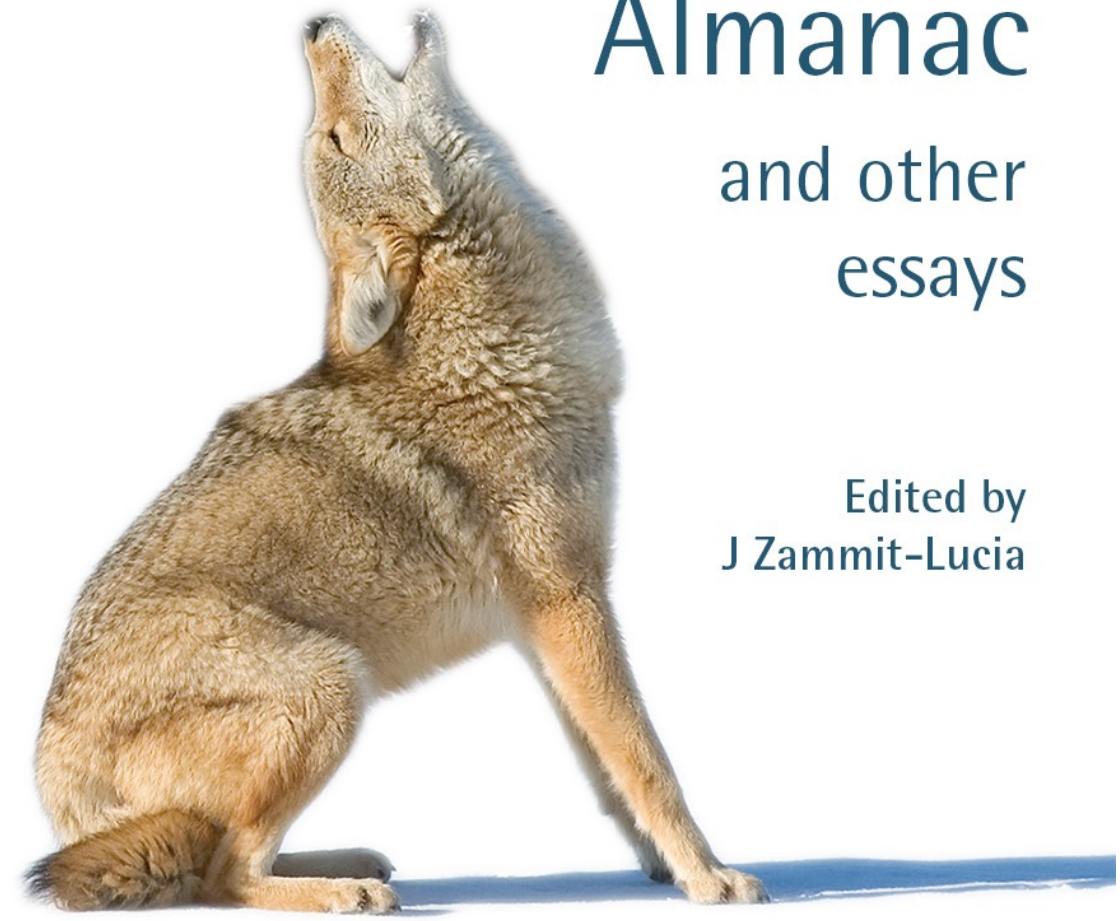
An Orange County Almanac

and other essays



Edited by
J Zammit-Lucia

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Cultura 21 eBooks Series on Culture and Sustainability. Vol. 7

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The Cultura21 eBooks Series on Culture and Sustainability presents findings from inter- and trans-disciplinary perspectives in research and practice. The eBooks are published openly online by Cultura21 Institut e.V. in order to support broad dissemination and to stimulate further debates in civil society and further action-research in the field.

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About this book...and Thank You

As always, any publication is the end result of the work and support of many people and institutions. It is always built on foundations laid by others.

This volume is the result of the 2011 annual writing competition organized by WOLFoundation.org (Web of Life Foundation). The Foundation's mission is to be "a factory of ideas" to help improve how we can all live our lives better, sustainably. The annual competition is one way in which we try to encourage people to share "fresh ideas, freshly presented". We were all delighted by the number of entries to this year's competition – our first one – as well as by the consistently high standards of the entries submitted. Our first, and most important, thank you goes to the authors, from all parts of the globe, who submitted entries to the competition. All were exceptional and a joy to read.

Thanks are also due to the many institutions, web sites, blogs and other cyber-structures that made it possible to publicize the competition far and wide and encourage participation.

Selecting a short list of essays and, from that, selecting first and second place winners was a challenging task. Our thanks to the Foundation's Advisory Board who read through the entries and voted for the winning entries.

With thanks to Sacha Kagan and all his colleagues at Cultura21 for making this publication possible and to Nikolai Huckle and Siobhan Dolan for patient and professional work in collating all entries, keeping them in order and preparing this manuscript for publication.

Finally, all thanks to the many millions of people around the world who are working tirelessly to improve the world we live in and the one we leave to our children. Much of what is in this volume comes directly from the work of these many. Hopefully, these essays may serve to provide some with a different perspective, a different look and, maybe, spark some new ideas that can be taken forward and explored further.

The title of this book comes from the title of the winning essay *"An Orange County Almanac: adventures in suburban ecology"*. This outstanding essay by Jason M. Brown is a worthy winner and opens Part I of the book – dedicated to essays written in a literary style. Part II is dedicated to essays written in a more technical/factual/argumentative style and is opened by the essay by Paul Wapner – our second place winner with *"Humility in a Climate Age"*.

Being the result of a competition that encouraged all ideas and all forms of expression, the essays in this book make a somewhat eclectic collection – in style, approach and content. The essays do, however, weave a cohesive story with the added strength of bringing together many approaches, many perspectives, many styles. Much was inspired by the outstanding "The Best American Essays" series. This collection is a jigsaw of pieces, each generated individually but which, miraculously, come to fit nicely together. Hopefully this eclectic mix can be energizing and give the reader an experience that is different from the mainstream.

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Environmentalism Refreshed

> “Why, sometimes I’ve believed as many as six impossible things before breakfast.” (The Queen, Alice in Wonderland)

“The way we treat each other is the measure of how we treat the earth”.

These are, maybe, the most important words that you will read in this book.

They are the concluding words of the essay by James G. Blaine titled “American Myths, American Dreams”. In his essay, Blaine takes us through a history of the myths that sustain us and build the world as we understand it to be. He encapsulates two sentiments that run, as a common thread, through all the essays in this book.

The first is that the time is over when we can afford the luxury – or the folly – of considering ‘the environment’ as somehow separate from ‘people’. Blaine powerfully makes the case that how we treat the environment is a social issue – not a scientific one; not a technical one; not an activist agenda somehow separate and different from the rest of how we organize society. “The task is to dismantle the strictly enforced boundaries we have set up between culture and nature and to watch what happens in the chaos” according to Jason M. Brown in the winning essay from which this volume takes its name.

The second sentiment is that we need new ways of thinking about issues that affect how we interact with our environment. In seeking essays for this volume, we were looking for fresh ideas – and we have not been disappointed. Whether expressed in literary style or in a logical exposition of thoughts and arguments, we have been rewarded with an explosion of feeling that says – clearly and loudly – the

environmental narrative that has been successful in the past needs to be refreshed with new paradigms and new approaches – and maybe a new energy. The authors whose work is collected here make some powerful calls for change. Some make them emotionally and metaphorically; others make them rationally and logically; but all make them passionately.

Whose Ecology – Yours Or Mine?

Our authors strongly challenge much that has become mere received wisdom – no longer subject to critical thought and therefore ripe for challenging.

Brown reminds us that the “bedazzling microchip geometry of sprawling civilization” has its own ecology. Coyotes and eucalyptus trees are part of that ecology, raising questions about the established dogma regarding introduced species. These same questions are raised by Adrienne Ross Scanlon who, as she battles to tear up the highly successful Himalayan Blackberry from the Pacific Northwest, wonders why one immigrant is battling another. When does an immigrant earn the right to stay? Similar sentiments emerge in Allison Roberts’s emotional description of how Man-made Normandy Lake drowned her neighbourhood and her father’s grave. How her grieving eventually gave way to a realization that our tendency to look back must not be allowed to destroy our experiences of the present and our potential for the future: “We must not allow the past to destroy our ability to lie in the grass and appreciate the present life around us. We must accept what nature is today, and pour our efforts into preserving what we have, rather than forever lament what we have lost.”

Conservationists have long adopted a ‘historical model’ to guide what they do with ecosystems. This has masqueraded as ‘science’. It is, in fact, a value system that has become embedded in the discipline of conservation biology. Is it time to shake it off? Does it still make sense to prioritize the past over the future or may we cause more harm than good and more conflict than harmony, while undermining goodwill and useful outcome? “An ecosystem is an amorphous blob of a word”, says Brown. Yet ecologists and biologists risk being sucked into the same traps as those economists who believed that, provided they could extract enough grants to construct the most complex of models, they could understand, map out and manage an economy (a social ecosystem) as though it were a machine. Will what didn’t work out so well with eco-nomy work any better with eco-logy or will we make the same mistakes all over again?

We must distinguish from ‘science’ those analyses that contain, hidden in every formula, a set of societal values with which our society may or may not agree. Your preferred “ecological purity” may not be mine – and both may be equally valid.

Re-discovering Emotion

> “By the time my father entered the University of Florida in 1954, the year after Watson and Crick confirmed the helical structure of DNA and free will was overthrown by predetermined encodings, the ‘softer’ sciences had developed ‘physics envy’”.

Deborah Thompson describes being brought up in a scientific household where sentiment and emotion were looked down on, and where, for something to have any credibility, it had to be shoehorned into the physics model of hard science, whether it fit or not. Forced to

abandon emotion as she pursued her science education, she finally broke down and cried. Today, most of us understand that we are, fundamentally and unshakeably, emotional beings and that the myth of the human as ‘rational actor’ is just that – a myth. And it is these emotions that we call on to appreciate, love and bind ourselves to nature.

“And I wept for them” says Omar Perlman of the wolves and coyotes as he was moved to tears by the beautiful, haunting sound of the howling packs. It is emotion not ecology that makes Elsa Sebastian contemplate imagined future worlds for her and her community as the Bristol Bay watershed makes the choice between remaining “the largest run of sockeye salmon in the world” or seeing itself anew as “one of the largest gold deposits in the world”. It is the search for emotional peace that drives the Wall Street currency trader described by Meg Domroese to spend some time trading in a different currency – watching and counting bees in Prospect Park for the natural history museum and the parks department. The training program gave her just “enough of the science…to get to the Zen she cared about.” And lest we let our emotions mistakenly take us just in one direction, Frank Buren reminds us in a timely manner that, in the right (or wrong) circumstances, “Nature will kill your children and wipe out your species without a second thought. It will turn your building into a pile of wormwood in half the time it takes to marry three different wives. Nature doesn't care. Nature is value-neutral.”

But we are not. And that is what this is all about.

A State of Confusion

Most emotional of all is our state of confusion about our own values. What do we value most for ourselves and for our children? How do we deal with the emotions of our own conflicting values? How do we deal with different moral principles each of which we hold dear but which all drive us in totally different directions?

In Kathleen Dean Moore's essay, these emotional conflicts are brought vividly to life when a mother is told that her daughter was in jail. Arrested for participating in a demonstration supporting environmental protection. "Don't all parents want the world for their children?...I don't know what to do: what to hope and what to fear, what to invest in and what to give up, what to insist on and what to refuse."

The reality is that none of us really knows how much of today we should trade off for tomorrow. As Marybeth Holleman so graphically shows us while waiting for aviation fuel to be simply burned away, consumption and waste are embedded features of what we call 'quality of life'. We cannot just wish them away with shrill cries of protest from the rooftops. In such a social environment, what we should deny our children today so that their grand-children may, just may mind you, be better off tomorrow? These are the values we struggle with – and simply attempting to bury values under the emotionless words of science and logic won't work. It'll end in tears.

Or we can strive for a technological fix.

Ralph Acampora's "interventionist ethology" shows us how innovative technology can, in fact, help us broaden our experiences, in this case by enhancing our ability to connect with non-human animals. Technology need not distance us from 'nature' – it can bring us closer.

But we are also warned not to put all our faith in technology. Gunnar de Winter's tale of "How to Build a Tiger" guides us through many issues: the power of money, our obsession with conspicuous consumption and the risks and uncertainties inherent in scientific and technological progress. Neither is technology likely to render infinite the finite resources available on our planet – all the clever equations produced by Rob Dietz's Milton Mountebank character notwithstanding.

Few doubt that science and technology will form a large and important part of our future on this planet – and probably an increasingly important part. The challenge is that we cannot know exactly how or exactly when. We cannot plan on it and neither can we plan without it. Yet more uncertainty; yet more confusion.

Where To Next?

> "Environmentalism in its current form cannot address the roots of the ecological crisis."

One cannot read the essays in this book and not be inexorably driven to the above conclusion so clearly laid out by Isaac Yuen.

So where do we go from here? Fortunately our authors have provided valuable suggestions as well as perceptive analysis.

First comes the money. Everything we do needs to be financed and A. Patrick Behrer's essay, while describing one approach in some detail, also makes the more general point that "the private sector controls the majority of global financial resources and…[we] must find ways to tap this resource." This pragmatism contrasts with the position of what I shall call 'traditional environmentalism'. The latter is an environmentalism that is ideologically based, rooted in the construction

of a moral identity that divides the world into good and evil and then becomes convinced of its own undisputed righteousness.

Thomas Wells effectively dismantles this environmentalism. “Forging such a moral identity may strengthen solidarity within the environmentalist movement, but it certainly doesn’t build the necessary bridges for successful political action…Righteousness simplifies but it doesn't try to understand.” He proposes economic analysis as a useful tool around which discussion of values and consequent action can be built. This is a valuable departure from economics (or ecology) as ‘science’ empowered to find ‘answers’ by doing an end run around values. It becomes economics as a framework for public discussion of values; a tool whereby values can be made explicit and trade-offs more transparent.

Yet, we cannot get away from the complexity of it all. And, in dealing with complexity, we risk forgetting one valuable tool – humility.

“Humility in a Climate Age” is the title of the second place winning essay in our competition. In his essay, Paul Wapner also reminds us that the environmental debate is about values – an ethical debate he chooses to call it. He then draws us into the discussion of the relationship between our societies and the natural world, distinguishing between having the humility to seek a harmonious relationship with nature as opposed to the arrogance of believing that we should aim for mastery over natural processes. And maybe it’s not just in defining our relationship with nature that we need humility. We also need the humility to accept that we don’t, actually, understand much. We are societies of emotional creatures with widely varying values and cultures working with incomplete, and often erroneous, knowledge of hugely

complex social, economic, ecological and atmospheric systems. Let us have the humility to believe that the best we can do is muddle through. That it is laughable to frame the issues as Question:Answer; Problem:Solution; I am right:You are wrong. We need to find more nuanced ways of engaging in discussion.

And here I'd like to conclude with the concepts put forward in Isaac Yuen's essay.

Wapner starts his essay with these words: "There is a battle going on for the soul of environmentalism". It is this framing as conflict that Yuen challenges in his essay titled "Playing to Tie: Adopting a Sustainable Mindset". Yuen puts it plainly "The root cause that led us to exploit, alienate, and dominate others, our surroundings, and even ourselves, remains. This root cause is a result of a specific mindset that is cultivated by modern society: We are taught to play the game of life to win." He argues that we cannot achieve sustainability while we see life as a competition to win over anybody and anything that might be out there to win against. We ourselves are not exempt "Many environmentalists approach the ecological crisis with the same mindset of winning". We must beat the corporations, the SUV drivers, those who don't wear green caps – whoever. They are the enemy.

Yuen suggests that the environmental crisis can only be improved if we can learn to play to tie. "The question of whether we can save the environment becomes irrelevant if we play the game of life with an intention to tie; genuine sustainability will arise spontaneously from that mindset." In today's society, learning to play to tie instead of to win is a tall order but it may be worth striving for.

Different, distinctive, disparate, diverse. The essays in this volume were

not conceived together. Yet they weave a cohesive story which I have tried to lay out in this preface. We asked for fresh ideas, freshly presented – and we got them. Now all that remains is for the reader to experience the skill and passion that each individual author brings in each one of these essays. I very much hope that you will enjoy the writing and the content as much as the judges of this contest and I have done. That you will find stimulation and inspiration to explore your own ideas further and maybe join us with your own writing in a future competition

Joe Zammit-Lucia

President, WOLFoundation.org

September, 2012

PART I

An Orange County Almanac:

adventures in suburban ecology

Jason M. Brown

Abandon nature all ye who enter here!

My non-stop flight from New York to LAX is arriving and the crackle-soft voice of the flight attendant shifts me in my window seat. Through the small window my hometown of Yorba Linda creeps up the foothills of Orange County, indistinguishable from the rest of the Southern California megalopolis. The eastern forests had melted into crop circles; then into meandering shades of desert-tan. Suddenly, the tangle of North-South ridges that divide Southern California's coastal plain from its high desert had given way to the bedazzling microchip geometry of sprawling civilization. With the ocean on one side and the mountains on the other, the lines that divide culture from nature were almost visible.

You see, as a kid growing up in Orange County, nature was this place we drove to. Each summer, my family would pack into the minivan for a whirlwind tour of Yellowstone, Yosemite or Mt. Whitney. In the cooler months we would camp among the Joshua Trees of the high desert.

It didn't seem to bother us that subdivisions and mini-mansions steadily devoured the chaparral hillsides and historic orange and avocado orchards of our once sleepy corner of the county so long as each summer we could flee to pristine places far from the smoggy, fast-paced life of the suburbs.

Orange County was once promoted as a paradise; boasting mild temperatures and millions of acres of lush irrigated vegetable gardens and fruit orchards surrounded by undulating hills of oak and sage. But after the post-WWII boom, the “Orange” in Orange County became just another hue on the planners’ pallet: pastel, pavement, repeat. In fact, one might get the impression that *ecology*, a word we tend to use to describe nature does not happen around here. That’s certainly what I thought when I left home as a 20-something hoping to make a connection to nature through various back-to-the-land internships and graduate degrees. Nature, I thought, was long gone in and around Orange County. I was certainly not alone in seeing the world this way, our modern civilization has inherited 500 years or so of talking about the human world (culture) as totally separate from just about everything else (nature). Look at any map of the world, and the defining boundaries are those between land and sea, countries, and sometimes, depending on the map, nature parks. The lines we have drawn around nature, both in our minds and on maps, have become as real as the boundaries between countries.

Southern California is full of these arbitrary lines. Not only between the United States and Mexico, the land and the beaches, but also along the myriad National and State Parks that embellish the coasts and Sierra Mountains of the Golden State. But each time I return to the County of Orange—for Christmas, birthdays, backpacking trips with my brothers—the boundaries that seemed so clear to me as a college student blur just a little bit more, and the differences between ‘us’ and ‘them’ are slowly melt into thin air. Here is what I mean.

A coyote drank my latte!

My father loves to golf; I don't. But when I'm visiting home I'll play. Dad and I catch up, and I watch the turkey vultures ride the thermals that rise off the chaparral hillsides above the emerald green golf course near my childhood home. As we approach the ninth hole, we top a rise that looks out over the fairway and surrounding landscape—hills above, houses below. As dad tees up and waggles into position, I notice that just off of the north side of the path, the golf course abruptly ends. The contrast between the electric-green grass and the brittle-brown beyond it comes into stark and absurd relief. Bewildered, I walk the edge between Kentucky-blue and tumbleweed-tan, using my 6 iron as a tight-rope balance. It's an eerie feeling, like seeing the camera pan out of an autopsied living room movie set, a place within a place. I raise my open palm to my brow to block the sun and plant my six iron-flag; I have found the fabled edge of culture's flat-earth!

Suddenly, a lone coyote trots into view through the tumbleweed and sagebrush and we both freeze. She puts her nose to the ground and nervously shifts her weight between her grey-brown front paws. The fire in her eyes reflects the green behind me. Realizing I'm not a threat or a meal, she lopes onto the golf course just as my father blasts a muffled curse at his hook shot and we watch the coyote disappear into a hedgerow.

For Orange County residents the coyote is a wild animal out of place. Unlike dogs, who are treated like members of the family (culture) and unlike the iconic wolves howling in the wilderness (nature) the coyote defies any neat categorization. Reading the newspaper a few days later I stumble across an interesting page: the online *Orange County*

Register's "Coyote-watch." The page features an interactive Google map that allows users to post recent coyote sightings in their neighborhoods (the reported sightings appear as paw prints on the map). Readers should visit the page with caution however, as it reads like a domestic-violence evidence file with gruesome pictures of battle-scarred dogs and interviews with shaken pet owners. One story profiled an award given by the Society for the Prevention of Cruelty to Animals of Los Angeles to the "Hero Dog of the Year." This year's recipient was a wire terrier named Ronald (after Ronald Reagan of course, this is Orange County). When a coyote entered his owner's backyard over the back fence, Ronald courageously attacked the invader before it made a happy meal out of his companion, a silky terrier named Anna. Apparently the coyote mistook the backyard for a drive-thru.

The coyote's inability to discriminate between suburban animals we hate (like rats) and suburban animals we love (like silky terriers) has gotten them into trouble with Orange County residents who have lost pets to these cunning hunter-foragers. In my conversations with friends and family, some take an empathetic tone: "Well, coyotes were here first, and with all the houses being built it's no wonder they wander into our neighborhoods, they're starving!" This is the classic image of a steadily advancing bulldozer over untouched wilderness. While this is certainly the case for many species unfortunate enough to have evolved on beachfront property, coyotes, have in fact adapted quite well to the suburban landscape, and frankly made themselves right at home.

Here is what I mean. An ecosystem is an amorphous blob of a word that attempts to describe the interactions and relationships between all the living and non-living things in a given place. An ecosystem can support for example, a limited number of plants and animals. Plants of

course make up the foundation of the food web because they produce their own food through photosynthesis. In a dry Mediterranean climate like Southern California, sun is abundant, but water limits the kinds and amount of plants that can grow. This means that even fewer of the animals that eat those plants such as mice, rats, rabbits, ground squirrels, gophers, etc. can find enough food and reproduce. This also means that even fewer of the predators that eat mice, rats, rabbits, ground squirrels, gophers, etc. such as coyotes can get enough food and reproduce.

Long before white people invented the suburbs, coyotes were present in fairly large numbers in Southern California. However, unlike many other species that have significantly declined or even gone extinct with the development of our peculiar habitat known as the suburbs, coyote populations have actually increased. While exact numbers are not known, some estimate that coyote populations in Southern California are some 10 fold larger than pre-colonial times.

How could this be? As we gradually shifted the sage and chaparral lands into irrigated lawns, gardens, and suburban woodlands we greatly increased the varieties and quantity of green plants that could survive here. This allowed more mice, rats, rabbits, ground squirrels, gophers, etc. to get enough food and reproduce. This in turn allowed predators like coyotes to get more food and you guessed it, reproduce. What's more, to a coyote the high density of defenseless bite-sized domesticates (in the form of dogs and cats) we keep are much easier targets than the rodents they are accustomed to catching; and being omnivores, coyotes have no qualms about raiding a dumpster for a midnight snack.

So between the increase in wild rodents to hunt, a plentiful buffet of house pets to choose from, and vast quantities of curbside Diners, the suburban coyote seems to have it pretty good. What's more, because these suburban coyotes are getting plenty to eat, scientists are observing decrease in the amount of time they spend hunting. Whereas a coyote in say Yellowstone National Park may have to forage for up to 60 percent of its waking hours, suburban coyotes spend that time resting. That's right, suburban coyotes are only working for two and half out of seven days of the work week! So while my family vacationed in Yellowstone; Yellowstone coyotes would prefer to spend the summer months in Orange County!

Some residents of Orange County would have animal control exterminate these pet-eaters. But as long as we are playing the game of suburban ecology, we will probably keep hearing the yip of yuppie coyotes foraging through Starbucks dumpsters after a morning jog through the park!

Eucalypts go home!

A few days after golfing with my dad and the coyote, I decide to go for a walk. While strolling through the familiar streets of my childhood, I stumble upon a cherished row of eucalyptus trees that lines a nearby street. A pickup truck's worth of workers are cleaning up after their morning task, and the soft consonants of Spanish bounce from mouths to ears. It appears that they have just finished de-limbing one of the eucalyptus trees which now stands stark and naked among its shaggy-clad companions. One of the workers prepares to make a final cut at the base of the trunk. As the chainsaw sputters and chokes, my mind begins to wander in sync with the whine of metal teeth incising the fat,

tan trunk. I passed by these trees almost daily growing up and never really put them in any kind of historical or ecological context. The trees were old, no doubt planted to protect orange groves against the Santa Ana winds. The first few inches of the saw's sweep transect the trees outer bark and youngest growth rings. The tree rustles and I imagine the blade cutting through the rings that correspond to my 30 years of life on this earth, growing up here in Orange County. It would pass by rings made during my time in graduate school and college, the two years spent as a Mormon missionary in the Dominican Republic, high school, my first kiss, first camping trip and my birth.

The rest of the crew stop their tasks and begin watching the tree for signs of tilt as the earnest blade continues past growth rings made in the 1970s, when the orange and avocado groves the eucalyptus protected from wind were being swallowed whole by subdivisions and strip malls (my own home was built during this time). As the blade digs deeper and the once-flesh-now-dust flies, it passes the 1960s, 50s, 1940s, 30s and 20s. With the blade buried deep inside the bole of the tree, it approaches the growth rings of 1913, the year the first Avocado trees were planted and Richard Nixon was born just down the street from where I stand. Finally, the sawyer cuts through the teetering eucalyptus' infant growth rings which must have been laid around 1910, when the Janss Investment Company purchased a portion of the Rancho Cañon de Santa Ana and began subdividing it into 10- and 20-acre agricultural plots which would later become my hometown of Yorba Linda.

In a snap and a crack the truncated bole thuds to the path along the sidewalk and the sawyer quickly begins to buck it into manageable sections. One of the other workers directs the few backed up cars to

pass. As I walk past the downed eucalyptus and crew, I catch the tale-end of a scowl cast by an older woman in a black Mercedes as she surveys the scene and speeds off. For many in California, illegal immigration is a touchy subject and perhaps she is sizing up the tan-skinned workers as possible suspects.

Like the Europeans, Mexicans, Chinese and other ethnicities that call California home, eucalyptus trees are immigrants. Native to Australia, they were brought to California during the gold rush of 1849, with one of the thousands of Australians leaving Sydney who hoped to strike it rich. And like the immigrants they accompanied, the eucalyptus found fertile soil and a favorable climate in the rare California coastal sage and prairies. For a few years thereafter the eucalyptus was officially promoted as a “wonder tree” that would save California from an impending timber famine and whose pungent leaves were reputed to have medicinal properties. Many soon realized however, that the structural properties that gave eucalyptus its reputation as a good timber tree had come from the wood of centuries-old groves in Southern Australia. The wood of the fast growing young trees, saturated with water warped and cracked when harvested in California and was therefore useless. Although commercial production came to an abrupt halt, the tree naturalized throughout the coastal region of central and southern California.

In the age of ecological correctness, the eucalypts have become an easy target for those who strive for a kind ecological purity. Despite the literally hundreds of non-native species that have naturalized since the European colonization of the Americas, the Eucalyptus has in recent years been singled out as a symbol of a gaggle of ecological menaces known as “invasive species.” In his 2002 article “America’s Largest

Weed," ecologist Ted Williams calls for the total removal of eucalypts or, as he refers to them "eucs." For purists like Williams, eucalypts simply do not belong in California, despite their ability to adapt to our climate.

California ecologists have gone so far as to remove eucalypts from public lands in order to restore native chaparral and coastal ecosystems, despite the fact that there are still hundreds of "non-native" plants throughout the parks. In the Channel Islands National Park, just off the coast of Sothern California, officials have decided to keep some eucalypts that are close to historic structures as part of the *cultural* heritage of the Parks, while removing them from other parts of the island.

It is striking that the language used to talk about eucalypts as an ecological menace and the language used to demonize illegal immigrants as social pariah is so similar. Both discourses make use of epithets, "eucs" or "wetbacks" to distance and dehumanize. Both attempt to demonstrate destructive habits, ecological (invasive) or economic (taking away jobs). Both are derided for uncontrolled reproduction and the danger they pose to native ways of life (whether that be human or "native" ecosystems). In a strange twist the eucalypts are anthropomorphized in order to be de-humanized, and the illegal immigrant is dehumanized to be de-naturalized.

The debate over whether or not to remove eucalyptus trees from spaces delineated as "nature" exposes how this stark boundary between culture and nature is not so black and white. Advocates of eucalypt preservation accuse people like Ted Williams of ecological purism, accusing him of a kind of ethnic cleansing in the name of native floral supremacy. Williams and other ecologists have argued that

protecting native species is, in the end, about protecting biological diversity in the face of the homogenizing effect of exotics.

Ecology is about interactions. When invasiveness as an ecological category is about delineating which plants and animals do not fit our preconceived notions of what is “natural” we forget that ecology is not a snapshot of a single place and time; it is dynamic and evolving. It is revealing that in the case of the Channel Islands National Park, Eucalypts were kept only around cultural sites. In this case, eucalypts were interpreted as being tainted by culture and as such are not fit to act out their evolutionary agency on their own terms within spaces been deemed “natural” by cultural institutions.

From culture/nature to culture-nature

As I sit in the airport terminal waiting for my return flight to the east coast, I notice a small sparrow dip and weave through the airport corridors. Orange County is a living monument to our attempt to separate culture and nature. We have laid an iron curtain between the two domains, patrolled by pugnacious pups named after cold warriors. But just as in the cold war we didn’t seem to realize how desperately communists and capitalists needed each other, the domains of culture and nature are not so different after all. Even a place as developed and overrun by *Homo sapiens* as Southern California shares something of the infinite complexity that emerges between the cracks. The good news is that the cracks are getting bigger as we realize that our social environment is intimately connected with the physical environment. The moral to the story is not that one can find “nature” in Orange County if one would just look hard enough; nor is it that intact, robust ecosystems are wholly cultural constructions. In a world of increasing ecological

catastrophe the task ahead is not increasing the strength of our will over an ever passive nature. Nor is it about getting back to some pristine primal wonderland. The task is to dismantle the strictly enforced boundaries we have set up between culture and nature and to watch what happens in the chaos.

In Praise of Weeds (Sort of)

Adrienne Ross Scanlan

A Sara's Orange-tip butterfly flutters above one of T-107's tangled mounds of Himalayan Blackberry. Nearby is a stand of trees where I crawl belly down across wood bark, brittle brown leaves, and purple plums shriveling where the August sun has slipped between tree limbs. Even here I find thorny spines of Himalayan Blackberry to snip. Weeding is like plugging one's finger in the dike between native species and invasive ones. Pull out your finger; in rushes exuberant life to take root in a new home.

I used to love yanking Himalayan Blackberry from the earth, tearing away the deep-rooted tenacity common to unwanted creatures. Himalayan Blackberry is an invasive weed as abundant in the Pacific Northwest as the rain. I'll admit the anthropomorphism and say it's as non-native to Puget Sound as I am. As an ex-New Yorker transplanted to Seattle, it's not lost on me that one weed is ripping out another to make a home for native species. But is the Himalayan Blackberry an ecological criminal to be ripped out willy-nilly? Or are weeds like Himalayan Blackberry part of home regardless of our diligent weeding?

I usually weed at habitat restoration projects organized by a local environmental groups. Today's weeding is at T-107, a "pocket park" nestled between Seattle's Duwamish River and West Marginal Way SW's car traffic. Once home to the Duwamish Indians, and later to Scandinavian and other immigrants, the Duwamish is a five-mile long Superfund site hosting barges, factories, Port of Seattle docks, and small "pocket parks" of reclaimed habitat. At T-107, wooden fences are

entwined with a verdant wall of Himalayan Blackberry. Not far below flows the Duwamish River with it's white and blue tug boats, and wood pylons where bald eagles and great blue herons perch. T-107 used to be the site of a brick factory. Planted, weeded, re-planted and re-weeded, T-107's foot trails meander amid alder and hip-high seedlings of Western red cedar, Douglas Fir, and other conifers. Nestled under these young trees is Himalayan Blackberry stems thin as pencils and low to the ground. I identify the weed by its thorns and characteristic five–leaf sets and snip it with my hand shears just as it emerges from shadowed ground.

I've brought my volunteer's passion for uprooting Himalayan Blackberry to restoration sites along the Snoqualmie River, the Mercer Slough, Hamm Creek, and too many other Seattle or King County habitats to recall. Unlike T-107, by the time I showed up at those other sites, the Himalayan Blackberry would be taller than I am. I would wear workingmen's leather gloves so stiff I could hardly grasp the pruning shears. I would sever a cane only to have a botanical chaos of vines and thorns jerk up like a tightly stretched tent snapping a pole. Canes longer than my arms, my legs, my body would clutch me. Thick maroon thorns would cut through muddy jeans and flannel shirts to rip crimson streaks into my skin.

And so, as I am doing at T-107, I would cut as close to the ground as I could get. The Himalayan Blackberry would grow back. I would return to cut it. The Himalayan Blackberry would grow back. I would return and cut again. The Himalayan Blackberry would grow back weaker but still alive and growing. I would return and cut and admire the weed's persistence, its tenacity to take root, its fierceness to live.

I'm ambivalent about weeds. I am one.

#

Although I identify with weeds, it's not always clear to me just what is a weed. Definitions vary, often contradict, and can get as tangled as what grows in an abandoned lot. From an agricultural perspective, a weed is a plant that causes economic harm. From an ecological perspective, weeds are plants (or other species) that thrive where humans have disturbed the landscape. Webster's 3rd New International Dictionary's definition of weed includes "…an obnoxious growth, thing or person… one of wild or rank growth…" or my favorites, "…sudden illness or release…" and "…an attack of madness…" One person's weed is another person's pretty flower. The easiest way through the thicket is to say a weed is a plant (or fish, animal or any other critter) that shows up in a place where we don't want it and won't go away. Poison or pull them all you want, weeds come back, supposedly out of place but asserting their grip over the landscape. If anything, all our picking, poisoning and other eradication efforts can act as a form of natural selection, promoting hardier, more genetically diverse weeds that are better able to thrive alongside us.

For most people, "weed" doesn't take into account whether a plant is native to an area or a non-native (introduced) species. It's a distinction that matters to anyone engaged in environmental restoration. Native plants typically refer to species that came to a region by wind, wave or other natural means that didn't involve humans. Once in a place, natives reproduce and thrive without human involvement. This is different from what happens with non-native species, whereby humans intentionally or accidentally take plants or other species out of their

natural region and bring them into a new place.

America is a nation of immigrants, but when it comes to plants most of us don't know the natives from the newcomers. Potatoes came from South America. Apples and pears were introduced from Eurasia. We can thank Luther Burbank for bringing the Himalayan Blackberry to the United States in 1865. But it doesn't matter whether they came because we wanted them or they arrived as stowaways in our cargo. These and many other plants have become part of the world we know as home. Most non-native or introduced species (estimates are as high as 90%) behave much like their human immigrant counterparts. They find an unfilled niche, settle in alongside the natives, and add to the local biodiversity without harming it.

Not so invasive plants. Invasive plants are a leading driver of native plant extinction. Invasives are a special group of non-natives that harm human health, the environment, or the economy. Himalayan Blackberry has all the classic characteristics of an invasive. It reproduces quickly (8,300 to 15,500 seeds per square yard dispersed by foraging birds and mammals, or by "daughter" canes that can grow 23 feet in a season). Himalayan Blackberry has no serious predators or pathogens in its new Pacific Northwest home. It thrives in human-induced disruption. Tear down a forest for suburban roads, shopping malls or mega-churches, and Himalayan Blackberry moves in, taking root in gated communities as easily as alongside rivers, streams, wetlands or forests. Seattle underwent waves of logging a century or so ago and while maples, alders and other deciduous trees grew back, native conifers like Western red cedar or Douglas Fir that should have returned through botanical succession never really took root in part because of competition from invasive species like the Himalayan Blackberry.

Today, the Himalayan Blackberry on Seattle's public lands could top 900 football fields and that's not counting back yards or anyplace else in its path. After weeding even a small thicket, I've found fertile soil barren of salmonberry, thimbleberry, Oregon grape, and other native plants. I've found stunted, pencil-thin seedlings of cedar, fir and other native trees the Himalayan Blackberry had swarmed, its vines climbing over and choking the native plants as it grasped sunlight, rain, nutrients. The native die out. The Himalayan Blackberry survives.

So for a weed like Himalayan Blackberry to be considered invasive, it has to go beyond being unwanted. It must take over the landscape and block out other species, rather like an itinerant preacher prophesizing the world to come and leaving his bastard children behind. Not all weeds do this, and neither do all introduced species. But weeds do tend to be called generalist species. David Quammen's elegiac "Planet of Weeds" describes how, in the biological sense, "weeds" can refer beyond plants to include mammals, birds, fish or other species that are "…scrappers, generalists, opportunists…" that is, able to travel far, survive using a wide range of foods and terrains, thrive in disturbed ecosystems, reproduce fast, and once in a place, dig in hard." Think of rats. Think of starlings. Think of us. Humans aren't simply the most destructive invasive species on the planet. We are, as Quammen says, "…the consummate weed."

#

Here at T-107, the tangled relationship between weeds and home is on my mind as I rip a hank of Himalayan Blackberry off a stack of cut wood. Uncovered are black bugs, dirt, and stones juxtaposed with shadows cast by the summer sunlight. A brown and grey moth flutters

down to the newly exposed habitat. I blink my eyes, and it appears to be just another leaf amid scattered brown leaves.

For most of my years in Seattle, weeding seemed an uncontestable good intention: take out the Himalayan Blackberry and other invasives; plant Nootka rose or other native species, and in doing so provide needed habitat — a home — for resident or migratory birds and other wildlife; restore T-107 to approximate what the Duwamish was like when it was a healthy, wild river. Over the next 24 years, Seattle and Puget Sound's population is estimated to increase by more than 2 million people, largely immigrants like me who come to enjoy it's once pristine beaches, trails and nearby national parks. Our arrival increases the economic incentives to turn habitat into the urban or suburban development which helps push already over-exploited salmon runs and other local beleaguered species closer to extinction. Over my years in Seattle, planting trees, monitoring salmon runs, weeding invasives and other restoration volunteering evolved as a way of minimizing my impact while showing gratitude towards my new home.

For years, good intentions (along with leather gloves and hand shears) were all I needed to yank Himalayan Blackberry anywhere I chanced upon it. But good intentions require scrutiny. Writers such as Michael Pollan and Steven J. Gould have noted how the ecological issues surrounding natives and non-natives can become co-opted by "anti-native" political or social agendas, the nadir being Nazi Germany's efforts to "cleanse" so-called "unwholesome alien influences" in the form of plants such as impatiens parviflora, a small woodland flower. Knowing this gives me pause when, closer to home, I encounter a zeal extending to outright hatred of weeds, invasives, or just plain non-native species.

The ecological jargon surrounding non-natives is xenophobic, filled with aliens, exotics, non-indigenous, foreign or introduced species that make it sound as if crazed hordes are storming the city gates. “The invaders must be stopped!” screamed one email about a weeding. “Know Your Enemy…” shrieked an otherwise informative web site about invasive species. A university / local government website on “the top ten most unwanted pests” has a fact sheet designed like a law enforcement “Wanted” poster complete with Himalayan Blackberry’s crimes (trespass on private property, overrunning desired plants), accomplices (birds which eat the berries and pass seeds through their digestive system, taking the Himalayan Blackberry to new locations), and steps for dealing with this “intense criminal” (send in the SWAT team, a.k.a. weeders like me) since “there’s no killing this monster.” An invasive species field guide edited by respected ecologists says of Himalayan Blackberry and the invasive Evergreen Blackberry: “The delicious fruit creates… the reluctance to treat these two species as vicious invaders.”

I’ve seen the converse, too, with native species described as more natural, better fitted to a place and having a right to it, yet fragile and displaced, made refugees by a motley mix of weeds, aliens and invasives. John Tallmadge writes of an assumed “…cherished concept of Edenic wilderness…”, a purity of nature that existed before we blundered onto the scene which underlies the cultural value given to native species.

Personally, I think tenacity counts. Maybe the Himalayan Blackberry has earned its place if only because it’s so hard to get rid of it. I’ve met more than a few restoration volunteers who voice my concerns: why penalize the Himalayan Blackberry for being hardy and able to tolerate

new environments? Native species, in contrast, tend to be wedded to a place, co-evolved to other native species, and vulnerable to sustained, human-driven environmental. While native plants are critical to a functioning ecosystem, I tend to agree with Stephen Jay Gould that natives are: "…only those species that first happened to gain and keep a footing…" and not necessarily the species best suited to a place through all times or conditions, nor always superior to newcomers. Once in place, though, newcomers and natives interact and influence each other, each change leading to another. Even if it were possible to remove all non-natives the result won't necessarily be the return of a pre-invasion ecosystem.

I think part of the hostility towards weeds and invasives is due to human nature. Traveling humans are the main way that plants and animals migrate to new places, whether it's rats lurking in trade ships or snakes coiled in food cargo. Every forest cut down for suburban housing or shoreline developed for trade destroys habitat for natives and opens the landscape to weeds and invasives. Research on climate change shows that weeds thrive in the hotter, carbon dioxide-enriched environments that are becoming our planet's future. Combine climate change with habitat destruction and a global transport system, and Quammen's planet of weeds looms where there will never be a shortage of Himalayan Blackberry. It's hard to build the political clout and economic punch needed to preserve land for wildlife, or plan sustainable urban and suburban areas. It's hard to change personal behavior enough to keep indoors that beloved invasive species, the pet cat, an all-too-local predator that's decimating bird populations. It's easy to yank a plant we don't like.

#

Two hours into weeding T-107, and hypocrisy is stinging along with the thorn scratches on my arms. I can't ignore how inequitable (if not ridiculous) it is that we human weeds go hither and yon, bringing weeds, aliens and invasives with us, vilifying the newcomers we've brought and ripping them out in the name of restoring habitat for the natives. But I have a personal issue to wrestle with as I snip spines of Himalayan Blackberry, smelling the fragrance of verdant life with each cut. I'm ambivalent about weeds because it took a weed to help me make a home.

Every place has its own chauvinisms, and the greater Seattle / Puget Sound region is no exception. Even after 20 years, I'm still told that I'm "so New York" in my speech, attitudes, and expectations. But to me (and borrowing from Ernest Hemingway), home is a moveable feast. My life has had many homes — jobs, bioregions, politics, writing, a husband and child. Except for the last three, all have been shed like a snake's skin left in the dust, the remains of what was once close to the heart but now outgrown.

I've not traveled as far or rooted as well as the Himalayan Blackberry, but I believe I can speak as a weed when I say that home is not a geographic place or the creatures in it. Home is your attitude towards the place you're in. Home is where you're rooted through exploration and engagement. Learning a home requires looking at a place (something that a region's long-timers may forget to do) and growing a weed's capacity to dig in and remain where you don't originally belong.

Like many, I'm "plant blind". I don't see plants other than as a blur of green, wind shifting leaves unless I make an effort to notice.

Volunteering at invasive removals forced me to learn my new home by exploring what is growing here. At T-107, I learn to recognize common tansy and its long stalks ending in feather-like fronds and a crown of yellow-gold button flowers. I realize that I have been seeing (and ignoring) common tansy in my backyard all summer long. I can never remember the field marks for Pacific Silver Fir, a native tree species, but even in winter, without its purple-black berries to pop in my mouth, I can identify the Himalayan Blackberry. It's a botanical landmark that reminds me I am in this park, weeding along this river, living in this city and not a former home.

Before finishing the morning's weeding at T-107, I yank and snip at a round hill of two invasives, bindweed and thistle. What's revealed is a thicket of snowberry and red-osier dogwood, two native plants. Curling at the thicket's edges, waiting its chance is Himalayan Blackberry. Regardless of my respect for it, the more abundant the Himalayan Blackberry, the fewer other plants are alongside it. As plant variety shrinks, so does local biodiversity, with fewer and a less diverse range of birds and small mammals able to find the food, water, shelter or other ecological services they gain from a diverse variety of plants. On a more personal level, the less there is for me to learn and explore, and the smaller my home becomes.

#

By mid-day, I and five other volunteers say our goodbyes alongside 16 thirty-gallon Hefty bags filled with bindweed, thistle and Himalayan Blackberry. A train rumbles. A belted kingfisher rattles a call. I smell the Duwamish's briny tang, watch cargo boats ply towards the Port of Seattle, and reach a bittersweet epiphany: maybe what I'm restoring

isn’t native plants but the human obligation to be engaged with the place where I live.

I’ll never get rid of the Himalayan Blackberry. I’m not even sure I want to. Maybe the best I can do — maybe all I want — is to keep a balance between native and newcomer. Give the Himalayan Blackberry sun, soil, wind and birds to disperse its seeds, and it will outlast me. And through human choice and tenacity, and a lot of weeding, so will the native plants.

Saving Normandy Lake

Allison Roberts

My grandfather was hunting for dead men. His goggles were old, cheaply bought things, and were quickly filling up with water. He groped, almost blind, through the cold, slimy mud at the bottom of the lake, feeling for that telltale rasp of clothing on fingertip, that strange sensation of hair floating in water, that smoothly cold brush of a stiff hand. Instead, he felt something hard and metallic. *Valuable*. He grasped it deftly, fulfilling his secondary task—pilfering from a displaced civilization—and propelled himself up to the surface of the lake, lungs screaming for air.

He was one of many poor boys in the 1970's performing the morbid task of body-searching. Normandy Lake of Tennessee had just been formed, through the eviction and flooding of a town, but the creators had failed to excavate the town's graves before filling the whole place with water. Within a couple months, the more recently dead began bobbing to the surface, horrifying reminders of the drowned past. The Tennessee Valley Authority (TVA) saw the potentially tourism-damaging nature of corpses, and proceeded to pay desperate men like my grandfather to correct the problem. They would go out in aluminum flat-bottom boats and equipment they supplied themselves, and dive down for as long as they could hold their breath, searching for bodies trapped beneath the water, dead men getting ready to bob to the surface and terrify children. Most of these men used the opportunity to fill their pockets with slightly less horrifying vestiges of the old Normandy town —silver cutlery and plates, loose change, gold (heavily rusted) pocket-

watches, and other tidbits that could be sold for a bit of extra cash.

The silver picture frame was an unusual find. It was tarnished, of course, but its glass was unbroken, and still held a badly damaged picture inside. My grandfather stared at it closely. Two blurred forms looked back at him, sex, age and faces unrecognizable. When he'd first closed his hands around it, he'd really hoped for something more valuable. Large, hard objects in the lake were often pretty big-ticket items — comparatively. Silver plates, mostly. This frame probably wasn't worth much money. And yet…he couldn't stop looking at the water-stained faceless people so carefully preserved within its glass. It was so strange, anyway, that a year of being underwater hadn't broken the glass. In the end, he couldn't bring himself to throw away the frame, and placed it on his work desk, thinking he'd surely throw it away tomorrow.

Elle had forgotten the picture. In the rush of packing and leaving, under the anxious eyebrows of TVA bureaucrats, it had been left behind, sitting neatly on the floor of her bedroom, waiting to be gingerly picked up and wrapped into a box, protected and warm. It was the last vestige she had of him, the last true proof that he had once been real and hers. Her father, once all warm smiles and gentle hands, now buried six feet under, with a decidedly cold and stiff smile. The frame had been a gift from him, once he knew he was dying. A reminder, he'd said, to think of the happy times. To drive down the old sunlit gravel road and remember his healthy laugh, not the death rattle echoing in a hospital room. Their town was supposed to be full of him at his best, the gregarious mayor, and her picture was supposed to be culmination of it all—the ghosts collected into a happy photo of him, holding her at age four, looking forward to a future that he would never see.

Can ghosts drown? Elle couldn't help but wonder that as she watched her past sink, slowly, underwater. The TVA had closed the dam, and the Duck River's waters were beginning to eat everything she had ever known. She wasn't supposed to see this, she knew. But she relaxed deeper into the rocks behind scraggly vegetation, trusting the Tennessee hills to hide her from any officials that might be strolling about, surveying their destruction. She could see everything from her little alcove. The gravel road, leading to the heart of Normandy, was slowly disappearing, and the houses were beginning to lose their first stories. Her picture frame, *her father*, was probably already far beneath the waves, tarnishing and disintegrating. In the distance, where the water was deeper, she could hear houses cracking and breaking apart under the pressure of dark undercurrents, waters swirling in confusion in their new terrain.

The world felt uncertain. Elle walked back to her new home, barely a mile away from her birthplace, and had the strange sensation of walking from nowhere. No past. No father. No familiar door that creaked when it was two-thirds open. She was curiously like a nomad, embarking on a new adventure. She willed herself to be excited. Instead, she felt like curling into a ball and staying there until the world felt real again. Her feet moved more quickly, nervous but light, and she began running down the road, old tennis shoes slapping on the pavement. Her breath came harder, and she felt her muscles protesting, but she pushed onward, trying to outrun the pain that threatened to crush her, to outrun the empty nothingness of her life.

The months passed. Elle avoided her old town, now dubbed "Normandy Lake," at all costs. Her mother was in a dark, unreachable depression that rendered her incapable of work, or occasionally, even

acknowledgement of her daughter. There were good times, days when her mother would suddenly find life, and would whirl about the house, cleaning and cooking and bringing sunshine in. It was on those days that her mother would talk about returning to her cleaning service job, a place she had left after Elle's father died. Then, the depression would return. Her mother would begin leaving food half-cooked, and close the shutters. The blankets would return to the couch, and silence would return the house.

Elle longed for escape. She wanted her father and childhood comforts, but one was dead, and the other underwater. Her mother, the last vestige of childish protection, was a wraith of who she had been. There was no family to turn to, no family friends (her mother had burned those bridges). School was not a point of escape, though Elle attended consistently. The move hadn't changed which high school she attended, but many of her closer friends had moved away, taking the government's free money for their shoddy houses and seeking better opportunities somewhere else. So, without human comforts to turn to, she poured herself into school and work. She juggled two part time jobs for her last two years of high school, and maintained straight A's. She shut her door on her mother and the dark house, turning her room into a stark, well lit, undecorated haven for academia. She found a dry, quiet escape in the clearly written textbooks, in the emotionless flow of facts and figures.

As the years passed, her scholastic diligence began to pay off. A fortunate scholarship sent her to a quality private college, where she did fairly well, despite having to come home every weekend and take care of her mother. She majored in chemistry, graduated top of her class, and went on to obtain a PhD in chemistry, all courtesy of

scholarship funding. By all social designations, she was a success. And yet, every morning, she looked into the mirror and felt nothing. She felt as though her inner self was tightly constricted, holding itself together, bracing for some unimaginable pain that she had yet to witness. She dated no one, made no close friends. She found comfort in the clean, logical chemistry lab, but nowhere else. She remembered happiness as though it had happened to a stranger. Smiles felt uncomfortable, stretching her face in all the wrong directions.

Eventually, she established a career at Emory University, teaching chemistry and performing research. She found a live-in nurse for her mother, who had deteriorated over the past few years, broken by grief. She bought a downtown Atlanta apartment, and told herself that she was home. And yet, she felt nothing but tired.

She had not returned to her birthplace since the day it was destroyed. Her hatred of the TVA, of losing her home, had kept her away. But memories of her father and a tiny hope that his ghost still lingered in the waters made her long to see her first home, whatever it had become. She parked her car in a small, poorly maintained lot on the opposite side from where the lake had formed. Taking shallow, shaking breaths, she opened the door. Her city shoes sank into rain-softened soil as she walked on the grassy path that she presumed led to water. If she remembered correctly, the Campers' home had been around here, before the lake. As she reached the top of the hill, she half expected to see their house sitting peacefully in a grassy valley. Instead, she found water.

She wanted to be angry. She wanted to look at the lake and cry out at the injustice of its existence. But as she looked out across the lake,

she couldn't rouse any indignation. The water was almost smooth, teased into tiny waves by the gentle summer wind. The sky curved above it, a perfect dark blue, accented by a few pink cloud wisps. The sun's dim twilight rays glinted off the shifting waves, accenting the deep green water with tiny stars of light. It was beautiful. She sank to the ground, just as she had when she was a child watching as her past drowned, and observed what her past had *become*.

Laughter caught her attention. She cast bewildered eyes down towards the distant, artificially sandy shore, and saw two children playing in the water. A young girl, laughing exuberantly, was perched on top of some precarious looking red pool toy, and a boy was watching her with teasing anxiety from the water below. Suddenly, he jerked the tip of the float with extreme force, tumbling the girl into the water. She shrieked, and Elle's view of them was obscured by a great flurry of splashing. She watched as their tomfoolery startled a blue heron from his regal perch a few yards away. He soared across the lake surface, great wings brushing the top of the water, disturbing the carp swimming just beneath the surface. Elle closed her eyes, turned her face towards the last of the sunshine, and listened to the sounds around her. Her eyes filled with tears again at the wonderful novelty of it all. She had seen her past as a dead, drowned thing, and seen her father dead with it. But here, in the very place that should have been a grave, life was flourishing. Something deep in her chest relaxed, and she felt warmth spread through her limbs. She laid back in the grass, its sweet scent mingled with the smell of fresh rain and warm earth. Her father was there again, his hand resting in her small, pale outstretched fingers. Together, they let the life that change had brought wash over them, and Elle smiled, broadly, naturally. She was home.

The water was getting cold, but we didn't care. We climbed on top of the little red inner tube again and again, playing a game whose rules we were still inventing, laughing until our stomachs hurt. Michael was eight and I was six, and we had been friends for four hours. My grandparents and his parents had chosen neighboring RV parking spots, and our paths had happened to cross while we were both wandering around the campground, avoiding helping the somewhat harried (and therefore snippy) adults. Our friendship blossomed quickly, as relationships at campgrounds tend to do. He became the central focus of my little life and one of the biggest influences of my childhood. We grew up together, relaxing in the boat, allowing the breeze to cool our sunburned faces as my grandfather drove us from place to place, entertaining our young minds with stories of his body-searching days. He'd describe the catfish, big as men, that swam lazily through carcasses of drowned houses, deep in the colder parts of the lake. Once, he showed us a dirty little silver picture frame with a muddied photo inside that he said he found on the bottom of the lake. I wasn't sure I believed him—the glass wasn't even broken.

I wish desperately that I could return there.

My grandfather has had two strokes. He lies, slightly out of his mind, on a hospital bed. His left side is wasting away, unable to move, and his mouth lists into a lopsided smile as he talks to me. On his better days, we reminisce about the lake—about fishing for bluegill brim and catfish, about the people we met there, about the little funny stories that accrued each year. On his worst days, I try to keep him from hitting my grandmother.

Michael is married now. He lives in a small aluminum trailer in Fairview,

Tennessee with a woman twenty years older than him. He tries to support them both on his low-level government employee wages, but money is tight. She has already left him once; she'll probably do it again. Of course, he left her once too, but gravitated back to her within a few months, like a moth to a whiskey-laced flame. Michael and I don't talk anymore. Our conversations ended abruptly with harsh words and false accusations a few years back.

All of this, I could have accepted. It was painful to lose such major characters of my life, but the lake remained. I could still close my eyes against the pain of it all and imagine myself floating in its cool green depths, watching the sun sink over Tennessee hills, and regain calmness in my heart. And then, a few years ago, my lake disappeared.

Tennessee faced a fairly severe drought several years ago, and found itself in desperate need of water. Normandy Lake, whose official name was Normandy Reservoir, was originally created as a water supply for parts of Tullahoma and Clarksville, in addition to being a tourist site and supporting a fish hatchery. When the drought hit, Tennessee drained most of Normandy Lake in order to provide water to residents of those areas. Whole sections of the lake completely vanished—floating boat docks were left stranded in mud, boat ramps lay hundreds of yards away from any water, and the strange final vestiges of Normandy homes began peeking above the water surface. Many fans of the lake, my family included, protested at this flagrant abuse of the lake, but our concerns rang flat. After all, it was argued, Normandy is not a real lake. Man built it, and so man has every right to tear it down.

For a long time, I agreed with that argument. Environmental

conservation seems to be a fight that emphasizes protecting the status quo, keeping nature as “natural” as possible. To do this, the intuitive thing to do is to advocate less human interference and the abolition of human constructions that prove detrimental to the original state of nature. And for most issues, this seems to be a good policy. Pesticides tend to increase the population they are trying to kill, and overhunting of a predator can cause an extreme (often irritating) overabundance of its prey. Whenever humans attempt to meddle in the natural state of things, the situation appears to get worse.

This policy seems to preclude my lake from protection. After all, it is a human construction. It has no rights as a part of nature. And yet, it is not *harming* nature. In fact, it is rapidly becoming a part of it. The TVA has been stocking it with a variety of fish (especially large-mouth bass) for the past forty years. Those fish have become a small part of a fairly vast ecosystem with five hundred types of organisms; blue heron and other birds eat the fish, thousands of types of moss grow from its water, beautifully colorful dragonflies live out their brief lives on its surface, their bodies feeding the fish and attracting more types of birds. Most significantly, the lake has become a habitat for a variety of mussels, including at least two endangered ones. The Duck River, which feeds the lake, harbors over nineteen types of endangered mussels, many of which are moving into the lakebed.

When Normandy lost such a significant amount of water, it damaged the fragile, developing ecosystem. The mussels are approaching extinction—aerators were installed to try to keep the reduced water level healthy enough for their survival, but they are not doing well. Fish are dying at an exponential rate, losing homes and space as the lake shrinks. Canadian geese, once a staple of the lake, are becoming less

frequent visitors, as they lose both natural food sources and tourist's bread. In fact, the economy of the surrounding area is suffering, as less people visit Normandy because of the reduced boat access. That means less minnows and crickets sold to fishermen, less food sold in local grocery stores, and less money spent on gas (most older boats are not particularly fuel efficient).

No, Normandy Lake is not a natural body of water. But it has a definitive place in the natural world, and it deserves to be protected. We must not allow the past to destroy our ability to lie in the grass and appreciate the present life around us. We must accept what nature is *today*, and pour our efforts into preserving what we have, rather than forever lament what we have lost.

Risking Sentiment

Deborah Thompson

Mutual of Omaha's Wild Kingdom was both my favorite TV show and my weekly trauma. Four decades ago, my father and I watched it together at 5:00 p.m. Sunday evenings. We got to take our supper into the den and set our plates on gold-speckled TV trays. The room, with its green shag carpeting and wood-paneled walls, sporting display cases of choice butterflies we caught in the Forest Preserves, felt a little like the woods and jungles that Marlin Perkins trekked. My father, curious about all animals, was most fascinated by the big cats. I nervously chewed my hamburger (in a bun, with ketchup, mustard, and pickle relish) as the cheetah leapt, and swallowed hard as she toppled the gazelle.

The first deaths I witnessed were on *Mutual of Omaha's Wild Kingdom*, and they made me wonder how God chose between the starving cheetah and the ailing gazelle. But my father was a scientist, as was his God, and both took an emotionally distant approach to the earth's creatures. Dad reminded me that in the wild, every predator was also prey, and if I felt sad for the fallen wildebeest I should also recognize that the pride of lions got to live another day. That was the natural order of things. It made no sense to be upset with nature. Besides, he explained, animals don't think the way we do. They don't have our moral code, our understanding or ability to ask why, our full emotional palette. I should be careful not to anthropomorphize or sentimentalize.

So I learned how to watch with willed stoicism, forcing myself not to empathize.

My father taught me the joy of observing details, and of seeing the unexpected. The log in the swamp that shows the faintest outline of a crocodile jaw beneath two eye-bumps. The pink edge of an elephant's ear. The leopard's camouflaging rosettes, which looked to me like a thousand eyes staring.

Ronald Earl Thompson was a scientist to the core, and a scientist very much of his time, situated at the crest of two centuries of rising faith in the Scientific Method. Ever since he was a young boy, my father loved chemistry in particular. Hunching over his A. C. Gilbert chemistry set while reports of WWII crackled over the radio, Ronnie took great pleasure mixing two solutions and making a third, sometimes with a poof of light or heat or color. Against reports of casualties and advertisements to buy war bonds, my father made baking soda volcanoes, turned fire green with boric acid or purple with potassium chloride, and concocted aluminum sulfide stink bombs.

But even more than the minor pyrotechnics, he loved the *discipline* of science. Maybe it was the backdrop of war that made science's stabilities so attractive. He loved that the truth was out there, distinct from us, regardless of how we felt about it, indifferent to our fears or needs. He loved the idea of objectivity—its solidity, its dream of certainty. This scientific method was tough. It required a rigorous resistance to the comforts of interpretation. This was a true challenge, and one of the things that made sciences like chemistry and biology and physics "hard," as opposed to the "soft" social sciences and, softer still, the arts and humanities. It took discipline to doubt when you wanted to believe.

By the time my father entered the University of Florida in 1954, the year after Watson and Crick confirmed the helical structure of DNA and free will was overthrown by predetermined encodings, the “softer” sciences had developed “physics envy.” The same methods used to observe cells dividing at the other end of a microscope were now applied to observations of animals, including human animals. Behaviorism invaded psychology. The interiority of the human mind was minimized in relation to exterior and observable data. People were seen as conditioned primarily by their environments; their actions were best understood as responses to external stimuli rather than the deliberate choices of a thinking, feeling self.

If human minds were denied interiority, animals were denied even a mind. Zoology took up the rigors of behaviorism from psychology and condemned “anthropomorphizing,” which came to mean not just assuming that animals think and feel the way humans do, but assuming that animals think and feel at all. At mid-century, animals were simply the manifestations of behaviors and motor patterns.

When he got his Ph.D. in Organic Chemistry in 1962 and began his career developing plastics, my father saw no inconsistency between synthetic polymer experimentation and his interest in wildlife and the natural environment. He loved both science and nature together, and loved them in ways shaped by his culture. He was, in the language of the time, conditioned by his social environment. By the late 1960s, living in the suburbs, he took my brother and me to the Forest Preserves nearly every weekend the weather permitted. There, armed with butterfly nets and jars stuffed with chloroform-soaked paper towels, we set forth into the wilds. I learned to identify yellow swallowtails and red admirals, and how to distinguish a monarch from a mere viceroy. I

also learned that to appreciate nature was to “preserve” it by mounting it in cotton-backed display cases. To love nature was to own it. Nature was something out there, distinct from our human lives; it was something you drive to. It came into the household only through television and *National Geographic* magazines.

Growing up, I tried to be the scientist my father was. I imprinted on him when he modeled rationalism as an instinct, and tried to love the discovery of the natural order as much as he did. I learned to value doubt over belief, and to appreciate how much harder the former is. I learned (though imperfectly) to observe without rushing to interpretation, and to look for the telling detail that would undermine established belief. Within that mental discipline was a kind of freedom. I took pride, too, in rationalism as an ethic. We didn’t fall prey to magical thinking, not even as a comfort for dealing with death.

In my teen years I tried to make my father proud. I studied hard—too hard. I learned to silence my voice, with its many emotions and needs. I stopped wasting time on the fantastical stories and poems I wrote as a child, stopped inhabiting the world of shades, conjectures, impossibilities and adopted instead the Scientific Method as my worldview. I cultured my skepticism, shunned superstition, and learned how to live without God or afterlife. I learned how to think, really think, without falling into logical fallacies or mistaking links for causes. Order and predictability, I learned, were preferable to transcendent meaning. It was better to be able to calculate your degree of doubt than to believe with all your heart.

“That’s all right!” my father said when I won my high school’s Bausch & Lomb science award, and “That’s not bad!” when I won the CRC freshman chemistry award in college. If I’d maintained a relationship with hidden nuances and irrational meanings, I might have detected the pride and love he was trying to contain with understatement. But I now collected evidence through direct, phenomenological observation, and trusted what could be proven and verified. I was merely “all right” and “okay.” I tried harder yet.

Until the day in my junior year of college, where I was majoring in chemistry. I’d begun doing volunteer work in a lab on organometallic compounds and chelating agents, measuring out micrograms of compound too tiny to be seen on the sheet of gold leaf that I could only handle with tweezers because the oils on my fingers would have thrown the weight. Maybe it was the acetone going to my head, or the stuffiness of the un-air-conditioned lab in the middle of Florida, maybe it was the start of what I would years later recognize as a migraine, but the heavy pressure under my eyes released into tears. It took me a minute to recognize that I was crying. Once I started I couldn’t stop. *I hate this*, I said out loud. It took me another minute to recognize hate. It took me a lot longer to figure out what I meant by *this*.

I’m not sure I ever properly analyzed what I hated, what caused me to break down and never enter another lab again. Having trusted in the analytical method for so long and having felt betrayed by it, I reacted by turning as far to the other side as possible. I reacted in hate and haste as I ran to the registrar, dumped all my upper-division science classes for the coming semester, and began again with introductory humanities surveys.

I, too, was very much a woman of my time. I wish I could have recognized then what I see now. Gradually, as classical physics gave way to quantum physics, social science's behaviorism, too, was being challenged. Maybe objectivity and subjectivity were not mutually exclusive. Maybe reason and emotion were not so distinct after all; brain research was showing them to be neurologically related, fraternal if not identical twins.

The gender ideology built into scientific models, too, was being uncovered and subverted. Feminist philosophers and scientists pointed out that, traditionally, the sciences were coded as male, the humanities female—and these two sexes were posed as opposites. The male way of objective, scientific thinking, I'd learned and internalized, was more valuable than the subjective, touchy-feely humanities. But people around me were starting to challenge these traditional attributes, as well as the values we put on them. I wish I'd been one of them. I wish I'd known then how to challenge science's antipathy to "softness" instead of accepting it and then abandoning science altogether.

Had I done so, I would have been ahead of my time. If in earlier eras the "soft" sciences had physics envy, the relationship is now beginning to invert. As faith in the possibility of absolute objectivity waned, subjectivity, or emotional attachment to the subject under study, was slowly becoming a gateway into insight rather than an obstruction of it. The accepted bans on sentiment and anthropomorphism were challenged. The field of ethology developed to study animals within their habitat rather than, as previously, in labs, where measurements and control groups were possible. "Leakey's Angels"—Jane Goodall, Dian Fossey, and Biruté Galdikas-- demonstrated that respect and empathy for other primate species could not only produce

unprecedented observational data but shift the whole paradigm. Charges of anthropomorphism were countered with charges of anthropocentrism—the belief that humans are exceptional and distinct from other animals, particularly in their possession of minds, emotions, and intentions, and, on the collective scale, of language and culture. Maybe the model of strict objectivity was itself biased and obscuring, according to these new ethologists. Debates were rekindled: Do animals have emotions? Do they have psyches? Do they have culture? Can they love, or yearn, or grieve? Do they have emotions we don't even know how to recognize or name? This new wave of ethology is summed up in animal ethologist Frans de Waal's oft-cited assertion, "To endow animals with human emotions has long been a scientific taboo. But if we do not, we risk missing something fundamental, about both animals and us."

We are now working to recover that fundamental something that we've missed.

Still, the anti-sentimental bias is alive and well today, even in the humanities, including creative writing. Good, strong, muscular writing—hard writing—is without soft sentiment. Stoic observation is preferred over—and is seen as the opposite of—emoting. A writing professor once explained to me that, rather than allowing my characters to cry, I should show them holding back tears; the latter act is much more "powerful." The anti-sentimental bias culminates in the "show, don't tell" mandate, creative writing's analog to the scientific method.

My father lived the "show, don't tell" ethos. I don't remember his every saying *I love you*. Instead, he showed it. He took me to the Forest Preserves weekly and museums monthly, helped me with years of

homework, drove me to tennis matches, and, later, read every essay I produced as a fledgling writer. ("That's alright!" he'd comment when he was feeling especially verbose.) He was a scientist to the end, and he trusted that deeds speak louder than words. But sometimes the facts *don't* speak for themselves.

My father died of a fatal stroke in 1995. I was already an adult and had been living away from home for years, with a PhD in English literature and a university teaching position. He never had told me he loved me, but I had just begun hearing it anyway, if only faintly and from afar. My mother gave him an unsentimental barely-Jewish funeral, as he would have wanted. It wasn't until I went out walking for air and literally stumbled over a plaintively meowing stray cat, who wouldn't leave my ankles, that I was able to wail. Even then, I felt the pull of rationality's moral imperative not to read anything mystic or superstitious into this eerily orange *felis catus* appearing insistently from out of nowhere, pushing its facial scent glands into my shins, butting its head under my palms, tempting me with meaning.

Recently, on the anniversary of his death—what Jews call the *yahrzeit*, Yiddish for year-time—I searched for a way to mark it. Estranged from the Judaism I was raised with, in part because of the rationalism I was also reared in, I still light a yahrzeit candle every year, but as always it seemed inadequate. Without the framework of a formal religion, I've had to invent my own rituals, going only by feel and instinct. Then I remembered our *Wild Kingdom* ritual. For lack of any better way to

mourn my father or memorialize the event, I turned on the TV to Animal Planet, which I'd heard had recently revived *Mutual of Omaha's Wild Kingdom*, half hoping to be greeted by white-haired Marlin Perkins himself, even though he died two decades ago. It would be hard, but I would force myself to watch nature's ravages.

Instead I landed on a show called *Big Cat Diary*, which follows three young mothers—a cheetah, a leopard, and a lioness—as they attempt to keep their cubs (called "pups") alive in unforgiving African terrain. Tamu, the lioness, was struggling the hardest, because she'd been expelled from the pride headed by the lion who impregnated her, and was on her own with her four pups. Then she was attacked by a young male lion, who wanted to kill her pups so that, as the tracker explained, she would come into heat faster and then he could impregnate her with his own genetic pool. (That's my recollection; I'm sure his wording was much less anthropomorphic and more behaviorist.) After the attack, only two pups were left. One had been badly injured, but limped away with his mama and brother to safety. Tamu went back for the missing pups but couldn't find them, and when she returned to the surviving pups, the injured one had died.

"Oh no," said the tracker, who doubled as narrator, a white man with a British accent contrasting with the voices of the African sorrow song that came in lightly as soundtrack. "Oh no, oh no, oh no." He was tearing up, in danger of spilling, and clearly embarrassed as a man and a scientist, so he took cover behind his binoculars. We watched with him as Tamu leant over the dead pup, then began to lick it with a tongue almost as wide as its small corpse. Her motions were those of a mother licking the amniotic fluid off a newborn, licking him into life. "Is she confused?" the Brit said in voice-over. "Does she not realize he's

dead? Or is it … I hesitate to say that this is an expression of caring."

My father would have hesitated, too, and perhaps I should have done so in honor of his memory. But as a failed scientist, I can unapologetically say what scientists can't, what I know to be true even if it's not verifiable: Tamu was grieving. Nothing could be clearer. As her surviving pup sniffed at the corpse and bit at Tamu's leg, she felt with her muscular tongue the last warmth of her child's body, showing a love and a loss that could never be told.

In some ways, I am my father's daughter after all. Since that yahrzeit viewing, I've become addicted to Animal Planet. It's now my soap opera. I take my vegetarian dinners in front of the TV and rail at the untold cruelties of nature while the big cats face their mortality with dignity.

Later in that yahrzeit episode, Tamu went back yet again to the site of the attack where she lost her other two pups. "She just can't let go," said the Brit sadly. He disapproved of her risk, leaving her one surviving pup alone to go after two pups who couldn't possibly be alive two-and-a-half days later.

"But what's that?" he said, with three glottal stops. "Hell-oo?" Emerging out of the tall grass were three figures—Tamu and her two starving pups, alive with yelps of hunger. "Good girl, Tamu!" gushed the Brit. He couldn't help himself. "Incredible! What joy!" He was tearing up, with happiness this time, clearly ashamed of himself, but unable to contain his instinct to anthropomorphize. Trying to recover his composure, he summed up, "And now we go on, and try to keep the three remaining pups alive."

And now we go on. But I'm still lingering over the dead pup. At this

time of yahrzeit, I'm haunted by the scene of mourning that my juvenile self learned to rationalize and repress. I replay it in slow motion on the screen behind my eyes: the image of Tamu's maternal tongue, muscular and soft, searching the surface of the pup's body, burying it in licks and breath and silence.

Trading in a Different Currency

Meg Domroese

A large, chopper-like carpenter bee came in for a landing on a purple cone flower. That would be today's flower. Andrea noted it on her data sheet. "August 12. 1:31 p.m. Carpenter bee. Purple cone flower." Perched on a rock, she was eye level with the bee, but it paid no attention to her as it went about its task of collecting pollen. She watched as this Black Hawk helicopter of a bee – as big as her thumb, and shiny black with a fuzzy, yellow vest – clung to the spiny head of the flower, pollen catching on its undercarriage as it crawled along, causing the flower to sway under its weight. And then it lifted off, hovering momentarily before making its way in a straight line to another pollen-laden landing pad.

For the past two months Andrea had devoted herself to a 30-minute regimen of bee-watching nearly every weekend, checking her list to see which flowers might be in bloom and then looking for one in Prospect Park. Even though she lived only three blocks away, she'd rarely spent much time in the park before – a picnic or two or a concert in the summers – so it took her a while to find where the flowers were beyond the playgrounds and fields.

She'd fallen into the activity by chance. Waiting to see the dentist – after rescheduling numerous times – she was flipping through a *New York* magazine when a listing caught her eye, "Dilemma: I work on Wall Street. It's been kind of stressful lately. Solution: Become a bee watcher

for the natural history museum and the parks department…It's a little bit science, a little bit Zen…" Andrea didn't know the first thing about bees and wasn't even sure she wanted to, but the description made it sound easy. An enforced, quiet 30-minutes outdoors immediately attracted her. She craved a way to slow down the gears that constantly whirred in her mind, turning over options for keeping her department afloat. She never could get the hang of meditation…well, she'd never really tried. Watching bees, however, seemed do-able. She knew she couldn't simply sit still without some hint of purpose, so she liked the idea of volunteering to help scientists who were studying pollination around the city.

A week later she was at a training session getting enough of the science – an introduction to identifying bees by major categories – to get to the Zen she cared about. Beyond catching the occasional news story about the mysterious loss of honey bee colonies, and trying to avoid pesky yellow jackets – all of which were just "bees" to her, she hadn't given bees much thought before. And her credentials as an insect observer were few – a brief childhood stint as an ant farmer and summertime collector of fireflies.

A bumblebee was the next visitor to her cone flower, following a looping flight pattern and tilting as it arrived. "1:35 p.m. Bumblebee," she wrote. The bee already had what looked like yellow chaps on its hind legs, and the long yellow and black fuzz covering its body was thoroughly dusted with pollen. But it added more to its harvest, packing its pollen baskets and then laboriously taking off.

A cloud passed overhead. Andrea was vaguely aware of a siren in the distance. She filled in the other required information on the data sheet.

“82 degrees Fahrenheit. Clear, sunny day. Along the southeast edge of Long Meadow.” She pulled up the coordinates on her iPhone, ignored the six messages that had arrived, and dropped the phone back into her small canvas shoulder bag. She looked around her cone flower and checked off, “More than 10 and less than 100 flowers blooming within 10 yards.” Bees were crawling into these, flying from flower to flower. It looked to her like a small city with executives dropping into meetings and then jetting off to the next one. And yet these bees stuck to one, clear mission. They didn’t need project managers.

Everything she knew about bees she’d learned from the young scientist from the natural history museum who led the training session for “bee watchers.” Dr. Matthews was so enthusiastic about bees it seemed impossible not to be. She didn’t want to disappoint him. There were about 20 people at the session. A handful of college students who needed a project to fulfill a requirement. Gardeners who took home seedlings provided that they would plant to do their bee observations. A couple who seemed like they did everything together. They had already been bee watchers for a couple of years and wanted to know where Dr. Matthews needed to get more data. There was a teenage boy who had that slumped, bored posture as he sat next to his dad, whom she thought must have dragged his son into this wholesome activity. As they were leaving she realized she had misread the situation – she overheard the boy talking about bees’ nests he’d found and additional bees he could identify that weren’t covered in the presentation.

“1:42 p.m. Honey bee.” Andrea always enjoyed getting a close-up view of the honey bee’s impressively long eyelashes as it coated its golden abdomen with pollen. She wondered if it had come from a local beekeeper’s hive, or if it had followed its deposed queen to set up a

new colony in the wilds of the city. What could such drama be like among creatures that had no capacity to gossip and create scandal and then revolution?

The honey bee was soon followed by a fly. Andrea was surprised how easily she could dismiss the fly now, the characteristic composite eyes covering the top of its head like goggles indicating it wasn't the subject of the study. No need to record the fly's visit. According to Dr. Matthews, unlike hairy bees that distribute pollen from flower to flower as they gather pollen and nectar, the fly is not a very efficient pollinator. She looked closely and could see it had only one set of wings rather than the two sets bees have. These details, unknown to her before, fascinated her in this new world she had entered.

All was quiet at her cone flower. Two more bee visits to make her quota of five and she would be finished. But she didn't mind the wait to the 30-minute maximum if they didn't come. Her husband teased that she took on bee watching as intensely as she did her job, but unlike managing a sales team in an economic downturn this seemed problem-free.

Only once had someone interrupted her in her weekly bee reveries. She explained to the little girl and her mom what she was doing, while keeping an eye on her target flower, not missing any bee visitors. She'd actually sounded like she knew what she was talking about! She felt a bit of pride as she told them that she was a "citizen scientist" helping to collect data about pollinator activity in the city. She showed them the example photos in each of the categories she used to identify arriving bees. The honey bee. The tiny green metallic bees, which she had yet to see. She mainly saw bumble bees, the occasional carpenter bee,

and once in a while a leaf-cutter bee that was in the catch-all “other bees” category. She’d gotten good at recognizing the leaf-cutter for the way the pollen adhered thickly under and along the edges of its abdomen, but she hadn’t seen it doing the thing that had earned it its name – gathering bits of leaves for a nest. The little girl was patient through Andrea’s explanation and then asked what she really wanted to know, “How many times have you been stung?” Andrea had forgotten to be concerned about that. The bees always appeared as intent on their business as she was on watching them.

Two more bumblebees arrived almost simultaneously. “1:51 Bumblebee. 1:51 Bumblebee.” She noted each on the data sheet. The first stayed only a moment before buzzing away, as if it only dropped in at the appointed meeting time to say that something more important had come up. Like one of those emergency, high-level meetings Andrea dreaded. The other stayed and stuck to the agenda, ambling around the flower head, poking among the tiny spikes.

Data collection done for the day, but curious and wishing to linger a little longer in the bee world, Andrea followed the bumblebee as it took off. It wasn’t hard to keep up. The bumblebee alighted on another cone flower nearby and then continued low along the edge of the garden. She saw it land on the ground and disappear. She crouched down and saw the small hole the bee entered. A nest! Dr. Matthews had said that many bees nest in the ground, and here was an actual entryway just at the base of a tree. She felt a thrill of discovery even as she mused at how such a simple thing could seem so remarkable. The bee appeared at the entry and then was out of sight again, almost as if beckoning her in like Alice before she fell down the rabbit hole. This was some New York real estate she’d never considered before, the tiniest studio

apartment ever. And yet, there must be a queen and dozens of workers inside, she thought.

The bee re-emerged – or was it another? – and flew off toward the garden they had just come from. Andrea turned and headed for home. No matter what was in store in the days ahead, she vowed she would be back the next weekend.

River Return Ocean Rest

Elsa Sebastian

I settle back into the gloom, leaning against a piling that is part of the foundation for Egegik's massive salmon cannery, the richly fertilized muck under my boots pulling me closer to the earth. It's been at least a week since I have been on land, and tonight I can enjoy it. I study the boat tied next to the cannery, her lines straining against the pilings. The old scow is beached, the tide has run away from her, and she is left, hull exposed. The Dolphin has worked as a tender out of Bristol Bay since the 40's, she is one of the originals, a World War II transport scow. The Dolphin started out buying fish from sailboats, which were the standard until the early 50s; nowadays we buy fish from stubby aluminum and fiberglass boats boasting powerful diesel engines. Fuel prices have started a mutter in the fleet about returning to sail power, and though most are joking, I like the idea of sailing reclaimed by the working class.

The Alaska Department of Fish and Game, the voice of science, has ordered a pause in fishing until an allotted number of salmon make it upstream to spawn. Most of the fishermen would rather be fishing than spinning on anchor, but I am happy for the chance to get off the Dolphin and explore. Every summer of my life has been spent on the ocean, and it's my sense of adventure that brings me back to the sea each year. I grew up fishing in Southeast Alaskan on my family's wooden troller; as soon as I was old enough my parents unclipped me from the

leash that had secured me to the mast in my wobbly days, and allowed me to help them clean the salmon they swung aboard. My first lessons in anatomy were cupping salmon hearts in my hand and watching them beat, a futile pulse that carried on for several minutes outside the body. Ecology came from poking at the silver threads of “needle fish” which poured from the stomachs of the salmon.

This is my 21st summer, and I am deckhanding out of Egegik, one of the small villages clinging to the sandy banks of Alaska’s massive Bristol Bay. The Bristol Bay watershed supports the largest run of sockeye salmon in the world, and the fishing season is one of the most lucrative in the state. Lately, Bristol Bay has been in the news for more than just salmon, beneath the swampy tundra of the Bristol Bay watershed is one of the largest gold deposits in the world. The prospectors are thick, but these aren’t bearded adventurers, but soft and sleek company men.

It’s hard for me to imagine an economy here based off of anything but salmon. Every summer the salmon push into Bristol Bay, using their keenly developed sense of smell to return to their exact place of birth. While supporting thousands of fishermen, the number of salmon that make it upstream to spawn is in the millions, and they keep coming back. Sometimes, when I have a moment away from my duties on the boat I stand on the side deck and watch the water flowing past. It is thick, dark with siltation, fragrant and gritty. I think of the salmon, surging forward, pressing upriver. When the fishermen run their nets out near our boat, the nets start jumping, heavy with fighting bodies. I can never see the salmon from above the surface -- the water is too full of earth, they move up into her quietly, they smell the river, they smell their ending.

What's left of the long summer light is slipping, bending through the pilings that support the cannery. With one last glance at the Dolphin, I head down the beach. The few hours of darkness in the northern summer prompt local brown bears to strut down beaches and roads, their paw prints blotting out the steps of fishermen who have returned to their cabins or fo'c'sles for the night. It is foolish to walk at dusk, but I haven't yet explored Egegik. A few nights ago a woman working at the cannery told me how her dog disrupted a fishermen's bonfire party: it had grabbed a skull from an eroding burial ground and had pranced past the fishermen. A few locals have told me about the burial site too, skeletons falling from an eroding dune to the sea.

I walk slowly, the wind is blowing, and the grass presses close to the sand. I can see that the fisherman's shacks are dark on the low hills. In the slipping light their walls, a patchwork of plywood and rusted metal siding, have faded into picturesque dark silhouettes. Looking out towards the river, past the fishing skiffs hauled up on the beach, the mudflats and sands-bars stretch to the horizon. I am thankful to be on land, where the low-lying tangled brush and the sweeping grass seem to stand in defiance of the sea's horizons. When I'm on the boat color is a rare sight, the ocean and sky are different textures of the same gray, and the land seems to hover, a fragile bright green space between. Migratory birds, cranes, ducks, swans, take refuge in this narrow strip of color, nesting in the tall grass. When surprised the flocks take flight: a vision of life spilling forth into the grayness.

The birds, like most of the fishermen and cannery workers, will only be in Bristol Bay for a few weeks. After that, we prepare ourselves to return

to a world that seems so distant that it's almost impossible to comprehend. I often wonder what these places look like in the winter, without the energy of the fishermen, who during the summer fishing season come in with loads of fish, build bonfires, drink, and tell stories. The locals have told me that the river freezes over, and I can only imagine the quiet, flat landscape, the silence broken only by small generators huffing in back sheds. Historically no one saw Egegik in the winter, it was a summer fish camp for people from Kanatak, a village on the western side of the Alaskan Peninsula. Every summer, these people crossed the Peninsula to fish, a journey of over 50 miles, involving a mountain portage, a lake crossing, and finally a paddle down the river to Egegik.

Moving along the dune, I feel far away from those who I love, so far away that I wonder if they are still there. The landscape stretches out, and the loneliness inside me releases a kind of soaring. Then I sense a presence; a femur, a torso, white bones pushing out of the sand into the falling night. I pause, my eyes attempt to focus. I find myself searching for symbolism, for some sort of appropriate emotion to pay tribute to this person who once lived, and undoubtedly once fished here. Nothing I have learned from a culture of graveyards, crosses, and superstition seems appropriate to carry into this moment. Human bones are falling from the land towards the sea. This is a place of movement, where the river runs heavy with earth, where salmon and men have cycled through for hundreds, even thousands of years. Nothing connected with the ocean remains static.

I think of the future of this soil, this sea. Throughout the summer fishermen have spoken of the Pebble Mine, a proposed gold and copper mine which multinational corporations want to put in the heart of

the Bristol Bay watershed. Pebble would be the largest open-pit mine in North America, and to hold back the waste from this operation would require miles of dams up to 700 feet tall. The seismic nature of the Bristol Bay region is a concern to scientists and fishermen alike, who wonder how dams can be expected to hold toxic mine waste into perpetuity. The seismic threat adds to the inherent fluidity of Bristol Bay's landscape and culture.

Ideas of history, culture, and landscape are often dismissed as economic externalities in the face of development, but Bristol Bay seems a worthy exception to our society's tendency to forget. The people who work Bristol Bay's salmon fishery, regardless of whether they are locals or transients, have relied on a resource that can seem mythical in abundance. But fishermen understand that the abundance of salmon depends on watershed health and careful regulation. Open-pit mining stands in stark contrast to this responsive ethic.

As I ponder the choices that Bristol Bay and our resource-hungry society face, I turn away from the bones and head back to the boat. Through the dim light I realize that I'm walking on a tangle of rugged, purple flowers, some of the first flowers I have seen in months. I lean down, but reconsider picking a bouquet; their roots are firmly lodged in the sand, hanging on tight for a slow ride back to the sea.

Wolf Song

Omer Pearlman

The howls reverberated through the woods; their low timbre enshrouding the tall timber; meandering among ponderosa and spruce; coursing through coniferous crowns and undulating through the underbrush. The voices of the chorus went weaving through the forest as gracefully as if they were the actual members of the resident wolf packs. It was a sound like no other, a song as clear as chimes and as deep as roots. What started as a low and somber *oooooh*, swelled into a symphony both primitive and new. The song was so sad and so beautiful it was both breathtaking and heart breaking. The wolves harmonized their separate voices into a kind of integrated force, a sum that was so much greater than its individual parts. It was a tangible thing that resonated in your bones, stirred forgotten instincts, blended with the blood.

I looked around at our tour group. The howls touched everyone. The most overt emotions spilled over eyelashes and down cheeks. Some stood stunned; others looked at each other in hushed amazement. A tall, muscular man with a deep tan and bleached teeth stood with fists jammed into his jean pockets, looking at once lost and embarrassed. It was as if he had spent his entire life believing himself to be an alpha male, but it wasn't until that moment that he had actually encountered the real deal. For it was indeed the alpha arctic male who had struck that first solitary note and set off the subsequent harmony from the arctic female, the timber pack, the Mexican pair, and the massive grays.

The Colorado Wolf and Wildlife Center also housed a coyote enclosure,

and these smaller cousins of the lupine lords gladly chimed in with their disjointed yips and yaps. But this latter chatter only served as a foil to the deeper howls, augmenting their gravity and providing an instant scale with which to measure the natural hierarchy among these canine carnivores.

My wife turned to look at me, confused by my attempts to look away and conceal my face. Now, I'm not a person who cries very often – or very easily. In fact, I don't remember the last time I shed tears – but the primordial howls had reached my core; had elasticized it. All of my recent research about the complexity of wolf policies – the historic wars declared against them, and the mass exterminations that followed – suddenly escaped from my mind and into my tear ducts. The up close and personal wolf song evoked the horrific black and white images I had unearthed during my graduate studies: piles of vanquished predators stacked outside a trapper's shack; dozens of wolf hides hung on a wire to dry; a lone lobo with his leg caught in a steel trap, baying at his captor and photographer mere moments before his death. Yet in spite of the atrocities committed in the name of westward expansion and human progress, this ragtag collection of sanctuary inmates, this mixed pack of zoo rejects and sideshow strays carried forward with all of their animal might the eternal tune of their fallen predecessors.

And I wept for them. I wept for the lucky few and the unfortunate multitudes. I wept for the beauty and vitality of their kind as much as I wept for the brutality and shortsightedness of my kind. I wept because the sound, the song, was so sad and so beautiful; so clear and so true, like something that is always there, just under the surface, beckoning us to remember that we are but one part of a grand and elaborate whole. Yet sadly, in our relentless pursuit of the American Dream, we

hardly ever make the time or the effort to explore or comprehend the rich vastness that lies just beyond the outskirts of our lives; the wilderness that can save us from ourselves.

Harsh Beauty:

Frank Lloyd Wright and the Cost of Nature

Frank Bures

I'm not sure what time it was when the light started coming into the bedroom. Whenever it was, I lay there and watched the day break through the windows of the Seth Peterson Cottage. There were no shades or curtains, which is precisely how the designer, Frank Lloyd Wright, wanted it.

The house was quiet, as it had been the day before when my wife and I rolled up the drive. It was as quiet as it had been for the 20 years the cottage lay abandoned and rotting in the middle on the edge of Mirror Lake in the Wisconsin countryside.

It was a place with a strange, dark past: Its namesake, Seth Peterson, was a young computer programmer in the Department of Motor Vehicles who wanted to study architecture at Wright's architecture school in Spring Green, Wisconsin, Taliesin, but was rejected.

So instead, he commissioned the cottage from Wright, then committed suicide before it was finished in 1959 – the same year Wright died. After that, it was sold to another family, who finished it, then sold it to the state in 1966. For the next 20 years, the cottage sat empty, becoming more and more a part of nature, until the 1980's, when it was rediscovered and restored. Now you can stay there, but you have to reserve it almost a year in advance.

When we arrived, we'd brought our things inside and stood staring out

the windows on the south side of the cottage, a massive wall of glass that looked into the woods that surround the cottage and run down to Mirror Lake. The way the light comes through these windows gives the space a feeling that is somehow both restful and exciting at the same time. It does not feel mannered and dated like some other Wright buildings in the area. It's small – 880 square feet – and built of wood and stone and glass, giving it an earthy, grounded feel.

"Study nature, love nature, stay close to nature. It will never fail you," Wright is said to have told his apprentices. "I believe in God," is another oft-quoted Wright line, "only I spell it Nature."

That is the sentiment at the heart of much of Wright's work. He called it "organic architecture," which makes it sound like something found at the local co-op. But the description is misleading, because at its heart is a lie: The belief that there is something inherently good in nature, that it is superior to the man-made. Philosophers call this the "naturalistic fallacy," and it has caused much confusion among eco-minded politicians, organic parents and hippies the world over.

If you truly believe nature will never fail you, you must redefine "fail." Nature will kill your children and wipe out your species without a second thought. It will turn your building into a pile of wormwood in half the time it takes to marry three different wives. Nature doesn't care. Nature is value-neutral.

Yet as I sat in the Seth Peterson Cottage, looking out the window as the sun stretched across the frozen surface of Mirror Lake, I couldn't help but feel that there was strange genius at work in this place; that Wright was on to something.

After all, when his contemporaries were re-creating little Europes

across America, Wright looked into the trees and saw something new. He looked at the land and saw something great. And he looked into the wild and saw beauty and tried to capture that.

Is that it? Not that nature is *good* or that it's *God*, but that it's as beautiful as it is terrible? Wright found a way to showcase that beauty while protecting us from nature's cold heart.

Maybe that's why the Seth Peterson Cottage feels so much more right than other works in Wright's oeuvre. It’s stripped of pretension and devoid of grand ambitions. There is an elegance to the way its rooms flow like a nautilus shell. There is a simplicity to the way the light pours in during the day and the shadows play on its stone foundation.

I got out of bed, walked out of the room and stood at the window again. So much tragedy had gone into the making of this cottage. It seemed odd that such sadness and death could result in exactly what Frank Lloyd Wright strived for: a building that felt fully alive.

Or maybe not. Maybe that was the most natural thing of all.

350 Pounds

Marybeth Holleman

We're on the runway, waiting. We've been sitting for twenty minutes, everyone in their seats, seatbelts fastened, luggage on board.

The plane is full. Twice, as we boarded, the stewardess urged us in an increasingly tight voice to stow our smaller bags under the seat in front of us, to remove coats and small items from the overhead bins, to be courteous and make room for fellow passengers or they'd have to check carry-ons that don't fit. There are no empty seats, no empty spaces. Behind me is a mother with a baby on her lap. Next to me is a man who needed a seatbelt extender.

A jovial voice comes on the intercom to tell us that "Hi folks this is the pilot" and "We're 350 pounds over weight" so "We're just going to sit here for a few more minutes and rev the engines to burn this extra weight." And then, reassuringly: "We do this all the time."

I stare at the *SkyMall* magazine in front of me and feel heat rise to my face. I'm flying home from Colorado to Alaska after giving a talk entitled "Climate Change and the Literary Imagination." To a packed room, I spoke about the shrinking ice pack and starving polar bears, about social ennui and political inaction. Science, I said, is not enough to motivate us. We need more than information; we need the emotional appeal and intimate awareness of story. We're led as much by our hearts as our heads.

Then I jumped in my rental car and drove to the airport on an interstate flanking the Rocky Mountains, past spires dipped in snow and skirted

by forests of quaking aspen and paper birch. I sped by them having just learned that these birch forests are dying because of heat stress, because of climate change, because of us.

I'm uneasy doing all this flying to give a talk on global warming. I paid extra for carbon offsetting, but so what? And now this. Carbon offsetting be damned, we get to sit here and burn off 350 pounds of jet fuel.

I look out the window. It's five p.m. in Denver, mid-November. The sun glowers back at me, a huge orange sphere anchored to the horizon. Off to the plane's rear, the air wavers, runway lights glowing in quivering lines. Is that heat rising from the tarmac, or the fumes of burnt fuel?

350 pounds. It's a familiar number, 350. It's the uppermost safe limit of carbon dioxide in the atmosphere. We must bring it from 392 down to 350 parts per million to curb global warming, to have a chance at saving polar bears, walrus, birch forests, and ourselves.

350 pounds. I sit and recall an old John Wayne movie in which Wayne takes a gun away from a drunken passenger, only to return it to him when he's had some coffee. And then one of the plane's engines fail. Wayne pushes open an emergency exit door and everyone begins to throw out luggage — clothes flying everywhere, women hanging on to seatbacks—so the plane can lift and miss hitting the Golden Gate Bridge.

I look around at the other passengers and wonder what they're thinking.

The large man next to me laughs and says to the woman next to him, "I'd offer to get off, but the wife's expecting me." She laughs, says something I can't hear, to which he responds, "Yes, it'd be enough to run your car for quite some time."

I wonder if they're thinking:

Those 350 pounds of gas would save me a ton at the gas pump.

Those 350 pounds of gas just blown off is probably why my ticket was so damn expensive.

Those 350 pounds of gas burned into nothing but heat in the night air, we might as well shoot the polar bears between the eyes.

"Please put your smaller bags at your feet. Please don't fill the overhead bins with coats and small items. Please place wheels facing out so we can fit more in."

Surely the pilot will tell us a truck has come to siphon it off. 350 pounds must have some value for an airline industry that is now chronically in financial trouble, chronically late and cancelling, chronically packed to the gills with people and luggage. Surely they'll siphon off the 350 pounds, and we'll lift, flying above all obstacles.

"We're just going to sit right here and burn it off. We'll rev the engine for a few minutes and that 350 pounds will be gone."

Of course, burning it off is the easiest and fastest way to get rid of excess weight. It's the best shot at getting us home on time. It means this flight, and the ones after it, will proceed just as planned, as if nothing at all is wrong, as if we're not living a death by a thousand small burns, weighed down by our own desires.

"We do this all the time."

We all sit, packed in, compliant. Passengers murmur to each other over the roar of revved engines. The man next to me opens a Time magazine; the baby behind me sucks on a pacifier. I lean back and try

to close my eyes. I can’t.

I lean forward, press my face to the window. The sun has sunk. A red light pulses in the thickening runway dark.

The World Depends on This

Kathleen Dean Moore

The message machine was blinking when I got home from work: “First, I want you to know that your daughter is going to be fine.” I braced myself for whatever would come next. “She was arrested during the street demonstrations. They’re holding her in the San Francisco County Jail.”

My husband and I had been watching world news all day. Now suddenly, this wasn’t about world news. It was about our daughter and a parent’s fears. What will she eat? How can she sleep? Do the handcuffs cut her wrists?

The night before, I had been dreaming about Erin. She was one of the young people in an outdoor clothing catalogue, striding out in autumn colors, her hair as blonde as apricots. She leaned against the other young people, laughing. But she wasn’t in some dreamy, sun-saturated place now; she was sitting in a small cube of light in a darkened jail.

I tried to picture a jail at night. Do the other inmates sleep splay-legged and heavy on their backs? Do they curl up as if they were babies? And our daughter? Surely she’s sitting awake on a bench with her knees to her chest and her arms wrapped around them. She will be cold, in that dark place.

Babies startle if they are not wrapped tightly. We learned this in a child-care class before she was born. Their bodies twitch and their arms flail as they sleep, and if nothing is holding them, they are afraid. So you have to wrap a newborn baby. We held our daughter close and

wrapped her in blankets, tight as corn in the husk.

We loved her so much and raised her so carefully, and isn't this what all parents do if they can? Piano lessons, art lessons, a hundred-dollar safety seat for the car. When she learned to drive, we tried to keep track of where she went and when she would be home. It never occurred to us that she would go to jail.

So here is the first thing she said when she called collect from the holding cell: "What can I say to keep you from worrying?"

To keep a parent from worrying?

Tell us you're home in bed, I cried, but my husband took the phone from my hand. She told him she was in a holding cell with dozens of other women. They are strong, amazing women, many of them mothers and grandmothers, many elegantly dressed in black, she said, and Frank thought that Erin's own voice was strong and amazing, more certain than he had ever heard.

To pass the time, the women are teaching each other to dance, she said. They are placing calls to news agencies, but they can't get through. Bombs are falling, newspapers aren't answering their phones, injustice and environmental destruction tangle in nets of violence and profit around the world – and all these women are dancing in jail.

The police released Erin at 2:30 a.m. A friend came into the city to drive her home.

Don't all parents want the world for their children? *Fellow parents, tell me, wouldn't we do anything for them?* To give them big houses, we will cut ancient forests. To give them perfect fruit, we will poison their food with pesticides. To give them a ride to school, we will leak bunker oil in

the last wild places. To give them the latest technologies, we will reduce entire valleys to toxic dumps. To keep them safe, we will deny them the right to privacy, to travel unimpeded, to peacefully assemble. To give them the best education, we will invest in companies that profit from death. And to give them peace, we will kill other people's children or send them to be killed, and amass enough weapons to kill the children again, kill them twenty times if necessary.

We would do anything for our children but the one big thing: Stop and ask ourselves, what are we doing and allowing to be done? I look again at the shopping list my husband had scribbled on as he talked to Erin: *Toilet paper / Bourbon / Flowers / County Jail / Environmental protest / Inmate*. How everyday and ordinary are our disastrous decisions. Frank and I go busily about, buying this or that, voting or not, burning up gasoline or jet fuel or split pine--on a small scale, in the short term, making things work for our children--forgetting that whatever is left of the world is the place where they will have to live.

What will our grandchildren say? I think I can guess:

How could you not have known? What more evidence did you need that your lives, your comfortable lives, would do so much damage to ours?

Did you think you could wage war against nations without waging war against people and against the earth? Didn't you wonder what we would drink, once you had poisoned the aquifers? Didn't you wonder what we would breathe, once you poisoned the air? Did you stop to ask how we would be safe, in a world poisoned by war?

Did you think it all belonged to you — this beautiful earth?

You, who loved your children, did you think we could live without clean air and healthy cities? You, who loved the earth, did you think we could live without birdsong and swaying trees?

And if you knew, how could you not care? What could matter more to you than your children, and their babies? How could a parent destroy what is life-giving and astonishing in her child's world?

And if you knew, and you cared, how could you not act? What excuses did you make?

And now, what would you have us do?

Two days after she got out of jail, we walked with Erin beside the ocean. Under a steep headland, we came across a jumbled heap of fishing nets, string, nylon cord and bullwhip kelp, intricately tangled. Buoys were smashed and buried beyond hope.

"This is what the world is," she said. She tugged at a rope in the nets gone to tangled ruin, drifted with sand.

"Yes. But you don't have to go to jail to say so. There are other ways," I said softly, knowing I should be still.

She answered as softly. "Then you need to show me those ways," she said. "Don't tell me. Show me."

Dear God. I don't know what to do: what to hope and what to fear, what to invest in and what to give up, what to insist on and what to refuse, how to go on with living in a time of death. All I know is how to hold my

daughter, wrapping my arms tight around her shoulders. Right now, the world depends on this.

Mountebank Wins Nobel for Infinite Planet Theory

Rob Dietz

Few people have read the dense volumes published by the economist Milton Mountebank, but his work has affected you, me, and every single person on the planet. Dr. Mountebank has revolutionized economic thought, and now he has been recognized for his singular efforts. Yesterday at a gala reception in Stockholm, Sweden, the chairman of Sveriges Riksbank, Peter Norborg, presented Dr. Mountebank with the Nobel Prize in Economics for his lifetime of work on *infinite* planet theory.

In his presentation of the award, Mr. Norborg stated, “Dr. Mountebank has demonstrated imagination and inventiveness beyond what the rational mind can comprehend.” Indeed, it is because of his theories that we all do what we do economically. Nations strive for continuous GDP growth and endless expansion of consumption thanks to infinite planet theory. Mr. Norborg went on to say, “All of our banks, including Sveriges Riksbank, owe him a huge debt. We finance economic expansion. Our actions and decisions would be morally suspect if we lived on a finite planet.”

In a light-hearted moment during the presentation, Mr. Norborg asserted that Dr. Mountebank had provided an even greater service to humanity by reducing stress on individuals. “Best of all,” he said, “is that we can extract, consume and digest resources guilt-free. Planetary constraints have been conquered. They have gone the way of the

dodo, the Roman Empire and the world's major fisheries."

Although Dr. Mountebank's books have failed to reach mainstream audiences, his work has been highly influential among elite political and corporate leaders. Ronald Reagan is a prominent example. President Reagan once famously said, "There are no limits to growth and human progress when men and women are free to follow their dreams." That's a close paraphrasing of Dr. Mountebank's conclusion to his magnum opus, *Infinity and Beyond: The Magical Triumph of Economics over Physics*. Phillip van Uppington, former vice president at Lehman Brothers, asserts that Dr. Mountebank was a huge influence on his firm. "We used to quote him all the time. One of the highlights of my career was the symposium I arranged a few years back with Mountebank and Milton Friedman. We called it 'Double Milton Day.' It really opened our minds to the possibilities of innovative finance. Once we implemented the double Milton doctrines, we made more cash than most small nations."

In his acceptance speech, Dr. Mountebank told the story of how he developed infinite planet theory. "Equations, equations, equations," he said, "I would see them dancing across my eyelids as I laid down to sleep. In the morning I would wake up and write them out. I did this for three straight years until I finally put it all together." The centerpiece of Mountebank's mathematical demonstration of the feasibility of infinite growth is his conjury equation, a recondite multivariate differential expression that, by common agreement, is understood by fewer than four economists in the world. "It's why I'm standing on this stage today," Mountebank said. "Unfortunately the equation is too long to fit on the screen behind me, but it's the key to infinite economic growth. Fortunately, though, you don't have to be an economist or a statistician

to use it as a guide for your daily actions." Dr. Mountebank continued by holding up a globe in his hand and stating, "We all recognize that the earth is a sphere, and from basic geometry, we all understand that a sphere has no beginning and no end. If you set out in one direction on the surface of a sphere, there is no stopping point—it's infinite." He spun the globe and walked his fingers around it to prove his point. "Q.E.D. No end. And that means it can be infinitely exploited for economic gains."

Infinite planet theory has gained almost unanimous acceptance in economic circles, but there have been some vocal critics. On the day of the award ceremony, a small band of protestors formed a picket line outside Sveriges Riksbank. One protestor was carrying a sign that said "Steady State." When asked why she was protesting, she said, "Mountebank? You can't be serious. They should give the Nobel to Herman Daly." Dr. Daly is known for his work on the limits to growth and the steady-state economy, concepts which fly in the face of infinite planet theory. The Club of Rome provided the original critique of the theory in 1972 when it published its bestselling book, *The Limits to Growth*. In his writings, however, Dr. Mountebank has dismissed the notion of limits. One of the passages in *Infinity and Beyond* says:

> "The end of cheap oil, species extinctions, climate change, deforestation, resource depletion, crippling poverty, loss of ecosystem services, soil and aquifer degradation—these are trifling problems, so long as we continue to grow the economy toward its ultimate size: infinity and beyond. Under no circumstances should we allow creeping thoughts about a finite planet or constraints handed down by universal physical laws to get in the way of building a bigger economy. And certainly we should shut our ears to the dreary doomsayers who continue to rain their inane facts upon our parade of growth. Growth, alone, is the moral and political ideal.

Dr. Mountebank ended his acceptance speech on a personal note, observing how infinite planet theory had soothed the fears of his young grandchildren. He said, “They told me they were scared about what was happening to the environment. I patted their little heads and told them not to worry. After all, you can’t harm nature on an infinite planet. By definition, there’s always more.”

Dr. Mountebank is the eighth Nobel laureate in economics from Fantasia University.

How to Build A Tiger

Gunnar De Winter

June 3th, 2112
7:15 am

The opaque window turns slightly transparent, allowing the sunlight to enter the apartment on the 115th floor of the ACC-e building. A smooth voice comes out of nowhere, tenderly filling the room.

“Good morning, Sarah. It’s 7:15 am and the weather is good, with a gentle sun and a UV-protection value of only 2, so you will not require any protective gear on your way to work.”

In the bed, which is incorporated into the floor of the bedroom, a heap of sheets moves. An arm finds its way out and tosses the sheets halfway across the sober, almost Spartan, room. Dr. Sarah Jones emerges, yawning and stretching. Half sleeping she manages to find her way to the shower and enters the cabin. Alerted by her infrared signature, the shower begins to work, making sure the temperature is exactly as Sarah likes it. Slowly, her mind begins to wake up. She’s never been a morning person.

By the time she enters the living room, breakfast is ready, standing in the food prep. She takes it out of the machine and sits at the dinner table, thoughtfully chewing. Over the last few weeks at work there had been talk of some new, secret project. Today all would be revealed – or so one of her colleagues had promised. She had become increasingly curious about it over these past few weeks. Now she would know.

Outside, waiting for an AutoCab, she arranges her long, black hair in a ponytail and looks up. It is indeed a good day. The smog is so light she can actually see the blue sky, and a few lonely clouds here and there. Her transportation arrives. The passenger door opens and she gets in, swiping her wrist across the sensor. The implanted chip tells the cab where to go and pays at the same time. During the ride, her thoughts end up where they started: the new project. The only thing preventing Sarah from biting her nails is her willpower.

Ten minutes later she's at her place of work – the Animal Cloning Consortium. The ACC had been founded a couple decades previously, when it was clear that the decline in biodiversity could not be stopped by conventional means. A couple of world-leading geneticists started collecting DNA samples of as many life forms as they could find, giving priority to the critically endangered or some that had already gone extinct. Collected and stored in a specialized structure – The Ark – these samples were used initially to clone animals that had gone extinct. This was mainly done to order – paid for by super-rich individuals. Nothing says 'I'm really rich' better than possessing an extinct species, alive and kicking. But occasionally assignments were undertaken on behalf of organizations interested in restoring biodiversity in one of the very few regions where this was still possible.

So far, the Consortium had only dealt with relatively 'simple' species, such as fairly primitive flowering plants, mushrooms, the occasional single-celled organism for the connoisseurs, and, where money was no object, some amphibians such as the axolotl. Larger, more complex organisms were, of course, a primary goal of research at the ACC. But this turned out to be a lot harder than previously envisioned. But progress in this direction was being made and Sarah's own research on

artificial wombs was a crucial part of this effort. Slowly but surely the artificial womb made even the cloning of extinct mammals start to seem within reach.

Maybe that's what this new project is about, Sarah thinks as she enters the spherical ACC building. The door slides open and an androgynous face appears on the wall to her right. "Welcome, Dr. Jones. Hope you have a great day." The rather attractive face disappears. As she rounds the last corner before she reaches her office, she notices that Sam's waiting for her, pacing back and forth. Sam, Dr. Jacobson, is a collaborator on the artificial womb project. A tall, gangly man with messy, bright red hair. He's cleaning his glasses, something he does when he's nervous.

"Hi Sam, what's up?"

Sam looks startled, as if awoken from a dream. Then he regains his composure. "Hi Sarah, you're right on time. The big boss has called a meeting. Right now."

"Okay, let's go." Sarah turns around and waits until Sam has caught up with her. "You know what this is all about?"

"Probably the new mystery project."

They arrive at the meeting room and enter. Several heads turn their way.

The boss is a small, bald and very burly man who always seems to wear his immaculate white lab coat. "Good. We can start."

The people spread around the transparent table. There are no chairs, as the boss believes that sitting lulls the brain. The burly man taps the table and a hologram appears, floating above the middle of the table. It

shows a logo which apparently doesn't mean anything to anyone in the room. It looks like an ivy-grown 'E'. Clearing his throat, the boss begins.

"None of you has probably ever seen this logo. It's from a new corporation that goes by the name of 'EdenCorp'. Nobody seems to know who is behind it, or what their goal is. What is known, is that EdenCorp has commissioned the building of a huge movable artificial island." Here, the boss pauses, probably to let the information sink in. The meeting room remains silent. The boss looks around, staring at everybody individually for a moment, and continues. "And now, they've approached us. They have one simple assignment for us…," he pauses again, this time obviously for the dramatic effect. Everybody in the room unconsciously leans a little forward. An almost unnoticeable grin flashes over the boss's face. "Build a Siberian tiger," he half-whispers. Now, everybody unconsciously leans back, as if blown away by the news. Mouths open, but no words follow. "What? No witty comments or snide remarks?," the boss asks with a mischievous spark in his eyes.

June 10th, 2112
9:02 am

Aiden pushes his hand on the display. A tiny tingling sensation tells him that his DNA has been extracted for validation. After a few seconds, the opaque glass doors slide open without a sound. The lights turn on gently, revealing a huge high-vaulted room, filled with large semi-transparent cases holding the DNA of almost any known organism that has lived in the past few centuries. Black-haired, blue-eyed Aiden is about to enter the Ark.

"Aiden, wait a second."

The tall, athletic man turns and watches Sarah walk towards him. “Would you mind if I join you?” she asks. “I’ve never been in the Ark before.”

After a few seconds of what appears to be deep thought, Aiden shrugs. “Sure, why not.”

Together, they enter the Ark. The doors close behind them. Aiden navigates effortlessly through the maze, with Sarah walking beside him. He suddenly halts before one of the countless nondescript cases. “Here we are.” He taps the glass cover, and a keyboard appears. After typing in the access code, he gives the command to extract Siberian Tiger DNA from the core of the case, which is never exposed to the outside world. Through rapid automated PCR techniques, the entire genome is cloned in a matter of minutes. A soft buzzing indicates that the process has started, and the timer starts to count down from 1 minute and 57 seconds. Sarah looks around in awe. Here lies the evidence for the short-sightedness of man, in the form of extinct species, many of which were pushed over the edge due to a final nudge by mankind. But at the same time, this place also represents the power of the collective discoveries by man, allowing these species to be resurrected. Sarah feels confused and conflicted.

“Excited?,” Aiden asks after a while, which is quite unusual, as he is known for his reticence and extreme thoughtfulness.

“Absolutely,” Sarah answers. “And anxious,” she adds a few seconds later, “this is the first test for my artificial wombs and it’s a big one.”

Aiden nods. A ‘ping’ alerts them that the genome is cloned and extracted. A small test tube appears in a small glass hatch on top of the case. Carefully, Aiden takes hold of it and puts it in his breast pocket.

With a wave of his hand, he makes clear to Sarah that they can leave.

June 14th, 2112
2:44 pm

After a very busy few days, preparing her wombs for use, Sarah receives a message from Aiden, making a small icon on the top left of her desk pulsate in a bright red hue. She taps the icon and the message appears on the table-top.

> *From:* AidenJ@acc.org
>
> *To:* SarahJ@acc.org
>
> *Subject:* Genome project ST mapped and ready to be implanted.
>
> Hello Sarah, my group has just finished mapping the ST genome and has prepared it for implantation. I don't know how far you have progressed in your preparations, but whenever you're ready, you can come and pick it up.

Without paying any further attention to the message, Sarah rushes out of her office and walks to Sam's office – all the while trying not to break into an unseemly run down the corridor. Forgetting to knock, she swings open the door and finds Sam reading some article with a frown on his face. He looks up, and Sarah simply says: "It's ready." The words were hardly out of her mouth before Sam was up and moving towards the door. Together, they quickly walk to Aiden's department, one floor down.

They find Aiden in the lab, surrounded by several of his colleagues. When he sees them, he makes a gentle, beckoning gesture. The other people in white lab coats make way, allowing the two to pass. They see

a single test tube, filled with a slightly cloudy liquid.

“That’s it,” Aiden whispers, “the tiger genome has been fully mapped, and inserted into host cells. From here on, it’s up to you.” He puts the test tube in a small box full of ice, to prevent the DNA from denaturing. Solemnly, he closes the box and hands it over to Sarah, who, equally solemn, accepts it. “Good luck,” Aiden tells her, “and be sure to keep us all updated on your progress.”

“Will do,” Sarah replies, staring at the box. Finally, she manages to tear her gaze away from the small, white box and looks at Aiden. “Great work, Aiden.” The tall man shyly shrugs. Sarah looks around. “Great work from your entire team.” The people in the room proudly accept the accolades. She turns to Sam, and says with a barely suppressed smile. “Our turn.”

June 18th, 2112
6:43 am

A loud peeping sound and a flashing red light roughly wake Sarah. Someone’s sending her an emergency message. “Open message,” she grunts. Sam’s face appears on the wall opposite of her bed. He looks panicked. “Sarah! You have to come over. Something’s wrong. One of the embryos is dying!” Sarah never got up faster. Within minutes, she is out the door, running through the hallways of the building.

When she arrives, Sam is waiting for her in the lobby. “What’s going on?,” Sarah asks sharply.

“I don’t really know,” Sam stammers, “everything seemed to be going fine until, suddenly, the vitals of embryo 4 dropped.”

“The other ones are all right?”

“Yes, so far, the four other ones are doing great.”

“Well, at least that’s something.”

They arrive at the womb chamber. Upon entering, the humid atmosphere in the room engulfs them. Five artificial wombs, resembling large meat bags, are suspended about a meter in the air. Four of the five wombs are looking perfectly normal, but one is convulsing, trying to abort the tiny speck of life that is growing inside.

Sarah storms into the control room, adjacent to the womb chamber and begins typing on one of the keyboards that appears on the table top. She replays the sequence of events that has led to this failure, and carefully scrutinizes everything that has taken place in the early development of the little embryo. She doesn’t see anything. Sighing, she rubs her eyes. The five embryos are genetically identical, so there has to be something that has happened in number four that didn’t happen in the other ones. Or maybe it still has to happen. That’s a scary thought.

August 7th, 2122
3:16 pm

It’s been almost two months since embryo 4 died. Ever since that event, Sarah has gone over the data again and again, in the greatest detail possible. She hasn’t found any satisfying explanation. The general consensus amongst those involved is a random, unpredictable mutation. Sarah has her doubts, but the other four are doing well, already looking like tiny tigers. Suddenly, her desk flashes. An emergency message appears.

“Problems with embryos 2 and 3. Needed here at once.”

Sarah runs to the womb chamber and sees wombs two and three convulsing heavily. Not again. It's crowded in the control room. Everybody's looking at the screens, but nobody seems to know what to do.

"What happened?," Sarah asks, forcing herself not to scream. The people around her simply shrug. Sarah angrily starts tapping the keyboard. Again, she can't seem to find any indication about what went wrong. A continuous 'beeeeeep', the ominous tone that hasn't changed in over a century, tells her that the two fetuses are dead. She pulls on gloves and walks towards womb 2. Putting her arms up to her elbows into the slimy inners of the womb, she gently removes the fetus. Sam does the same with fetus 3. The minute, pinkish, naked tiger is about as large as the palm of Sarah's hand. She has to fight back tears.

September 25th, 2112
10:27 am

In a few minutes, the two remaining baby-tigers will be born. The past month has been the most stressful in Sarah's life. Every day, she feared getting a message telling her that the two remaining fetuses had succumbed to the same unknown causes that killed their genetic twins. Every time she got a message, she expected the worst. But the worst did not come.

And now, she's standing in the womb chamber, proud and nervous as only a mother can be. Wombs one and five slowly begin contracting, going into induced labor. The two delivery teams are prepared. Sarah standing at womb 1, looking at the smooth delivery. A baby tiger is born. It takes a while before she realizes that there's a lot of commotion at womb 5. She rushes over to find out that the baby from womb 5 is

stillborn, and beyond resuscitation. Sarah is torn between sadness for this cub and joy for the other one. The sole survivor. Only one of the five tigers survived. That's not a good success rate. But she'll worry about that later. Now, she's mesmerized by the tiger cub that's blindly moving its paws.

The cub is transported to the specially equipped nursery room, where it will be fed and nurtured until it's large and independent enough to be handed over to EdenCorp.

December 31st, 2112
4:05 pm

Sarah watches the tiger cub play. Running around, trying to catch one of its many toys, the cub is unaware of its congenital heart defect. A few weeks after she was born, it was discovered that her heart wasn't functioning as well as it should. Luckily, custom-made medication makes it manageable. Today, she will be handed over to her new owners.

Having developed somewhat of a bond with the cub, Sarah is sad to watch her go. In the past months, she has often wondered what might've happened to the cub's sisters. And all too often, these thoughts have led to a subdued anger and a failure to understand how these creatures could have gone extinct in the first place. At the beginning of the twenty-first century, so many species disappeared, not as a result of natural factors, but because of man-made factors. And the people just stood by and watched it happen.

Sarah sighs, turns around and walks away. Edencorp, pleased with the success, has already commissioned a new assignment. Now, Sarah

and others are going to build a white rhinoceros.

PART II

Humility in a Climate Age

Paul Wapner

> Take your well-disciplined strengths
>
> and stretch them between two opposing poles.
>
> Because inside human beings
>
> is where God learns.
>
> —Rainer Maria Rilke

There is a battle going on for the soul of environmentalism. How it plays out will determine our ability to respond to a whole host of environmental dilemmas, especially climate change. All of us are partners in this struggle, since battle lines are being drawn not simply on the street or in policy debates but also inside each of us. We are torn between two visions of how to relate to the earth. Much depends on how we negotiate our way through the conflict.

One vision sees *Homo sapiens* as simply a single species among many, and thus subject to the same biophysical constraints as other creatures: Like the rest of life, we evolved over millennia, and depend fundamentally on the biophysical gifts of the earth. From an environmental perspective, this means that we should try to harmonize ourselves with the natural world—we should use only so many resources and produce only so much waste, and strive generally to fit ourselves into the web of ecological interdependence.

The other vision sees humans as the exceptional species: Yes, we are subject to nature's laws, but these are not inviolate. We can outsmart, work around, or otherwise rise above them by employing our reason and technological abilities. From an environmental perspective, our exceptionalism calls on us not to harmonize ourselves with nature but to rework the natural world in the service of human betterment.

The first view can be called the urge toward "naturalism" whereas the second can be called the urge toward "mastery."

For decades, environmentalists have primarily expressed the first view, projecting a vision of naturalism in political campaigns. They have tended to confront their critics along the naturalism-mastery divide, offering a counter-narrative to the predominant hubristic attitude of lording over nature and trying to instill a sense of species-humility in the face of growing environmental challenges.

Environmentalism is changing, however, especially in light of the climate crisis. Many are now toning down or outright abandoning a naturalist sensibility for one leaning toward mastery. We see this in the attraction to technological fixes as evident in the resurgence of support for nuclear power, the popularity of carbon sequestration, and the embrace of "green" consumption. Today, some staunch environmentalists are even proposing earth-altering actions to protect ourselves from the dangerous buildup of greenhouse gases, seeking to change the atmosphere itself to accept more carbon dioxide or at least deflect climate change dangers. Proposals include putting up orbiting sunshades to block sunlight, fertilizing the oceans with iron to grow more phytoplankton to absorb carbon dioxide, and pumping sulfur dioxide into the atmosphere to impede solar radiation. Many

environmentalists have come reluctantly to recognize that there is simply no way that societies are going to cut back, restrict their imprint on the earth, and otherwise live lightly on the planet enough to mitigate climate change. Too many people need energy and are unwilling to deny themselves the pleasures of material consumption for an orientation of naturalism to take hold widely enough to make a difference. At this stage, they reason, we should ramp up our abilities to outsmart and manipulate nature in the service of protecting ourselves from climate catastrophe. Put differently, many environmentalists are now admitting that global capitalism, incessant technological innovation, endless consumption, and pervasive anthropocentrism are here to stay. Rather than continue to battle against these dynamics in the service of living more harmoniously with the natural world, many argue that it is time to embrace them and align ourselves with their power.

There is much promise to the “new environmentalism.” In the shadow of Copenhagen’s failed negotiations, we are all grasping at straws for insight, and the notion that technological fixes could enable us to surmount climate change dangers within the existing world order (and with our lifestyles intact) appears particularly attractive, especially to the privileged among us.

And yet, for all its promise, the new environmentalism raises significant questions. Is it really forward-looking, or will it simply reinforce and accelerate the forces that got us into the climate crisis in the first place? That is, can it usher in a new energy future or will its promise of technical solutions distract us from the difficult work of realigning our lives? Is it so compatible with current economic and social systems that it will merely diversify our energy choices without fashioning a

genuinely different orientation to our energy lives? More generally, we need to ask where the new environmentalism will lead us. Will it take us into a technocratic future animated by the type of design and technological optimism associated with Promethean thought that has long animated environmental skeptics, or will it prefigure a more naturalized world, more in line with the precautionary sensibility that has long guided the environmental movement?

There are no easy—and certainly no definitive—answers to such questions. We cannot evaluate the new environmentalism in either/or terms, as if it were either helpful or not in ushering in a sane climate future. Rather, the effects of the new environmentalism turn on how we translate it into practice. Key to such translation is recognizing that the impulse behind the new environmentalism needs to be in productive tension with conventional environmentalism and the urge to naturalism. As we move deeper into the climate age, we need to revive and embolden the impulse toward naturalism to rein in our hubristic tendencies. Our humanity depends on it.

The Moral Character of the Two Environmentalisms

Environmentalism is many things. At its core, however, it is an ethical movement. As political theorist Leslie Thiele reminds us, it is about extending moral consideration across space, time, and species. It involves caring about the needs and well-being of our fellow human beings, future generations, and the more-than-human world. Addressing climate change is a moral act to the degree that it involves protecting each other and other creatures from climate catastrophe, and ensuring that future human beings will inherit a livable planet. In many ways, the new environmentalism does represent this moral

sentiment. Its embrace of technological capability, economic growth, and instrumental rationality represents a commitment to addressing the climate crisis and thus making the world a better place for all living creatures, including future generations.

There is, nonetheless, something unsettling about the moral character of the new environmentalism, especially to the degree that it ignores naturalism. Its promise to deliver a world in which we may continue to indulge all our appetites, desires, and customary practices simply by altering material structures seems morally thin. Such a vision involves technologically engineering the world so individual, environmental decision making becomes irrelevant. It strives to ensure that we conduct ourselves in an environmentally sound fashion through designed systems of social life. This raises ethical concerns to the degree that it relieves individuals of having to clarify their moral commitments or take deliberate actions to limit themselves in the service of others' well-being.

Ethical action involves deliberation and the conscious choice to restrict acting on one's desires in deference to the welfare of others. The new environmentalism promises gadgets and systems that will absolve us of the need for such reflection and consideration. Most ethical action also entails a sense of humility about oneself and, by extension, the human species. At least since Aristotle, ethicists have considered humility a virtue whose practice deepens the human character and heightens one's moral sensitivity. The new environmentalism dispenses with this to the degree that it calls on us not to respect nature's limits and adjust ourselves to them, but to outsmart and plow through nature's biophysical character with the aim of crafting sustainable lives without requiring, or indeed permitting, the exercise of choice. Humility is thus a

casualty of the new environmentalism.

This is not to say, of course, that the new environmentalism is immoral or even amoral. As mentioned, its proponents care deeply about protecting the environment and ensuring that humanity survives and flourishes in the face of grave environmental challenges. Rather, it is to suggest that the new environmentalism is incompletely moral. The new environmentalism needs the ethical bearings that sensitivity to naturalism can provide. It needs the sense of humility and the appreciation for the more-than-human world that conventional environmentalism has long valued and championed. This is especially the case at this point in history.

Since the dawn of modernity, the balance between naturalism and mastery has been increasingly weighted toward mastery. Our attempt to decipher nature's ways and manipulate them in the service of human betterment has been accelerating for centuries and shows few signs of abatement. Indeed, we seem continually committed to run roughshod over the nonhuman world. Given this imbalance, this is simply not the time for fully embracing the new environmentalism but rather reviving naturalism, which at its core expresses diffidence concerning human frailty, and the human condition more generally. Naturalism conveys the understanding that we—as individuals and as a species—are not at the center of the universe but simply occupy a distinct place in the order of things.

In many ways, it has been our self-centeredness—our placing ourselves at the core of existence and our willingness to do whatever it takes to advance our interests—that has created our environmental dilemmas in the first place. It is time to regenerate a cautionary attitude

toward this sensibility and put it in its proper place. If checked by humility, the new environmentalism can offer wonders without veering off in dangerous and ethically troubling directions. Couched within an effort to balance naturalism and mastery, the new environmentalism can take its rightful place in the evolution of the movement. It can offer promise toward addressing climate change by urging us to explore our technological, scientific, and “economistic” tendencies and capabilities. It will fail us, however, if we don’t balance these proclivities and capacities with the moral compass of knowing that, while we may be unique as a species, we are not exempt from nature’s laws and imperatives, and we live less than full lives when we forget this. This recognition, paired with the realization that there is more to the cosmos than humans, provides the antidote to the hubris of the mastery narrative—and to our collective ability to address climate change.

The tension between naturalism and mastery is as important to environmentalism as the paradoxes that wrack human life are to human experience. We live best when we refuse to collapse such paradoxes. Likewise, we will live most humanely through the climate age by keeping alive the long environmentalist tradition of harmonizing with the natural world rather than lording over it.

American Myths, American Dreams

How the stories we tell create the people we are

James G. Blaine

In her 1969 book, *The Economy of Cities*, Jane Jacobs confronted conventional wisdom by suggesting that early humans built cities before they cultivated farms. In her introductory chapter, “Cities First – Rural Development Later,” Jacobs wrote that the growth, diversity and economic activity of prehistoric cities actually created the conditions necessary for the introduction of rural agriculture. The book received far less attention than Jacobs’ paradigm-busting first book, *The Death and Life of Great American Cities*, and her theory of urban precedence barely made a ripple in the public discourse.

Undoubtedly one reason for the tepid response was that Jacobs’ idea seemed absurd to many of her American readers. Although she supported it with evidence from recent archeological discoveries, her denunciation of “the dogma of agricultural primacy” flew in the face of America’s most powerful and enduring myth – that the American Dream stood on the legs of frontiersmen who swept westward into the wilderness and the backs of farmers who followed close behind to clear and settle the continent.

That is what they had learned in history class. “The United States was born in the country and has moved to the city,” wrote historian Richard Hofstadter in his Pulitzer Prize-winning book, *The Age of Reform*. He certainly had a point. In 1790 the new country’s first census reported that 95 percent of all Americans lived outside of cities. A century later,

when the census pronounced the end of the frontier, two-thirds of the population still lived in the country. Today, less than half of one percent of Americans are farmers. Yet the myth of the enduring importance of the small farm, the virtues of agrarian life and the unique influence of the American frontier continues to have enormous consequences for the way Americans regard their cities, cultivate their land, exploit their natural resources and treat each other.

The agrarian/frontier myth is the foundation of the American identity. At its core is the belief in “American exceptionalism,” the idea – now a staple of presidential debates – that America is a special nation, forged on the crucible of the frontier, whose mission is to be a beacon to the world (and the accompanying belief that we therefore don’t have to play by anybody else’s rules). This idea has had wide influence. Until the U.S. Supreme Court ruled otherwise in *Reynolds v Sims*, for example, it assured rural majorities in state legislatures and Congress long after America had ceased to be a rural country. It anchors current demands for English-only legislation, despite the fact that four of our ten largest cities are Los Angeles, San Antonio, San Diego and San Jose – or that we have state capitals named Montpelier, Baton Rouge, Santa Fe, Sacramento and Pierre. Perhaps most importantly, it has led to a view of cities as parasites on the land, as places inhabited by the foreign, the effete, minorities and the poor – everyone, in short, but the vast majority of the white, native-born middle class.

While America has become the most powerful and affluent nation in the history of the world, it has never adequately accounted for the real costs: the damage to the environment and the neglect of the poor. Nowhere has this accounting failure been clearer than in the ubiquitous American development pattern known as suburban sprawl, which can

no longer be dismissed as an aesthetic blemish on the landscape or the triumph of bad taste. It is the culmination of a national obsession with growth and progress that relies on environmental exploitation and economic inequality.

It is important to understand that there can be no solution to either problem without a recognition of the intimate connection between them. We have not always recognized that. For more than a century, the environmental and social justice movements developed separately, and often they came into conflict with each other. The former concentrated on the preservation of the wilderness and the protection of habitats and natural resources. The latter focused on eradicating poverty, creating jobs, and gaining access to social and economic institutions. They worked at cross-purposes: one sought to promote growth, the other to limit it; one focused on economic distribution, the other on values change. By the beginning of this millennium, the two movements had grown so far apart – and their identities so different – that Van Jones coined the term “eco-apartheid” to describe the divide. Perhaps nowhere is that divide more starkly on display than in their views of suburbia. Social justice advocates fought for years to open up the suburbs to make the American Dream available to all. Disaffected environmentalists wanted to escape back to the land from what, to them, had become the American Nightmare.

The origins of the agrarian myth are usually traced to Thomas Jefferson, whose dictum – “Those who labor in the earth are the chosen people of God” – was part of a broader political campaign against the urban and industrial interests that were mobilizing behind Alexander Hamilton and his quite different view of America’s future. The myth’s frontier component got its ultimate formulation in Frederick

Jackson Turner's 1893 essay, "The Significance of the Frontier in American History," in which he wrote, "The existence of an area of free land, its continuous recession, and the advance of American settlement westward, explain American development."

The myth, however, did not begin with Jefferson's yeoman farmer, nor did it end with Turner's frontiersman. It arrived with the earliest English settlers, who, unlike their French and Spanish counterparts, came to settle the land as well as to exploit its resources. "The land was ours before we were the land's," wrote Robert Frost of those early immigrants, who recorded their ownership claims even before their boats set sail. They saw the continent as theirs for the taking, the subduing, the taming. Religious people, they found their instructions in the second chapter of Genesis when God told Adam to "be fruitful and multiply, and replenish the earth and subdue it, and have dominion over . . . every living thing that moveth upon the earth." God had once given them a garden, and humans have been trying to get back into that garden ever since.

Partly because the germs they carried preceded them into the interior and decimated the native peoples, the early settlers came to think of the new world as an empty space, its land as virgin land. And because those who survived the initial contact with Europeans had no notion of private property – a right the newcomers deemed the bedrock of their civilization – the settlers simply claimed the land for themselves and paid a nominal price to abide by the letter of their own laws. They called the limit of their settlements the frontier, which was less a line on a map than a challenge to push ever westward, clearing the land and clearing out the people who lived on it. Over the next nearly four centuries millions of people came to this country. Most of them were neither

English-speaking nor farmers – and many of them crowded into the overcrowded slums of urban America. But the myth lived on. It was still our “manifest destiny” to spread our values westward across the continent and beyond, and these values remained rooted in the consecrated soil of the family farm.

When the 1890 census announced that the country no longer had a “frontier line,” Turner proclaimed the end of the formative era of American history: “America has been another name for opportunity, and the people of the United States have taken their tone from the incessant expansion which has not only been open but has even been forced upon them. . . .But never again will such gifts of free land offer themselves.” The pioneers had moved westward, drawn by “the demand for land and the love of wilderness freedom,” until there was almost no wilderness left.

The combination of the belief in private-property rights, the Biblical exhortation to subdue the earth, the yearning to turn the wilderness into a garden, the need to survive in a land that often proved unexpectedly inhospitable, and the seemingly boundless quantities of land, water and natural resources provided the foundation for America’s rapid development and exceptional affluence. Both were fueled by a fervent commitment to limitless growth in a land where no resource must be left unplowed, undammed, unfelled or unextracted.

Human activity, in fact, could enhance nature and make it more productive. When settlers pushed beyond the 100th Meridian after the Civil War, for example, they encountered a land far drier than anything they had seen before. There were large tracts in the West that averaged fewer than eight inches of rainfall a year. Such desert

conditions didn't faze speculators and boosters such as William Gilpin, Colorado's first territorial governor, who proclaimed often and loudly the widely accepted theory that "rain follows the plow."

Yet as Turner was chronicling the closing of the frontier, he overlooked another and equally formative story. The country was exploding with growth – population, immigration, urban and industrial growth. Between 1870 and 1910, the population of the United States grew two-and-a-half times – to almost 92 million people. The percentage of those living in urban areas grew at more than twice that rate, and by 1910 almost half of all Americans were either immigrants or the children of immigrants.

Moreover, the new immigrants were no longer coming primarily from the western countries of Europe, but from Italy, Eastern Europe and Russia (and in the West from China) – foreign-looking and sounding people who inhabited the slums of big cities and provided cheap labor for American industrial growth. Now that it no longer existed in fact, the frontier became the imaginary "safety valve" for American cities – an escape route from the filthy air and water, overcrowding and poverty, ghettoes of the foreign-born and the non-white, places of labor exploitation, class divisions, crime and violence – none of which were part of America's popular image of itself. (Even agriculture, the backbone of the American Dream, was not immune from the changes. The invention of huge machines transformed farming from a collection of small operations to industrial conglomerates, which in turn transformed the work force from family members to wage laborers and share croppers.)

The myth of the frontier, with its code of individual triumph and rural virtue, lived on not only in the characters of pulp novels, but in our

literary and historical heroes. Walt Whitman and Huck Finn set off alone, heading west to experience the sense of freedom that comes on the open road and in the new territories. Abraham Lincoln learned his simple candor and bedrock principles on the frontier, while Charles Lindberg, the “Lone Eagle” who became America’s greatest hero, gave the country a new frontier about which to dream.

The last part of the 19th century witnessed a third trend that, while less noted than the city and the frontier, was no less significant for the country’s future: suburbanization and white flight. The introduction of the streetcar provided the urban middle class affordable escape routes to outlying areas. The American Dream might no longer be a farm, but it could be your own home on a small plot of land in a tree-lined community. As middle-class – and later working-class – whites moved out of the inner cities in growing numbers, the new immigrants poured in. Early in the 20th century they were joined by Blacks, determined to escape the increasingly “Jim Crow” South and lured north by agents of industrial companies in search of cheap and non-unionized labor.

Although Blacks came in even greater numbers during World War II, almost every northern city experienced enormous declines in population almost as soon as the war was over. The reason was the accelerated exodus of whites made possible by a massive federal highway program, subsidized home mortgages, and record construction of single-family houses on cheap farmland. In the five decades after 1950, the cities of Boston, Cleveland, Detroit, Philadelphia and Washington, D.C. all lost between one quarter and one half of their total populations. Those left behind were increasingly Black and increasingly poor.

Blocks of boarded-up buildings in vacant neighborhoods, the emergence of structural unemployment, and the growing fear of violence reinforced the public perception that cities were alien, dangerous, even un-American places. What the country did not notice, however, was the rage that was boiling below the surface. In the late 1960s it exploded.

American cities had long experienced race riots, most notably New York's draft riot in 1863, and deadly disturbances in Chicago, Harlem and Detroit in the first half of the 20th century. But what happened in the 1960s was a different order of magnitude. The first warning came out of Watts in 1965. Then, in 1967 and 1968, urban America burst into flames. Detroit. Newark. Cleveland. Baltimore. Washington, D.C. The government's response was two-fold. The first was to send federal troops into the ghettos to restore order. As the television screens recorded daily, American soldiers were once again in combat. But this time the war was in American cities and they were shooting at American citizens.

The second was both more sober and more surprising. In its "Report of the National Advisory Commission on Civil Disorders" to President Lyndon Johnson, the Kerner Commission did not blame the rioters; it blamed the nation, which it described as "moving toward two societies, one black, one white – separate and unequal." This, the commission said, had to change; and while it offered a series of interim proposals to improve the lives of those living in the inner cities, its most far-reaching remedy was that America must open up its suburbs. Only then would minorities and the inner-city poor gain access to the American Dream.

Following the Kerner Report, the NAACP brought suit against Mt.

Laurel Township in New Jersey, arguing that suburban zoning ordinances amounted to systematic discrimination. In its landmark 1975 decision, the New Jersey Supreme Court agreed, and in a subsequent decision the court ordered specific tools for integrating suburbia. Other states also required outlying municipalities to provide their “fair share” of low-income and subsidized housing.

Suburban communities had been using both public ordinances and private covenants to insulate themselves against racial and economic integration for years. The Kerner Commission’s demand that they cease doing so was an assertion of simple justice, long overdue. Yet one of its most far-reaching results was the legal codification of – and the moral justification for – suburban sprawl. Real estate interests, armed with a new set of legal and philosophical tools and with their eyes fixed firmly on the bottom line, pushed local governments to approve huge new plans for residential and commercial development.

Who could object? To own a house on a small plot of land away from the filth and crime of the city – wasn’t this the 20th-century manifestation of the American Dream, the agrarian/frontier myth made available to millions of people? Unfortunately, it has brought with it the traditional, if unanticipated, consequences. The departure of even more people accelerated urban decline; and suburban development has turned out to be the most environmentally harmful way that people can live on the land.

The agrarian/frontier myth, of course, is not solely responsible for suburban sprawl. But our myths do matter. They are the stories we create to understand ourselves and make sense of our world. The American story recounts the subjugation of the wilderness, the

exploitation of resources and the abandonment of cities. This does not do justice to either our complex history or our diverse people. How can we tell the whole story?

What if we incorporated Jane Jacobs' narrative of the critical role cities have played in human development?

What if we remembered that John Winthrop and his Puritan congregants came to Massachusetts Bay to establish, not a homestead, but a city on a hill?

What if we acknowledged that, while an embattled farmer may have fired "the shot heard around the world," the seeds of the American republic were sown in Boston and Philadelphia?

What if we honored our reputation as a "nation of immigrants" by recognizing that most of those immigrants became Americans in our cities?

What if we saw our cities as places of innovation, creativity and diversity as well as crime, violence and graffiti?

What if we honored the people who lived on the empty land before we claimed it?

What if we ceased to romanticize an agricultural economy that produced an antebellum South based on slavery and a corporate agribusiness built on migrant labor, heavy equipment and the privatization of the commons?

What if we embraced Aldo Leopold's land ethic that "changes the role of Home sapiens from conqueror of the land-community to plain member and citizen of it?"

What if we really believed with Thoreau that “in wildness is the preservation of the world?”

Cities are very different places from wilderness, but all places on this earth are sacred places. We need a mythology that is inclusive not divisive, one that celebrates frontier people and Native Americans, farmers and urbanites, the city and the country. And we need public policies that do not make us choose between preserving the wilderness and revitalizing our cities, between economic well-being and environmental protection, between human rights and the rights of nature, between a green world and a just one. We must give up the notion that we are separate from the rest of creation. We must stop destroying the few wild places left on earth, and we must recognize that cities, the home of most of the world’s people, are perhaps the most endangered habitats of all.

To choose between the environment and social justice is a false choice, for, in the end, the way we treat each other is the measure of how we treat the earth.

The ethics of climate change

Thomas Wells

The global climate change debate has gone badly wrong. Proponents of action have sidelined themselves with their manifest failures of ethical perspective and pragmatism. Environmentalists argue that climate change is fundamentally a values problem. And yet their interpretation of this has taken a narrow moralising form that systematically excludes consideration of such important ethical values as improving the lives of the 1 billion people living in unacceptable poverty or even protecting other aspects of the environment (such as wilderness areas). That narrowness also leads to self-defeating policy proposals founded almost entirely in the economy of nature rather than political economy. The result is a fixation on global CO2 levels alone as the problem and solution, at the cost of systematic and broad evaluation of the feasible policy space. These foundational errors have induced a kind of millenarian meltdown in many otherwise sensible people, to the extent that to be an environmentalist these days is to fear the oncoming storm and know that all hope is lost.

To put it mildly, people in this state of mind are not well placed to make persuasive or practical contributions to the political debate about what we should do about the fact of climate change. In their reconciliation with despair environmentalists are not only mistaken, but display a disturbing symmetry with those opponents of action who are mistakenly complacent about the status quo. Though it may seem strange, especially to mainstream environmentalists, a dose of economic reasoning could reinvigorate the proponents of action by restoring a

sense of perspective and proportion, and also help to forge the necessary political consensus for addressing the problems of climate change.

It is clearly a scientific fact that the world's regional climates are changing substantially and at unprecedented speed, as a result of the global warming produced by the greenhouse gases emitted human activity (in particular by the industrialisation of the West). But 'science' does not have the legitimacy or resources to tell us what we should do about climate change. We have to work out for ourselves, through politics, what the scientific analysis means for what we have reason to value, and what to do about it. Making such decisions sensibly requires information about how our socio-economic institutions interact with the environmental mechanisms. Relying on the natural scientific account alone leads us to fixate on the minutiae of greenhouse gas emissions levels and climate sensitivity, while drastically simplifying the human side.

It is often said, and very plausibly, that climate change is difficult for human minds and our political institutions to grasp and act on because its global scale and long-term (inter-generational) and complex causal mechanisms present a 'perfect moral storm'. One way of dealing with such difficult problems is to moralise them, and this seems to be the strategy currently favoured by mainstream environmentalists. The problems deriving from a complex of socio-economic institutions and environmental mechanisms is personalised as a simple ‘values’ dilemma: Are you for the planet or against it?

Morality in this sense concerns strict but simple universal rules that everyone should follow without regard to personal situations or

consequences - on the model of laws. On this model, one's carbon footprint is a moral crime (against the planet presumably) which one should feel guilty about and strive to reduce. As of course are other people's carbon emissions: they deserve to be shamed or otherwise forced into submission by the righteous ones. Hence the competitive carbon austerity in some parts of the environmental movement. Hence also the sneering at SUV drivers and Arizonans with swimming pools. Forging such a moral identity may strengthen solidarity within the environmentalist movement, but it certainly doesn't build the necessary bridges for successful political action.

In trying to tackle climate change by directly dealing with the causal mechanism of CO2 levels we have framed the situation as an enormous collective action problem - how to persuade 7 billion people to adopt the new morality of carbon rationing (and prevent free-riding). Everyone who thinks this through recognises that it is impossible to realise without enormous government coercion (severe rationing along the lines of China's one-child policy). That requirement explains the antipathy to democratic principles of many climate change warriors (such as James Lovelock): it seems easier to persuade all 200 governments to adopt carbon authoritarianism than to persuade all those people individually. However even the government coercion approach fails - see the failures of every inter-governmental treaty, from Kyoto to Copenhagen - and the reasons are obvious.

The moralisation approach undermines itself since it frames climate change narrowly in terms of righteousness. Inevitably deliberation about action gets bogged down in an interminable blame-game about what justice requires - who had their industrial revolution first, etc. Furthermore, the moral duties of different actors do not all point the

same way: poor country governments have a clear and over-riding moral duty to help their citizens achieve the high quality of life which the West takes for granted, and which is inevitably energy (carbon) intensive. And then there is the practical economics: the world still has lots of coal, especially in the poor world, that can produce electricity for as little as 3c per kwh. Not even the strongest moral rhetoric can make renewables competitive without radical technological (price) breakthroughs.

No comprehensive global political solution to greenhouse gases is possible. We need to go back and think again.

The moralisation approach contrasts with a fuller ethical thinking in which values are considered and debated explicitly and openly. Righteousness simplifies but it doesn't try to understand. No-one emits carbon deliberately 'for fun', but rather we engage in activities which are more or less valuable to us - such as flying across the Atlantic to visit grandparents - which happen to emit carbon as a by-product. To ignore the value of these human activities and see them instead as moral crimes is to do violence to the very humanness of the lives (including those of future generations) that we are supposed to be so concerned about preserving. The single-minded focus on carbon reduction even distracts us from protecting other valuable parts of our environment, like the wilderness areas that would be industrialised with biofuel plantations, dams, and windmills. We need a broader ethical debate about what the consequences of climate change will be for what we humans have reason to value (e.g. polar bears - not that important; rising sea levels - very important) so that we can take really credible actions to protect them.

Perhaps surprisingly, such a fuller ethical analysis can benefit greatly from economic reasoning and tools. Economics is often supposed to be cold and heartless. Certainly it is mechanical and mundane. But sometimes a hardnosed logistical approach is helpful, and economics is actually very good at addressing complex problems involving multiple agents with divergent interests that cannot all be satisfied i.e. our 'perfect moral storm'. Its contribution is twofold: numbers and values.

First, economic analysis uses quantitative methods to disaggregate the different causal mechanisms in play (such as different sources of CO2 equivalents) and different effects on social welfare (such as the impact of more frequent extreme weather on cities and agriculture). Then it constructs models focussing on the most significant mechanisms and uses the models to test alternative policy proposals for their costs and benefits to social welfare. That allows us to work out the effects of different policy measures and mixtures, including interaction effects and negative unintended consequences. It gives us a better sense of proportion: What will work and will it be enough?

Second, economists understand social welfare to include other things we value besides those related to climate. That is because they naturally think in terms of comparative rather than absolute value. While environmentalists focus on identifying the bad of climate change and then argue for minimising CO2 emissions, economists understand that our priorities are relative. We have other values and concerns, such as for quality of life, countryside preservation and global equality, that need to be incorporated into the analysis so that we can make a sensible allocation of our limited resources among our goals. Economists point out that the full cost of spending on climate mitigation is the loss of all the other things we could have done with those resources, from

eliminating tropical childhood diseases to guaranteeing worldwide access to a decent education.

Such an economic analysis suggests different packages of policy bundles (not only markets for carbon) that would follow from different values we assign to different aspects of social welfare, as well as incorporating the degree of uncertainty remaining in the science and politics of climate change.

This is an essentially pragmatic approach - breaking the 'end of the world' into human-sized and human-relevant problems and solutions and ordering them by their importance, feasibility and (opportunity) costs. It builds on the fact that while the central causal mechanism behind global climate change is greenhouse gas emissions (important to understanding and modelling the phenomenon itself), solutions need not directly engage with that causal mechanism in the short term. After all, it is the effects of climate change on the things we care about that is important, not some abstract CO2 molecule count. We do not need to fixate entirely on CO2 emissions when other options exist to mitigate the effects of climate change that actually concern us, and seem much cheaper and more effective. i.e. we can trade off some level of climate change we can live with against the excessive costs and implausibility of seeking to end all carbon emissions immediately. Piecemeal actions are easier to achieve and even at national and regional levels can be significant. For example, soot emissions from old-fashioned coal-burning power stations are particularly bad for climate change but relatively easy to regulate and mitigate.

In the longer term, the greenhouse gas build-up must be dealt with, of course, and that will have to be by technological advances that remove

CO2 from the atmosphere, such as genetically modified algae and trees, while also reducing the carbon intensity of our high energy life-styles (for which we already have some existing technologies, such as nuclear power). But note that such innovations require no prior global agreement to set in train. A high price on carbon in a few large rich countries (preferably via a non-regressive carbon tax) supplemented with regulations where markets don't work (e.g. to force the construction industry to build more energy efficient buildings) and research subsidies would provide the necessary incentives. Nor do they require global agreement for take-up since they will be attractive on their own merits (clean, efficient, cheap). Developing countries burn dirty coal because it is cheap and their people need electricity. They don’t need a UN treaty to tell them to use cleaner technologies if they are cheaper; but they wouldn’t sign such a treaty if they were more expensive.

The pragmatic approach does not depend on reaching an impossible global agreement on a perfect solution requiring moral or political coercion. Instead it offers feasible paths through the moral storm while respecting the existing interests and values of the human beings concerned. It is more democratic than the moralising approach because it works within our existing democratic institutions (no need for a 'global government') and offers transparent arguments within our present valuational framework (rather than requiring us to assume a new and narrow set of values). It is also fairer. While the moralists' fixation on minimising further CO2 emissions places excessive burdens on the world's poorest, the pragmatic approach naturally pushes the greatest obligations and costs onto those (rich governments) most able to act. There will of course be new humanitarian demands which the rich world

must honour - e.g. from low-lying Bangladesh or the Maldives - but we already know how to build sea-walls and they're much cheaper than stopping the economy and much more likely to work.

At present too many environmentalists are guilty of the same moral and cognitive melt-down in the face of its complexities that they accuse their detractors of. They are wrong to see the development of human freedoms and well-being as a distraction or even a threat to the world. They are wrong to fixate on an abstract and impossible problem (450 CO2 ppm) and seek a perfect solution without reference to wider ethical issues, and political and practical feasibility. They are wrong to give up so easily on democratic politics and human ingenuity and settle for retreating into the darkness of 'sustainability'.

Playing to Tie:

Adopting a Sustainable Mindset

Isaac Yuen

Environmentalism in its current form cannot address the roots of the ecological crisis.

We've all seen the messages of hope shown at the end of documentaries on how to save the environment. Turn off the lights. Plant a tree. Switch to a more energy efficient thermostat. Put your recyclables in your blue box. Together, we can change the world.

We leave the movie theatre empowered and feeling good about the difference we can make. We go on with our lives. We head out to a fancy restaurant, indulge in a carbon-intensive steak, and drink wine shipped from halfway across the world. No connections are formed that link our behaviour to global impacts. Cognitive dissonance is suppressed within our minds. We continue to live unsustainable lifestyles, attempting to sooth our conscience with token gestures of green consumerism. Everything runs shallow; nothing substantial is changed.

Nor are dire warnings particularly effective in driving change towards a more sustainable future. One can walk into a bookstore and see rows of bestsellers espousing the perils of runaway climate change, of oceans being emptied of fish, of rampant deforestation and the disappearance of biological hotspots. One rapidly becomes desensitized to these messages of doom; we can envision dystopic

futures much more readily than hopeful and promising ones. We develop a sense of fatalism and sigh with an air of resignation when we think about the world that is left to the next generation.

The end is nigh. Be prepared for the post-apocalyptic world.

It is true that the modern environmental movement has achieved significant accomplishments over the past fifty years. The world recently celebrated the fortieth anniversary of Earth Day. Species such as the Californian Condor and the Whopping Crane have been brought back from the brink of extinction. Acid rain has been curbed in large portions of North America. The Montreal Protocol represented a unified global effort to curb damage to the ozone layer. Awareness surrounding the impact we have on our world has been raised. We congratulate ourselves on a job well done.

But environmental problems have continued to grow in scope and complexity in recent decades. As we head into the second decade of the twenty-first century, we are confronted with the end of cheap fossil fuels, an uncertain climate future, and the rapid deterioration of our atmospheric, oceanic, and terrestrial systems. We face these challenges with an economy that is fundamentally untenable, an unstable system grounded in faith of ever-increasing growth and straining against the physical limits of the world. In hindsight, the majority of successes achieved by the environmental movement have only addressed the symptoms of the ecological crisis. The root cause that led us to exploit, alienate, and dominate others, our surroundings, and even ourselves, remains. This root cause is a result of a specific mindset that is cultivated by modern society: We are taught to play the game of life to win.

Winning at All Costs

If life is a game, humanity is on the verge of victory.

More than seven billion of us now inhabit the world; there are more people alive at this moment than at any other in human history. Our technological prowess is unparalleled; human ingenuity and brainpower are at an all-time high. We can now communicate instantaneously with anyone across the globe. The entire breadth of human knowledge lies at our fingertips. We have the ability to shape our surroundings to our liking to an unparalleled degree; we are continuing to make our lives safer, easier, better.

These achievements have been possible because we have been raised with the belief that we need to succeed at life. We are told that the road to a prosperous and meaningful life is hard and arduous. Starting out with nothing, we are taught to make something out of ourselves. Opportunities must be seized; grand feats must be accomplished in order to establish self-worth. We are pushed to compete with others and emerge as the better. To stand out and be differentiated from the masses is a great feat; to gain the ability to wield power and influence over others is an even greater one.

Today, it would appear that we stand in the golden age of human achievement. We can look back and look at the sum of our achievements, things that were unimaginable to anyone even a century ago.

But our need for victory has a price. In order to win, we must have someone or something to win against. We are winning the game of life at the expense of the other.

The other consists of all who are not us. It was formless, shapeless until we gave it form and shape. We identified it with our language and used our words to distance ourselves from it. There was connectedness with the other until we severed ourselves from it, interdependence until we walled ourselves off from it. The other is nature. It is the abstract notion of an ecosystem. It is the wilderness “out there”. It includes the culture we do not understand. It comprises the people who do not share our worldview, who do not understand our desire to win at life. They are all considered the other.

We have become so enamored with our successes and accomplishments that we do not see or wish to see that we are winning at the expense of the other, which we wholly rely upon. We win at the price of the oceans polluted and emptied. We win at the cost of the forests logged and lost. We win while the indigenous cultures and languages that embody alternative ways of what it means to be human continue to vanish and become extinct. Our mindset to win and our drive to succeed blinds us to all else. The division and isolation we have utilized to guard against the other has made it easier to head down the road of exploitation, alienation, and domination. Uncontrolled greed inevitably waits at the end of that road, the insatiable desire for endless riches, unassailable safety, immortality itself. And when this greed is combined with knowledge and ability, ruin inevitably ensues.

It is possible to continue along the same path, to continue winning at life. Indeed, we as a global species are closer to "winning", of ending the game in victory in our favour, than ever before. But the price of winning is our diminishment. Our livelihood. Our diversity. Our relationships with the vast, immeasurably complex tapestry that is the life that clothes our world.

A pyrrhic victory of this nature is no victory at all.

Thinking on the Same Level

Many environmentalists approach the ecological crisis with the same mindset of winning; I speak from personal experience. As environmental educators, professionals, and activists, we all wish to succeed at saving the world. After all, what nobler goal is there to win as David against the Goliath of faceless evil corporations? The thrill of victory as an underdog is exhilarating, the glamour of being hailed as a champion of the people impossibly alluring. There is no loftier achievement, no greater ambition. We dedicate vast amounts of energies and resources tackling issues of pollution, deforestation, overfishing, and climate change. We seek to be heard. We see acts of injustice and must act. We channel our energies into tackling each problem we see head on with the zeal and passion that is in our hearts.

Sometimes it works. Patches of forests are preserved. A species here or there is taken off an endangered species list. We celebrate those minor victories joyously. But our efforts and actions, however well intentioned, are borne out of the same source: A desire to win, to be right, to triumph over the other. People who do not subscribe to the ecological commandments we espouse become our enemies. We fight the good fight against them, opposing them until our voice rings out above theirs, until we emerge victorious. We forget that fighting fire with fire only ends in the destruction of everything worth protecting.

The magnitude of the problems we must face sets in. We become dismayed when people fail to respond to our outcry against blatant injustices and impending disasters. We become angry when they

become resentful of our ecological declarations that were borne out of the best of intentions. Each defeat becomes personal, a grievous wound on our souls.

In the meantime, the consumption and greed remains. Damage to the life support systems of the world continues unabated. Resentment and resistance stymie any progress made. Genuine change remains elusive.

This ongoing struggle to win at saving the world exacts a heavy toll on us. Many of us burn out, unable to cope with seeing lakes emptied, forests destroyed, oceans polluted. Some resort to protecting themselves with a blanket of cynicism. Still others become part of the system, attempting to work from within the institutions of power to leverage change. But these establishments, like ecosystems, are inherently resilient, designed to resist and buffer against the type of fundamental change required to address the ecological crisis. So while we do some genuine good, the majority of our efforts run shallow, they wander and they are wasted. We become tired, broken, and jaded; we cycle between the highs of small victories to the lowest depths of despair in defeat.

How can we as environmentalists talk about a sustainable future when we are internally unsustainable ourselves?

We must recognize the fact that we cannot address the current ecological crisis using the same level of thinking that caused the situation in the first place. We got to our current predicament by acting without regard for consequences. No matter how much energy and passion we bring to bear, no matter how well our intentions can change that. As long as we live our lives with a mindset of winning, no solution

is possible. Waging war against the other cannot bring about long-lasting and genuine change. What is desperately needed is thinking on a different level. We must have a different goal. We must walk a different path.

Playing to Tie: A Different Path

The path to a sustainable and prosperous future begins with the internal cultivation of a non-winning, non-opposing state of mind.

Instead of playing the game of life to win, we seek a tie. We go nowhere and seek no victory. We do not want the game to end. From this mindset, a different approach to life and living emerges. Getting too far ahead or lagging too far behind against the other becomes undesirable, for both courses of action lead to an unwelcome end. We begin to stay behind to get ahead; we start to get ahead by staying behind. Equilibrium is struck. Homeostasis is attained.

Playing to tie is the first and most important step towards the development of a sustainable mindset; one cannot hope to articulate or recognize the vision of a genuinely enduring and prosperous future without it. When we play to tie, when we perceive life and living as exercises in resilience and endurance, we can begin to appreciate thinking that considers the long haul over the short term; a slow burn is preferred over the scorched earth.

One of the consequences of playing to tie is that it forces us to recognize our opponent; we must stare across the abyss and accept the stare returned. It necessitates that we understand the actions and tendencies of the other; we accept responsibility for its creation. Instead of continuing down the road of isolation, alienation, and exploitation, we

walk a healthier path towards awareness, integration, and cooperation. We realize that there is no strength to be gained from exploiting the other for victory, only weakness. In our dealings with the other, we seek understanding but not necessarily agreement. Differences are acknowledged and difficulties are negotiated.

When we find balance, when we accept our interdependence with the other, we are constructing a foundation of sustainability within ourselves. Because our end goal is not grounded in the need to forge ahead, less action is taken. We recognize that action caused the current predicament and that more action is not the solution. Slowing down, we do what is deemed needful, no more. We only do what we must; that which we cannot do in any other way. Through our integration with the other, we begin to understand that our actions have consequences beyond ourselves. Therefore, we devote our energy towards determining what is needed and what is merely wanted.

Without an obsession with winning, we can afford to pause and simply be. We can rediscover the traits within ourselves that make us a successful social species: compassion, economy, and cooperation. They can be utilized to address the fear, greed, and wastefulness we see within and around us. In times of despair, we can draw upon those same qualities to give ourselves hope; they become our deep, clear, inexhaustible reservoirs of inner strength. It becomes easier to be content, centered, and prepared in the face of adversity. Unhurried, we have the time for introspection and for wonder. We consume less and appreciate more. We want less and are more.

Having a sustainable mindset is crucial to the development of an environmental ethic that is effective in addressing the ecological crisis.

It shifts away from a mindset of anthropocentric domination in which modern environmentalism is embedded. But it is not grounded in the biocentric egalitarianism of the Deep Ecology movement either; human beings are unique and cannot be and should not be valued equally with other life. Playing to tie strikes a balance between the opposite ends of the spectrum. It recognizes the individual and the whole, the nuclear and the universal. Differences are recognized as fact; interdependence is accepted without shame or disdain. We who are blessed with the unique and cursed with the gift of self-awareness, must learn how to approach life as all other life on this world innately does. Possessing intelligence, we must not act in ignorance of the consequences our actions have. Having the power to shape the world, we must act in the best interests of all who live in it.

Sustainable from Within

A shift towards such a mindset may seem fantastically fanciful and impossibly impractical, especially in modern society. But in reality, examples of this way of being are all around us. Life as a whole innately plays to tie. The individuals, the groups, the species of the world are all equipped for survival, fanged for it, timid for it, aggressive for it, clever for it, poisonous for it. Life is endlessly complicated, hopelessly tangled, infinitely rich, tremendously resilient, but it thrives without the desire to dominate. It goes on with only one goal: to live on.

On a biological level, human beings are no different than all other life. The human body is a complex system that plays to tie from the moment we are born until we breathe our final breath; it seeks no victory and has no goal other than to maintain the conditions in which it can continue to function. The human body is also an active community and

an ecosystem, the result of a dynamic pattern of relationships between us and the other. Only ten percent of what we think of as “us” is human cells; the remaining ninety percent of the cells that reside within our body are bacteria, fungi, and other microorganisms. Our cells continuously rely on and are in turned relied upon by them. Microbes help us regulate a myriad of bodily functions, ranging from assisting in harnessing energy from our foods to keeping our immune systems healthy. We cannot survive without this interdependence. Our minds would do well to learn from our bodies, and shift from the desire to win to a desire to sustain.

Fundamental change in thinking starts with the individual. It cannot be bought. It turns to resentment when forced. It is either cultivated from within, or it is nowhere. We must understand that only when we are sustainable in life and living before we can address the problems around us. Only when we move beyond our desire to win and dominate will we be able to address the ecological crisis. Only when we feel healthy and connected with others, our surroundings, and ourselves can we make a real difference. Only then can we begin to envision and create a lasting, prosperous, and hopeful future. The question of whether we can save the environment becomes irrelevant if we play the game of life with an intention to tie; genuine sustainability will arise spontaneously from that mindset.

What’s in a Name

A. Patrick Behrer

A famous author once posed the question: what’s in a name? Unlike the characters tasked with answering that question, Emirates Airlines thinks there’s quite a bit in a name, even as much as GBP 90 million. That’s the price they paid for the right to name Arsenal Football Club’s new stadium. This is consistent with the estimate that the average naming rights deal in America is worth USD 2-4 million annually. While these numbers represent seemingly large sums of money, they are paltry investments compared to the revenue of the companies that purchase these naming rights.

The sale of these naming rights represents a major source of income for professional sports. Environmentalists should take note: this lucrative market could also, with regulation, be accessed by conservation organizations looking for funding. A version of this strategy has already been implemented by groups like the World Conservation Society which has auctioned the naming rights for several newly discovered species. This essay will discuss a few cases in which this source of funding has been explored, and then finish with a discussion of how future applications of the idea may take shape.

Species Naming Rights

One area in which conservation fundraising efforts have been making advances is in the use of naming rights auctions in naming newly discovered species. Because the international codes on taxonomy do not restrict how species are named, several conservation organizations

have begun auctioning the right to name newly discovered species as a way of financing the work necessary to protect those same species. Supporters see it as a modern version of royal sponsorship. In the 17th and 18th centuries new species were often named after the sponsors of the expedition that found the new species. Supporters today see no difference between that and providing the opportunity for a sponsor, after the discovery, to provide for future conservation and discovery efforts.

In each of the following three case studies the auction was conducted slightly differently but in each of them taxonomic standards were maintained by a review of the proposed names by the International Commission on Zoological Nomenclature (ICZN). Additionally, while the total money in each auction varied widely, each case still provided the organization sponsoring the auction with significant funding to expand conservation capacity in the areas where the species were discovered.

The Golden Palace Monkey

In 2004, Dr. Robert Wallace, working with the World Conservation Society (WCS) on the edge of the Madidi National Park in Bolivia, discovered a new species of titi monkey. The WCS has been involved with the protection of the Madidi area since the early 1990s and the Bolivian National Parks Service recognized the area as a national park in 1995. The park itself covers an area of 50,000 sq km and is home to 11% of the world's bird species. The park also has significant populations of jaguars, Andean condors, and the heavily endangered vicuña.

Recognition as a park was effective in ending the commercial logging

that had previously taken place in the area but the park is still under threat from illegal logging and the growth of agriculture. Dealing with these threats, and maintaining the protected areas, costs an estimated USD 550,000 annually.

As the discoverer of the new species, Dr. Wallace had the right to give the monkey the name of his choice. However, rather than name it himself, he proposed that the WCS help cover some of the costs of protection by auctioning off the naming rights in a blind auction on the website www.charityfolks.com. The idea caught on and received significant publicity. In fact, the WCS reported that several executives of the Fortune 500 – companies that spend tens, if not hundreds of millions of dollars on naming sporting venues – were interested in participating in the auction.

Ultimately the auction was won by the Internet Casino Goldenpalace.com with a bid of USD 650,000. They chose to name the species the Golden Palace Monkey and, after being Latinized and approved by the ICZN, the official name became *Callicebus aureipalatii*. Of the USD 650,000 raised by the auction, 100% went to the Bolivian National Park Service to be used to run Madidi National Park.

As one of the first instances of naming rights auctions the WCS's Golden Palace auction was remarkably successful. While the funds raised by the auction did not reach a comparable level to that spent by larger corporations on stadium naming rights, it raised a figure that exceeded the annual operating costs of the area being conserved. For a single event that required little work by the WCS, this represents a significant sum.

The Blue Auction

Following the success of the WCS's Golden Palace auction, Conservation International attempted to follow their lead with an auction in 2007 to earn the right to name ten new marine species discovered by Conservation International Scientists working in the Bird's Head Seascape in Papua, Indonesia. Located on the northwest coast of New Guinea, the Bird's Head Seascape is an area of 183,000 sq km that holds more than 1,300 species of coral-reef fishes and 75% of the worlds reef-building coral. This area is threatened by local cyanide and blast fishing, coastal mining and timber harvesting. Conservation International is working with the Indonesian government to create economic empowerment and education initiatives to protect the area as well as enforcement initiatives to conserve the area's unique species.

In order to fund these activities, Conservation International partnered with Christies Auction House, the Indonesian Government, the Monaco-Asia Society and Monaco's Prince Albert II to hold a naming rights auction with the goal of raising USD 2 million. Unlike the auction sponsored by the WCS, this auction was invitation only and conducted in person in Monaco's Oceanographic Museum and Aquarium. Like the WCS auction, the proposed names were Latinized and submitted to the ICZN. When all was said and done, the auction raised a total of USD 2,045,000. As in the WCS auction, 100% of the revenue went to conservation initiatives.

Again, the sums raised are not enormous compared to what corporations like Emirates Airlines are able to spend, but they are still significant. Conservation International's 2007 budget for the entire Asia Pacific region was USD 24 million; USD 2 million makes up almost 10% of that budget amassed without having to acquire any debt and adds to money received through donations and government funding. This is

important as both of these, as others have noted, are finite resources.

Biopat

In contrast to the auctions offered by the WCS and Conservation International, the German nonprofit Biopat has taken a longer-term approach that could serve as the model for future funding through naming efforts. Rather than auction off the rights to name species, Biopat adds newly discovered species to an online database that potential sponsors can access. Anyone interested in naming species browses the catalogue until they find a species they are interested in. Then they work in concert with Biopat to choose an appropriate name. Like both of the previous examples, the names are verified by the ICZN.

Prices in this scenario typically range from USD 3,500 to USD 13,000. Since its inception in 1999, Biopat has raised over USD 500,000. The money raised is split between funding taxonomic research and funding conservation efforts in the area in which the species were discovered.

The important aspect of the program run by Biopat is its continuity. They have demonstrated that the use of sponsorship for naming rights as a source of funding for conservation need not be a single event in the form of an auction. Rather, when managed correctly and subject to rigorous peer review, ‘selling’ naming rights can be used as a long-term source of funding for conservation organizations, which regularly encounter new species.

While there is mild controversy surrounding the practice of selling or auctioning naming rights, the practice does have the potential to be a strong source of funding. If care is taken in the naming process by requiring sponsors to follow international codes of nomenclature and if

the final names are reviewed by the ICZN, then the risk of corrupting taxonomic practices is minimal. While this new source of funding will never solve all of the needs of conservation finance or, unfortunately, result in the hundred million dollars raised by stadium naming deals, it can be a source of supplementary funding for conservation organizations.

Thinking Ahead: Location Naming Rights

While the auctioning of species naming rights appears to be a good potential source of income for many conservation groups, not all groups are regularly presented with the discovery of new species on the lands that they work to conserve. In fact, many groups are attempting to obtain land that may have been used agriculturally or industrially specifically so that native species are able to return. For these groups, auctioning off species naming rights is not a viable option.

If the option to auction species naming rights does not exist, groups can consider auctioning the naming rights for the land itself. This may not be as romantic as the opportunity to name a new species, but it can still be a viable source of funding. This practice also opens the door to receiving funding from memorial foundations which require that certain naming conditions be met before they will provide funding. For example, the Michigan Department of Natural Resources (DNR) had, for many years, maintained a practice of prohibiting private foundations or individuals from attaching their names to public property. Thus, when the Meijer foundation offered to pay USD 1 million to fund improvements at the White Pine Trail State Park – provided they were allowed to name it – the offer was refused. At that point, the Michigan legislature promulgated new legislation that would allow for private

individuals who contribute to the DNR to receive temporary naming rights subject to several conditions. The primary restriction is that the naming rights will only extend for twenty-five years. Additionally, names cannot be given to special natural and cultural resources (as defined by the legislature).

The example set by the Michigan Department of Natural Resources provides a set of guidelines for conservation organizations that are interested in promoting the sale or sponsorship of land resources as a source of funding. Organizations which deal extensively in easements and other large property deals could actively auction the naming rights for the easement to conservation minded foundations or corporations interested in burnishing their 'green' credentials.

While some may rebel against the notion of being complicit in a corporation's attempt to 'greenwash,' the fact remains that the private sector controls the majority of global financial resources and if conservation groups are to remain financially viable in the future, they must find ways to tap this resource. Selling the naming rights is potentially an easy way for conservationists to gain access to corporate funding.

Conclusion

Conservation organizations are going to face increasing demands on their funds as population growth continues and the most valuable areas on earth are increasingly threatened. Finding innovative new ways to meet these funding demands is critical for the ongoing success of conservation organizations. Selling the right to name newly discovered species is a source of funding that has already been utilized

successfully. Its large scale and long term viability remains to be seen but it is a practice that appears to have a promising future for organizations which consistently encounter new species in their work.

The idea of sponsoring parks, easements and other types of land set aside is a much newer, and potentially more controversial, idea but one which also deserves consideration. No one is advocating changing Yosemite National Park to Apple Inc. National Park, but allowing Apple to sponsor and attach their name to education initiatives within the park is a potentially acceptable compromise and good way to fund programs that might otherwise be cut or never exist at all. Not every conservation organization is able to auction species naming rights and the auctioning of location naming rights offers an alternative way to access the funds of the private sector.

So what's in a name? A lot of potential.

Inventionist Ethology:

Sustainable Designs for Reawakening Human-Animal Interaction

Ralph Acampora

Part of the cultural imperative of devising ecologically sustainable practices is the demand for revival and enhancement of human beings' inter-relations with other animals, especially free-ranging ones. Of late, dormant tendencies of biophilia have been stoked by developments in diverse fields such as inter-species ethics, comparative psychology, and animal-based artwork. Post-humanist forms of morality are emerging, cognitive and behavioral zoologists investigate the undeniable intelligence and sociality of complex organisms, and artists breathe new life into the representation of animality. Against this backdrop, I would like to present and advocate innovative technologies for cross-species encounter as designed and implemented by the techno-artist and design engineer, Natalie Jeremijenko (see URLs hereafter to access online graphics).

These designs can be introduced by understanding them as an ethological variant or retooling of Frederick Turner's "inventionist ecology". In the '80s and '90s Turner put forth a provocative new form of environmentalist theory and practice. He distinguished it from traditional currents of environmentalism—namely, *conservation* as "wise use" of resources, *preservation* as a quixotic if not incoherent attempt to "save or rescue" nature, and *restoration* as the endeavor to bring back "authentic" ecosystems by re-establishing their unsullied or

pre-industrial conditions. What Turner anointed and proffered as *inventionist ecology* would be instead a human program of creative intervention not so much into as with nature, itself now understood as the primordial force of creativity: “Nature is the process of everything interfering with—touching—everything else”, and so “potentially at least, human civilization can be [not only] the restorer, [but also] the propagator, and even the creator of natural diversity, as well as its protector and preserver”. This approach transcends the drawbacks of pursuing prior models by themselves—it moves beyond, that is to say, the still self-interested program of resource conservation, the static nostalgia of preservation, and the arbitrary designs for always-only-inadequate compensations of pure restoration.

Inventionist ecology would create and disseminate new biomes or species. Similarly, what I am dubbing inventionist ethology designs for and then practices novel forms of relationship between different species —in other words, a zoologically inflected kind of techno-cum-performance artwork. New interventions of this sort resist misguided attempts of preserving artistry and animality by mummifying them in museum-type contexts, whether galleries or zoos; instead, they proactively seek to recreate living connections and biotic conscience *in situ*. For example, Jeremijenko has launched a series of projects under the title of “Ooz” (zoo spelled backwards, with a coincidental yet significant connotation of spreading beyond containment like ooze). Ooz interrupts the typical grammar of zoological exhibition that assumes animals on display are primarily passive objects of viewing and that human spectators cannot be participants in encounter: http://www.nyu.edu/projects/xdesign/ooz/ . At one installation in the Netherlands, for instance (see "Robotic Geese" link at website),

humans can direct artificial geese by remote-control and have them swim toward and vocalize at natural birds of that or other species, whose own reactions can in turn be watched via computerized video-cameras.

Now, while this interactive context might be deemed intrusive upon the nonhuman animals involved, it is important to keep in mind that these same animals are free-ranging organisms with full liberty to engage or avoid the scenario just described—quite to the contrary of standard zoo protocol. Another objection could be that the techno-goose milieu brings us further away from authentically encountering other animals insofar as it injects yet more mediation of artifice (usage of tracking/projection apparatus as well as duck-like doppelganger) between us and them (the biological birds on the scene). Here I would highlight that inventionist ethology challenges the unfortunate tradition in mainstream environmentalism to demonize technology as always only alienating—through Ooz it rather becomes the motive force that mediates the crafting of a convivial creole of biotic communication and interaction (whenever actual animals take up the gambit of their artificial cousins), which I argue is a salutary project for any truly sustainable lifestyle. In effect, displacing the us/them dynamic of unilateral spectatorship, Ooz generates the promise of establishing an inter-species “mixed community”.

Such a perspective, by virtue of a Turnerian twist of vision, radically shifts our conception of Nature: no longer is it opposed to humanity and artifice—rather it becomes, as a universe always already technological itself, inclusive of human instrumentation. According to Turner, biological bodies are themselves highly organized systems of electro-chemical and mechanical energy. Indeed, even absent conscious

contrivance, all live bodies are prosthetic in the sense that they incorporate alien matter and press it into service for “artificial” interests that extend the body’s field of influence and exposure. One could then say, with Turner, that “the body of a living organism is its technology; the technology of an organism is its body.” The corollary for humankind is that “our own technology is an extension of our bodies”. Taken together, and projected onto the level of ecological evolution, Nature is a realm of becoming that develops complexity through the operation of continuously and interactively technical functions. Thus, inventionist ethology is consonant with, rather than detractive from, “natural” processes; on this view, Ooz is seen to be only a more densely organized node of organismic interaction.

Another Ooz project that exemplifies inventionist ethology is the open aviary, “For the Birds”, that was perched atop the Postmasters gallery in lower Manhattan (NYC) during the autumn of 2006 — see http://postmastersart.com (link for “Natalie Jeremijenko”, under “Artists” menu). Central to this “model urban development” of multi-species cohabitation was a “rooftop prairie grid” that presented a matrix of staged opportunities for visiting birds (chiefly--but also for butterflies, squirrels, microbes, and plants) to eat, rest, play, decompose, and/or propagate as and when they saw fit – see http://www.environmentalhealthclinic.net/projects/mud/ . Human artists set up the scenario and human visitors could share in the resulting activity or watch/hear it in person or by remote camera-feed projected onto a screen downstairs: follow "Communication Technology" link, under "For the Birds" menu at Ooz website. Included were several sorts of feeding and/or composting stations, a miniature ferris wheel that pigeons found interesting, and a microphonic sound-catching dish

that allowed songbirds to amplify their tunes; for more items, see "Twoilets" link, under "For the Birds" menu.

“For the Birds” brings to the fore an ethically salient feature of inventionist ethology, namely that it upsets the paradigm of species apartheid perpetrated by most of dominant civilization (via socially invisible regimes of abuse, e.g. “pest control” of urban animals) and paradoxically perpetuated even by some abolitionist forms of animal advocacy (liberation or rights schemes beholden to no-contact dictates). The penthouse prairie also furnishes a concrete illustration of what some animal geographers and trans-species theorists are calling zoöpolis; urban oases such as greenroofs, archipelagos albeit, yet give embodiment to the visionary planning ideal of welcoming commensal creatures and/or weedy wildlife in and to metropolitan areas inclusive of city centers. One of the project’s elements in particular, the ferris wheel utilized by local pigeons, further exhibits what Jeremijenko refers to as the impromptu “spectacle of adaptation”—a site and sight in which other animals display a dynamic agency that is not normally conceived as part of their behavioral ensemble. This enriches the phenomenology of nonhuman life, instead of seeing and describing it as limited to mere instinctual response or automatic activity.

A third case of inventionist ethology is the “fishface sensor array” deployed along with a sea-level scoping device in the Hudson River just below Chelsea Piers in NYC (for introduction, see http://www.environmentalhealthclinic.net/projects/fwish/ or "For the Fish" link at Ooz website):

> Fishface is a grid of fish-detecting buoys … creating a low-resolution display of the activity and flow conditions in a shoreline section of the river. … It renders the presence or absence of the fish in its immediate vicinity, and provides an interface for humans to communicate with fish (and vice versa). Functionally, each device also contains a sonar transducer that lights up if there are fish present. A single fish swimming through the array appears as a series of lights sequen-tially marking its path; a school of fish will produce a drifting cloud of lights.

Also planned is a nearby look-out station of a rather different kind than usual:

> The Eye-Level Observatory … presents the underbelly of the body of water, and stretches the surface tension across the eyes. The view from the Eye-Level Observatory is intended to profoundly transform the water surface, from a reflective surface or mirror into a membrane. It is an instrument to produce a gestalt[-shifting] effect, so that the once a viewer has been immersed in the visceral relationship between the viewer's body and the body of water, [s/he] will never again see the lake [only] as a surface but [also] as an active skin under which life and possibilities are teeming.

A remarkable aspect of this project is that a by-product of the cross-species interaction could actually provide ecological services of benefit directly to the riverine biome and indirectly to any humans who may swim or fish in the lower Hudson. One possibility is that the fish could be attracted to the sensor buoys with an offering of food (pellets or flakes) that contains a PCB-absorbing agent. Through the fishes' daily routines of eating and excreting, the toxin would then become amalgamated into a heavier compound, a state that renders the pollutant less bio-available and results in relatively safe sedimentation. By distributing such chelates, in other words, the fish would become themselves agents of remedial action against a notorious problem of water pollution in the area. Thus, a virtuous cycle of multi-species

interaction results: humans' aesthetic predilections (for the array's display of lighting patterns) would contribute to allaying fishes' hunger, which would in turn contribute to a process of cleaning filtration (via chelation), which would finally conduce toward healthier enjoyment and usage of the river by both humans and fish (as well as other organisms not immediately involved).

What about fellow mammals, aside from the birds and fish discussed so far? The so-called bat-bar and "Bats in Place" projects speak to this kind of concern. The former, as designed by architect Laura Kurgan, involves humans having cocktails within a translucent terrace that includes imitation eaves functioning as bat-hutches with suitable attractants come the happy hours of twilight: see "Ooz Architect" at Ooz website. The latter is more complex: human interfaces are set up near urban bat roosts, such that people and bats can switch various (visible or infrared) lights on or off and so that they might communicate via robotic bat devices:

> *What people can do*: move the robotic bat to approach other bats; issue verbal utterances … ; observe the bats as a larger social unit; observe particular bats more closely through the eyes of the robotic bat; listen to the bat chatter through the robotic bat … .
>
> *What bats can do*: verbally [vocally] or physically [tangibly] respond by moving toward or away from the robotic bat; observe the humans if they care to; tune into human generated sounds by triggering a speaker that plays the human sounds transposed into bat frequency.

It may appear dubious that humans actually "converse" with bats via such an ensemble of engineering. These other mammals are, after all, fairly alien in that their primary perceptual field is echolocation rather than vision (as with us)—in other words, theirs is not really a world*view*

but rather a *sound*scape. Inventionist ethology can grant (and even capitalize upon) this sort of difference between specific phenomenologies, because the kind of inter-species communication it seeks is not so much a matter of translation from one organismic idiom to another (in either direction) as it is a gambit at developing a communicative nexus or creole that evolves from, stirs up, and spurs on interactions. We don't have to teach bats human language, nor do we have to learn their dialect; instead, a new and co-produced (quasi-)linguistic system might emerge on the scene.

Indeed, mutuality is a hallmark of inventionist ethology as envisaged here. The various projects I am explaining here constitute object lessons in what Jeremijenko dubs the "architecture of reciprocity"—which designs for interaction, as opposed to such unilateral technologies and arts as hunting or photography. This approach may be used aside from, but also within, established zones of animal encounter: although Ooz proper is conceived as a paradigm for *in situ* interventions, "oozy" techniques might be used at institutions such as zoos. When the latter type of intervention occurs, the hosting establishment opens itself to elements and ventures of radical reform and engages the possibility of self-reinvention as a potentially transformative exercise. Fully aware of institutional impediments, I would nonetheless encourage existing zoos to consider incorporating oozy apparatus and aspects.

Speaking of incorporation, Jeremijenko and others are investigating the option of taking some practices of inventionist ethology public. That is to say, they are looking to establish a holding company for a particular site-installation. Once the corporation comes into existence, the idea would be to allow relevant nonhumans on the board of directors (as *ex*

officio members or para-consultants) in a bid to grant them legal standing via the convention of personhood for incorporated firms. Jeremijenko:

> Because corporations are granted "personhood" with the rights of an individual, and equal protection under the 14th Amendment, they provide a unique structure and opportunity to extend personhood to other nonhumans. Corporations are the only [institutional] non-persons considered [legal] “people”, whereas other forms of organization including governments, unions, not-for-profit 501-c, art museums, zoological gardens, galleries, and small unincorporated businesses do not have "rights". Nor [usually] do other forms of life, and if they do, they are limited at best.

Given this situation, Ooz Inc. would endeavor to circumvent the law’s blind-spot regarding nonhuman animals and transcend for other organisms their current consignment to the juridical status of mere property. Even if the notion of placing nonhuman directors on the board does not eventuate, by at least upgrading other animals from *stake*holders to *share*holders, economic benefits may accrue that could be reinvested into protection or restoration of relevant habitats.

Having presented several instances of inventionist ethology, let us now take stock of its moral status and educational promise. It may have struck some readers that the approach taken here plays up technology to such an extent that it loses the critical capacity to gain ethical distance from the artifacted universe, in effect “letting anything go” in terms of technical mediation of animal encounter. Fortunately, this worry can be mollified if not dispelled by relying on the very exemplar already invoked—for Turner himself has offered means of making appropriate value distinctions:

> Good technology … increases and does not decrease the organized complexity of the world … respects the existing technology of nature, and even when adding to it does not destroy the complex order and beauty that helped it evolve and upon which it is based. Bad technology … destroys technology, whether in the form of the bodies of animals and plants, or in the form of our own rich material and mental culture.

If we apply these criteria, the Ooz projects discussed above tend to fit fairly well in the "good technology" category. Certainly, none of them is destructive of organic or artificial technology in the senses indicated by Turner. Moreover, installations like "For the Birds" or "Fishface" as well as "Bats in Place" do in fact increase organized complexity in their airy, aquatic, and/or terrestrial environments. They do this by constituting and encouraging denser nodes of inter-species networking, including the sort that bring about bio-cultural ecologies of animal association.

Some (especially country-dwellers) may look on this approach with bemusement: if biophilic tendencies of humanity are to be nourished outside of captivity contexts, then the obvious prescription is greater exposure to rural living and/or foraging lifestyles—not the crafting of sophisticated new artifice to build contrived contact between species. This objection makes a point worth keeping, namely that residence in and habitation of hinterland and relative wilderness (where possible and desirable) can augment eco-psychological health. Still, the nub that I insist upon is that the viability proviso is usually not met in today's world, where most of (human) global population lives in urban areas and where sheer numbers (of humans) would ruin the prized qualities of rural/wild zones if everyone were to relocate there. We have to deal with the crisis of cross-species encounter in city contexts, and

inventionist ethology can work as therapy for biodiversity deficits therein. The original theorist of Gaia, J. E. Lovelock, comments:

> As society became more urbanized, the proportion of information flow from the biosphere to the pool of knowledge which constitutes the wisdom of the city decreased. … Soon city wisdom became almost entirely centred on the problems of human relationships, in contrast to the wisdom of any natural tribal group, where relationships with the rest of the animate and inanimate world are still given due place.

In light of this epistemic problem, Ooz and suchlike projects can be seen as ways to recharge biospheric information flow back into city-knowledge; the human-animal interfaces I have presented and interpreted create a cognitive loop that might be termed “eco-feedback” (bio-feedback raised to the level of relational/systemic wisdom). Here we should note that the inventionist enterprise under discussion enhances ethology in a significant way, for it begins to fill the gap in research of precisely urban wildlife behavior. It does this in an appropriately dialogic and recursive fashion, aware of and in fact utilizing the behavorial influences that subject and object have on each other as they become together a synergistic field. “The point is to see the inter-*relation* human/animal as constitutive of the identity of *each*”, critical theorist Rosi Braidotti has argued in a different yet related context, “It is therefore a relation, a transformative or symbiotic relationship that hybridizes, shifts and alters the ‘nature’ of each one”. And this, in conclusion, also indicates the moral upshot of the approach I advocate: inventionist ethology proffers designs for cultivating a sustainable, bio-diverse ethos of cross-species encounter that emphasizes relational ethics as such.

An Orange County Almanac

and other essays

edited by J. Zammit-Lucia

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Dr Joe Zammit-Lucia is an artist, author and independent scholar and commentator. A self-proclaimed 'intersectionist', he works at the intersection of disciplines "which is where the action happens." He is President of WOLFoundation.org, a Member of the Dean's Advisory Board for the College of Arts and Sciences at Florida International University, has served as Special Advisor to the Director General at IUCN, is a Board Member for the African Rainforest Conservancy and a Fellow of the Royal Society of Arts.

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