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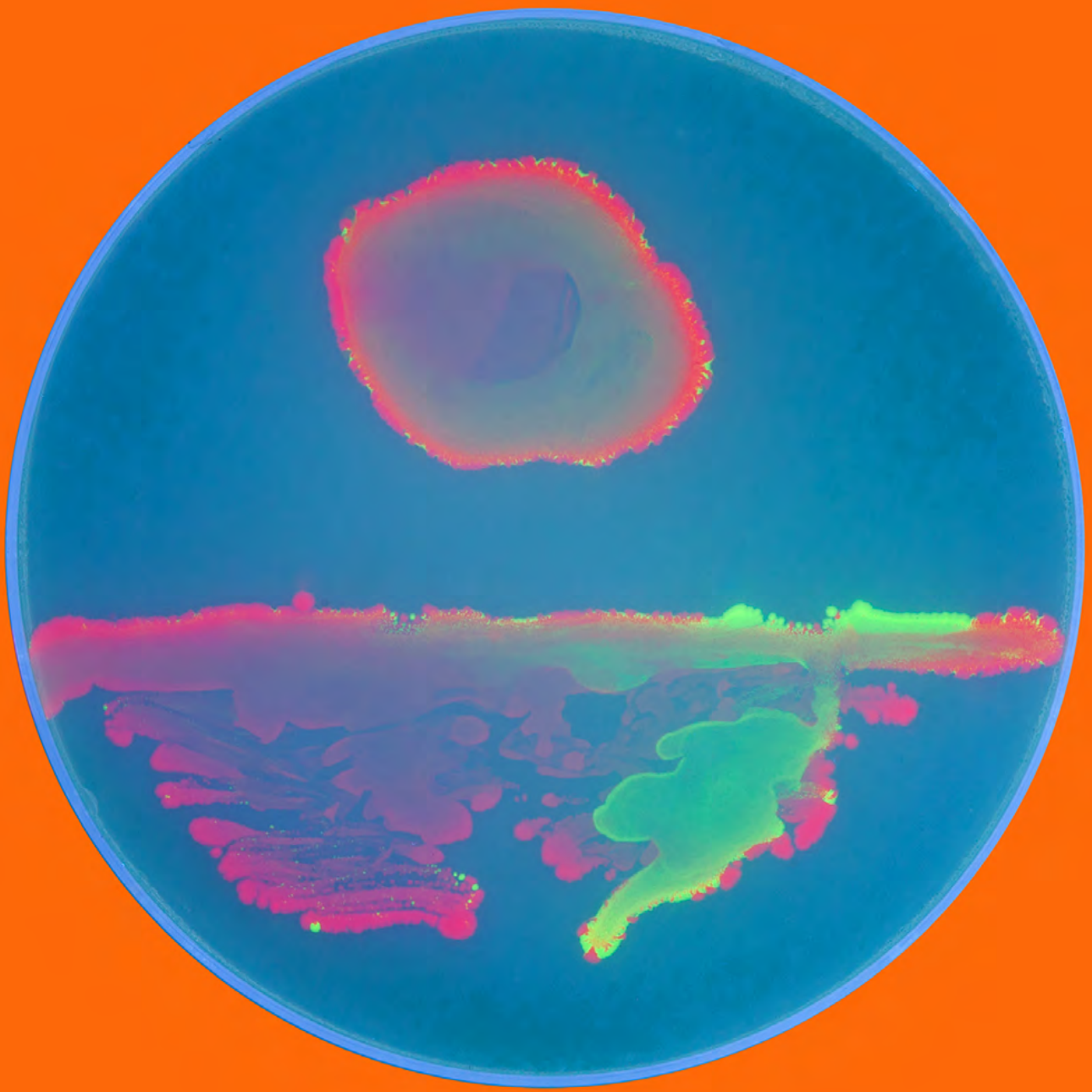

Naturally Hypernatural

Suzanne Anker – Petri[e]'s Panopolis / Laura Ballantyne-Brodie – Earth System Ethics / Janet Gibbs – A Step on the Sun / Henry Sanchez – The English Kills Project / Steve Miller and Adam Stennett – Artist Survival Shack / Joe Mangrum – Sand Paintings / Tarah Rhoda and Nancy Chunn – Chicken Little and the Culture of Fear / Sarah E Durand – Newtown Creek

ANTENNAE

The Journal of Nature in Visual Culture

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Antennae (founded in 2006) is the international, peer reviewed, academic journal on the subject of nature in contemporary art. Its format and contents are inspired by the concepts of 'knowledge transfer' and 'widening participation'. On a quarterly basis the Journal brings academic knowledge within a broader arena, one including practitioners and a readership that may not regularly engage in academic discussion. Ultimately, ***Antennae*** encourages communication and crossovers of knowledge amongst artists, scientists, scholars, activists, curators, and students. In January 2009, the establishment of Antennae's Senior Academic Board, Advisory Board, and Network of Global Contributors has affirmed the journal as an indispensable research tool for the subject, now recommended by leading scholars around the world and searchable through EBSCO.

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EDITORIAL

ANTENNAE ISSUE 34

This is the second of two issues of *Antennae* titled *Naturally Hypernatural* after a conference organized by Suzanne Anker, (Chair, BFA Fine Arts Department at the School of Visual Arts New York) and Sabine Flach (Chair, Department of Art History at the University of Graz). *Naturally Hypernatural*: *Visions of Nature* investigated the fluctuating 'essences' of 'nature' and the 'natural' in the 21st century. The talks focused on contemporary issues in the visual arts and their intersections with the biological and geological sciences, confirming that nature remains an intrinsically mysterious, ever more mutable entity. Most importantly, the perspectives of the participants to *Naturally Hypernatural* moved beyond classical human-animal studies approaches for the purpose of considering more complex and intricate interrelations between beings and environments. As Anker and Flach acknowledge:

At the present time, cellular parts are being remixed in laboratories to create synthetic organisms while geological transformations are forecasting wild swings in weather conditions. Human reproduction regularly occurs in Petri dishes while cucumbers are grown in space. The artificial and the natural now combine to form novel entities, never before seen on earth, while animal species dwindle down to extinction every day. Animals and plants are exhibited as contemporary art, while the real is conflated with the imaginary.

This issue of *Antennae* and the previous gather a selection of papers presented at the conference. As part of the journal's year-long exploration 'beyond human-animal studies' which began in March 2015 with the publication of the first of two installment titled *Multispecies Intra-action*, *Natural Hypernatural*'s contribution further problematizes the new philosophical and recent artistic approaches to the possibility of viable posthumanist models. The redefinition of the concepts of 'natural' and 'artificial' which so much characterize the Anthropocene are in these two issues embraced by each author in different and original ways. Here, anthropocentric systems are not replaced by zoo-centric ones. Authors thus attempt to grapple with different links and elusive networks between different species, spaces, organisms, and technologies. The artistic repercussions that ensue from this reconfiguration of the traditional object/subject relationship are ripe with new and exciting potentialities.

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PETRI(E)'S PANOPLY

The Petri dish, like a Rorschach inkblot, or DNA's double helix, has become a popular cultural icon. While denotatively, the Petri dish is a covered glass plate used in scientific laboratories, connotatively, it alludes to something brewing under investigation. In this real or imagined container a concept or a substance, if allowed to ferment, will sprout its hidden dimensions. From seeds, to politics, to toxic environments inside, such a dish brings forth a host of arresting results.

Author: Suzanne Anker

Employed as a container for working with fungi, bacteria and even embryos, this discrete glass dish has revolutionized scientific research. Composed of two interlocking circular, yet separate halves, this humble scientific apparatus is, in effect, unchanged since its invention in the 19th century. In addition, it has become a standard *accoutrement* in Bio Art and Design practices. Many artists are currently working with this object, sometimes as conceptual signifiers of scientific nomenclature with its processes, and at other times as sterile containers for microbes and cells. Microscopic entities have also become prominent in research, possessing an ability to act as sensors, generate fabric, produce eco-friendly renewable materials, as well as being engaged in art as a revolutionary painting medium.

The Petri dish was invented by scientist Jules Richard Petri while he was working for the German army under the direction of the eminent bacteriologist Robert Koch. Robert Koch, along with Louis Pasteur, and Ferdinand Julius Cohn, is one of the significant innovators in the then emergent field of bacteriology.[1] Employing this simple apparatus, the Petri dish, Koch was able to isolate the microbes responsible for tuberculosis, cholera and anthrax. His research supported the "germ theory" basis of disease confirming that infections were based on external agents as opposed to spontaneous combustion, a competing ideology at that time. Formulating a set of postulates to analyze microorganisms, he proposed the following formula: 1) the organism must always be present in every case of the disease; 2) the organism must be isolated from a host containing the disease and grown in pure culture; 3) samples of the organism taken from pure culture must initiate the same disease when inoculated into a healthy, susceptible animal in the laboratory; 4) the organism must be isolated from the inoculated animal and must be identified as the same organism first isolated from the originally diseased host. [2]

Test tubes and microscopes established the way for visualizing, culturing and classifying microbes; a process to uncover the concealed aspects of disease. However, issues of sterility remained problematic. Cells needed to grow under aseptic conditions, free from contaminants. Even air, all air, contains many species of bacteria and fungi, although most often we are not aware of them. Earlier methods of keeping cultures sterile included putting cells under a bell jar, which today seems totally inefficient since the bell jar could not fit under the microscope. However, devising a simple apparatus in which a glass dish can be covered by another glass dish to keep the cultures germ free, revolutionized scientific discovery. Petri's original scientific paper consisted of a mere 300 words. Although Robert Koch is considered a more significant scientist, it is Jules Petri and his Petri dish that are well known by the culture at

Simone Cuoto and Richard Walshe
Fig. 1. *Strawberry Spaghetti in a Petri dish* (2013). Inkjet print on archival paper, variable dimensions.
© Cuoto and Walshe

large. Even *Google doodle* celebrated the 161st birthday of Jules Richard Petri on May 31, 2013.

The daily *Google doodle* is a quite elaborate animation. Representing each letter of Google as a Petri dish, a swab was employed to grow bacteria in each. As noted by James Plafke, "starting from the left, a bacteria that forms the first *G* is a dirty sock, the first *O* is a doorknob, the second *G* is a dog (seemingly focused on the mouth), the L is from the soil surrounding a plant, and the *E* is from a household sponge. You can now thank Jules Richard Petri for reminding you that everything is disgusting and you probably shouldn't touch anything". [3]

In addition, the artsy-craftsy company Etsy sells jewellery and scarves derived from microbiologic iconography. Natasha Bouey's Petri Dish earrings: *Gram Negative and Gram Positive Bacteria*, states the artist "pay[s] homage to Hans Christian Gram, the creator of the technique of bacteria staining using a violet dye, iodine and an alcohol rinse to differentiate between two different

bacterial cell walls." However, Noadi, another jeweler on Etsy's site creates one-of-a-kind Petri dish necklaces. [4]

The term pure laboratory culture, refers to the multiplication processes microbes and cells are undergoing as they reproduce themselves. It is a term that refers to a selective process, allowing these entities to perform under optimum conditions. Situated on agar as a scaffold, such an agarase gel is a derivation from seaweed. However, several correspondences should be noted when the term is applied to the intersection of biology and the arts:

cul•ture[5]

n., v. **-tured, -tur•ing.** *n.*

1. artistic and intellectual pursuits and products.
2. a quality of enlightenment or refinement arising from an acquaintance with and concern for what is regarded as excellent in the arts, letters, manners, etc.
3. development or improvement of the mind by education or training.
4. the sum total of ways of living built up by a group of human beings and transmitted from one generation to another.
5. a particular form or stage of civilization, as that of a nation or period: Greek culture.
6. the behaviors and beliefs characteristic of a particular social, ethnic, or age group: youth culture; the drug culture.
7. a. the cultivation of microorganisms or tissues for scientific study, medicinal use, etc.
   b. the product or growth resulting from such cultivation.
8. the act or practice of cultivating the soil.
9. the raising of plants or animals, esp. with a view to their improvement.

v.t.

10. to subject to culture; cultivate.
11. a. to grow (microorganisms, tissues, etc.) in or on a controlled or defined medium.
    b. to introduce (living material) into a culture medium.

[1400–50; (< Anglo-French) < Latin *cultūra*. See cult, -ure]

In both senses of the word, culturing is a deliberate action in which development occurs. It is not a static process. It involves some kind of transformation and stratification of nomenclature. To cultivate ideas, their growth patterns and transmission is a way to conjoin these variegated aspects of the word itself.

Agar, is another substance with a dual utilitarian function. It is employed in culturing bacteria as well as an ingredient in molecular cuisine and other foodstuffs.

a·gar[6]

(ā'gär', ä'gär') also **a·gar-a·gar** (ā'gär-ā'gär', ä'gär-ä'-)

n.

1. A gelatinous material derived from certain marine algae. It is used as a base for bacterial culture media and as a stabilizer and thickener in many food products.
2. A culture medium containing this material.

Besides the Petri dish, which facilitates the growth of microorganisms, a substrate is also needed onto which bacteria can position themselves. Although gelatin and even sliced potato were experimented with in Koch's laboratory, nothing seemed to be suitable.[7] Working beside her husband in the laboratory as a technician, Fannie Hesse, the wife of scientist Walther Hesse, recorded many images of what was seen under the microscope by using her drawing skills. However, as the food preparer in the family, she also cooked the meals as well as the broth to feed the bacteria in the lab. Familiar with agar in her recipes for making jellies and jams, it was she who suggested agar as a replacement for gelatin because of its heating and cooling properties. It is also a clear substance and bacteria decline to eat it.[8]

Additionally, like volumes in a library or artworks in a museum, microbes also are curated into collections. Beginning in the late19th century, after Koch's introduction of pure culturing techniques into laboratory practice, collections were started as a way to "to preserve microbial diversity." In 1900, Frantisek Kral set up the first collection in what is now the Czech Republic. The oldest working microbial collection is located in Belgium and was founded in 1894. The collections

Fig. 2 Balsamic vinegar pearls on arugula puree (molecular cuisine). Photo by Tarah Rhoda

can specialize in certain microorganisms while others are more general in nature, Currently there is international oversight of these collections and a database of what is held and where.[9] Although intuitively, one's reaction is to rid the world of deadly microbes, they may, nonetheless, possess hidden secrets that in the future can prove useful for humankind. Currently, at the *Preston Robert Tisch Brain Tumor Center* at Duke, a genetically engineered polio virus is being employed to target cancer.[10]

Derived from seaweed, and used in many Asian recipes, agar has recently become an important ingredient in molecular cuisine. Molecular cuisine is considered a modernist type of cuisine in which its ingredients are manipulated through chemistry. The foodstuffs are altered, infused, or reconfigured and act as *trompe l'oeil* eating experiences. What you see is not what you get in terms of taste and sensation. As taste, smell, and sight are the main senses employed during eating, this kind of cuisine thwarts expectation and

heralds in a ruminating string of memories. It is a psychological experience as well as one that provides nourishment or even economic or social status. In *Strawberry Spaghetti* by Simone Cuoto and Richard Walshe (fig. 1), whole strawberries were pulverized in order to be mixed with warm agar-agar. The resulting puree was then pushed through silicon tubing into an ice-bath with the aid of a syringe. The transformed substance resembles rod-shaped bacteria. This dessert course is served in Petri dishes. The recipe for 'fig. 2' employs balsamic vinegar pearls as a salad dressing for arugula puree. These dishes were created as part of a studio class project in molecular cuisine at the *School of Visual Arts Bio Art Laboratory* in New York City.

Recipe: Balsamic Vinegar Pearls [11]

Ingredients

Agar-agar (2 g)
Olive Oil
½ cup Balsamic Vinegar

Directions

1. Put a glass of olive oil in the freezer for 30 minutes.
2. In a pan, mix the vinegar with the agar-agar and bring to a boil.
3. Pour the vinegar into a bowl and fill a pipette or a cooking syringe.
4. Dribble vinegar into the cold oil glass. If using a syringe, hold it parallel to the table.
5. Using a pierced spoon, collect the pearls thus formed and put them in water to rinse. Serve on desired dish.

Please note: Use a deep glass filled with very cold vegetable oil so the pearls will be perfectly round and jellified when reaching the bottom of the glass.

Petri Dishes in Art

Petri dishes have entered the cultural domain employing bacteria for projects in photography, painting and sculpture. Bacteria as a painting medium originates with the noted father of penicillin, Alexander Fleming.[12] Investigating the wide range of colors bacteria "bloom" in, Fleming's work in this area was an extremely difficult task (fig. 3). Getting myriad strains of bacteria to sport their colors simultaneously required an extensive knowledge of these substances. In the 21st century, such painting techniques have been simplified. Through the manipulation of microbes through biotechnology, bacteria can be rendered to express fluorescent colors. From green to red to orange to blue, full palettes of chromatic hues are available for art and science alike.

In 2008 the Nobel Prize in Chemistry was awarded to three researchers for "the discovery of a glowing jellyfish protein that makes cells, tissues and organs light up".[13] The protein, GFP was first isolated from jellyfish in 1967 by Osamu Shimomura. Roger Tsien and Martin Chalfie shared the prize with Shimomura for their genetic engineering and development of this protein into *e.coli*,[14] allowing the microbe to locate the expression of a gene in real time. Employed worldwide as a significant laboratory tool, GFP allows scientists to peer into living matter without harmful radiation (fig. 4). Because of its long history of laboratory culture and ease of manipulation, *e.coli* plays a vital role in modern biological engineering and industrial microbiology.

Emerging artists Richard Walsh, Yacov Avrahami and Amanda Wu have also employed this cold chemical light to create striking images. For Richard Walsh and Yacov Avrahami, this medium is manipulated to create landscape paintings. In Walsh's work the stroke of the brush is in full force, while in Avrahami's painting the subtleties of watercolor prevails (figs, 5, 6). Amanda Wu takes this medium into the realm of relief sculpture (fig. 7). Carving into agar colored with powdered charcoal, Wu creates abstract forms reminiscent of hard-edge paintings. The "push and pull" in her work is further augmented by the fluorescent pigmented bacteria glowing under special light.

Other significant visual practitioners employing the Petri dish in their work include Michal Rovner, Mitchell Joachim and more recently Anicka Yi. In 2003, Michal Rovner's *Data Zone* employs Petri dishes as video projection screens in which tiny figures marched in various configurations. Substituting a human silhouette for

Alexander Fleming
Fig. 3. *Untitled* bacteria paintings on agar, c. 1920. Courtesy of Alexander Fleming Laboratory Museum (Imperial College Healthcare NHS Trust)
© Fleming

bacteria, Rovner's work underscores the anonymity of mass populations.[15] Anicka Yi's work graces the cover of *Artforum*'s March 2015 issue. Inside the magazine are photographs of Petri dishes containing an eruption of microbes. For Ms. Yi, contagion has become a major concern in a global world, in which its detection brings forensics into the public sphere.[16] Mitchell Joachim, an architect and designer, created a bio city world population map employing Petri dishes and bacteria. Concerned with the strong possibility that populations in the next one hundred years could top eleven billion, he employed *e.coli* as a method of analog computation.[17]

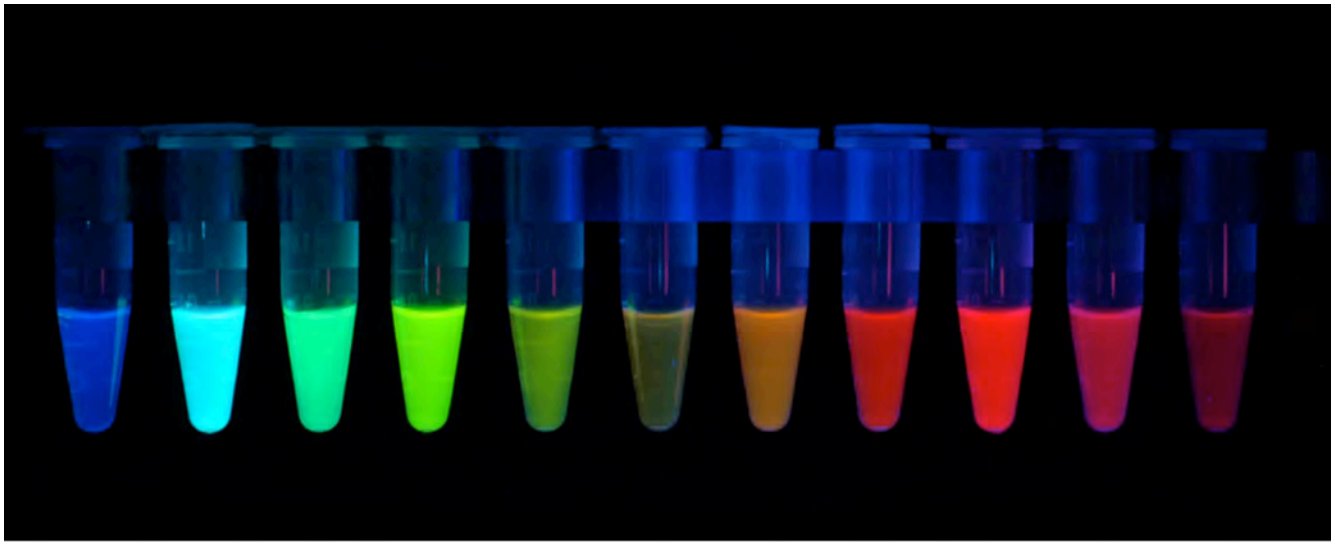
Petri's Panoply/Rainbow Loom

Casting a wide net, employing multiple overlaid metaphors, Petri dishes, are a reminder both of life's enduring reconfigurations and death's restructuring of life. Remaking, repairing, and revamping are the new "calls to the wild," as resources are exploited in scientific laboratories and in the culture at large. In prior centuries, vanitas paintings warned against the excess of material culture. In my series of work, entitled *Vanitas (in a Petri dish)* (2013), an array of objects are brought together from various origins in the natural and synthetic worlds: insects, fruits, metals, plastics and eggs among other diverse items. Never occurring side by side in nature, these elements garnered from the everyday represent part of the inventory of "things" available to consumers in a post-industrialized society (fig. 8). Originating in an exhibition at Art Laboratory Berlin in Germany and reinstalled in Shanghai, China, each installation speaks both to a global presence and a national identity.

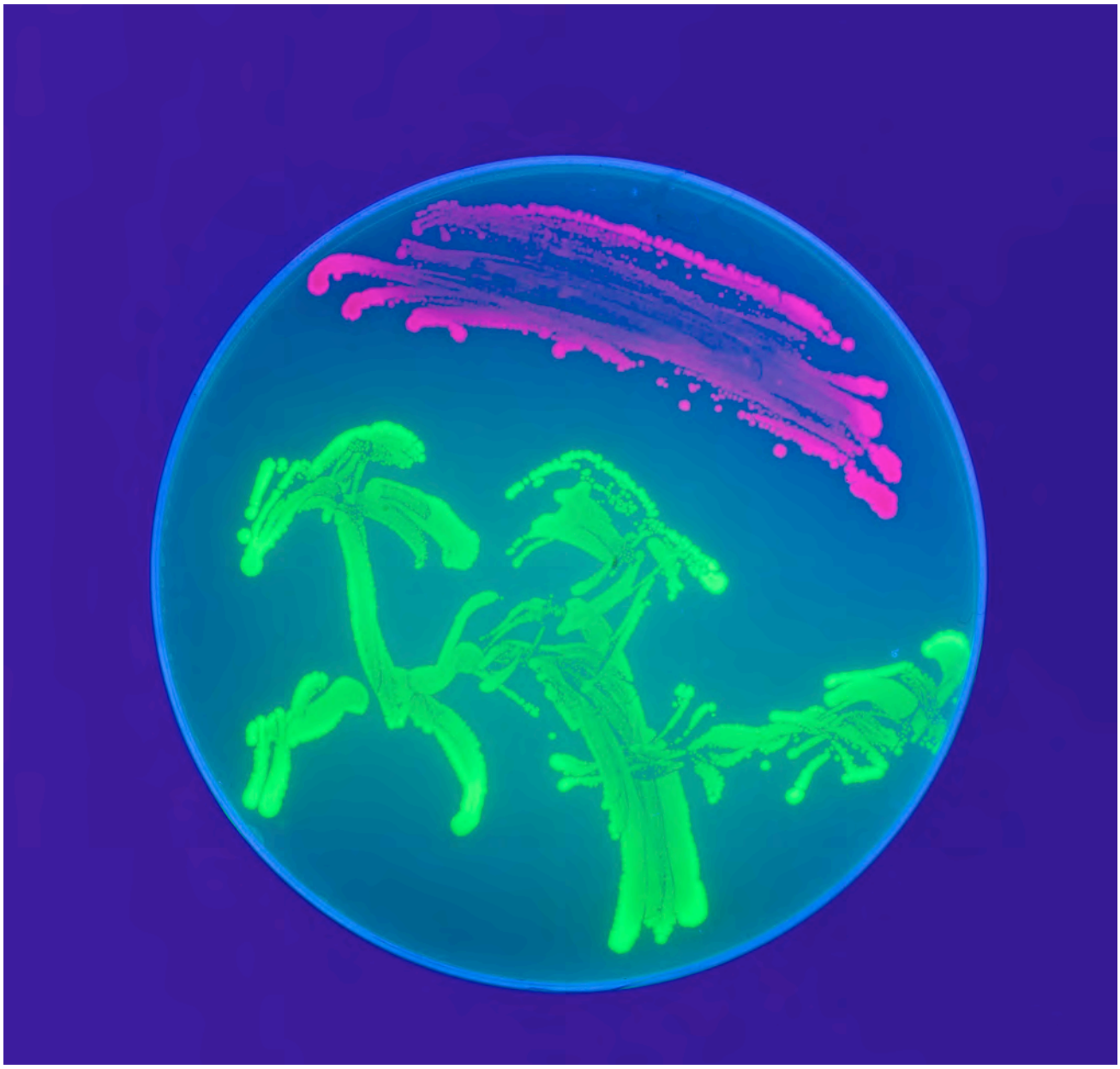
The items found in Shanghai included rubber duckies, blue lotus flowers, mushroom varieties, sponge-like fungus, play dough, rubber bands and 1000-year-old eggs, which are sometimes referred to as century-old eggs. When their eggshells are removed, the egg is revealed as a gelatinous mass of black, green and amber (figs. 9,10). In Berlin, items included broken glass, dead grasshoppers, tomatoes, chicken eggs, steel wool, candy (in the shape of sunny side-up eggs) and spices. It is significant to note that, because of international trade, there is an overall uniformity of products, however, with some exceptions.

National identities and class differences are prominently displayed alongside their generic counterparts, although they are not visual, but significantly implied. In small stores in Germany operated by non-Germans, one can find non-name-brand candies and other foodstuffs. In China, small shops mix old stationary with current versions. In both countries, supermarkets carry a rich array of items, but again, basing its inventory on its local populations and their economic divisions.

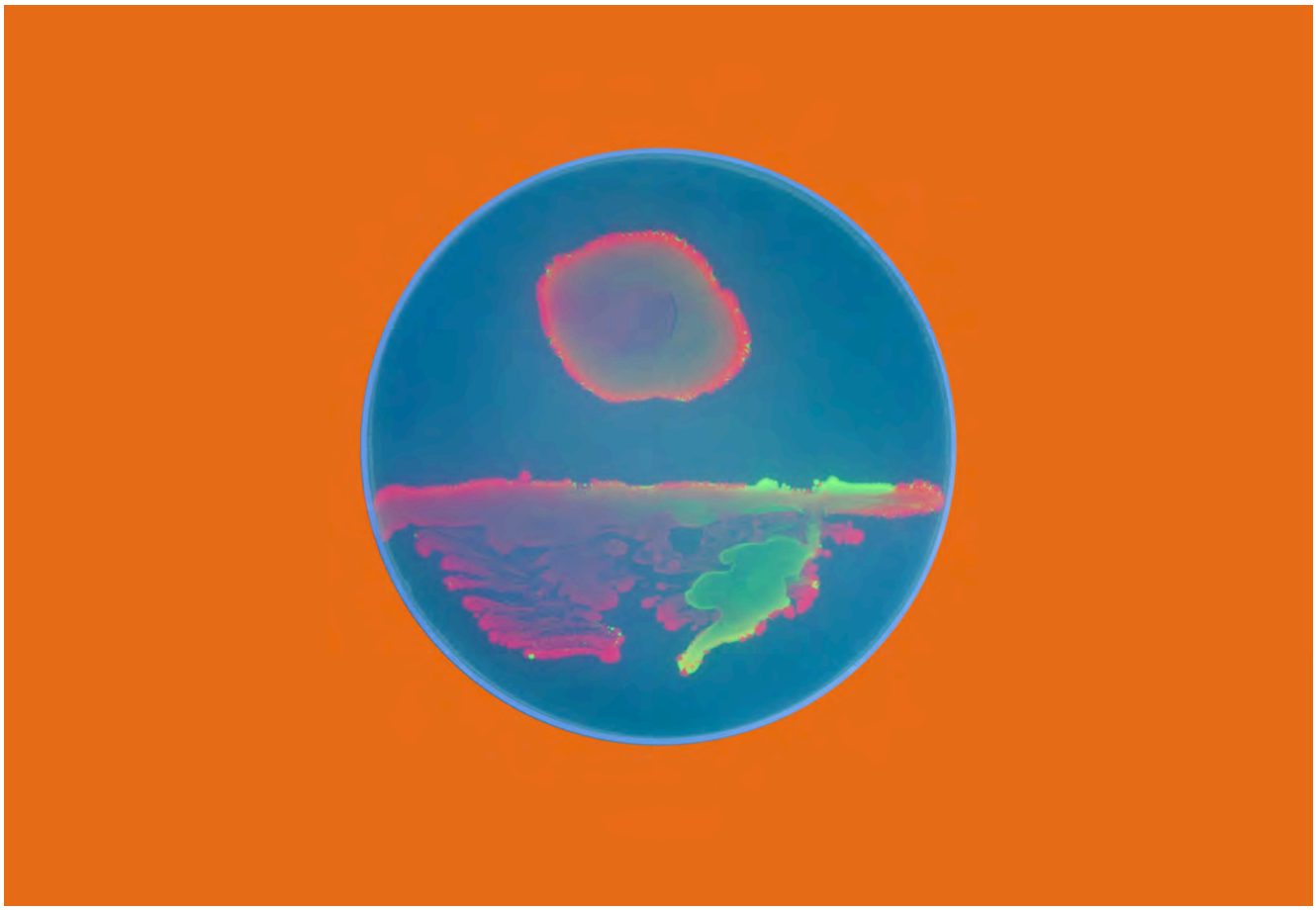
In each exhibition, the Petri dish became the container to hold the myriad items which were arranged by color. From deep greens to charcoal blacks, from transparent materials to the utterly opaque, from smooth textures to viscous ones, a table was set to delight the eye.



Roger Tsien
Fig. 4. *Bioluminescent Vials,* University of California, 2008
© Tsien



Richard Walsh
Fig. 5. *Untitled,* 2013. Photograph of bacteria painting; Inkjet print on archival paper, variable dimensions.
© Walsh



Yacov Avrahami

Fig. 6. *Untitled,* 2013. Photograph of bacteria painting; Inkjet print on archival paper, variable dimensions.© Avrahami

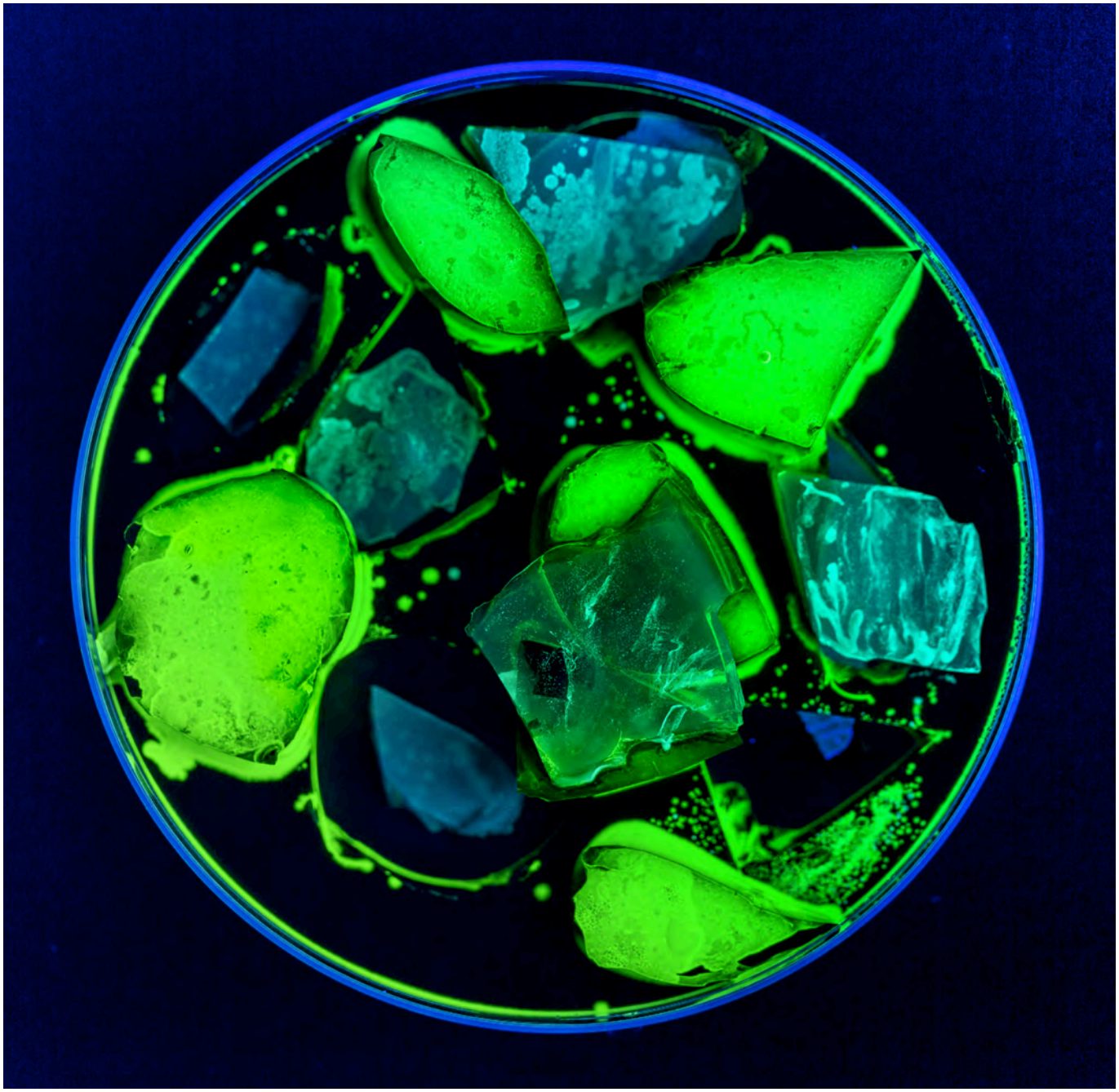
Remote Sensing

In another set of work in the exhibitions, 3D rapid prototyped sculpture was featured. The fabrication of *Remote Sensing* begins with the digital photographs *Vanitas (in a Petri Dish)* series. These high-resolution images are reprocessed into computer programs that convert the photographs' brightness into 3D protrusions, a technique called displacement mapping. Next the 3D files are run through software to create a third axis for printing: *x*, *y*, and *z*. The program simultaneously determines the deposition of variegated color applied to the structure. Each sculpture expressed differing topographies: from plateaus and valleys, to arcane rock formations and snow capped peaks. Hence, when translating the photos from *Vanitas (in a Petri dish)* into *Remote Sensing*, an unanticipated art historical genre emerged—the landscape. These micro-landscapes articulated far away places and other geologic features contained in the realm of the imagination (fig. 10).

The concept of remote sensing deals with new technologies, which can picture places that are either too toxic or too difficult to visit. Using state-of-the-art satellite data, remote sensing apparatuses are employed to computationally picture such spaces. As an extension of digital photography, these images garner information electronically in order to eclipse onsite investigations.

The Two Petri(e)s

In conclusion, I would like to bring the reader's attention to two Petri(e)s: William Matthew Flinders Petrie (1853-1942) and Julius Richard Petri (1852-1921). Although born in the same decade they probably never met. Flinders Petrie (this time with an e) was an English Egyptologist who pioneered a systematic approach to archaeology. Rather than excavating archaeological sites with a generalized approach to discover or uncover artefacts, he devised a method that recorded successive layers of the digging as a way to ascertain and reframe what was found. Through this structured method,



Amanda Wu

Fig. 7. *Untitled,* 2013. Photograph of bacteria painting; Inkjet print on archival paper, variable dimensions.
© Wu

records could be kept of the site as a discrete format, a form of underground floor plans.

Whereas the German Petri wanted to keep all extraneous microbes out of his specimens by covering (fig.11), the English Petrie wanted to expose what was hidden underneath by uncovering (fig.12). The dialectic between the inside being protected from the outside in both cases were discrete sets of isolation techniques that allowed for the study and production of knowledge. By covering, as in the case of the dishmaker, or by uncovering in the case of the archaeologist, a rich array of discovery could be maintained and catalogued. Underscored here are the ways in which objects could be made to talk.

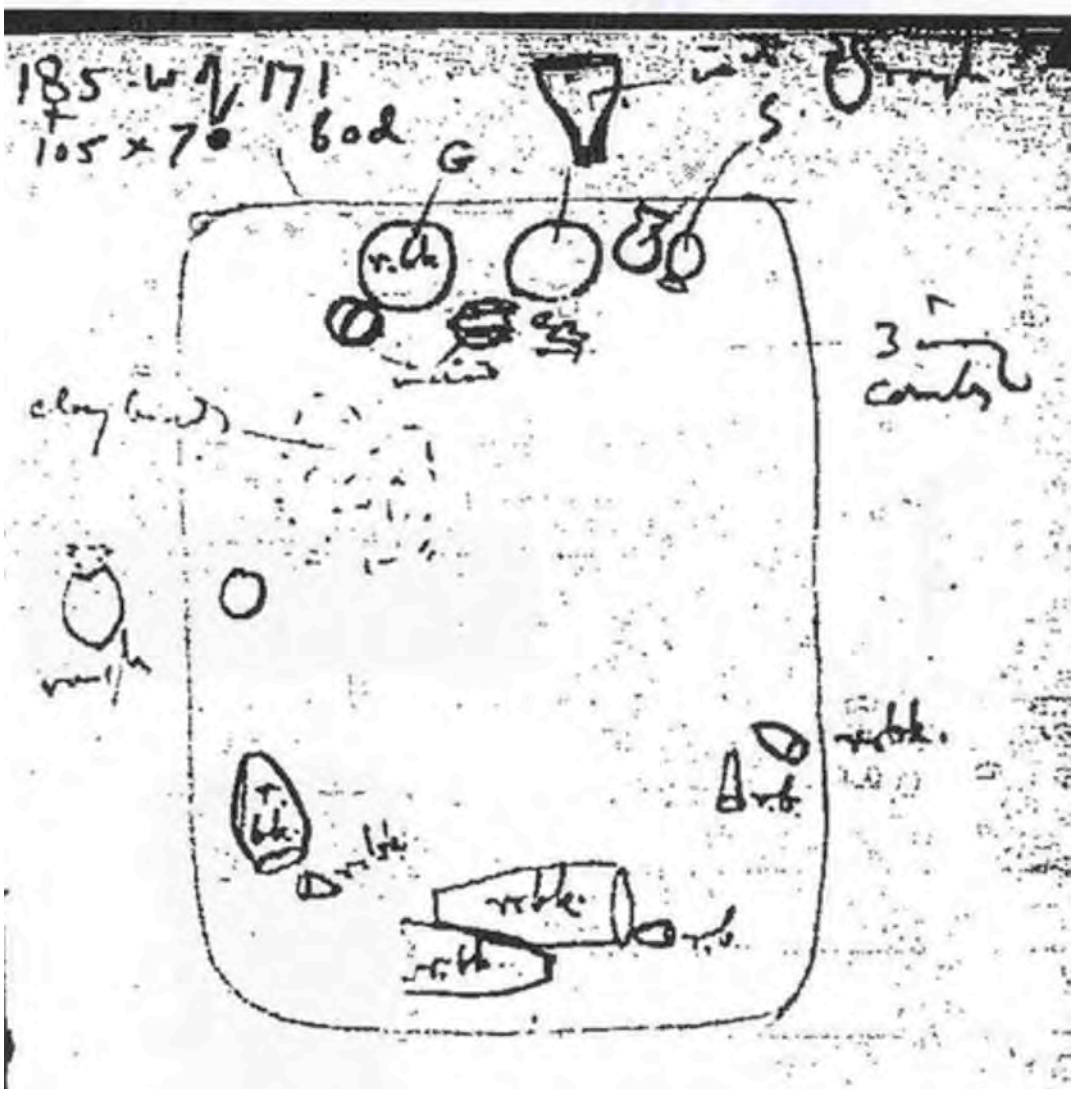
Suzanne Anker
Fig. 8. *Vanitas in a Petri Dish* (2013). Inkjet print on archival paper, 20x20 in © Anker

Suzanne Anker
Fig. 9. *Rainbow Loom.* Wooden table, 366 glass Petri dishes, various items collected in China, 36 x 192 x 36 in (91.4 x 487.7 x 91.4 cm). Installation view of Rainbow Loom at V Art Center, M50 Creative Garden Shanghai, China, 2014. Photograph by Henry G. Sanchez © Anker

Suzanne Anker

Fig. 10. *Left: x, y, z* (2015) Two-dimensional and three-dimensional transformations from photography to 3D printing. Inkjet print on archival paper, 28x29 in © Anker

Fig. 11 *Right:* Glass Petri dish made by Pyrex. 95x20 mm / 3.54x0.07 in



William Matthew Flinders

Fig. 12. Petrie's Plan of Naqada grave 185 from his excavation notes. The red polished Predynastic pot (E.54.1898) is circled on the sketch. Courtesy of the Petrie Museum', England.

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Suzanne Anker is a visual artist and theorist working at the nexus of art and the biological sciences. Her work has been shown both nationally and internationally in museums and galleries, including the Walker Art Center, the Smithsonian Institute, the Phillips Collection, P.S.1 Museum, the J. Paul Getty Museum, the Museum of Modern Art in Japan, the Medizinhistorisches Museum der Charité in Berlin, the International Biennial of Contemporary Art of Cartagena de Indias, and V Art Center in Shanghai, China. Her seminal text *The Molecular Gaze: Art in the Genetic Age* (co-authored with the late Dorothy Nelkin) was published in 2004 by Cold Spring Harbor Laboratory Press. She is currently on the Intermediate Advisory Board of the Research Master CAST at the Maastricht University in Netherlands and Section Editor of Reproductive Medicine and Society (RBMS), in association with Elsevier Ltd. and Reproductive Healthcare Ltd., edited by Martin Johnson (Cambridge, UK) and Sarah Franklin (Cambridge, UK). She is the Chair of the Fine Arts Department of School of Visual Arts in New York since 2005 and currently is chair of the Leonardo Education and Art Forum (LEAF). suzanneanker.com

EARTH SYSTEM ETHICS

Earth system science examines our view of Earth as a system involving interactions among the different spheres of the Earth, including the biosphere, lithosphere, atmosphere, hydrosphere, cryosphere and the anthroposphere. Taken within the conceptual paradigm of the anthropocene, Earth system science reveals the fundamental mismatch between planetary boundaries of the Earth system, and contemporary civilization. New paradigms for an ecological society need to be articulated. For this to occur, western liberal political epistemology needs to be questioned. An emerging systems view of life is at the forefront of this effort. Based on emerging views of nature, cosmology, and social ethics this paper proposes a new discipline, Earth System Ethics (ESE), is established to systematically inquire to the crisis into which we have awoken. ESE is a discipline to take account of emerging ecological worldviews and is suggested as an analytical framework and starting point for a normative framework of principles (principlism) to reduce the indeterminacy of abstract norms and generate an action-guiding framework.

Author: Laura Ballantyne-Brodie

The news has been delivered. We now understand with near certainty that human induced climate change generated by industrial economies worldwide is at odds with the physical systems of the planet. The future for human civilization and countless non-human species is at risk. Shocks such as the credit crunch, infectious diseases, climate instability, and ecological collapse are converging. Despite the rush of information, we have so far failed to take collective action of a meaningful kind. Solutions that are advanced, rarely, if ever, address these seemingly intractable issues systemically. We are fast approaching an era of rolling crisis. Alternative systems, including political, economic, legal, and social ways of organizing need to be articulated. In order for this to happen in a meaningful way, a new philosophical foundation must be forged. New paradigms, stories of 'being,' and ecological worldviews need to be articulated. An emerging systems view of life is at the forefront of such attempts. A systems view of life recognizes that humans are a part of a larger bio-community, a vast planetary network of beings interlinked in space and time.[1] Based on a principles approach (principlism), Earth system ethics (ESE) is proposed as a unifying foundational discipline to systematically inquire and respond to the environmental crisis from a uniquely non-anthropocentric (systems) approach. Based on a fundamentally non-anthropocentric worldview, ESE promotes reflection and inquiry into human potential, and (re)emergence as creative, citizen humans (*cf* reductionist rational agents) nested in ecological systems of our home planet, Earth.

Introduction to Earth system science

Earth system science is the study of all of the systems of the Earth as they relate to each other.[2] The different spheres are: the biosphere, lithosphere, atmosphere, hydrosphere, cryosphere and the anthroposphere. Earth system science reveals that all the different spheres are interconnected, and impacts on one system can have profound and disturbing consequence on another. This is opposed to the study of the component parts that constitute those systems.

Earth System Ethics

- Transdisciplinary epistemology
- Framework principles approach
- Emphasis on cosmological worldviews
- Emergent views of nature; and
- Fundamental social ethics

Earth System Science

- Earth system science is the study of all of the systems of the Earth as they relate to each other.
- Instructive because it teaches us that all the different spheres are interconnected - and impacts in one sphere can have profound and disturbing consequences on another.
- Earth Scientist's are telling us that Earth is not a static rock after all but a dynamic entity in a constant state of flux.

Earth system science reveals that Earth is not a static rock after all – but rather a dynamic entity in a constant state of flux.

Paradigm shifts in science

A new scientific conception of life is emerging that challenges many of our assumptions about the natural world and our place in it. Knowledge from the established field of Earth system science, read within the context of the anthropocene, is challenging dominant paradigms. Paradigmatic change is also occurring in the physical, biological, ecological, and social sciences. These paradigms include our relationship to nature and ecological worldviews. When it comes to nature, we have largely acted on the assumption that nature is benign and fragile. Expressed another way, the natural world has been objectified – and viewed as a submissive repository for human kind to exploit at will. Our understanding of the natural world is largely 'mechanistic,'[3] in the sense that we can change our behaviour, and at our will, nature will change too. These 'reductionist,' worldviews based on classical physics are giving way to co-evolution. Coevolution reveals that evolution is a creative process of unfolding life in forms of ever increasing structural complexity,[4] thereby exposing us to the fallacy of teleology. [5] A co-evolutionary perspective of life reveals to us that the Western myth of control is rooted in a mechanical cosmology.[6] These emerging perspectives challenge dominant paradigms, and reveal a vast planetary network of beings interlinked in space and time.[7]

Introduction to Earth system ethics

Earth system ethics is proposed as a foundation for a non-anthropocentric ecological approach, integrating original and existing normative principles with a new conceptual organization. Proposed as a branch of systems philosophy, with a transdisciplinary epistemology, Earth system ethics is a framework approach, structured around 1. cosmology (in the sense that is affects our worldviews); 2. views of nature; and 3. social ethics.

An Architecture of principles

Made up of 8 principles and one universally applied principle, the principles are organized under three sub categories 1.cosmology, 2. views of nature, and 3. social ethics.

Synergistics. Synergistics is the interaction of multiple elements in a system to produce an effect where the sum of individual parts is greater that than the whole. Synergistics calls for the establishment of a human-earth relationship that is mutually enhancing, where ecosystems, social and economic systems are self-pollinating, renewing and in a constant and continual cycle of growth, life, death, and continuation.

Cosmology

Planetism.

Planetism is a concept of 'planetary nationalism' recognizing that Earth is what all of humanity has in common. As such our first allegiance should be to the planet.[8] Planetism is replacing the previous paradigms of nationalism (first allegiance to nation) and tribalism (first allegiance to tribe), in terms of priority to culture and/or religion. [9]

Interdependence.

The principle of interdependence is embedded in, and stems from, the awareness that humans are part of a globally interdependent system, biologically, ecologically, economically, and socially.

Views of Nature

Ecological enmeshment.

Ecological enmeshment recognizes humanity's biological dependence on the natural world. It reveals the profound truth about ecology that there is no separation between nature and human. Nature is not our object – nature and ecosystems are all a part of the interconnected sphere of (bio-spherically bound) life.

Healthy Mind v Control

Sophrosyne is a Greek philosophical term etymologically meaning healthy-mindedness, and self-control or moderation guided by knowledge and balance.

This is the opposite of **hubris,** that is excessive pride or self-confidence.

Paradigm Shift

- A scientific conception challenging assumptions about the natural world and our place in it.
- Disruption today is of the same order of magnitude as Copernican revolution 400 years ago(?).
- Question the aftermath of Copernican revolution: insignificance fails to recognize our place based on ***co-evolutionary perspective.***
- We are significant - our relationship with Earth is like that of a parent and child.

Social ethics

Cooperation. Conservation of resources in the name of mutual benefit - people *do want* to behave altruistically and co-operate for the benefit of the greater good or future gens.

Solidarity. Commonly applied in public health ethics- justifies the reduction of individual liberty to create circumstances which are mutually beneficial for all.

Subsidiarity. Decisions made at the lowest appropriate level of governance.

Sufficiency. Self reliance and minimal consumption.

Systems Philosophy

- Systems Philosophy uses systems concepts and methods to construct a realistic 'philosophy' (in the sense of 'world-view') and puts it to practical use.
- Interested in concepts such as hierarchy, emergence, relationship, connection, synergy and wholeness to analyse and model the structure, components, variety and functioning of the real world, and our place in it.

Conclusion

Our interdependence (across and within the different spheres) underscores our co-dependence to survive. For new compelling visions of social organization, political restructuring, and artistic and poetic re-imagination of our earthly existence, we first need a meaningful conceptual framework to understand 'the whole.' Crucially, this framework must acknowledge the physical reality of the systems we are subject to, a part of, and upon which we are dependent. Establishing an intellectual and conceptual framework is an important part of developing new institutions, and jurisprudence to collectivize attempts and embed new approaches within a foundational structure. Important first steps to this work are to: render new ecological worldviews meaningful; clarify what we are fighting for; and above all articulate the claim of our species and non-human species to life. The role of artists and designers is crucial to inspire and encourage humanity to gather our will and transition to ecological societies.

Earth system ethics provides a conceptual framework to guide this work. We have the opportunity not only to bear witness to the new system that is emerging, but intentionally contemplate, and at the very least attempt to design new systems.[12] The Earth system ethics framework, with its focus on lateral capacity building for people and organizations (*cf* hierarchical) is perceived as a radical departure from the status quo. Inherent in this framework is the understanding that it is no longer possible to leave the hierarchies to solve the great challenges of our time – the profundity of the change that is needed fundamentally requires the active participation of citizen humans. The art world has an important role to inspire change and a belief in life (*cf nihilistic neo-liberalization).* Art and artists can no longer afford to be used solely for subjective expression, ironic provocation, or elite furnishing: a

collective of socially engaged artists can lead the way to elucidate abstract concepts and reimagine our collective future. Artists can assist in dispelling the 'reductionist' myth of 'rational agency,' and in turn inspire a holistic life centered worldview, in which humans are recognised as we are: creative beings with a legitimate claim to *live* life, now and a long way into the future.

Laura Ballantyne-Brodie is a conceptual artist, eco-philosopher and activist. Laura works alongside Professor Natalie Jeremijenko in the Environmental Health Clinic at the Steinhardt School of Education and Human Development, New York University. In the environmental health clinic, Laura is the project lead for the *TreexOffice* and *AgBag* projects, examples of mutualistic closed systems agriculture specific for urban and high-density areas. Laura's background in bioethics, law and energy policy has led to her current interest in systems philosophy, where she explores the crossroads of law, environmental issues, and their ethical dimensions. Laura's research and overall body of work, including an organisation she founded, Rent to the World, focuses on these crossroads from this emerging systems approach, that she calls Earth System Ethics. http://lauraballantynebrodie.com/

JANET BIGGS: A STEP ON THE SUN

Filmed inside an active volcano, artist Janet Biggs discusses her recent project, A Step On the Sun, *with artist and writer Suzanne Anker. Biggs often assumes the role of a wanderer in search of unexplored territory, both physically and psychologically. In this recent four-channel video installation, Biggs documents sulfur workers as they extract minerals from inside Indonesia's Ijen volcano. While myriad references to sulfur are embedded in folklore, alchemical texts and ancient writings, this element is compared to fire in its fierceness. Anker and Biggs discus the associative, social, and personal aspects of Biggs' work, including the challenges of working in one of the world's most uniquely beautiful and brutal locations.*

In conversation between: Janet Biggs and Suzanne Anker

Janet Biggs
A Step on the Sun, 2012, (still from the video)
Multi-channel, high definition video installation with sound. Courtesy of the artist, Analix Forever, Geneva, Switzerland, CONNERSMITH, Washington, DC, and Cristin Tierney Gallery, New York, NY. © Biggs

Janet Biggs' work takes the form of videography and performance in her explorations of extreme environments. She assumes the role of a wanderer in search of unexplored territory, both physically and psychologically. In this interview, we discuss her stunning multi-channel video, *A Step on the Sun*, which documents the mining of sulfur in Indonesia. Myriad references to sulfur are embedded in folklore, alchemical texts and ancient writings in which this element is compared to fire. With an atomic number of sixteen, sulfur is a yellow crystalline solid. Although considered caustic, several studies suggest that sulfur, when combined with oxygen to create sulfur dioxide, has a cooling effect on global warming.

Suzanne Anker: What brought you to film in an Indonesian sulfur mine? Was there something about this substance that intrigued you? Why did you choose a sulfur mine as opposed to a diamond mine or a coal mine? Did the color or liquid states of sulfur have something to do with your choice?

Janet Biggs: The Ijen sulfur volcano is a uniquely beautiful and brutal place. I am drawn to environments that are elemental and extreme, the ends of the earth. I use these landscapes as surrogate characters or equal subjects to the individuals who struggle to maintain a sense of self within them. I use grand stories and heroic efforts as points of departure, then slide sideways into small gestures or esoteric tasks as seen from deeply personal perspectives. I am interested in how incidental, small moments are as wondrous as the stupefying wild and beautiful landscapes where these actions occur; how places untouched by the digital age can be transported and experienced through technology.

I was first seduced by the visuals; the indescribable vibrancy of sulfur in its solid state, bubbling, blood red when in a liquid state, and the brilliant turquoise of the world's largest sulfuric acid lake. Ijen is remote – a day's drive through unpaved, mountainous boulder roads, then a two hour hike up straight up a steep volcano slope, then a perilous scramble down the crumbling inside rim down to a pure acid lake.

Existing within this incredible beauty is one of the most extreme examples of human exploitation and hardship I've ever witnessed.

Miners scale the outside of an active volcano, and then descend into its harsh interior to extract the sulfur. They carry more than their body weight for miles, back up the caldera walls and down to the weigh stations at the base of the volcano. Nothing is mechanized. It is mineral extraction at its most primitive basic.

SA: Hydrogen sulfide (H_2S) is infamous for its smell, frequently compared to rotten eggs, What did it smell like on the mountain? Did you have any difficulty breathing? How long were you on the mountain?

JB: I expected the hydrogen sulfide to smell of rotten eggs, but it surprised in its intensity and lack of any identifiable smell. It was so acrid that it burned your mouth, nose, and eyes. It didn't smell like anything, it engulfed, blinding me and burning my throat and nose. When the wind changed and I was hit full on by the fumes, the only thing I could do was crouch down low, close my eyes, hold my breath, and moan until the wind shifted. You couldn't run from the fumes. The hydrogen sulfide was totally blinding, and the risk of falling into the sulfuric acid lake was too great. You just had to wait it out.

We had brought gas masks, but found them difficult to wear. Hiking up and down the caldera was so strenuous it felt like your lungs would burst when wearing a mask. I tried to give some of the miners masks, but they rarely wore them, instead preferring to cover their noses and mouths with a bandana.

I spent two weeks filming in and around the Ijen volcano. We would camp on the volcano rim, as sulfur was mined day and night. At night, the miners would ignite the sulfur so they could see. They worked with blue flames shooting up all around them.

We brought a small three-person tent where I, my assistant, our guide/translator, and two miners, all in gas masks, tried to sleep. About every third day, I would have to hike down the volcano to a

Janet Biggs
A Step on the Sun, 2012, (still from the video)
Multi-channel, high definition video installation with sound. Courtesy of the artist, Analix Forever, Geneva, Switzerland, CONNERSMITH, Washington, DC, and Cristin Tierney Gallery, New York, NY. © Biggs

guest house, where I recharge my camera's batteries.

SA: Were you able to communicate with the sulfur workers? Did you have a translator? Were they at all interested in your project? What is the life expectancy for the workers?

JB: Yes. I found Aan online, advertised as an independent guide and translator for the Ijen

Janet Biggs
A Step on the Sun, 2012, (still from the video)
Multi-channel, high definition video installation with sound. Courtesy of the artist, Analix Forever, Geneva, Switzerland, CONNERSMITH, Washington, DC, and Cristin Tierney Gallery, New York, NY. © Biggs

plateau. He had been the guide for an Italian photographer who photographed inside the volcano. It was a risk to hire him, but it couldn't have turned out better. Aan grew-up close to the volcano and had friends who were miners. He taught himself English and eventually was able to attend the university in Surabaya. He was an incredible resource and is now a good friend. Aan was able to get us permission to film inside the volcano. The Ministry of Forestry, which oversees Ijen, does not allow anyone except miners inside the volcano. Imam, a good friend of Aan's, who can no longer mine sulfur due to his damaged lungs, joined our team. The life span of an Ijen miner is 35-45 years, as breathing sulfuric dioxide fumes causes irreparable lung damage. Imam introduced us to many of the miners, including Abi, who became the focus of my video.

I was able to communicate with a number of the miners about my project, especially Abi. Abi understood my desire to try and understand how such an extreme place affects someone's sense of self. To me, his life was unimaginably difficult, but he could look outside the harshness of his existence and see the beauty of his environment. He spoke as a poet and never lost hope for himself and his family.

SA: What happens to the sulfur extracted from the mine? Is it exported to another country or does it stay in Indonesia?

JB: The sulfur from Ijen is primarily bought by local factories that use it to bleach sugar. Some is also sold locally to vulcanize rubber. None is exported. The Ijen miners are independent, which means the companies that purchase the sulfur and the government agencies that oversee the volcano do not implement any safety regulations or support. If you can rig two bamboo baskets into a sulfur carrier, physically manage to ascend five steep miles and then descend into the volcano, break apart the solidified sulfur with an iron rod, and carry out at least your body weight of sulfur crystals, you can be an Ijen miner.

SA: What attracts you to places of such intensity? What kinds of fear you have experienced? How do

Janet Biggs
A Step on the Sun, 2012, (still from the video)
Multi-channel, high definition video installation with sound. Courtesy of the artist, Analix Forever, Geneva, Switzerland, CONNERSMITH, Washington, DC, and Cristin Tierney Gallery, New York, NY. © Biggs

you prepare yourself psychologically?

JB: My work often begins in the autobiographical and associative, then winds its way into scientific and anthropological research.

I feel a compulsion to find places that are wondrous and extreme, otherworldly, and film the people who call these places home. I can't deny that there is a thrill seeking side to my personality and practice, but I'm drawn to locations and situations where new discoveries can be made. The kind of discoveries that come from stepping completely outside of what you know, experiencing uncertainty, allowing yourself to be destabilized … and at times terrified. And there is always awe!

The locations where many of my projects are filmed are physically demanding. I do whatever physical conditioning I think is necessary to be effective in these locations. For Ijen, I spent a lot of time running up and down the Brooklyn and Williamsburg bridges. I also occasionally need to learn new skills. I joined the kayak polo team to become a competent paddler so I could paddle in Arctic waters. I became certified on a high powered rifle to protect myself from Polar bear attacks. I've learned how to pack a camel and trek for hours in a growing desert, and most recently, I needed to research prisoner release strategies in case of kidnapping.

SA: Please describe the narrative you constructed in this piece.

JB: This work addresses the very idea of the modern age, of technology, scientific advancement, and its place in the larger world. There is an

Janet Biggs
A Step on the Sun, 2012, (installation view: International Biennial of Contemporary Art of Cartagena)

assumption that science and technology have changed how we live our lives, bringing new possibilities for intellectual, industrial, and individual advancement. I'm interested in parts of the world where technology doesn't or can't exist; places so extreme that there is not the possibility of satellite connections or electrical power; locations so harsh that metals corrode and humans are the only source of power.

A Step on the Sun focuses on Abi, a sulfur miner working in the Ijen volcano of East Java. Footage of Abi is framed in and amongst images that evidence both the beauty that surrounds him and the exploitation that he endures. The images from Ijen are intercut with footage of a *National Oceanic and Atmospheric Administration (NOAA)* weather balloon launch and near-space images from a recent MIT student experimental balloon flight into the stratosphere.

The sulfur miners wake long before dawn to hike high up to the Ijen volcano's rim, then down into the crater to mine for sulfur. Formal industrial mining is impossible, as the volcano erupts from time to time, projecting acid to the height of 600 m (2,000 ft.), splashing the neighboring areas with a corrosive rain.

Abi's environment is extreme. Almost two miles above sea level, the crater houses the largest sulfuric lake in the world. Along the shore of this intense turquoise lake, miners install pipes into sulfur-spewing volcanic fumaroles, which collect a condensation of boiling, blood-red molten sulfur, which turns yellow as it cools and hardens.

Abi collects the hardened sulfur crystals, and packs them into a hand-made bamboo basket. Amid clouds of sulfur dioxide gas, he carries heavy baskets from the crater floor up an almost-vertical rocky path to the rim.

The piece ends with Abi reaching the rim of the volcano and then cuts to a camera view from a high altitude weather balloon. The images from the balloon represent the promise of transcendence, but as the balloon ascends the oxygen depletes and it eventually bursts. The final image shows the burst balloon falling back to earth.

A Step on the Sun presents an individual who has put everything on the line in a struggle to define and defend a sense of self in one of the most extreme environments imaginable. He willingly accepts the risk of free fall in the search for transcendence.

Janet Biggs is an American artist, known primarily for her work in video, photography and performance. Biggs received her undergraduate degree from Moore College of Art, and pursued graduate studies at Rhode Island School of Design. She has had solo exhibitions and film screenings at the Musee d'art contemporain de Montréal; Hirshhorn Museum and Sculpture Garden; the Armory Art Fair; Tampa Museum of Art; Skulpturenmuseum Glaskasten Marl; Herbert F. Johnson Museum of Art; Mint Museum of Art; Everson Museum of Art; Gibbes Museum of Art; Rhode Island School of Design Museum; and the Perth Institute of Contemporary Arts, Australia; among others. http://jbiggs.com/

THE ENGLISH KILLS PROJECT

The English Kills Project *integrates the intersection of art and science with the speculations and promise of creating societal change in a site-specific area. The project takes its name from a tributary of Newtown Creek, a waterway located in Brooklyn, New York that was designated a federal Superfund site in 2009. By taking a socially engaged approach to bio-art that brings community and ideas together,* The English Kills Project *attempts to find new methods to bio-remediate an obscure, mysterious and historically polluted waterway.*

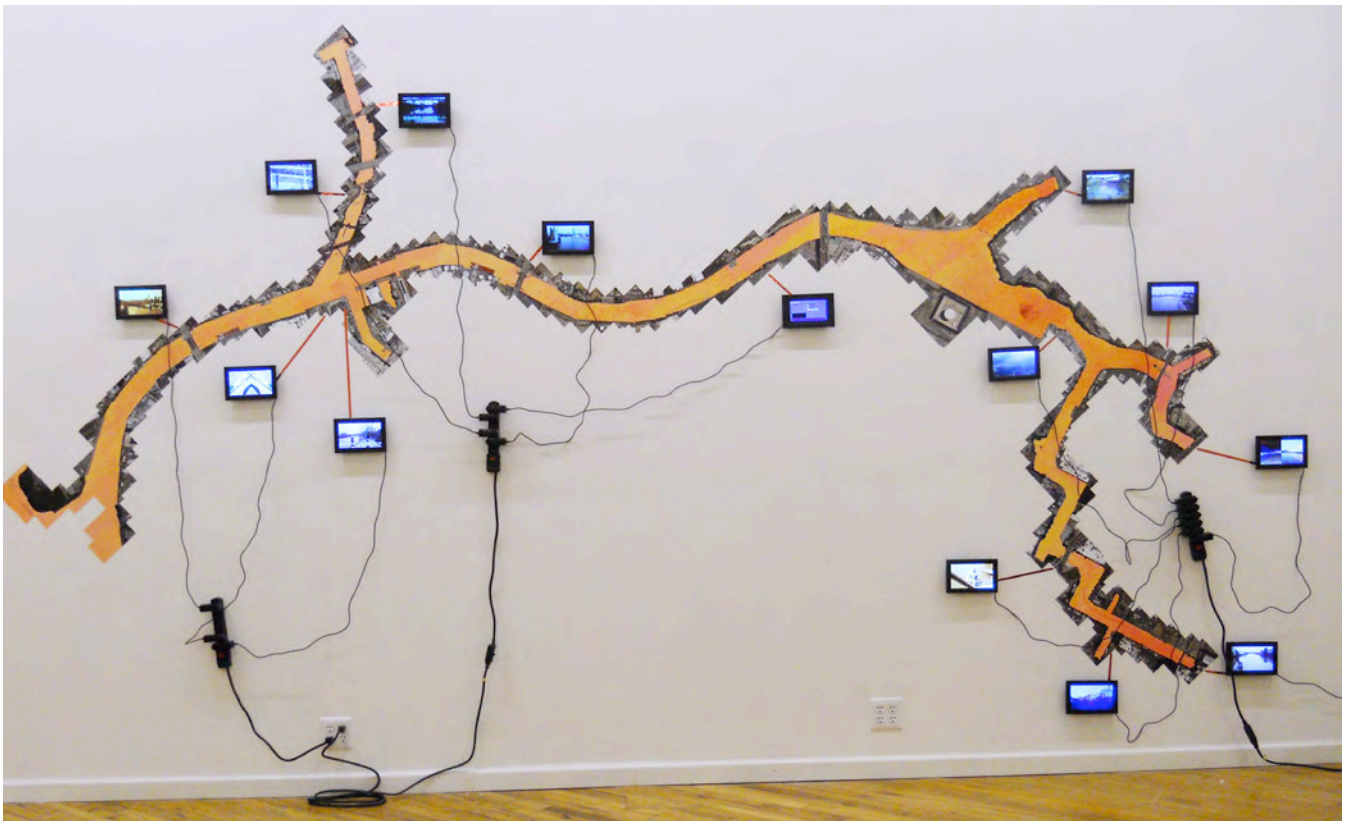
Text by: Henry Sanchez

Henry G Sanchez
Fig. 1. The English Kills Project, 2014, Canoe trip down the English Kills, © Sanchez

There are a number of challenges to consider when developing an art project that integrates elements of biology with art making and social engagement about a site-specific area. On one hand is the necessity of working with my biologist collaborator, Dr. Sarah Durand for guidance and expertise to understand the science and biology that drive some of the propositions that The *English Kills Project* has to offer. An ethical, scientific framework gives legitimacy to our efforts and is the basis for its original impetus. On the other is a desire to activate a typically underserved, poor community of color in order to address longstanding issues of environmental justice. Working cooperatively alongside entities, organizations and government can clash when

Henry G Sanchez

Fig. 2. The English Kills Project, 2014, Areal view of English Kills and surroundings, © Sanchez



Henry G Sanchez
Fig. 3. NTWKDKMCEK, 2010 © Sanchez

contesting the direction of environment and public policies applied by those same authorities. Complicating this project is a desire for community voices to be heard and to claim agency where none existed before. Inevitably the problems of how to visualize and aestheticize arise during the course of realizing these concepts. An artist's vision still plays a role in how the work is created. The question is "How does an artist-initiated project integrate the new frontiers of the intersection of art and science with the speculations and promises of making societal change?" Theses seemingly disparate purposes are what comprise *The English Kills Project*.

The English Kills Project is a socially engaged bio-art project that brings community and ideas together to find new methods to remediate a Superfund site. English Kills is the name of a tributary of Newtown Creek that reaches into the Brooklyn neighborhoods of East Williamsburg and Bushwick. I have lived here since 2006. During this time I have been one of the few residents that have experienced this hidden waterway (fig. 1). This once great estuary, which existed up until the mid-industrial river. Obscure and mysterious, English Kills is the source of Newtown Creek. English Kills also happens to be the most polluted portion of waterway. In 2009, Newtown Creek and its tributaries were designated a federal Superfund Site.

How does a five-mile creek become invisible in a densely packed urban environment? Many of the long-standing residents that live in close proximity are unaware of its presence. Imagine a river winding through your neighborhood blocked by walls of commercial buildings, warehouses and light industries. For example, the base of English Kills is surrounded by a Fed Ex Distribution center and the New York City Department of Sanitation.

The Metropolitan Transit Authority of New York (MTA) owns the railroad that crosses English Kills, the adjacent bulkheads and a parking lot at the base of the creek. Of the all areas around Newtown Creek, English Kills is the most obscured and least accessible. It is a public waterway without

Henry G Sanchez
Fig. 4. The English Kills Project, 2014, The combined sewer outflow of English Kills © Sanchez

public access, which is arguably illegal. English Kills is a waterway that no one can see or experience (fig. 2).

I first encountered English Kills surreptitiously and under the threat of a summons and fines by our New York City Police (I have received three thus far). What I found was a hidden expanse of a river that stretched towards a horizon, walled-in by concrete and metal. This revelation was similar to a dream of opening a secret door to nature and wildlife. It reveals a potential for an alternative inner-city experience that could present a new understanding of our inter-relationship with water and non-human animals.

After a series of excursions throughout the length of the Newtown Creek to record video and investigate this watery grey infrastructure, I created an installation called *NTWKDKMCEK* (fig. 3). It was an aerial map of the entire creek with small monitors displaying videos placed at the points where I captured the sights and sounds. The aural sensations of the installation led to an unintended discovery. If one were to walk along the installation wall from the left side (the mouth to the East River),

one would be bombarded by a cacophony of heavy traffic sounds from trucks and a metal recycling plant. However, when one reached the far lower right end (at English Kills) of the installation, the audio was replaced by the constant sounds of birds. This led me to concentrate my efforts on investigating English Kills rather than the entire creek. I also realized that a nature preserve was establishing itself in the creek without the knowledge of the local population. This naturally recurring restoration is due in large part to the demise of heavy industry and with the aid of twentieth century federal and local environmental protection laws. Nonetheless, the problems of pollution persist due to our own behavior.

English Kills has one of the largest combined sewer overflows (CSO) in Newtown Creek. CSOs transfer storm water and untreated sewage wastewater. During any storm event, the urban run off, storm sewers and the CSOs containing our human waste, empty into English Kills and Newtown Creek (fig. 4). Typically during dry days our sewage reaches the water treatment facility in northern Brooklyn. However, even minor rain events tax the ability of the waste treatment plant to deal with the influx of water. Therefore the untreated sewage, our washing and toilet use, is diverted to the creek. Other than the naturally occurring tidal flows, our wastewater has become a primary source of water for Newtown Creek. Adding to the problem is an antiquated sewage system that cannot support this capacity of water. Dr. Durand's graphs illustrating the dips in depleted oxygen and concentrations of enterococcus in the water quality are evidence that increases in rainfall cause these oscillations. Newtown Creek has been victimized for over a hundred years of historical abuses by former industries along its banks. The early responsible parties for the majority of its contamination have since disappeared, but it has a long pollution memory. Unfortunately, the communities that reside along the waterway are now the current major source of pollution for Newtown Creek.

How does one visualize the problems, aspirations and speculations that revolve around the subjects of toxic waste sites, bio-remediation, animal habitats and urban planning? *The English Kills Project* has a number of iterations that exist within the confines of the white wall gallery and exhibitions spaces (fig. 5). The artwork can take the form of installations with videos, Google maps, bio-imaging, microscopy, performance, site-specific works and recorded interviews. The video works are instrumental in providing a glimpse into the conditions, and reveal the animals that live in English Kills. Some of the first installations have been early speculations of wetland filters fabricated from recycled tires and spartina. Included are a series of glass-encased sculptures called the *Toxic Talismans;* bio-forms sculpted from the actual soil of English Kills. Of course, the soil contains the street run-off, our entercocous, and daily waste. The *Toxic Talismans* are symbolic forms with allusions from mythology to the animal life of English Kills. They become redemptive figures representing renewal, transformation and restoration. Recently I created a public service announcement featuring one as an animated figure who discusses the inter-relationship that we have with the creek. The talisman asks for a change in our habits and demands, "Don't flush when it rains!" (https://vimeo.com/112718952)

Other installations have incorporated live animals that were captured from English Kills. Fish tanks with banded killifish, ribbed mussels and shrimp have become a recurring feature in recent exhibitions. Currently, four killifish survive in my aquariums. Animals and the microscopic life of water samples from English Kills have taken a starring role in videos screenings and film festivals. The aesthetics of *The English Kills Project* are a multi-varied semiotics of art intersecting with biology, microscopy, public policy and myth making.

The truly rewarding element of this project is the surprising encounters with non-human animals and nature's insistence over grey infrastructure. With patience one can observe how nature and animals re-appear, transform, feed and become part of the process of restoration, despite this being a distressed and heavily polluted area. A defining moment of my experience with English Kills was a summer day that I recorded the great egret feasting on killifish (fig. 6). This beautiful endangered species has made a home for itself in the creek due to the lack of predators, a surprisingly

Henry G Sanchez

Fig. 5. The English Kills Project, 2014, Installation view © Sanchez

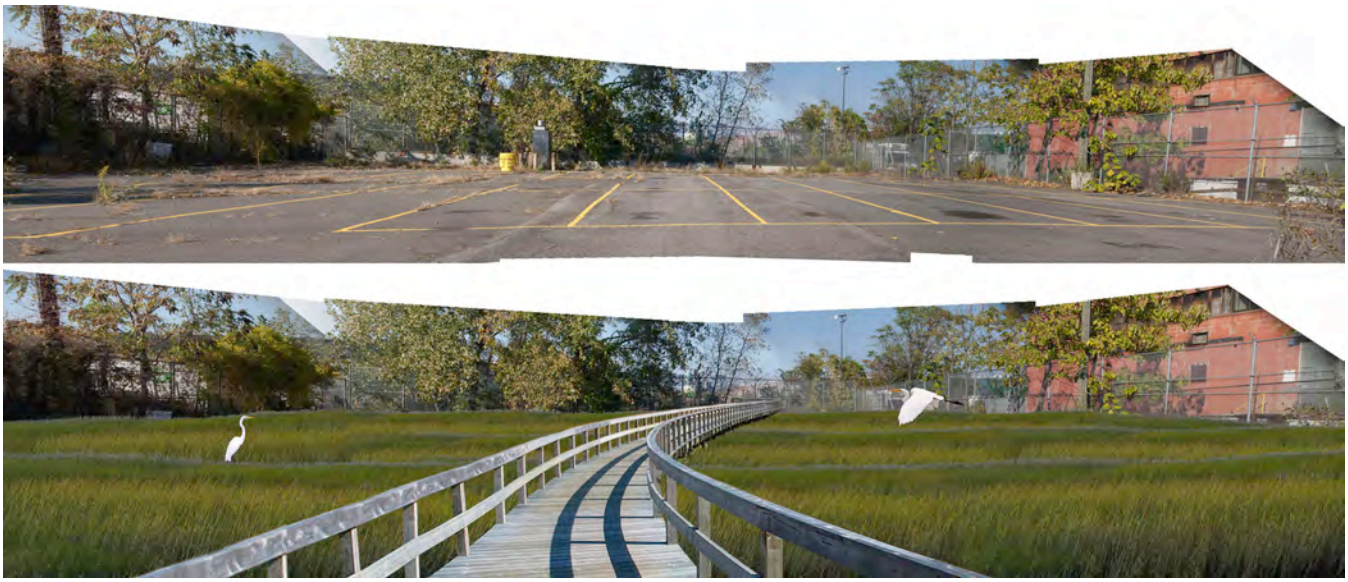
abundant food supply and the limited amount of boat and human traffic. Blue herons, the great egret, cormorants, black ducks and sea gulls have found a home and respite throughout Newtown Creek and English Kills. Unfortunately, so few of the residents in Brooklyn get the chance to observe these beings.

A goal of *The English Kills Project* is to introduce methodologies of bio-remediation to play a major role in the Superfund clean-up process. Constructed new wetlands in Newtown Creek can clean the walled–in waterway. Clean soil, filter feeding animals and spartina can serve as a natural kidney to filter harmful bacteria and toxins in the water. A new inter-tidal zone to buttress against the perpendicular bulkheads can filter the untreated sewage, create new habitats for animals, and support the current wildlife. Dr. Durand and I have recently submitted proposals to the MTA to use their property in the English Kills basin to realize an experiment. The proposition would transport her ideas of suspended habitats to English Kills to install along the MTA-owned railroad-bridge and on the former supports of the old swing bridge (fig. 7). It would be a first attempt to bring clean constructed wetlands to English Kills. Instead of grey remediation, such as dredging and capping, normally associated in Superfund cleanups, examples of bio-remediation can be tested. Figure 7 is a before and after image showing the current state of the bridge and a speculation of how it could appear with the suspended habitats. Dr. Durand and I believe a transformation to replace the grey infrastructure with a green infrastructure can see tangible results in the life and health of the creek.

Transformation at this site could finally see a public access point and bring an open space adjacent to this public waterway (fig. 8). The top half of Figure 8 shows the empty MTA parking lot at the base of English Kills in its current state. What if this

Henry G Sanchez

Fig. 6 and 7. The English Kills Project, 2014. Above: The great egret of the English Kills. Below: *The Suspended Habitats of the English Kills?* © Sanchez



Henry G Sanchez

Fig. 6 and 7. The English Kills Project, 2014. Transforming the MTA parking lot to open space. © Sanchez

were turned into a park with an elevated walk way?

This could potentially be a new commons for the local community with gardens, a place for contemplation and beautification, as well as providing New York City with much needed storm preparation. The parking lot proposal was general in nature with no specific design. Therefore, why not have local residents design a park? New proposals could transfer a sense of agency and consent to the very populations that have been left out of the Superfund planning process.

The English Kills Project, amongst other things, seeks to discover new methods for bio-remediation, green technology and ecological restoration for new wetland habitats for the current wildlife. Collaboration and participation are required from multiple actors, artists and non-artists, government authorities, businesses and the communities and residents along the creek to realize it goals. It is a project with experiments that migrate between the science lab, the artist studio and nature in the public commons. Its framework is an intricate mix of how biology, science and public planning intersect with art and social engagement.

The English Kills Project is now creating an alternative, parallel Superfund process in cooperation with the residents of Bushwick and East Williamsburg. It will solicit submissions from the community to design new constructed wetlands in English Kills and a new open space on the empty parking lot. The project asks, "What do you want to see in English Kills?" Design templates and plans would be based on the principles of bio-remediation, using green technology and with an ethical concern over impacts on nature, humans and non-human animals. It raises the possibility of collective action based on creatively re-imaging where power rests on deciding environmental policy and the direction of Superfund processes that affect a poor neighborhood of color. A series of summer weekend events are planned on the empty parking lot that would provide a place for congregation and exchange. Since the parking lot sits on top of the English Kills CSO, this is an excellent vantage point to see and experience the creek while witnessing the pollution. If people can see the problems, it may move them to action.

Henry G. Sanchez is an interdisciplinary, project-based artist and curator. Sanchez's work has been exhibited and screened at Electronic Arts Intermix, New York, NY; Momenta Art, Brooklyn, NY; Greenpoint Film Festival, Brooklyn; Rooster Gallery, NY; Guggenheim Museum, Soho; Pera Museum, Istanbul Turkey; Jersey City Museum; Here Art Center, NY; Pierro Gallery, South Orange, NJ; Rupert Ravens Contemporary and Affero Gallery in Newark, NJ; City University of New York; Taller Boriqua Gallery, NY; Ben Shahn Center, William Patterson University; and Centro de Arte de Sevilla, Sevilla, Spain. His curated exhibitions include AQUA-CULTURE at the McKinney Avenue Contemporary in Dallas, Texas (2014), GEO-LOCO at Outpost Artists Resources and DATA-DADA at Grace Exhibition Space in Brooklyn, NY. http://henrygsanchez.tumblr.com/

ARTIST SURVIVAL SHACK

On August 1, 2013, Adam Stennett began a month-long installation/endurance performance, living and working in the 6.5 x 9.5 foot, self-sufficient, off-the-grid survival shack at an undisclosed location on the East End of Long Island. The supplies, food and water Stennett arrived with were all he had access to, and he did not leave the area for the thirty-one day duration of the performance. Stennett designed systems using solar, reflective insulation, parabolic mirrors, LED lights, fifty-five gallon water collection, vertical grow walls, vermiculture composting for solid waste, and urine collection (for later use as nitrogen rich fertilizer). The artist's mission was to survive physically and spiritually, and to create a new body of work that would be exhibited along with the Artist Survival Shack *itself at the conclusion of the performance. A daily journal was kept and can be read at www.artistsurvivalshack.tumblr.com.*

In conversation between: Steve Miller and Adam Stennett

Adam Stennett creates conceptual works from a post 9/11 perspective, investigating issues that affect our global society and their ramifications on the American psyche. Well known for his exquisite renderings in oil and acrylic, Stennett delved into sculpture and performance with Artist Survival Shack, a self-sufficient and off the grid exploration of an artist's necessities eventually installed at Glenn Horowitz in East Hampton. In this interview, Stennett talks to Steve Miller, who has lived and worked between New York City and Eastern Long Island since 1975. His career trajectory consists of over 40 solo exhibitions at venues such as the National Academy of Sciences, the Hong Kong Arts Centre, Rose Art Museum, the Centre International d'Art Visuels CARGO in Marseilles, and the CAPC musée d'art contemporain de Bordeaux. His work has also been included in group exhibitions at the New Museum, the Bronx Museum, The Brooklyn Museum of Art, and The Everson Museum of Art.

Steve Miller: Having seen the *Artist Survival Shack* on Long Island, I was immediately attracted to all of the aspects of which you were thinking. The environmental concerns were obvious and relevant, but what struck me was this notion of surviving – just physical survival, and this complex set of relationships that we all have to live in now. And that includes food, air, water, rent – we all have to pay rent no matter where we are, artist or not. But then, the other aspect of staying alive in the art world: how do you keep going? On every front that's a long-term strategy with many moving parts. The irony in your piece relates to summer rentals in the Hamptons, which are just about impossible to do on any normal artist's budget. So I think the interweaving of the complex relationships of environment, nature, studio practice, and the luxury world.

Adam Stennett: The *Artist Survival Shack* project grew out of my experiences of living and working as an artist in New York. I moved to New York 20 years ago, right after finishing my undergraduate education, to pursue a career of being an artist. And one of the biggest challenges that I discovered fairly quickly, was how to carve out a space to live and work as an artist in the fairly challenging environment. To be able to meet my expenses, and still have enough time to make work – and that time to make work became more and more precious and challenging. Along the way I started thinking about ways to maximize art-making [studio] time, and minimize overhead so that I could almost beat the system and have the space and time to make work as an artist.

Adam Stennett

Fig.1. Artist Survival Shack, installed in Bridgehampton, New York during a 31-day endurance performance, August 1-31, 2013. (showing the 55 gallon water collection barrel, 100 watt solar panel and outdoor solar shower) © Sanchez

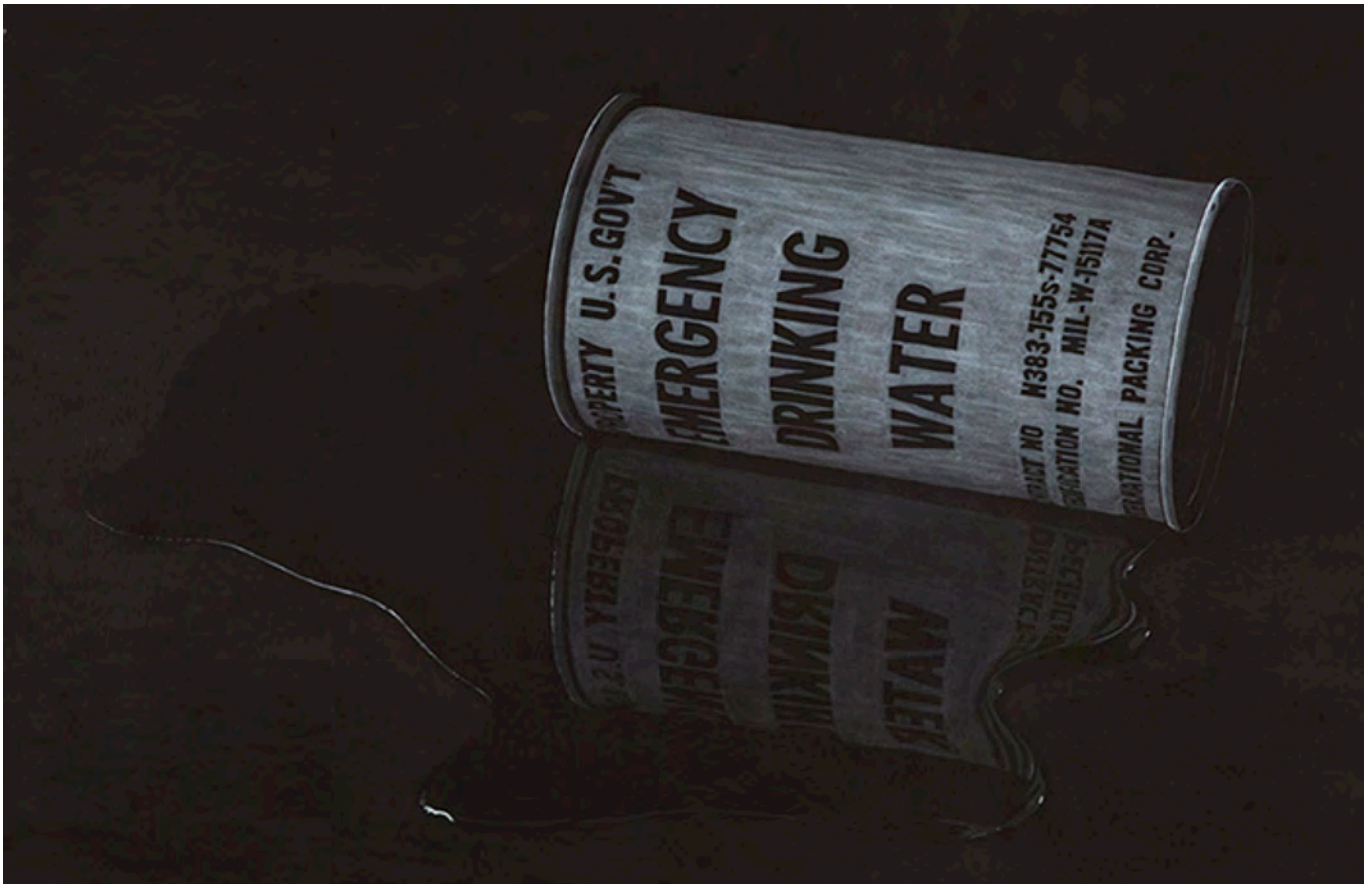
The Artist Survival Shack is a metaphor for that struggle, and an embodiment of the ways that I developed systems to think about what an artist needs to live and work, and how to turn that into something that is functional – a life that is functional. In this way the shack itself became an artwork that represented that struggle. (fig. 1)

SM: In some current artistic practices the traditional relationship between value and labour has been broken. Many of today's artistic practices seem to be executed with no regard towards physical effort, and are in turn more about a point of view on a subject in relationship with contemporary culture, rather than skills. The Instagram portraits of Richard Prince come to mind, because he makes them on his phone. I happen to be in love with that work; that's another story. Your work requires not exactly deprivation, but something close to that in the aspect of a 24/7 time commitment. How do you contextualize endurance and performance as one of your mediums?

AS: I guess I wouldn't really think about it as deprivation, so as much as distillation – that I am trying to get down to the essentials, and get rid of all of the distractions. So in order to do so, spending a month in the shack working 24/7 without leaving the shack becomes an idea of an intense self-made residency. It was an attempt to get to the essentials and get rid of anything that would distract me from art making. For me art making is almost like meditation – through the physical practice I feel like I get into a mindset beyond the everyday way of thinking, and being in that art making headspace for me is very relaxing and enjoyable. I think that what you were saying about Richard Prince's work is that it seems like it's almost effortless. Right? That there is not an intense work ethic that goes into its creation in the same way as there is in my 24/7 endurance-performance piece. I think with Richard's work that is part of the

Adam Stennett

Fig.2. Black Military Surplus Water Can. 2013. acrylic on paper, 44 x 30 inches © Stennett



Adam Stennett
Fig.3. Emergency Drinking Water Spill. 2013. acrylic on paper, 30 x 44 inches © Stennett

illusion that he goes for – that there is this illusion, and that it is effortless, as if it's just something into which he has this idea that he puts out there, and then it becomes art. But, I would put forward the idea that Richard is in that art making habit 24/7 as well; that he's constantly working.

SM: I entirely agree with you. I'm 100% on board with that – in having personally known Richard. There is a joke within his family: how do you get him off the telephone? So, in that sense he is constantly thinking, and constantly conceptualizing, and I think that [requires just as much exertion as physical labor.] The physical "effort" of manual labor is an illusion, and regardless, while there is not an equation that can compare the strenuity of mental versus manual labor. So, you make this studio, and you create art, and you've answered the question, but we haven't actually talked about the objects that you make. You've almost answered the question in my mind, which is: you know you're talking about the Shack as a place for meditation, and installation, and your drawings are-- which I love-- very minimal, clean, and efficient. How does that balance out the time component and the making of them?

AS: The art making process for me is as much about mark making as it is about – I mean, the paintings themselves end up looking pretty photographic a lot of times. Actually, when people aren't looking at them closely, they at first assume that they're photographs or photographic in some way. But the process for me is always a very abstract process; I'm separating myself from what it is that I'm drawing or painting in order to just look at the shapes, and the shadows, and the light and the dark. (fig. 2) And that process is kind of a translation in my mind and becomes a meditative process. I'm making marks and I'm looking at reference material, but I'm also – the way I think of it is almost reductive, like I'm marking out

Adam Stennett
Fig.4. Canteen Spill. 2013. acrylic on paper, 22 x 30 inches © Stennett

what's wrong as much as I'm marking what's right. When I start with a blank piece of paper, obviously a lot of that blank piece of paper is "wrong," so I need to make marks that make it look the way that I want to make it. (fig. 3) This minimalist aesthetic also ties in with this whole fascination I have with streamlining and distilling things down to their essentials, and getting rid of all the crap that we don't really need. So the *Artist Survival Shack* itself is kind of a metaphor for that simplifying and distilling down to what is really necessary. Hopefully the work aesthetically also represents that idea. (fig. 4)

SM: Okay this is just a comment – I'm gonna get really corny here…Because you're using a black sheet of paper at least in that work that was in your Glenn Horowitz show [1] (fig. 5-6) and its like you're bringing in the essential element – which is the light, you're bringing the light into this darkness. I think that there's a glow to that work and a simplicity that does mirror all the work you do to set up the minimal footprint on the planet to show the essential imagery, and that is something I really respond to. In a way your work is very low tech and off the shelf materials that anyone can find, yet still you use technology to solve part of your survival solution. How do you see technology facing with the natural world, and do you extrapolate your premise as your personal surviving solution to look at the larger issues of what's going on with the planet? Climate change, for example.

AS: Well, the materials that I used for the shack I did want to be things that were easily attainable that anyone could go out and find. (fig.7)

Adam Stennett

Fig.5. Artist Survival Shack. 2012-2013. Installed at Glenn Horowitz in East Hampton, NY in the exhibition Adam Stennett: Survival, Evasion and Escape (The Artist's Studio) September 7- October 28, 2013 © Stennett

Also things that were fairly inexpensive, because there's a financial component to the struggle of an artist to meet his expenses and have enough time to make work. There is also a lot of repurposing of objects that goes into it – so, taking things that are used for one thing and using them for something else. I think artists often excel at this sort of problem solving, finding new ways to do things. So technology comes into this, because technology is always evolving. It is therefore always providing new tools for artists – if artists want to mine that material and use those tools to solve their problems. One of the things that I used technology-wise was solar [power]. And that's not necessarily a super new technology, but there is more focus on it right now. I also was looking at ways to deal with other problems like collecting water – things that are essential needs to live and work. You need clean water; you need to find efficient ways to deal with waste. [In terms of] waste management systems, I was using a composting system to deal with all of the solid waste that I produced in the month that incorporated vermiculture (fig. 8). It incorporated worms to break down solid waste, any food scraps, or any other waste that I was producing. I did a lot of research using different technologies and sciences to solve problems that made me think about things in new ways, which I think is a goal that a lot of artists have: finding new solutions for old problems.

SM: I love that. Okay, there's another aspect of the survival shack that intrigued me and that was the part of finding you in the field; actually physically finding you. You were so close but I remember coming by twice and going like – where the hell is this guy? It's something that you have to discover physically, and I think that it's something that you discover conceptually as the piece unfolds. But the other part is seeing your ability to, while you are

Adam Stennett

Fig.6 and 7. Above *Artist Survival Shack.:* 2012-2013. Installed at Glenn Horowitz in East Hampton, NY in the exhibition Adam Stennett: *Survival, Evasion and Escape* (The Artist's Studio) September 7- October 28, 2013; Below: *Artist Survival Shack*, interior (showing painting wall) © Stennett

Adam Stennett

Fig.8 Artist Survival Shack - system for waste management - includes 5-tray vermiculture composting bin, 1000 red wriggler composting worms, urine / nitrogen spray unit. 3 gallon bucket toilet and 11 gallon urine collection unit. All of the solid waste and liquid waste from the 31-day performance was processed by this system. The solid waste in the 5-tray composting bin was then displayed along with the shack in a gallery setting during the six week exhibition that followed. © Stennett

there, blog, share the experience – document. You're sharing the experience, but by sharing the experience you're willing to be watched because we're watching you and looking at what you're doing. This would be much more public in an urban environment, which we'll talk about in a minute, but how does the notion of surveillance incorporate itself in the art practice in a world in which many of us are willing to submit information to Facebook, Instagram, Twitter, as if we're willing to be watched on our own terms. We all want to control how we're watched, and how we're looked at, and yet we also recognize that if you use a computer or if you use Google, for example – every search is being tracked; they've got an algorithm. What's the balance between getting yourself out there on social media and wanting people to watch you? And this other larger issue of being watched without our permission, what do you think about that?

AS: I believe that art making and performance have an undeniable component of communication. Making art is attempting to communicate in some way with the viewer, and artists are always looking for new ways to communicate, and new tools to use to communicate with. Surveillance, especially post 9/11, has kind of a negative connotation in a lot of ways. There's a lot of fear, and wrapped up in this idea of that we're being watched and cameras are everywhere is sort of this big brother idea. But I think that it's an undeniable part of our culture, and as an artist I'm constantly looking for ways to think about our culture and things that are involved –

Adam Stennett
Fig.9 Artist Survival Shack , interview view © Stennett

including fear and paranoia and this post 9/11 big brother kind of feeling, and looking for ways where I can turn that around and use that for my advantage as an artist. So using these tools and blogging, or in the case of our *Survival Shack*, we kept the location secret – it was an undisclosed location, but if people were interested in coming to visit they would be guided to the location. Then on the blog I was posting images from my daily experiences in the shack, and keeping a journal so the outside world could experience what I was experiencing in some way, but yet there was still a layer of secrecy surrounding it. And there were other elements that refer to the Cold War, and things like that that I weaved into the "tapestry" of the shack project for that very reason. This idea of surveillance, the seen, the unseen, and how these things are filtered for us in the lenses that we're allowed to see the world through. All of that stuff is very interesting to me (fig. 9).

SM: Okay, we're almost done here, two more questions. You know, we had this conversation a while back when I was in your studio. You were talking about doing something in more-extreme conditions, in particular: winter. Summer in the Hamptons is one thing, not to minimize your undertaking in any way. I saw what it was like to do what you did out there. I mean, you were just really developing the focus on minimal imprint, and there was an aspect of physical survival and commitment. How is this going to change with more extreme weather conditions, or what lead you to think about that?

AS: Well, I wanted to take what I learned from my month living and working in a 6 1/2 foot by 9 1/2 foot shack and raise the stakes a little bit. So, especially through this last winter, I started thinking about a more challenging problem, so I wanted to

ARTIST SURVIVAL SHACK JOURNAL

ON AUGUST 1, 2013, ADAM STENNETT BEGAN A MONTH-LONG INSTALLATION / ENDURANCE PERFORMANCE LIVING AND WORKING IN A 6.5 X 9.5 FOOT, OFF THE GRID ARTIST SURVIVAL SHACK AT AN UNDISCLOSED LOCATION ON THE EAST END OF LONG ISLAND. THE SUPPLIES, FOOD AND WATER HE ARRIVED WITH WERE THE ONLY SUPPLIES HE HAD ACCESS TO. HE NOT LEAVE THE AREA FOR THE DURATION OF THE PERFORMANCE (ONE MONTH). THE FOCUS OF HIS STAY WAS TO SURVIVE PHYSICALLY AND SPIRITUALLY AND TO CREATE A NEW BODY OF WORK. THE OFF-SITE PERFORMANCE WAS FOLLOWED BY AN EXHIBITION FEATURING THE SHACK ITSELF, RELATED PAINTINGS AND ARTIFACTS SEPTEMBER 7- OCTOBER 28, 2013 AT GLENN HOROWITZ BOOKSELLER IN EAST HAMPTON, NY.

artist survival shack compact garden after the rain

14TH AUG 2013

JOURNAL

Tuesday, August 13, 2013

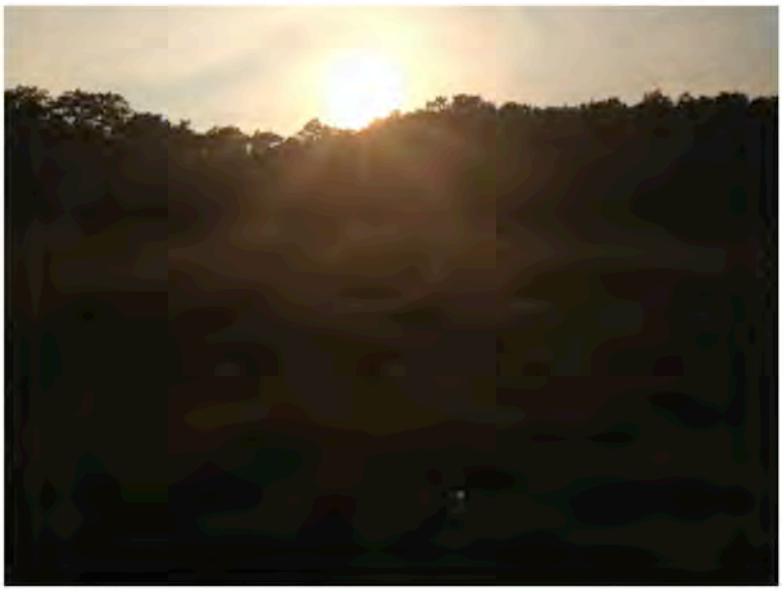
Woke up to crazy rain again. By midday my 55 gallon barrel was overflowing with water funneled from the roof. I scrambled to gather some of my other empty water containers and by 4pm all of those were full as well. I guess I don't have to worry about running out of water. The water collection system has proven to be more than adequate.

No major leaks in the shack other than the ones I have known to watch out for. My compact garden has had a good drenching the past two days. Have noticed it seems to experience an immediate growth spurt after rain- much more than after regular watering. Could be due to chemicals in the tap water I started with.

Tomorrow will be two weeks into the project. That also means I have a little over two weeks left to finish the paintings and other works for the show. It will be a big push to get everything finished that I want to finish but that is usually the way things work before a show. I feel like everything is coming together.

ARTIST SURVIVAL SHACK JOURNAL

ON AUGUST 1, 2013, ADAM STENNETT BEGAN A MONTH-LONG INSTALLATION / ENDURANCE PERFORMANCE LIVING AND WORKING IN A 6.5 X 9.5 FOOT, OFF THE GRID ARTIST SURVIVAL SHACK AT AN UNDISCLOSED LOCATION ON THE EAST END OF LONG ISLAND. THE SUPPLIES, FOOD AND WATER HE ARRIVED WITH WERE THE ONLY SUPPLIES HE HAD ACCESS TO. HE NOT LEAVE THE AREA FOR THE DURATION OF THE PERFORMANCE (ONE MONTH). THE FOCUS OF HIS STAY WAS TO SURVIVE PHYSICALLY AND SPIRITUALLY AND TO CREATE A NEW BODY OF WORK. THE OFF-SITE PERFORMANCE WAS FOLLOWED BY AN EXHIBITION FEATURING THE SHACK ITSELF, RELATED PAINTINGS AND ARTIFACTS SEPTEMBER 7- OCTOBER 28, 2013 AT GLENN HOROWITZ BOOKSELLER IN EAST HAMPTON, NY.



end of the third week

JOURNAL

Wednesday, August 21, 2013

As of today I have spent three weeks surviving in the shack. If nothing unforeseen happens I feel like I should have enough food and water to make it though the month. I spent the morning drinking coffee and looking at the painting— trying to decide if it needed anything more.

My friends Patrick Paine and Jenny Gill came to visit around 1pm. Jenny is the Director of Communications for Creative Capital. She read some of my early drafts of the artist survival shack proposals and gave me advice that was very helpful in shaping them. Patrick is an artist and teaches at LIU. They are both some of the nicest people you will meet and it was fun to see them.

The afternoon was hot and sunny so I pulled my second folding chair into the shack and the three of us actually sat quite comfortably in the shade and relative cool of the 6.5 x 9.5 foot shack.

After they left I decided the painting was finished and moved on to the next and last painting that will be in the show. I jumped right into it and painted until late. Have been hearing what I think are whippoorwills the past few nights which sets a foreboding mood.

Adam Stennett

Fig.10 and 11. Artist Survival Shack, journal excerpts 1 and 2 © Stennett

create a new space that was portable, or easily movable – something that can be broken down and reassembled anywhere, and that would be functional under any conditions. Arctic conditions seemed like a good challenge. When you're walking around New York City and its 3 degrees out, it tends to focus your mind on the idea that design flaw could be very serious. If you're living and working in a shack in 3 degree temperatures on a rooftop somewhere or elsewhere, and you can't leave and you don't have any way to escape this space that maybe doesn't work. I think it is interesting for me to raise the stakes and start experimenting with new materials to use as installation, or to capture the sun's energy, or to just live and work in a space. Obviously in the summer you're also outside a lot more, and so I started thinking about the idea that if you're in the winter the space may need to be a little bit bigger because you're not able to use the outside space as much. So, new challenges. I think one of the things as an artist that I'm making artwork – I've said this before – but making artwork for me is about problem solving. And as an artist you come up with problems and some of those problems are more interesting than others, and some of those solutions are more effective than others. But an artwork, to be effective or interesting to me, needs to begin with a good question and then some sort of solution that is interesting (fig. 10-11).

SM: I think the thing I like about what you're doing is the totality of it. It involves global concepts, and it involves all sorts of notions of survival. Then you're actually physically making art within this – an art object. This makes it very rich and complex. There're all these different frames in which to look at art. And another of these frames that's discussed now more and more, is this idea of Sci-Art, which obviously my work is a natural fit to. I guess I am one of the old men of that movement. Arthur Miller and his book *Colliding Worlds* sees science redefining contemporary art to see a third culture. Do you feel any affinity with this – I mean, you're like partly in this realm; does this notion stimulate you, or occupy any of your thoughts in terms of making your own work?

AS: Well, I'm not sure if I would go so as far as to say science is redefining contemporary art in the last century. I think that's kind of his argument in some ways in that book. I think that the intersection of science and art is fertile ground for great artworks to happen. For me, I think artists who I am most interested in are very aware, and very open to possibilities, so seeing things that science brings to the table and using those to your advantage as an artist and making those connections is very interesting. I think it's a little dangerous to get too focused on one angle, and I would argue that your work, for instance, isn't just Sci-Art. You're bringing in a lot of cultural angles, and you're exploring more than just the intersection of science and art, and I think that's hopefully what I am doing as well. I think there is a connection to science and art-- that is important, the connection to nature and art. But hopefully, at least, I am trying to be open as possible to as many influences as possible with my work.

SM: I think that's what makes you so rich.

Adam Stennett creates conceptual works from a post 9/11 perspective, investigating issues that affect our global society and their ramifications on the American psyche. Well known for his exquisite renderings in oil and acrylic, Stennett delved into sculpture and performance with Artist Survival Shack, a self-sufficient and off the grid exploration of an artist's necessities eventually installed at Glenn Horowitz in East Hampton. Adam Stennett's work has been featured and discussed in The New York Times, The Los Angeles Times, Frieze, Art In America, Bomb Magazine, BlackBook, New York Magazine, The New Yorker, Harper's Magazine, and Esquire. http://www.adamstennett.com/

Steve Miller has lived and worked between New York City and Eastern Long Island since 1975. His career trajectory consists of over 40 solo exhibitions at venues such as the National Academy of Sciences, the Hong Kong Arts Centre, Rose Art Museum, the Centre International d'Art Visuels CARGO in Marseilles, and the CAPC musée d'art contemporain de Bordeaux. His work has also been included in group exhibitions at the New Museum, the Bronx Museum, The Brooklyn Museum of Art, and The Everson Museum of Art. In 2004 Miller was a New York Foundation for the arts painting fellow. His work or reviews of his work have been published in *Le Monde, La Nouvelle Republique, Art Press, Beaux Arts Magazine, Süddeutsche Zeitung, South China Morning Post, The New York Times, Artforum, Art News* and *Art in America.*

SAND PAINTINGS

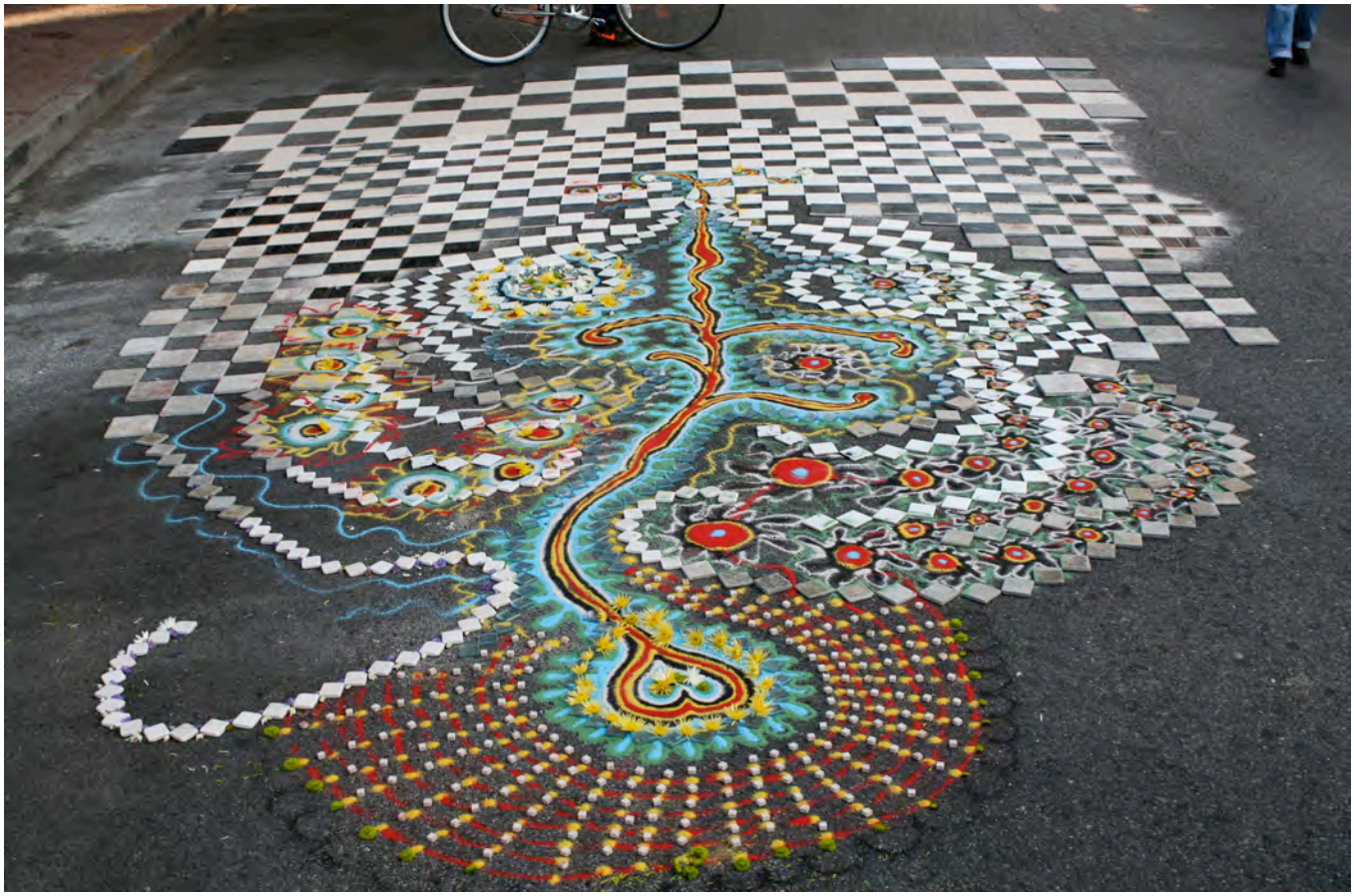
My paintings are a visual rebellion of the urban grid. It's my philosophy that we are psychologically programed by this system, a dominating force that efficiently partitions the globe into quantifiable sections of space and time, divided by minutes and seconds. I work to reclaim these divisions by creating sand paintings, in organic shapes, and acting as a catalyst for a synthesis. For me this is a vital process of affirming life. Each painting is spontaneously improvised, using colored sand, poured directly from my hand. Visually, I combine elements from nature, culture, technology and contemporary art to find the common ground from which to communicate our collective interdependence. My art is about co-existence within the natural order of life, challenging politically, the existing order of beliefs, in a run-away materialistic global paradigm. I imagine each of us as a grain of sand in a painting of billions.

Text by: Joe Mangrum

Molecular biology is offering an intimate look into the nature of organic matter, its structure and function, respectively. From chromosomes to ribosomes, from bacteria to viruses, from neurons to stem cells, the underpinnings of material existence is in a golden age. But what else explains the remarkable qualities of a seed or a thought? How can the fleeting within and around us be visualized? How do we experience the immaterial?

What follows is a visual essay by Joe Mangrum, a contemporary New York artist whose work includes a multitude of sand paintings. Sand paintings have a long history as an art and spiritual form. Their unfixed nature has permeated Native American practices, Tibetan monks' rituals and Australian Aboriginal cultures. As a process of pouring sand in a variety of chromas, to create striking images, the paintings' manifestations belong to the temporary. Considered a method to encompass healing and ceremony, such practices have also served as a matrix for generating ideas embedded in abstract painting practices and post-minimalist process oriented sculpture. More recently, many artists have turned towards fragile materials such as dust, flowers and sugar as mediums for their work.

For Joe Mangrum, a reprogramming of human action and agency is required to entwine more harmoniously with the natural world. He makes us aware of the fact that "we are all unknowingly and psychologically programmed by an urban grid, a dominating force that efficiently partitions the globe into quantifiable sections of space and time, divided by minutes and seconds. It is ultimately out of sync with the natural world, seasonal cycles and lunar tides." Employing colored sand as his medium, he draws through pouring, employing his hands as a funnel. His improvisations refer to the organic configurations of botanical and animal forms. He describes his work as being "influenced by an abundant world of undersea creatures, carnivorous plants emanating electrical impulses, and a living mathematical amalgam of botanical geometry." As an antidote to "a run-away global materialism," he considers his art to "be about interconnectivity and coexistence within the natural order of life.



Joe Mangrum

Above: *Asynchronous Syntropy,*, May 2012 Hand poured colored sand at Museum of Art and Design NY *Swept Away Exhibit.*
Below: *Sprout,* Havemeyer St. Brooklyn, NY. Hand pour colored sand and ceramic tile. September 16th 2007 © Mangrum

Joe Mangrum

Above: *Union Sq. Aug11th 2011*, Hand poured colored sand.
Below: *Union Sq. July 12th 2012,* Hand poured colored sand.© Mangrum

Joe Mangrum

Above: *Washington Square Park, NYC. Nov14th 2010,* Hand poured colored sand.© Mangrum
Below: *Union Square, NYC. July 31 2012*, Hand poured colored sand .© Mangrum

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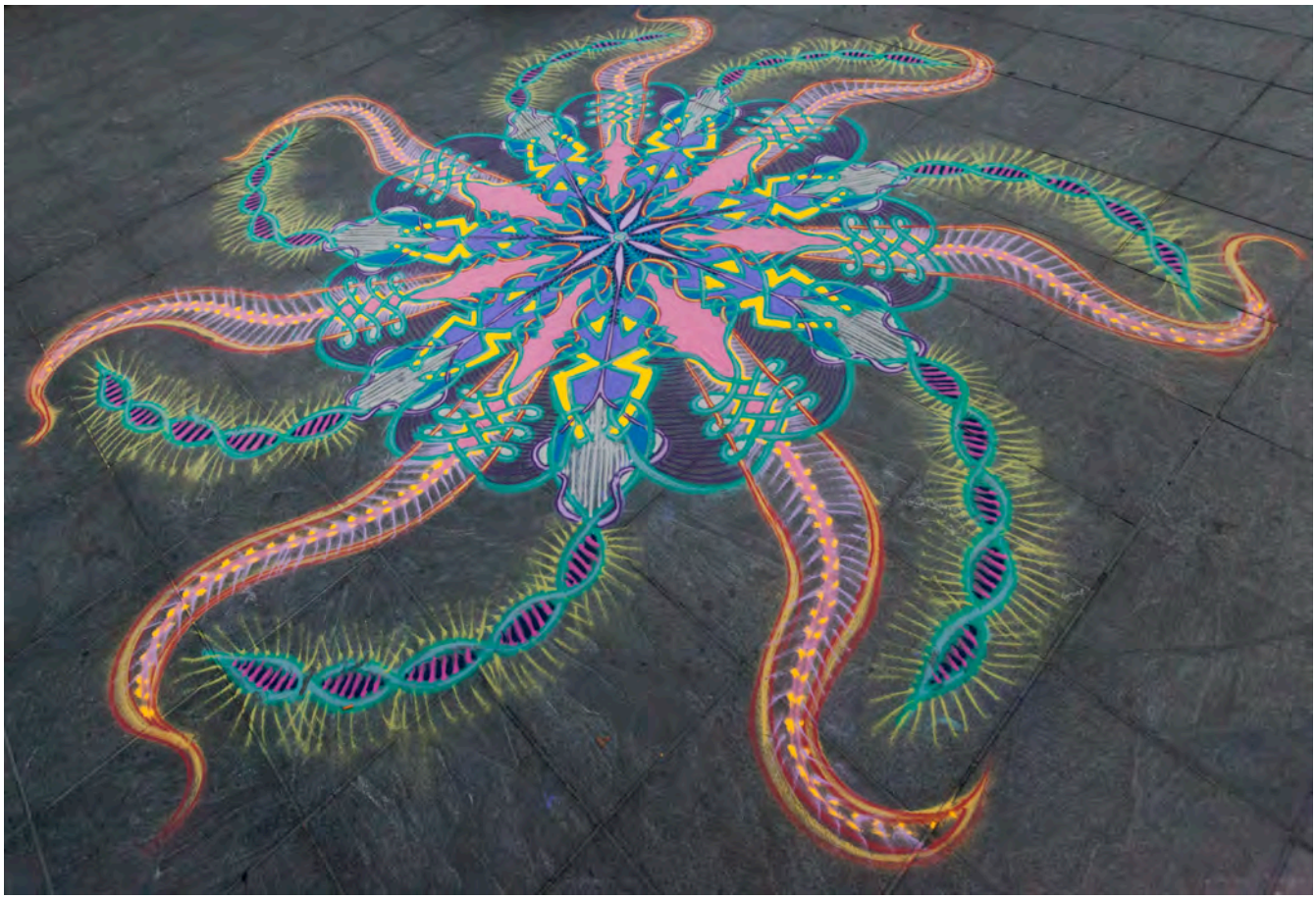
Above: *Fire* September 2010. Hand Poured Colored sand.© Mangrum

Below: *Union Square, NYC. July 10th 2014*, New York Hand poured colored sand © Mangrum



Joe Mangrum
Washington Square Park, NYC August 23rd 2014, Hand poured colored sand © Mangrum

Joe Mangrum's work explores issues of the urban grid, environmentalism and its effects on the collective psyche. Since 2009, he has created a series of over 800 intricate sand paintings in public and private spaces which act as vibrant catalysts of social interaction in New York City and around the world. Inspired by ancient traditions and synced up with a rhythm of animation, forms are mixed with an urban free-style and combined with bright "Pop Art" colors, fractal variations and circuitry. His paintings are influenced by an abundant world of undersea creatures, carnivorous plants emanating electrical impulses, a living mathematical amalgam and botanical geometry stemming cross-cultural metaphors from years of travel.

Mangrum's work has been exhibited worldwide. In 2015 he installed 8 large scale sand paintings as part of a solo exhibit at the Doe Museum, Zuidlaren,Netherlands. In 2014, he traveled to the UAE to participate in the Sharjah Calligraphy Biennial. In 2012, he was featured at the Museum of Arts and Design as part of the "Swept Away" exhibit, completing an indoor project "Asynchronous Syntropy" as well as circumambulating the entire museum for a marathon 24 hrs in two days. As a special project, his work was featured at MOCA Miami, during Art Vasel Week 2014. He participated in The Flag Art Foundation's "Watch Your Step" exhibit and has installed at The Corcoran Gallery Rotunda in Washington D.C. Mangrum has held residencies at the de Young Museum in San Francisco, at the Ashé Cultural Center in New Orleans and The Red Gate Gallery in Beijing, where he was featured in the inaugural exhibit of the Sunshine Museum. He received the prestigious Lorenzo de Medici Award at the Florence Biennale in 2003, for his piece titled "Fragile". Mangrum's works have been commissioned by private collectors, The Asia Society, Jen Kao for Fashion Week and others. In addition, he has received commissions from the City of San Francisco, including a permanent public artwork on the sidewalks of Mission and 22nd streets. Other commissions include Coachella Music and Arts Festival, Electric Daisy Carnival, All Points West and Mile High Music Festival.

Mangrum has also worked with educational programs, given slide presentations and a panel discussion at Adelphi University He has demonstrated his work with students at The United Nations International School, The de Young Museum of San Francisco, Eleanor Roosevelt High School in New York and Moton Elementary in New Orleans. He is an active supporter of environmental causes and has contributed efforts to Love For Japan, Riverkeeper Alliance, Natural World Museum, World Environment Day and Copenhagen 15. He has been featured on "Sesame Street," and interviewed for the PBS program "Spark" on KQED. He has been featured on CNN and in The New York Times, New York Daily News, LA Times, Artbusiness.com, Yahoo News and numerous blogs. Joe Mangrum currently lives in New York City.

CHICKEN LITTLE AND THE CULTURE OF FEAR

The eleven scenes of Chicken Little *and the* Culture of Fear—The Garden, The Bathroom, The Kitchen, The Bedroom, The Jail, The Road The ER, The Main Hospital, The Diner, Poortown and Fox News—*contain approximately 500 canvases in varied sizes and more than 4,000 individually mixed acrylic colors. Each is arranged like individual sound bites, held together on the wall by a painted ameba shape.*

In conversation between: Tarah Rhoda and Nancy Chunn

Nancy Chunn
Chicken Little and the Culture of Fear: Scene I, The Garden, 2004
Acrylic on canvas
Dimensions of panels vary
Courtesy of Ronald Feldman Fine Arts, New York
© Chunn

The media has always played to our fears as a motivation for watching the six o'clock news. After 9/11, the media's sense of restraint vanished along with a lot of common sense. We are now exposed to nonstop new fears ranging from the innocuous, to the slightly ridiculous, followed closely by the completely inane, and lastly by the totally hilarious. Only on rare occasions is this drivel interrupted by relevant and poignant dangers. The only way to maintain any level of sanity in this age of absurdity was for me to restage the folk tale of Chicken Little, who rashly jumped to false conclusions that the sky was falling when an acorn hit her head. She alarmed all her friends that the world was ending. While on their way to alert the king, Foxy Loxy promising them safety, lured the group into his den and alas, consumed them.

Tarah Rhoda: Nancy, you've been working on your *Chicken Little* project for the last 12 years? How did you end up here?

Nancy Chunn: I was watching a *Columbine* documentary and there was an interview segment with author Barry Glassner who had recently written a book called *The Culture of Fear*. I read the book and it was so spot on! It was talking about how wedge issues become important decisions for people who go out and vote, for people who are vulnerable to fear mongering. Wedge issues are intended to fracture a population's unity. Some examples are welfare mothers, gay marriage and national security, among others. So it was then that I decided to do a piece and combine *Chicken Little: The Sky is Falling* and the *Culture of Fear* The work has a political bent about what in the heck we are dealing with after 9/11.

TR: Your *Chicken Little* scenes, are very similar to the way we digest the news, piece by piece. At what point did you decide to break each scene down into various sized panels?

NC: Well, that really had to do with how the intrinsic ideas fit into a site-specific installation. There are eleven scenes to my *Chicken Little* because there are eleven walls at the Ronald Feldman Gallery in NYC where I will exhibit this work.

TR: *Chicken Little* is a very extensive project. Can you talk about your process for working on it?

NC: I start by writing, getting my ideas together for each scene. For each of these panels I have boxes and boxes of files. This is the workout for the jail, and now I am just starting to figure out the main color for the jail. There are stacks of paper, paper, paper of ideas. What am I going to put indoors, what will go outdoors, will there be a separate prison for women? How shall I portray a prison?

TR: So you have a whole legal box: an inventory of icons, characters and coded colors for each scene?

NC: Yes, My wonderful assistants make up these crib sheets for me so I can have it all organized. *(Nancy begins showing Tarah the inventory).* You can see the nurse on the right; her hair color is brown #47, which was originally made for the Road. Her skin tone is this one, which was also used in the *Main Hospital.* This was for the *ER* scene – a nurse and a cleaning woman. This detail is one of my favorites – these two people are arguing as some poor person is self combusting, which of course you will see every day in the hospital. .

TR: Is this organizational structure something you created from the beginning or did it happen along the way?

NC: No, no. It just kept getting bigger and bigger, crazier and crazier. Mark Rosen, my partner, finally said that this is a ridiculous way to work, because I had these little pieces all lined up trying to match the true colors and to get it just right. He said "Nancy, I could do this on a program." So I said "Fine! Do it," and he did. It took him a year – but it's called the *Fabulous Ferret Program*. The color swatches are tagged with every detail or part of a scene they have been used in, and then broken down into CMYK. This way I can easily go back and forth from working with the digital print outs and mixing paint. So this is all the work behind the scenes. Here is the swatch book and CMYK codes. See these are all the colors that could be used to remake light blue #17 – it's beyond crazy, look! Theoretically, I could grab these swatch books and those files and remake the whole thing – not that I'd

Nancy Chunn
Chicken Little and the Culture of Fear: Scene II, The Bathroom, 2004-2005
Acrylic on canvas
Dimensions of panels vary
Courtesy of Ronald Feldman Fine Arts, New York
© Chunn

want to. This blue-green color was used in the garden, some 12 or 13 years ago, it was blue-green #3, and you can see it was also used in the Socrates' detail of hemlock leaves. So, if you're looking for a red-violet, say red-violet #76, you can go into that section of the book and see this color was used in *Poortown*, scene X.

TR: This is another very meticulous element of building out this world for *Chicken* Little – her palette.

NC: Right. It's like her closet!

TR: The subject associations tagged with each color swatch are very intriguing: "Loosey Goosey skin, Mooning Car, Dead guy." They almost read as haikus. "Bedroom, Chicks at School, Tip of the tail."

NC: Yes, aren't they interesting? In the past, I showed all of the research behind the scenes in addition to the finished pieces. I think, to tell you the truth, that it is what my gallery director was interested in, my process, my methods. This color you see was used in a duck's beak and in the business report of Fox News. This color was made for the row and now it is being used in the infirmary as a skin color. This is the green that was used for the vomiting Greek guy, who was also in the infirmary. So we know where these things go.

TR: It is really fascinating that all of this information is reduced down in such a manner that this work could be recreated. You have your own paint by number world laid out for you.

NC: Totally. And I am not even embarrassed to say this is paint by numbers- absolutely.

TR: I think that paint by number element leans the project towards a potential commercial territory. Would you ever consider making an adult's coloring book? Or a political Eye Spy? A playful product that critiques the consumer?

NC: Totally! I've been hoping that if somebody sees this they will want to do all that. I was fortunate that Rizzoli did a book of my *New York Times* front pages series in 1997. I worked on the front pages using pastels, rubber stamps and other media which visually transformed the copy, photographs and content of "all the news that's fit to print." I think you can still buy the book now for five bucks or something like that on Amazon. But yes, I can

Nancy Chunn
Chicken Little and the Culture of Fear: Scene IV, The Bedroom, 2006
Acrylic on canvas
Dimensions of panels vary
Courtesy of Ronald Feldman Fine Arts, New York
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imagine the product coming with custom crayons from my swatch directory.

TR: It is evident that all of these elements have been assembled with a lot of patience and care, but done so with a generic hand or perspective. This seems intentional – was your decision to use clip art based on aesthetics or content associations?

NC: Yes, visually I really like the copy and paste effect, but it's also perfect for this project. The clip art is from all different eras and all different styles. You can see this one is clean with a steady width and this one over here is loose and swoopy.

TR: Besides the *Chicken Little* crew and the Foxy Loxy group – are there any other reoccurring characters?

NC: A few of the characters show up in various scenes, like this woman – she is the resident hooker. She is a reappearing character, who appears in Poortown as well as in the Diner. Here this blonde is going into the next scene – she is shown again in the same clothes, same back view going into a store in Poortown.

TR: I would assume it would be *Chicken Little*, but is there a character in this story that represents you?

NC: I would say *Chicken Little*, except I don't end up with the fox. It took me a while to think of myself as her. I definitely knew that she would be a girl. When I saw the stupid Disney film, of course they had made *Chicken Little* a boy.

TR: That was the second animated adaptation right?

NC: I don't know if anything was done earlier, but there were many books.

TR: I think the very first animated version was done during WWII.

NC: OH! I never saw that. Ugh, is it cute?

Nancy Chunn
Chicken Little and the Culture of Fear: Scene VI, The Road, 2006-2007
Acrylic on canvas
Dimensions of panels vary
Courtesy of Ronald Feldman Fine Arts, New York
© Chunn

Nancy Chunn
Chicken Little and the Culture of Fear: Scene VIII, The Main Hospital, 2009-2010
Acrylic on canvas
Dimensions of panels vary
Photo: Bill Orcutt
Courtesy of Ronald Feldman Fine Arts, New York
© Chunn

Nancy Chunn
Chicken Little and the Culture of Fear: Scene VIII, The Main Hospital, 2009-2010
Acrylic on canvas
Dimensions of panels vary
Photo: Bill Orcutt
Courtesy of Ronald Feldman Fine Arts, New York
© Chunn

TR: Well, not exactly. I believe it was produced at the request of the United States government, as part of a campaign to fuel the war efforts and discredit Nazism.

NC: Get out! Let's watch it. Oh my God, let's find it. Is it a whole movie?

TR: No, it is just an animated short. It was actually part of a whole series of political cartoons

NC: So it was propaganda? I can't believe this! You would think with all of my research I would have seen this!

TR: The narrator, Leonard Maltin, in his introduction to the animated short in the "Walt Disney on the Front Lines: The War Years" DVD set states the following:

> Seeing Walt Disney's name on an animated version of the famous fable named *Chicken Little* might lead you to expect a cartoon in the silly symphony series, but there is nothing light hearted about this version of the story. Instead it is a war-time parable about listening to rumors and falling prey to persuasive leaders who have their own sinister agendas. Originally the studio planned to show Foxy Loxy reading Adolf Hitler's book *Mein Kampf* to make sure no one missed the point, but it was decided to downplay the obvious Nazi imagery. Foxy Loxy is quoted reading from the book: "undermine the faith of the masses and their leaders" even so there is no mistaking the purpose of this 1943 cartoon, and there's no way to misinterpret its grim finale. *Chicken Little* is one cartoon parents may want to see for themselves before deciding if it is appropriate for their kids.

NC: Alright, so where did you find this film? This is *Chicken Little* from 1943?

TR: Yes. I think originally the book that Foxy Loxy was reading was actually Hitler's *Mein Kampf*, but the filmmakers wanted the cartoon to remain relevant beyond its time, so they changed the book to be a generic "Psychology" book.

NC: Yeah, this is really amazing. You know what I may do? I may deal with this by giving the 1943 a short homage, by incorporating it in the jail scene in some way.

There are three different endings to the story of *Chicken Little*. In the first one she gets to the candy king, he gives her the umbrella, and says

Nancy Chunn
Chicken Little and the Culture of Fear: Scene VIII, The Main Hospital, 2009-2010
Acrylic on canvas
Dimensions of panels vary
Photo: Bill Orcutt
Courtesy of Ronald Feldman Fine Arts, New York
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"this should protect you from the falling sky." In the second he says "go back to your place because you're crazy!" The third and most common version she never gets to the king. She meets Foxy Loxy who lures her and her tribe into, the cave where they are eaten. So I of course chose the most devastating ending, but my chicken little ends up as one of the leggy blonde anchorwomen at Fox News.

TR: The first scene of Chicken Little's world of fear takes place in a garden. Why a garden?

NC: In the garden we see some unfortunate environmental issues at hand. In this scene are endangered baby spotted owls and bears waving good-bye because they have lost their homeland – the forest. This is where *Chicken Little* gets hit on the head by a TV, rather than an acorn or a rock.

Since this is all based on media, what's better than TV?

TR: You introduce weather into this scene. Why?

NC: Weather is a big deal. It affects more people than any other story. So here's my tornado. Acid rain is coming down causing forest fires. There is a mudslide, killer bees and a poisonous pond complete with oil spills. Also present is a deer tick, frogs with extra digits and poison ivy.

TR: And so you and I watched the 1943 cartoon--

NC: Oh that was wonderful!

TR: I'm curious, after spending so much time in Chicken Little's world and inviting her into yours – I would imagine that her character shadows you back in a way. Do you hear her piping in when you're

Nancy Chunn
Chicken Little and the Culture of Fear: Scene IX, The Diner, 2011-2014
Acrylic on canvas
Dimensions of panels vary
Photo: Casey Dorobek
Courtesy of Ronald Feldman Fine Arts, New York
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your entire body of work is mapping your reactions to these political structures – whether it's the front page of the *New York Times*, world maps or the story of Chicken Little.

NC: Well that's easy, it's all about mapping, you know. It is an incredible thing which is both so abstract and not.

TR: I was obviously pretty tickled at your presentation, but being able to dive in and see the details behind the scenes, it's so concise – it's really wild, the structure that you've used to build out this little world.

NC: And the files, the color programming, and then storing all of the little files – it looks like a lab.

TR: It's absolutely absurd that the craziest content throughout your whole series are these TV screenshots – the Fox News headlines. You can't the absurdity of the actual headlines?

NC: No, none of these things can you make up! All of these speech bubbles in my *Chicken Little* panels are real quotes. This is what Sarah Palin said "but obviously we've got to stand with our North Korean allies" "I'm old, but I'm still cute and strong and very butch." Michelle Bockman says "Hey I took karate when I was 17 years old, I'm dangerous." And the media doesn't stop, and because it's 24/7 they always have to find something to make us turn on the set and watch it. They are constantly trying to out-fear everybody. It's very incredible. The weird thing about this, I had to watch some of Fox News and I will tell you this: they have incredible graphics. The image that comes across on the TV screen is impeccable. They are so much more sophisticated graphically than any of the networks, than any of the carriers. The quality of the color, the quality of the shots – scary how good looking it is. No, really – I couldn't believe it.

Nancy Chunn
Color mixing swatch books
Photo: Beatriz Meseguer
Courtesy of the Artist and Ronald Feldman Fine Arts, New York
© Chunn

Nancy Chunn received a B.F.A. from the California Institute of the Arts. In the late 1970s she moved to New York and has been represented by Ronald Feldman Fine Arts Gallery since 1985. She has exhibited both nationally and internationally, received two National Endowments of the Arts awards, an Anonymous Was a Woman grant, and the Jennifer Howard Coleman Distinguished Artist in Residence Grant in Painting from Otis College of Art and Design that produced a catalogue and a John Simon Guggenheim Memorial Foundation Fellowship in 2009. Rizzoli International Publications published a hardbound monograph of *Front Pages*, a project completed in 1996. Using rubber stamps and pastels, she editorialized each front page of the *New York Times* for that entire year. Since 2003, she has been working on a painting installation, *Chicken Little and the Culture of Fear.* http://www.feldmangallery.com/pages/artistsrffa/artchu01.html

Images Courtesy of Ronald Feldman Fine Arts, New York

NEWTOWN CREEK

A small river runs through the great city of New York. Four-mile Newtown Creek once drained a vast tidal salt marsh that spread its wetlands across north Brooklyn and west Queens. But this vanished ecosystem is not vanquished. The organisms of disappeared communities show themselves in pockets of living space along the Creek. The water of Newtown Creek is alive with immature forms of invertebrate life, ready to re-establish communities long ago suffocated by an industrial capitalism that exploited the natural world to the point of destruction. Human engineering can now turn the seawalls of Newtown Creek into habitat space. By offering life in the water a place to live, new communities will return the favor by restoring water quality. The restoration of the great New York estuary will be a collaborative enterprise between multiple organisms.

Text by: Sarah E Durand

At the junction of New York, New Jersey and the sea is one of the great estuaries of the West Atlantic coast. Here land meets ocean and fresh water collides with seawater pushed up the estuary by the tides via the Harbor and Long Island Sound. All the City's boroughs, save one, belong to islands. The landscape of the estuary circa 1600 was recreated for us by the Wilekia Project of the Wildlife Conservation Society (Fig 1), wherein the red oval added here indicates the mouth of a small river of the estuary, Newtown Creek. The course of the Creek through the wetlands of Brooklyn and Queens encapsulates the story of human activity in the estuary.

The tides ebbed and flowed through the wetlands of the Creek - over cordgrass, mussel mounds and oyster beds, over populations of crawlers and burrowers. Mammals from the uplands followed out the tides' ebb; among these trekkers were humans who shared the bounty of oysters, mussels and clams. Drifters and swimmers from the sea came with the inflowing tide to the safety of the grass stems – to hide, to feed, to grow and to spawn. And birds were always present, through the ebb and flow. The estuary was the home of the Lenape peoples, whose culture held the natural world as sacred. Biological and physical elements of the ecosystem were celebrated, personal accumulation of materials was not, and the concept of land ownership was foreign. The native culture was replaced by one from the west that crushed the biological and warred with the physical forces of the ecosystem.

The effects of the new culture can be seen by comparing Figures 2 and 3. Figure 2 illustrates the course of the Creek in 1861 (courtesy of The New York Public Library). The map shows the tributaries of Newtown Creek still flowing with relative freedom from the advancing grid through the surrounding wetlands. The shoreline meanders through Brooklyn and Queens, a product of the dynamic interplay between wind, water and sediments. The arrow points to the future site of Dutch Kills Basin, an engineered structure of later years (see Fig 4). Inside the red oval that is superimposed upon

Fig. 1. *"Manahatta" circa 1600, home of the Lenape people*
Image: Boyer, Markley, Mannahatta Project, Wildlife Conservation Society; Eric Sanderson, Director. Image source, *CultureNOW* – Exhibitions. Museum Without Walls

the map are some islands. The smallest of these at the upper left is Mussel Island, named after the millions of these animals that filled the spaces between the cord grass culms.

Figure 3 illustrates the circled area on the map in Figure 2 as a progression through time (aerial photographs compiled by Mitch Waxman at the website newtownpentacle.com). Beneath the aerial photographs is an image of the industrial product most commonly deposited into the Creek, oil (photographed at the Dutch Kills Basin inlet). A black lake of oil extends from the Brooklyn shoreline of the waterway, the largest pool of spilled oil in the continental US. The black lake floats on the water table, it seeps into the Creek, its fumes invade basements - it's the legacy of the Creek's status as the center of East Coast oil refining through the mid-20th century.

What still remains of the dynamic interplay between water and sediments of the unbound estuary creates the complex landscape visible in the first image of Figure 3 (1924). Currents, tides and winds have molded the water-land interface into a myriad of microhabitats along a meandering shoreline, each microhabitat suiting the needs of a different community of organisms. Advancing

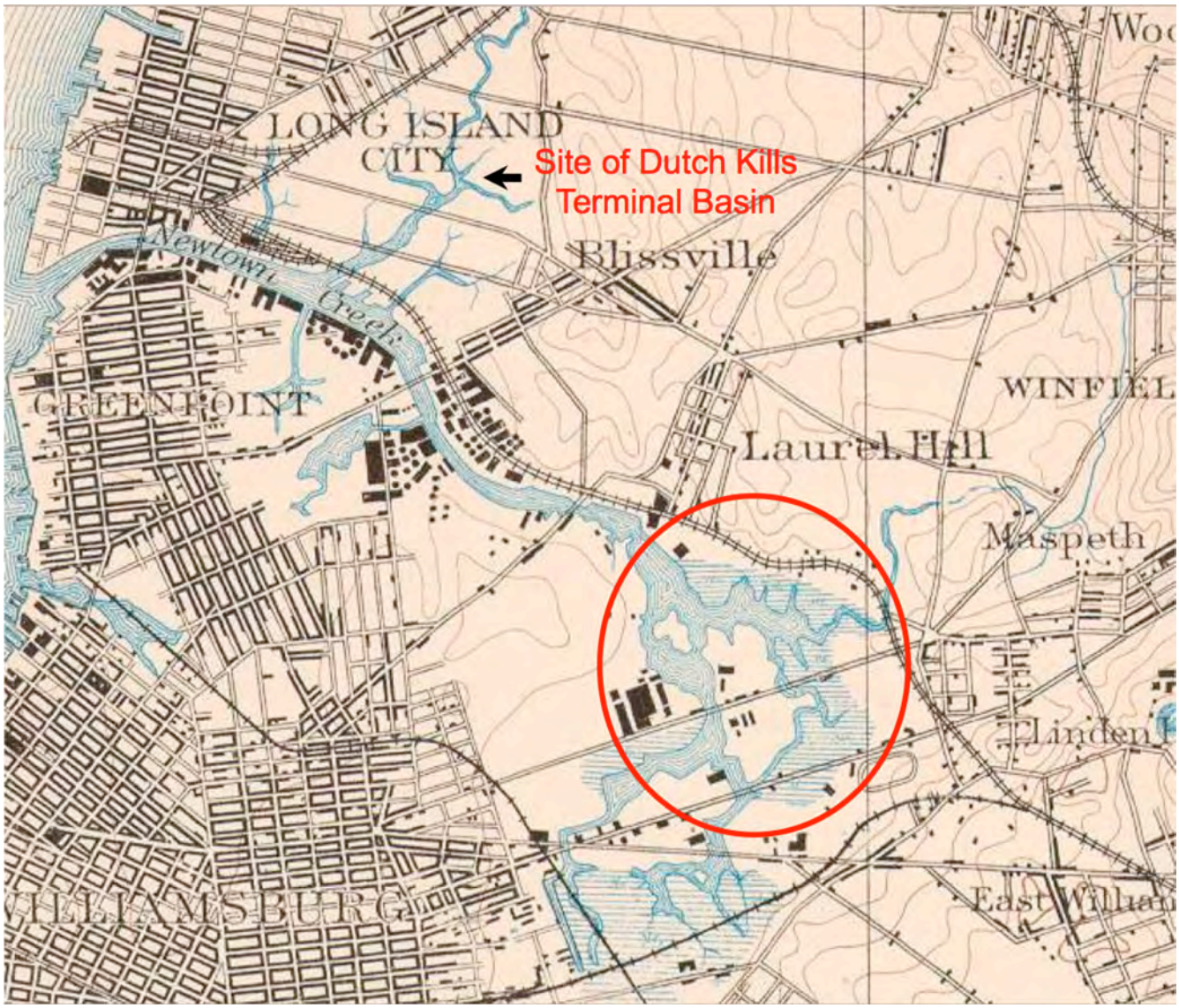

Fig. 2. *Newtown Creek in 1890's.* Circled area identifies site pictured in Fig. 3
Lionel Pincus and Princess Firyal Map Division, The New York Public Library. 'Map of Newtown Creek and vicinity' *The New York Public Library Digital Collections*, 1896.

through time, soft edges of indeterminate boundaries become hard outlines. The dynamic stability of equilibrium between ocean and fresh water flow becomes a static stability enforced by walls of bulkheads. By 1951, the walled-in waterway has been created, with buried headwaters and blockaded tributaries. Freshwater, such as it is, reaches the waterway via pipes. The waterway has been transformed for the convenience of capitalist industry.

Figure 4 offers a close look at a human-engineered structure on the Creek, the Dutch Kills Terminal Basin of the tributary by this name. The basin provided turning space for barges, two of which have long been abandoned along the east shore, where they reside as rusting hulks. The bulkheads here are fully intact - the tide rises and falls against their walls of concrete, leaving the dark band you see above the water surface. The arrow points to an outlet that delivers, when it rains, a combination of street runoff and raw sewage. In sum, the Dutch Kills Basin is an ideal location to measure the ecological impacts of the Creek's new design features. And a study of water quality here was indeed pursued by the author and students of

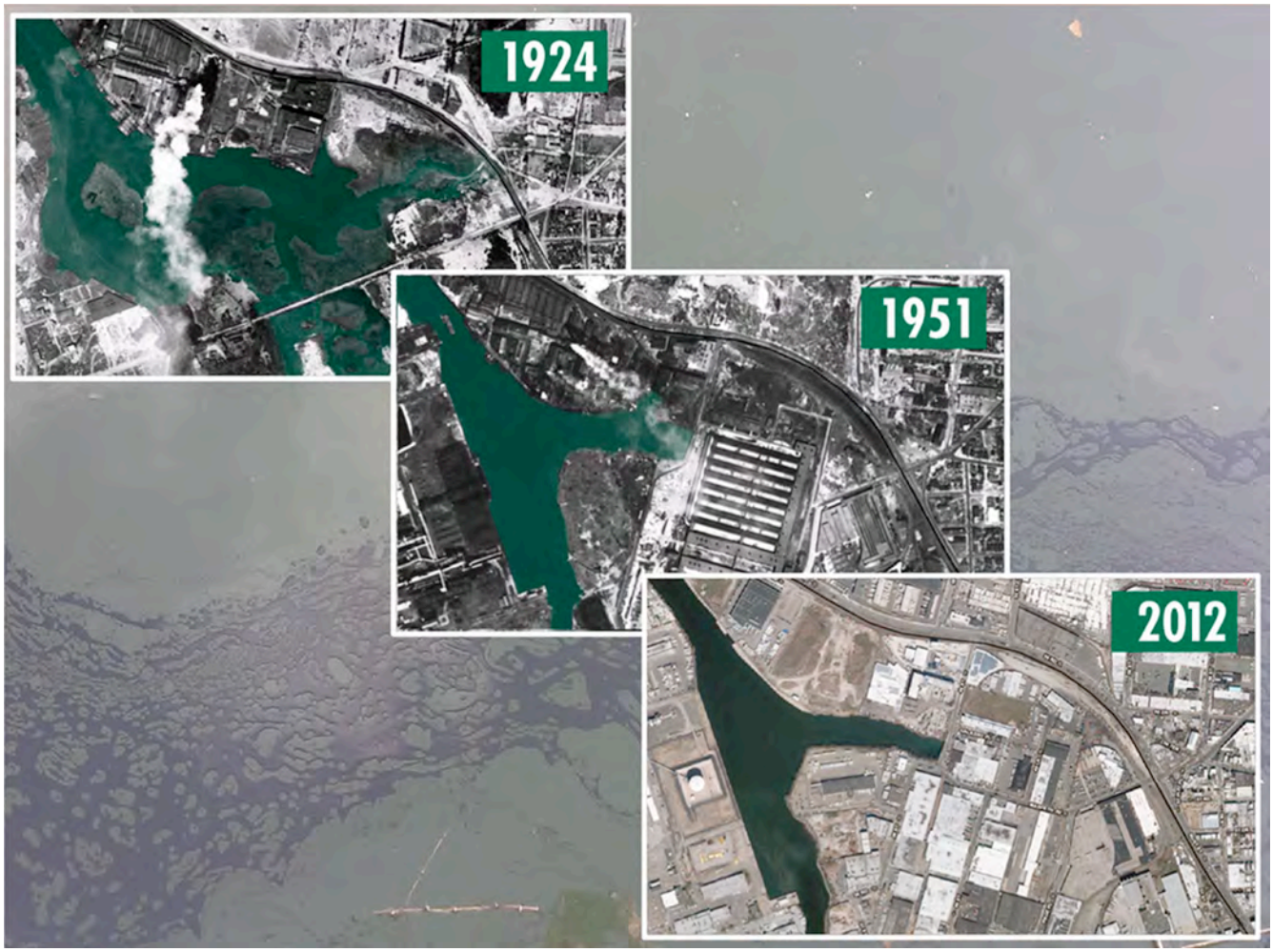

Fig. 3. *Newtown Creek in 1890's*. Circled area identifies site pictured in Fig. 3
Lionel Pincus and Princess Firyal Map Division, The New York Public Library. 'Map of Newtown Creek and vicinity' *The New York Public Library Digital Collections*, 1896. Colouring: Mitch Waxman. Bottom photo: Sarah Durand (Dutch Kills oil contamination)

the City University of New York at LaGuardia Community College, Long Island City.

The graphs in Figure 5 record wild oscillations in the water quality of the Dutch Kills Terminal Basin over weekly measurements that were taken during summer months (data from 2012). Each point on a line is a sampling day (only the first graph identifies sampling days with diamond symbols). The blue line in each graph shows the volume of precipitation within a 2-day window preceding the time of sampling. Measured variables were 1) cell concentration of the gut bacterium *Enterococcus* per 100 ml water samples (the red line in graph 1); 2) acidity level as measured by pH standard deviation units (the orange line in graph 2; note! - low values correspond to high acidity) and 3) dissolved oxygen in surface water, measured in milligrams per liter (the green line in graph 3).

Enterococcus species are indicators of raw sewage. Their concentration had a significant positive correlation with rainfall. Why? The outlet identified by the arrow in Figure 2 is the opening of a combined sewer overflow (CSO) discharge pipe. It discharges a combination of water from our streets, toilets and sinks whenever rainfall swells the volume of this combined flow to levels that would flood the receiving water treatment plant. So at such dangerous volumes, the sewage system is designed to divert the combined flow away from the treatment plant - into the nearest waterway.

Organic material, like sewage, is food for bacterial populations in the waterway; their

Fig. 4. *Dutch Kills Terminal Basin: a human engineered dead end.* Arrow points to "CSO" *(see text)* - photos by Sarah Durand

numbers explode with the banquet offered by each rainfall. As the cells decompose organic matter from the CSO, their cellular respiration depletes oxygen and releases carbon dioxide. Carbon dioxide reacts with water to form carbonic acid (the same chemical reaction is acidifying our oceans as carbon dioxide levels rise from he burning of fossil fuel). The second graph indicates that each peak rainfall event corresponded to a minimum pH value or high acidity. Acidic conditions interfere with the ability of bivalves, such as oysters, mussels and clams, to form their shells of calcium carbonate - and once formed, to grow and maintain them.

Given that dissolved oxygen in the water is depleted by bacterial decomposition, we can understand why CSO discharges with rainfall also coincided with minimum concentrations of dissolved oxygen (graph 3). But graph 3 also indicates that aquatic oxygen levels oscillated in the absence of rainfall. What could be a possible explanation? Another player in the extreme oxygen fluctuations in Dutch Kills was the phytoplankton; meadows of microscopic plant-like cells (photograph at left) within the plankton community of microscopic drifters. The phytoplankton sample shown here (mostly diatoms) was collected on the sampling day indicated by the first orange square - a day when the water was saturated with oxygen. The phytoplankton populations exploded after CSO releases and associated bacterial decomposition, which releases nutrients - fertilizer - into the water. With the phytoplankton blooms, diurnal oxygen levels soared because of the mass of photosynthesizing cells. But then the bloom

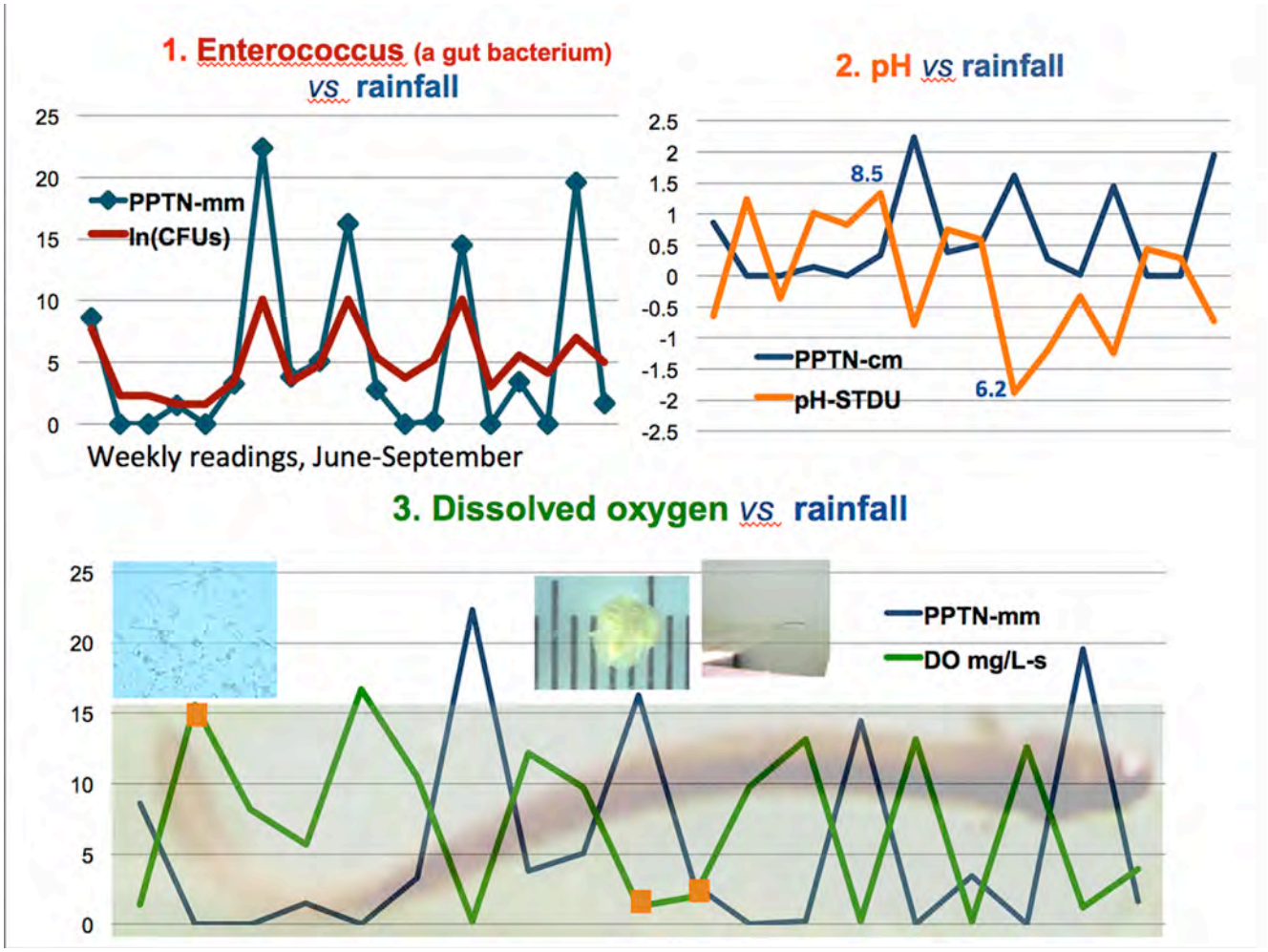

Fig. 5. *Oscillations of ecological variables, Dutch Kills Terminal Basin*
- photos by Sarah Durand *(see text)*
Abbreviations
CFU: colony forming unit (viable bacterial cell)
DO: dissolved oxygen
pH: negative log value of hydrogen ion concentration
PPTN: precipitation STDU: standard deviation unit
s: surface sample

exhausted the nutrients released by bacteria and the cells died off, thereby providing more organic material for bacterial decomposition and another fall in dissolved oxygen.

In graph 3 there are two DO minima marked with orange squares to identify the sampling days that two animals, respectively, were observed: a juvenile horseshoe crab (second photo from left, units are millimetres) and an American eel (adjacent photograph shows eel in water next to bulkhead and bottom photo is an enlargement of the animal). To discover such animals were present at all was cause for celebration. Legislation has been passed and actions taken to protect both species - yet here they were in the waters of a Superfund site. But a realization quickly followed inspiration: the eel is a nocturnal animal, during the day it hides from avian predators (such as the gulls that frequent the Creek) and it forages at night. Similarly, the horseshoe crab didn't belong at the surface, from where we scooped it up within our plankton net. The crab had reached the age where it should have taken up residence in the bottom sediments through which it tunnels for food particles (which it did for the subsequent 8 months that we were able to sustain it in the laboratory). Yet both animals were at the surface on a sunny morning, the eel swimming slowly along the surface towards the main waterway, its mouth breaking the surface to gulp air (some species can acquire additional

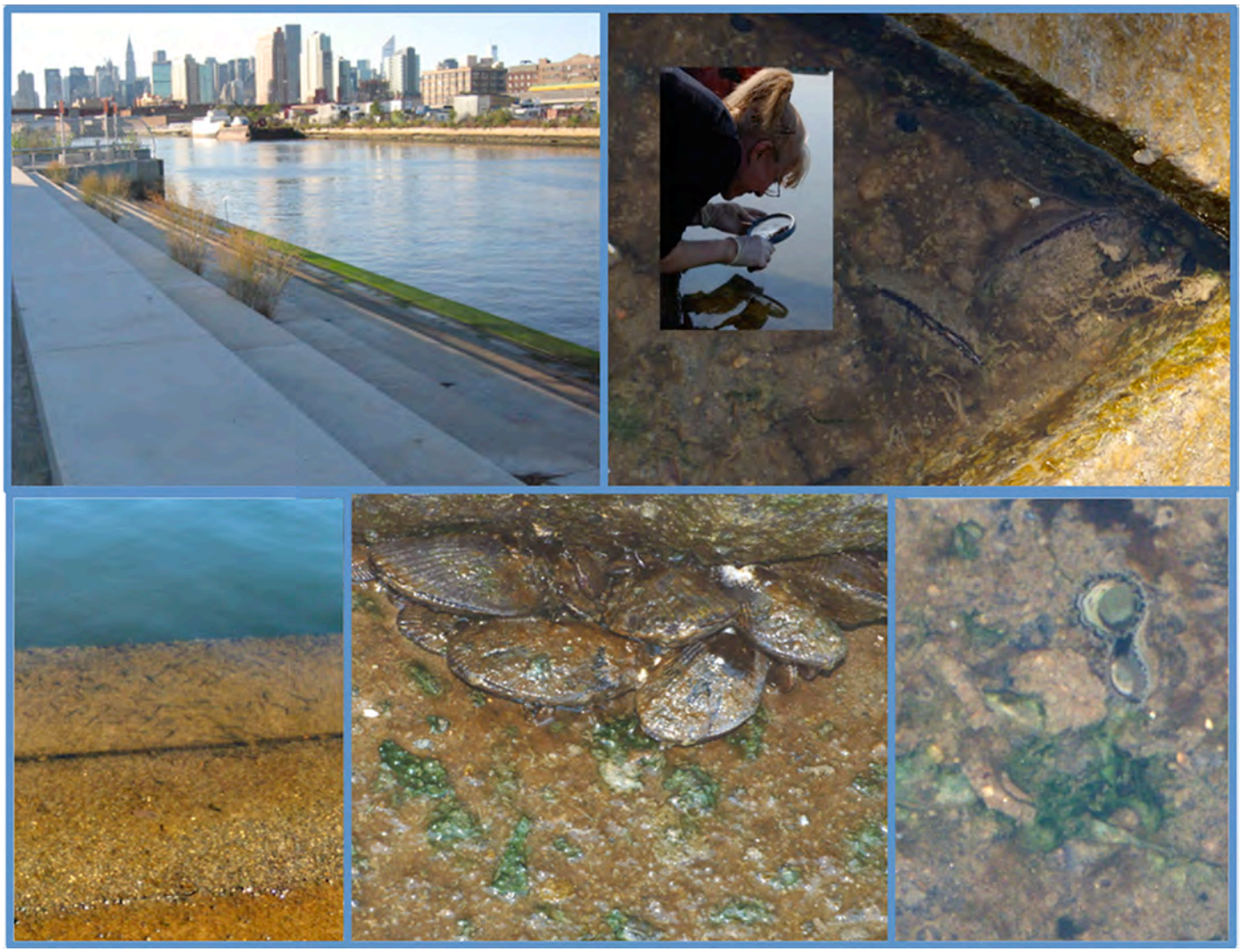

Fig. 6. *Newtown Creek Nature Walk, intertidal steps hold oases of life.*
- photos by Sarah Durand and John Landers.

oxygen with this behavior). We lost sight of the fish as it swam very slowly southward. Eels are fast swimmers, but speed must be supported by oxygen and little was available - the fish was on its way out of Dutch Kills before it suffocated.

The artist George Trakas took the first action to construct a bit of shoreline, the "Nature Walk," that provided horizontal structures as opposed to vertical walls (Fig. 6). The project was in service to the surrounding community of Greenpoint, which sits on the oil lake. At the Nature Walk, steps pass through the intertidal zone to the water's edge; note the high-tide mark on the adjacent bulkhead. Colonizers arrived at the newly formed living space: they settled along the step junctions and within the periodic triangular depressions along the step surfaces that served as sediment traps. At the top right of 'figure 6' are two mussels that have partially buried themselves in this sediment, with the author in the process of discovery. The bottom row of photographs show a school of fish visiting the steps with the incoming time, more mussels - here clustered at a step junction - and the double-siphons of a soft shell clam within the sediments of another triangular depression.

The steps brought evidence that human engineering in service of the biological would allow the return of lost communities. Here was the "hypernatural," because the natural is irretrievable: for now, the hardened grid of human activity around Newtown Creek is immutable and the bulkheads that service it must stand. But within the confines of this

Fig. 7. *Bulkhead support for marsh grasses (see text)*
- photos by Sarah Durand (left panel, Dutch Kills) and Carter Craft (middle, right panels, Whale Creek)

unnatural system, elements of the natural can be constructed.

The ribbed mussels of the Creek, *Guekensia demissa*, normally live attached to the stems of the intertidal cordgrass, *Spartina alterniflora*, and attached to each other. Both organisms are key species of the tidal marshes along eastern North America. As water passes over the gills of the mussel it is filtered of phytoplankton and bacteria (Wright *et al*, 1982; Peterson & Dam, 1986; Kemp *et al*, 1990; Langdon and Newell, 1990) - the very planktonic cells whose population explosions so disrupted the biological community of the Dutch Kills basin. Cordgrass of our estuaries interrupts water flow, thereby slowing current velocity and allowing particulates to precipitate in the shallows, where sediments are exposed periodically by the tide and available to sunlight and the oxygen-producing process of photosynthesis. Native cordgrass can transport oxygen to its roots, which then diffuses into the surrounding water. Microbes of the root systems and plant's own tissues can capture, sequester or degrade industrial toxins in a process named "phytoremediation" (reviewed by Pilon-Smits, 2005).

The tidal salt marsh is casually referred to as the "estuary's kidneys." Wetlands are now recognized - and constructed - for the treatment of wastewater (so-called "treatment wetlands"). What if the wetlands of Newtown Creek were REconstructed?

In 2011 we received a New York State grant under the auspices of the Environmental Benefits Projects fund, part of an award to the

Fig. 8. *A beginning, inspected by juvenile heron* (insert)
- photo by Sarah Durand (Whale Creek) and Patterson Beckwith (insert, Pulaski Bridge)

communities of Greenpoint, Brooklyn and Long Island City, Queens, in recognition of violations of the Clean Water Act in Newtown Creek. The awarded project proposed to use the bulkhead itself as a foundation for habitat reconstruction. New Zealand environmental engineer David Tihau Bishop designed a habitat frame for mounting onto the bulkheads; but at first we were offered no place to put it. While sorting out this problem, we initiated a pilot project with plastic buckets and basins to demonstrate the feasibility of this approach along the bulkhead of the inlet into the Dutch Kills basin. The cordgrass grew and mussels thrived in sediments surrounded by molded plastic (Fig. 7).

The first engineered habitat units of steel arrived at the Creek during the summer of 2014, here shown chained to the bulkhead of the Nature Walk (Fig 8). The inset shows another set of units suspended from a dolphin off-shore of the North Brooklyn Boat Club - and an avian visitor we identified as a juvenile black-crowned night heron. Platforms underneath the sediment basins can hold additional mussels.

The month before these photos were taken, a story about the Creek made the New York Times: "Rainbow Sheen and a Tip Draw a Focus to Dumping in Newtown Creek" (Sept. 12, 2014). The source of a oily plague that had regularly blackened the grass stems along the bulkheads and coated mussels along the Nature Walk had been finally identified, thanks to a

community newly galvanized to protect and heal its estuary. Neither teams from the NY State Department of Environmental Conservation (NYSDEC), the City's Department of Environmental Protection (NYCDEP), nor our own search (though we came close in identifying a stretch of Dutch Kills shoreline!) had identified any establishment along the Creek as source of the regularly invading blanket of oil. Had a finger of the black lake seeped into far west Queens?

An anonymous community observer called the NYSDEC: the culprit was the owner of a waste oil and scrap company. This company's tank trucks were driven to the site of a conveniently located large drain behind a Long Island City diner. The drain led to Dutch Kills, a tributary that opens into the Creek opposite Nature Walk on the Brooklyn shore.

The flow of oil has stopped.

In November of 2014, the menhaden returned to Newtown Creek. They came by the thousands and traveled up the Dutch Kills tributary. No one can remember when they were last here. John Lipscomb, Boat Captain of Riverkeeper (and leader in the effort for oil-spill accountability), observed, "I've never seen this before. It's so wonderful to see life returning."

Sarah Durand discovered biology at age 5 while walking through a salt marsh with Dad and a red bucket. The bucket had arrived empty but returned with a wild array of invertebrate animals - "pets." When the pets succumbed to the inadequate circumstances of the bucket, ecstasy of discovery gave way to grief, guilt and curiosity: How did they live? What did they need? Sarah ultimately majored in marine biology at the University of Pennsylvania, where she received a dual BA-MA degree from the graduate division of Evolution and Ecology. She began her doctoral studies at Rutgers University as a field biologist studying Herring Gulls, but concluded with a doctoral thesis on the neural basis of vocal communication in doves, for which she received the PhD from the Center for Behavioral and Molecular Neuroscience. A subsequent post-graduate fellowship award from the National Institutes of Health supported her study of the forebrain vocal system of parrots at the University of Maryland, College Park. Sarah is currently an Associate Professor at LaGuardia College - CUNY

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