the works seem to anthropomorphize the invisible wireless networks that activate the air itself. His project also created a very tangible alternative model for networked communication, a model in which information flows freely between people, objects, and even space itself. This created a participatory networked environment, one in which every being and object occupied a space and a voice. It was impossible to view the *ALAVs* without seeing some kind of floating body, or without projecting a kind of sentient life on these simulated creatures. They seemed to represent how our consciousness could be freed from gravity, lighter than air, giving us a way to directly communicate with air itself. By developing technologies for new social interactions and structures, Berk has envisioned an alternative pathway for public communication.

While Berk created the inflatable *ALAVs* using contained gas in order to shape a space, the artist's team called Superflex have created a project that contained gas for the purpose of influencing social change. Superflex worked in collaboration with Danish and African engineers on *Supergas*, which aims to provide a modest and efficient portable biogas system for families in Africa. Superflex identifies their artworks as tools, shaped by a social and economic commitment. The tool *Supergas* has helped individual families to become independent producers of energy with minimal time investment and without making dramatic changes to their culture. This trans-disciplinary process of development involved the community on a deep level. Also, the design process didn't end with implementation; the tool itself was originally designed for flexible

use, a kind of open-ended platform. *Supergas* captures organic materials that are an ordinary artifact of farming in order to promote individual energy empowerment and to protect the air from more polluting forms of energy production. The thought process that can take a polluting compound and with minimal costs turn it into an energy resource can be a contagious activity, in turn promoting similar independent and innovative cross-disciplinary and cross-cultural cooperation in the future.

In the 1960s, the US first implemented air quality monitoring and advisory systems to alert the public about dangerous levels of pollution. During days of poor air quality, public notification came bundled with the weather report and people were told to avoid going outside. While this “one to many” kind of information exchange may work effectively for these kinds of warnings, other models in a networked environment could be exploited with respect to air quality. In an open platform, *Area’s Immediate Reading* (AIR) by Pre-emptive Media (Beatriz da Costa, Jamie Schulte, and Brooke Singer), the artists turned individual citizens into volunteer “smog detectives” using a network of wireless pollution-monitoring devices. This open platform allowed real-time sharing of location and time-based information about pollution, health, and the environment. Media was used as a strategy to open public dialogue. This wireless network created for the AIR project functioned like another definition of “the vehicle”: a medium in which medicine is administered. In this case, the illness represented is a complacent society, blind to the dangerous effects of air pollution, and the metaphorical “medicine” is increased public participation in monitoring.

Amy Balkin’s *Public Smog* (2007) projects address the commodification of clean air from the perspective of the market. Balkin is an artist whose works create metaphoric shifts, question social and political assumptions, and take an activist stance. Her work often involves intensive legal, financial, and political research. *Public Smog* is a public park located in the atmosphere, of changing size and floating in an unfixed location. At first it seems like a fantasy! How can anything exist in such an ephemeral location? The premise of Amy Balkin’s work references the economic system of emissions trading. Through her project, the “global public” can purchase as many emissions allowances as possible on the emissions market. These carbon offsets are then retired; in other words, they are taken off the market, making them unavailable to polluting corporations. By openly embracing the free market for the public good, Balkin presents a sharp critique of the system the project must operate within; therefore, she sees her “public space” as the emissions trading market.

Balkin’s work clearly questions the market, and the solution she proposes is meant to be absurd. However, in the context of contemporary culture, the solution seems like a viable one. In fact it is very similar to the structure proposed by Feasta, where individuals buy and sell emissions credits on the market, and a certain amount of emissions credits are distributed for free to citizens. A group called TheCompensators* proposes the exact same solution as Balkin, claiming to have retired over 1500 EU emissions allowances (TheCompensators*, 2007). These solutions create potential problems grounded in the very idea of the market. Healthy markets may grow, but if people decide to buy emissions credits or clean air, the market may issue more emissions credits to balance the market and meet the demand. This process would force the public to pay ever-higher prices for clean air.

The difference between Balkin’s *Public Smog* and TheCompensators* projects lies in the fact that one identifies itself as an art project and the other as an environmental project, but the underlying metaphors are similar. By using the metaphor of a public park, Balkin’s work allows viewers and participants to look at the system of emissions trading through a familiar lens. Most

viewers understand the difference between public and private property in the context of land use. The privatization of air as if it was a public park is a metaphor Balkin used to influence a greater understanding of the problems that may emerge from an emissions trading system. Balkin invites public participation through the purchase of emissions allowances and offers an alternative reading of the carbon trading system, and therefore creates an alternative pathway for examining this market.

The message of *Public Smog* becomes even clearer when seen in relation to one of Balkin's earlier works entitled *This is the Public Domain*. In 2003, Balkin purchased a 2.5 acre parcel of land located in Tehachapi, California, intended as a permanent, international commons, free to everyone, held in perpetuity. Since there was no precedent for the creation of such a commons in the current legal system, Balkin's project involved a complicated legal process that explored solutions in both real property law and copyright law. Through this process, Balkin questioned the foundations of the existing laws and highlighted the disappearance of public space. Balkin has identified the project as an art project, and this classification is essential to her legal approach, one that explores the land as a creative work of art. Through this project, she joins a movement of people who move fluidly between the roles of artist, environmentalist, and activist.

In another example, Ben Engebret provides individuals in various US cities the chance to personally comply with the Kyoto protocol. Engebret himself does not identify himself purely as an artist or call his latest project, *Personal Kyoto*, an art project, and his projects often operate outside of the art market on the Internet. *Personal Kyoto* analyzes electric usage information and calculates an energy reduction goal of what the Kyoto Protocol might require for an individual. *Personal Kyoto* allows individuals to monitor electric use on a daily basis with the goal of reducing their personal consumption of greenhouse gases. Like Balkin's *Public Smog*, *Personal Kyoto* works within an existing system to empower public action and benefit. While *Public Smog* takes on the publicly traded carbon offset system with collective action using a public space model, *Personal Kyoto* looks to individual responsibility and accountability as a means to encourage global change.

While projects that focus on personal responsibility and embrace the philosophy of "voluntary" emissions reduction may help raise awareness of the problem of CO₂ emissions among the general public, and as such may have an impact on total emissions, their focus on personal choice may detract from the urgent need to curb emissions now. Can the American individualist ideal promote the changes needed? Voluntary emissions reductions may be a great idea on an individual level, but can they work on a global scale?

The paradoxical problems and metaphors that have been raised by these artworks are part of the system in which the works exist. They are either in the art world, with its gallery economy based on the buying and selling of works, or in the public art world, in which works can be supported by government or private interests; some works also operate in the semi-public forums of the market or the Internet. These works bring up larger questions about the potential of art in a time of global environmental crisis, and more specifically the potential of art and science collaboration in creating alternative pathways to understanding and responding to climate change.

By planting gardens inside of truck beds, Laramee created a carbon-neutral fleet of three Mercedes Benz trucks. Along with bio-geographer Dane Griffin, she calculated the amount the trucks would drive so that their emissions would match the amount of air cleaned by the flatbed gardens. How far could these trucks travel so that they created no harm? In one case, she concluded it was no more than one-third kilometer per month! Laramee's work created an alterna-

tive pathway for addressing the problem of automobile emissions by presenting a potential solution. However, by showing that this solution was impractical, she emphasized the magnitude of the problem.

Climate change is a global problem that requires international cooperation. The projects in the *Aer* exhibition navigate the economic and personal politics of air and air quality. As these politics can be complex and controversial, Platform London, a group whose work crosses disciplinary lines to achieve social and ecological justice, attempts to blur the boundaries between art and activism. Their projects involve rigorous research, advocacy, public art, and education, or various combinations of each. The global price of oil is set at London's International Petroleum Exchange, and their artwork entitled *Unravelling the Carbon Web* looks closely at two major players in the oil industry that have headquarters in London: BP and Shell. The project focuses on their activities in Iraq, the former Soviet Union, and Nigeria. These have included the oil industry in Nigeria and the policy of Shell. A component of the project by Platform London, the *Remember Ken Saro-Wiwa* project, was a tribute to the Nigerian writer and activist who led a nonviolent campaign against the environmental damage associated with the operations of Shell and other multinational oil companies in the Niger Delta. His execution by the Nigerian Military in 1995 provoked international outrage. Platform London then coordinated a coalition of organizations and individuals to contribute a series of living memorials to Saro-Wiwa; these included a book of poetry and a stainless steel bus made by Nigerian-born artist Sokari Douglas Camp. This growing project, aptly named *Unravelling the Carbon Web*, contains an archive of related news, historical documents, and analysis, including fables that try to reach the conscience of the global oil industry.

Conclusion

The work of the artists in the author's curated exhibition, *Aer*, and the related art and activist projects discussed in this article, represent the beginnings of an effort to address the issue of air pollution from a multi-disciplinary perspective. In the 1960s, Yves Klein, Robert Barry, Hans Haacke, and others developed artworks from ephemeral materials. By making artworks from air and water, these artists pushed boundaries and expanded the definition of art. At the time that Klein, Haacke, and Barry were creating the ephemeral works discussed in this article, water and air were seen as public resources. However, by the early 1990s bottled water had become a popular item in stores, and air pollution trading systems in Sulfur Dioxide and CFCs had already been implemented. Because artworks generally operate within various economies, whether they are gallery works or works of public art, the position of ephemeral artworks as private property may have unintentionally softened the public to the idea of selling bottled water and to the buying and selling of air. The context in which an artwork is presented—for example as a high-priced product in a gallery or in a public space—affects the extent of its message and the effectiveness of the work in responding to a global crisis like climate change.

Therefore, recent contemporary artists using ephemeral materials, for example Laurie Palmer (*Hays Woods/Oxygen Bar*) and Tue Greenfort (*Bonaqua Condensation Cube*), have responded to the idea of selling air and water by offering an alternative reading to the mainstream commercial messages that encourage marketing these resources. By presenting the *Hays Woods/Oxygen Bar* as a public artwork in which clean air is distributed for free, Palmer developed an alternative mechanism to access new audiences for art and to encourage social activism in support of preserving the woods.

Contemporary artists presented in this article have used dramatic visuals in order to offer alternative viewpoints. Both Kim Abeles (*Smog Collectors*) and Hehe (*Pollstream* and *Champs D'Ozone*) developed innovative ways to visualize air quality. Their works dramatically make the invisible tangible to art audiences in dramatic ways. Other artists presented in this article have used technology as a means of creative and critical intervention. Sabrina Raaf (*Translator II: Grower*) and Sarah Jane Pell (*Interdepend* and *Undercurrent*) have designed works that highlight the human body's impact and dependence upon air. Their works suggested the implications of an alternative future in which air is a limited resource.

Like Raaf and Pell, Jed Berk (*ALAVs 2.0*) used the communications potential of technology as a means of intervention by placing audiences in direct conversation with anthropomorphized floating vehicles. Berk's project drew attention to a different kind of human interaction with the air, highlighting air as a pathway of communication and transportation. Eve Andree Laramee (*Parks on Trucks*) also used a vehicle to illustrate the potential of air, but unlike Berk's *ALAVs*, the vehicle Laramee used was severely handicapped by the constraint that it have no negative impact on the air quality. Through this work, Laramee illustrated the magnitude of emissions coming from each individual automobile compared to its physical footprint.

As was shown through the controversies surrounding the creation of global markets that trade in air and through artists' critical responses to this controversy, there can be new mechanisms for communicating problems related to the environment in general and climate change in particular. From a top down perspective, carbon trading systems may put the atmosphere under the control of a small number of large corporations rather than in the hands of the citizens that need to breathe air to survive. However, there may be another kind of trading system that artists can play a role in developing, one that facilitates a grass roots exchange of ideas in opposition to corporate control.

Towards that aim, *Supergas*, not only operated outside of the traditional art market, but also operated outside of the global energy market. *Supergas* functioned as a catalyst for social change by turning consumers into producers. Engebretth (*Personal Kyoto*) drew attention to global efforts to reduce greenhouse gases and also redirected the power of that reduction to individual citizens. Preemptive Media (*AIR*) also placed tools in the hands of citizens by empowering the public to record and monitor local air quality, and Amy Balkin (*Public Smog*) critically questioned the carbon trading system by suggesting a way for individuals to collectively subvert the system and return the air to the public domain.

Each human being is affected by poor air quality and climate change, and the response of governments to privatize the air may not solve the problem, but rather might create more difficulties. Several of the artists discussed in this article have created alternative pathways to highlight the flaws in the carbon trading system and to empower individuals to preserve and protect our fragile atmosphere. As has been shown in this article, artworks can serve as an alternative medium for promoting activism and can lead to new social interactions and structures that have the potential to transform politics.

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