LOVE IN THE ANTHROPOCENE

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FOR MEI AND JEREMY

"If we don't change direction soon, we'll end up where we're going."
—Professor Irwin Corey

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INTRODUCTION:

THE ANTHROPOCENE

How and where will love arise in a world in which nature has become almost entirely an artifact? We invite you to imagine human beings living in worlds of the future that have been remade and are almost entirely managed by human action: rivers, lakes, oceans, forests and fields are as meticulously planned and technologically maintained by humans as are cities and their systems of transportation and utilities. The weather is profoundly affected by the inadvertent consequences of human action, and by clumsy attempts to correct these perturbations and bring them under intentional human control. The other animals with whom we share the Earth survive only at the margins, and only

if their continued existence can be justified to planetary managers.

The world we inhabit now is not really so far from this imagined world. Wild elephants and rhinos are now being protected from poachers by unmanned drones while "Gorilla docs" intensely monitor the world's last wild population of Mountain Gorillas, staging medical interventions when necessary. An integrated system of mobile gates that will protect the history and treasures of the city of Venice by isolating the Venetian Lagoon from the Adriatic Sea is now 80 percent complete. Should you find yourself in Dubai you can downhill ski in the Mall of the Emirates, even on the hottest summer days.

The fact is that virtually all of the terrestrial biosphere has been transformed by human action, and the oceans are not far behind. More seafood that people consume is produced by aquaculture (fishfarming) than by fishing. Twenty million tons of human trash is in the world's oceans, much of it concentrated in a several hundred thousand square

mile area known as the "Great Pacific Garbage Patch." Millions of pieces of debris from satellites, rocket boosters, and lost equipment are now orbiting the planet.

The few places that are largely immune to human impacts are found on mountaintops, deserts, and in polar regions—but now even these areas are being transformed due to climate change. Fossil fuel–driven climate change is opening up new regions of the arctic to oil and gas exploration, which may lead to more fossil fuel–driven climate change, which may lead to more areas of the Earth being exploited for fossil fuel production, and on and on it goes.

The human transformation of the planet is fed by technology that continues to develop according to Moore's Law (roughly that computing power doubles every two years), though the reliability of new technologies is often "iffy" and new threats emerge daily as we become increasingly dependent on electrons for maintaining our financial

records, preserving our cultural history, protecting our security, and defining who we are and how we present ourselves to each other.

What we ask you to imagine is not a world of fantastic, mind-blowing innovations in technology and radical alterations in human behavior, or an apocalyptic wasteland in which all of the worst of doomsayers' predictions have come to fruition. Rather, we invite you to consider with us the path we are already on and where it might lead.

We explore our questions—about love in a world in which nature has become almost entirely an artifact, and what this might mean for human loving relationships—by telling stories and sharing meditations, not by issuing predictive declarations that are supposed to provide answers. Prediction is always risky, but especially so when human action is involved. There is little about the world of the future that is fixed and determinate. As the good Professor Corey insinuates in the epigraph, awareness of where we are going can lead us to change course.

A good example of this concerns chlorofluorocarbons, which were marketed under such brand names as Freon. For most of the twentieth century, we used these chemicals as refrigerants, solvents, and propellants. Had brilliant scientists not alerted us to the consequences of using air conditioners and spray cans that used these chemicals, the ozone layer would have eventually been destroyed and the Earth rendered a lifeless planet.

This same example illustrates how forces driving change can interact in surprising ways beyond anyone's intentional control. Early twentieth century chemistry combined with mass consumption caused the problem of ozone depletion. More advanced chemistry combined with remote sensing and a brief era of international cooperation allowed us to solve the problem before substantial damage had been done.

While there are many reasons to be concerned about the future, how bad or good it will be will depend to a great extent on the values of

those who will live in that world. Consider, for example, present-day New York City. "I ♥ NY" say many of today's residents and tourists. But the seventeenth-century inhabitants of Manhattan, the Lenape Indians, would have probably been appalled by much of what present-day New Yorkers and visitors admire: skyscrapers, subways, museums, designer brands, bars and restaurants with a buzz. For all we know, we stand to future people in the way that the Lenape stand to us. We may be appalled by their tastes and desires. They may despise what we think of as the treasures that we sacrifice to bequeath them. Knowledge changes, but so do preferences and desires.

What, you may wonder, does this all have to do with love? Don't we love our New York children as the Lenape loved their Manhatta children? What do managed, manicured parks, the incidence of skyscrapers, geoengineered climate, nanoparticles and the increasing use and dependence on virtual reality have to do with love? One answer is wait

and see. But to anticipate what we hope you will see, think for a moment about how inseparable love is from nature in our actual experience—whether it involves those special places where we have fallen in love, activities we love to engage in, or even the love of nature itself. More profoundly, where does nature end, and we begin? From the point of view of biogeochemistry, nature is the carbon cycle, the nitrogen cycle, and other natural cycles. We, like objects on this planet, are living embodiments of these cycles. Our breathing and respiration are instances of the same cycles that govern the atmosphere; our circulatory system as well as various cellular processes are instances of the hydrological cycle; digestion and metabolism recapitulate the soil cycle; and we are as subject to the laws of thermodynamics as any planet or star. To neglect the natural world from which we are constituted is to ignore the very matter of our own bodies—the hands with which a daughter caresses the face of her dying father, the rapid,

heated breath of a passionate kiss, the arms in which we cradle a child or a beloved pet. It is also to ignore the hands we stuff in our pockets when we look away from suffering, the arms we cross over our chests to defend ourselves from perceived threats, and the hardened expressions on our faces when we stare down our enemies. Our bodies—how we love with them and use them to navigate a first date to the movies, to waltz across a polished floor, to give up a subway seat to an elderly woman—are inseparable from nature.

Today, the main driver of change on planet Earth is not volcanic activity, shifts in tectonic plates or variation in solar radiation, but the growing human population and its demand for energy, food, information, services, and the need to dispose of waste products. The term "Anthropocene" was coined in order to mark the scale and significance of such human impacts on the planet. In the last 250 years, humans have caused not only climate change, but also species extinctions, desertification, ocean

acidification, ozone depletion, pollution and more besides. First used by the biologist Eugene Stoermer in the 1980s, this term "Anthropocene" came to widespread public attention in 2000 when he co-wrote a short article with the Nobel Prize-winning chemist, Paul Crutzen, suggesting that we may be entering a new geological epoch distinguished by these widespread and profound human impacts.

The Holocene, as the current geological epoch is officially known, began 11,700 years ago. During this time Earth's systems—its biosphere, atmosphere, lithosphere, and hydrosphere—have been unusually stable. Biologically modern humans emerged about 200,000 years ago during the Late Pleistocene, but virtually everything we associate with humanity (e.g., agriculture, cities, writing) developed during the last few thousand years. At the beginning of the Holocene there were probably about six million people living as hunter-gatherers. Today there are more than seven billion people, most living in highly complex urban societies.

While the word "Anthropocene" is new, the idea has been around since the nineteenth century as scientists, theologians, and naturalists struggled to give voice to the dawning realization that humanity, with its technological power, was remaking the planet. In 1907, the French philosopher Henri Bergson wrote:

> *In thousands of years...our wars and revolutions will count for little...but the steam engine, and the procession of inventions of every kind that accompanied it, will perhaps be spoken of as we speak of the bronze or of the chipped stone of pre-historic times: it will serve to define an age.*

Even earlier, in 1864, the American polymath George Perkins Marsh identified human agency as responsible for large-scale changes in the planet, some breathtaking and many worrisome. He was struck by the massive changes he witnessed from the time he was a child in Vermont living alongside Native Americans, to the deforestation and desertification he saw as a diplomat working in the Mediterranean region.

Many of us have witnessed changes as dramatic as those Marsh observed—if not directly in our own neighborhoods, then certainly in distant cities and countries, through various media, including television news, documentary films, and so on.

With change so constant, present, and immediate, it is not surprising that the idea of the Anthropocene has fallen on fertile soil. Over the last decade, websites, organizations, scholarly books, novels, a refereed scientific journal and even "creativity" workshops have been established that are devoted to the study of the Anthropocene. A proposal to declare the Anthropocene a new epoch in Earth's history is under formal review by the International Commission on Stratigraphy (ICS), the authoritative scientific body that makes decisions about the geologic time scale.

Geologists write Earth's history on the basis of what is found in layers of the Earth's crust: For example, the transition that occurred about sixty-six million years ago between the Cretaceous and the Paleogene is marked by a thin layer of iridium-rich sediment and a break in the fossil record (dinosaurs before, no dinosaurs after—an asteroid strike may have delivered the iridium and caused the extinctions). Perhaps the ICS will view as the mark of the Anthropocene the radioactive isotopes that began to be laid down in the Earth's crust in the 1940s as a consequence of nuclear testing. It may be more difficult to find in the stratigraphic record distinctive traces of the systematic human transformation of the lithosphere, atmosphere, hydrosphere and biosphere that have occurred as a result of industrialization and mass consumption. There is no guarantee that a record of who we are, how we lived, and in what we found meaning, will be encoded in the Earth's crust.

Whatever its fate as a geological category, the Anthropocene is an important concept for

understanding how we live and what the future may hold. Our current cultural and moral world differs markedly from that of our forebears. These differences are likely to increase exponentially in the next few centuries as we continue to seek immortality, and renew our quest to restore or even improve the natural world whose order we have ruptured.

Technology and the Anthropocene are joined at the hip. The humanity that has transformed nature is now organized in highly complex systems bound together by air travel, oil and gas pipelines, electrical wires, highways, train tracks, fiber optic cables, and satellite connections; this enables "action at a distance" that would once have seemed inconceivable, whether as a conversation on Facetime or through the instantaneous transfer of wealth and resources from one side of the world to another. These possibilities affect the nature of our relationships and our conception of agency. We now feel empowered to save a child in a faraway village by

clicking on a link or making a phone call and pledging a contribution. We can adopt children from cultures we never knew existed and carry on love affairs with people who not long ago would have been faceless and mysterious. Yet at the heart of this power is a sense of helplessness when it comes to stemming climate change and other transformations that herald the arrival of the Anthropocene. While together we are bringing about these changes, the sense of agency and responsibility that was central to the Enlightenment tradition that gave us so much of our literature, politics, and morality, seems to be disappearing in the high-technology, mass society that we have created.

In a world of greater resources and fewer well-insulated spheres of life, everything becomes increasingly fungible, from wombs to kidneys to artworks to lives themselves. Trade-offs between the near and dear, and the remote and strange, become possible in a way they never were before. Sitting in his rooms in Cambridge, the late nineteenth century

philosopher Henry Sidgwick could read about famine in Bengal, but there was little he could do about it in real time except to decry it. You, on the other hand, can immediately empty your bank account and make something happen on the ground in a disaster zone—maybe save some lives, maybe increase the opportunities for corruption. Or instead you could go in for some online gambling on your children's future. Or you could just leave everything to your canary. Everything seems possible but nothing seems certain or to matter. In a world where everything affects everything else and no one feels decisive over much at all, the distinction between causation and complicity has become fraught. When I drive my SUV to the 7-Eleven for a Slurpee am I causing climate change, contributing to it, complicit in it, or does it not matter what I do? What, if anything, turns on these distinctions? Is San Diego Gas and Electric giving us what we want, or manipulating us because we have no choice but to pay our bills? The list could go on. And on and on.

Such questions and their lack of answers can lead to a crisis in meaning. Human life has traditionally been lived against the background of a nature that is seen as largely independent of human action. The Book of Matthew tells us that the sun shines on the just and unjust alike. Once geo-engineering is perfected we may be able to fix this oversight of nature. But what becomes of the message of humility and compassion that this teaching evokes?

Many questions remain but this much we know: the Earth is rapidly changing, and humanity is a prime mover. What we are losing is substantial and the Anthropocene will in many ways be a diminished world. But will it be a world in which our most important values shrivel? Will it provide a platform for developing new rituals, ceremonies, relationships and rites of passage that are meaningful and appropriate to this new epoch?

The Anthropocene presents us with many questions. Our focus is on how and where love—as

we know it today, and as our forebears understood it—can arise in the world of the Anthropocene. This is not a narrow scientific question. It contains a fundamental human challenge. The story of the Anthropocene begins with geology, but is ultimately a story of the human heart.

Finally, a word on our collaboration. We are each, and together, responsible for every word in this book. The authorial voice is neither Dale Jamieson's nor Bonnie Nadzam's, but a third voice which we have jointly created.

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