Current modes of understanding climate change and environmental damage are increasingly focused on both the embodied experience as well as the abstraction of scientific knowledge. Embodied experience becomes a mere deference to the authority. Sacrifice is essential in that realm. Markley[[1]](#footnote-1):

**The expanses of pre-human history that extend into the deep backward and abysm of time underscore the fact that climatological time, measured in millennia, exists beyond daily experiences of the weather, beyond the duration of individual lifetimes, beyond the accumulated memories of generations, and beyond the technologies of observation, inscription, and recording that characterize the rise of modern meteorology in the nineteenth century. The tensions between observation and speculation in meteorological sciences that Katharine Anderson describes in Victorian England foreshadow the contours of contemporary debates about global warming and its consequences. In the twenty-first century, we have come to understand climatological time as a dynamic and consensual knowledge about the interpretations of a wide range of proxy data: ice cores from Greenland, tree rings, sediment layers in mud and swamps, patterns of coral growth, and so on that can be analyzed to reveal signs of long-term variability based on specific chemical signatures, pollen samples, and gas bubbles trapped in ice.19 In this respect, the cognitive understanding of climate has become a process of acclimating one’s embodied experience to increasingly complex technologies and to the resulting displacements, in time and space, of observational and experiential authority. Climatological time is dynamic, shaped and recalibrated, as Bruno Latour suggests, by the networks, alliances, and assemblages that collect, transmit, verify, interpret, and disseminate data; that then reaffirm or modify assumptions and values about the natural world; and that continually negotiate the vexed relationship between seemingly individual, embodied experience and scientific knowledge.20 A crucial effect of the technologies of climate science is that our experience has been refocused, or really recalibrated, to integrate into our lived experience consensual inferences from ratios of isotopes, compression of layers in ice cores, models of global circulation of water, atmospheric circulation, large-scale deforestation, and satellite images. In this respect, climatological time registers the complex theoretical and practical relationships between qualitative experience and quantitative knowledge, between human history and the earth’s history. Recycling becomes, in one sense, a sacrificial rite to an ideal of sustainability.**

This turns case and makes aff impacts inevitable, their representation of the world normalizes a notion of nature as an inexhaustible resource and reentrenches neoliberalism. Markley 2:

**The technologically-mediated, proxy observations of longterm climate change, then, force us to recalibrate to traditional notions of common sense, to the embodied and expansive times of Emerson’s Nature. Even for scientists, policy-makers, environmental activists, and informed citizens who believe in anthropogenic global warming and are striving to promote whole-scale changes in modes of production and habits of consumption, the time-scales of climatic change cannot be experienced viscerally but only imagined. Phenomenologically, they are part of what Derrida calls, in a different context, the “irreducible virtually of time and space” (162). Scientific knowledge requires a willing suspension of experiential belief in the facticity, the experiential groundedness, of a world of familiar seasons, a continuous anthropocentric history, and the Lockean tendency to treat the natural world as a storehouse of infinite productivity. In this respect, climatological time produces interference patterns that provoke complex and self-generating modes of disidentification: proxy data is both integrated into patterns of daily experience (recycling plastic bottles, buying energy-efficient cars) and sequestered from traditional behaviors (continuing to eat meat, despite the carbon footprint of meat production). In Bruno Latour’s sense, we have never been, and cannot become modern, because we remain caught (and oscillate) between the dialectical impulses toward the purification of identities (the self-aware green ethicist) and the proliferation of hybrids (the conflicted, steak eating Prius owner).21 This is why, even as the literate public worldwide has been deluged with information (and misinformation) about global warming and its likely consequences, the effects of this media saturation paradoxically have reinforced as well as challenged longstanding views of humankind’s relationship to nature. The managerial ethos** of late twentieth and twenty-first century corporate culture **that tends to treat climate change as a marketing opportunity is a descendent of the brutally insensitive optimism of neoclassical economics. Given its geneaology, the ideal of sustainability that underlies most plans of collective action to address global warming risks reinscribing a Lockean vision of the inexhaustibility of natural resources** into the idea of **a** preternaturally **resilient ecology that exists outside of** the dynamicsof climatological **time. The measure of** several generations—of **one or two extended human lifetimes—becomes the timescale of sustainability. In this regard, sustainability tends to be co-opted into a seemingly objective semiotics of mathematics and neoclassical—and neoliberal— economics, what Philip Mirowski calls “the very ideal of natural law[,] . . . the verification of a stable external world independent of our activity or inquiry” (75). This projection of stability from mathematics onto “a stable external” nature effectively treats complex and dynamic ecologies as constants rather than variables; the closer sustainability approaches a set of statistical inferences over decades or a century, the more it tends to remain complicit in exploitative ideologies of resource extraction and the political and administrative hierarchies, centralized bureaucracies, technologies of economic calculation and accounting, the policing of resources and populations, and distributive political economies that are required to manage finite resources.**

The alternative is to reject the affirmative notions of sustainability and their model of time in favor of a view of Nature as complex and transcendent. Markley 3:

**Nineteenth-century transcendentalism suggests that the ruptures between microcosm and macrocosm, between humankind’s experience of time and Nature’s time, are produced by the self-generating alienation of custom or ideology, what William Blake called “mind forg’d manacles.”13 In his essay “Nature,” Ralph Waldo Emerson recasts the threat of extinction within phenomenological notions of time, nature, and experience: the knowledge that we traverse the whole scale of being, from the centre to the poles of nature, and have some stake in every possibility, lends that sublime lustre to death, which philosophy and religion have too outwardly and literally striven to express in the popular doctrine of the immortality of the soul. The reality is more excellent than the report. Here is no ruin, no discontinuity, no spent ball. The divine circulations never rest nor linger. Nature is the incarnation of a thought, and turns to a thought again, as ice becomes water and gas. The world is mind precipitated, and the volatile essence is forever escaping again into the state of free thought. . . . That power which does not respect quantity, which makes the whole and the particle its equal channel, delegates its smile to the morning, and distils its essence into every drop of rain. Every moment instructs, and every object: for wisdom is infused into every form. (542) In gesturing toward the reflexivity of microcosm and macrocosm, Emerson yokes Hutton’s geological time or Laplace’s universal time to experiential moments and perceptions that defy scientific reductionism. Human life, like the planet itself, is “no spent ball,” but a web of complex, proliferating, and dynamic energies.14 In contrast to Milton’s view of seasonal change as a mark of the fall, Emerson locates “perfection” and “harmony” in individual days. He begins this essay by observing: There are days which occur in this climate, at almost any season of the year, wherein the world reaches its perfection, when the air, the heavenly bodies, and the earth, make a harmony, as if nature would indulge her offspring; when, in these bleak upper sides of the planet, nothing is to desire that we have heard of the happiest latitudes, and we bask in the shining hours of Florida and Cuba; when everything that has life gives sign of satisfaction. . . . These halcyons may be looked for with a little more assurance in that pure October weather, which we distinguish by the name of the Indian Summer. The day, immeasurably long, sleeps over the broad hills and warm wide fields. To have lived through all its sunny hours, seems longevity enough. (540) In contrast to nineteenth-century scientists struggling to explain the prospect of an earth succumbing to the heat-death ostensibly predicted by the second law of thermodynamics, Emerson finds time both focused and dilated, intimations of immortality distilled into the “sunny hours” of “pure October weather” that bring to the climate of northern New England the kind of “satisfaction” ostensibly experienced in the tropical sunshine of the Caribbean.15 “Spring/Perptual” becomes a distillation of thought and experience, an imaginative transcendence of the often dank realities of the “bleak upper latitudes” of the planet. Emerson’s “halcyons” locate embodied human experience within a matrix of “harmony,” in which multiplying complexities produce greater intimations and emotive understandings of Nature as “the circumstance which dwarfs every other circumstance,” an unalienated universal composed of, and generating, infinite experiences of “that power which does not respect quantity, which makes the whole and the particle its equal channel.”**

And, representations of time come first. They impact policy decisions, shape action, and are a prerequisite to actually knowing the impacts of the aff. The ambiguity in the terms sustainability and future generations unique justifies this position, means it is most predictable, fair, and best for education since it forces debates to actually defend their positions. Markley 4:

**In this essay, I outline a brief history of the registers of time and explore some of the ways in which the complex tensions among embodied, historical, and climatological time underlie contemporary understandings of and commitments to sustainability. Sustainability, I argue, is a function of particular ways of conceiving of time, and therefore the different registers of time that I discuss both produce and are reinscribed by invocations of sustainability as an ethics, a policy goal, and an environmentalist rallying cry. Embodied time, historical time, and climatological time are mutually constitutive as well as culturally and historically inflected, and it would take several full-length studies to examine critically the ways in which different cultures have tried to negotiate among them. In focusing on aspects of western literary traditions, I trace the ways in which time remains embedded in history, culture, and technology; it is not an abstract and objective measurement of duration, but a dynamic set of relations mediated by technoscientific understandings of climatic variability and climatic change. In this respect, as I argue below, the idea of climatological time paradoxically transcends and deconstructs a long philosophical and rhetorical tradition that contrasts kronos (chronological time) to kairos (the opportune moment, the “right” time, or, as in contemporary Greek, the weather).4 In complex ways, an understanding of climatological time complicates a straightforward political response to the crisis of global warming in the twenty-first century. The familiar catch-phrases that invoke “the world our grandchildren will inherit” or urge us to “save the earth for future generations” reveal the extent to which sustainability is indebted to conceptions of embodied time, that is, to individual experiences of wind, heat, cold, rain, drought, and the thousand climatic shocks that flesh is heir to. Reinscribing a conception of time that dates back to the Old Testament, sustainability evokes a succession of individual lifetimes—an unbroken sequence of embodied experiences from the past and into the future that presupposes sociocultural evolution taking place against the backdrop of the timeless present of an abiding Nature. Troubling this quasi-biblical vision of succession and a socio-genetic inheritance of moral authority, property rights, social responsibility, and racial, ethnic, and religious identities is a fundamental question: what exactly is being sustained? Is it the stability of the planetary ecosystem (and its numberless subsystems) as a self-perpetuating, Gaiaesque whole? Or the productivity of the natural world so that technologies of resource extraction and practices of intensification allow selected populations to maintain, improve, and extend first-world standards of living? In an important sense, a sophisticated approach to this question invites an exploration of a critical archaeology of time. The work of literature mediates the intimations of sublime change—of climatological time—by restricting time to anthropogenic history. Contemporary rhetorics of sustainability draw on a rich legacy of images of ecological stability by re-envisioning the pastoral tradition—the eternal spring of the bucolic countryside—and the georgic, the strategies of intensification that allow for the endlessly increasing exploitation of resources. The roots of these genres in the classical world and their successive re-imaginings in Europe and the Americas suggest the extent to which notions of sustainability subsume and rework tensions that have characterized views of nature for literally thousands of years.This means that the primary ethical imperative is to open up space for relationships. Gilson[[2]](#footnote-2):**

**If responsibility is “a question of becoming”** and becoming involves the kind of relation that is constitutive of responsibility, **then** the linkage between these two concepts entails that **becoming is an ethical endeavor.** In becoming, one expresses, augments, and transforms the capabilities of one’s body through its relation to those of another body; yet, as Paul Patton notes, this assemblage is formed without “involving [the] appropriation of those powers” or hindering the other’s ability to express itself (Patton 2000: 79). Deleuze’s comments concerning the problem of evil in Spinoza’s ontology of bodies clarify this point: What is positive or good in the act of beating? Spinoza asks. **What is good is that this act** (raising my arm, closing my fi st, moving rapidly and forcefully) **expresses a power of my body**; it expresses what my body can do in a certain relation. What is bad in this act? **The bad appears when the act is associated with the image of a thing whose relation is decomposed by that very act (I kill someone** by beating him). **The same act would have been good if it had been associated with the image of a thing whose relation agreed** with it **(e.g., hammering iron**). Which means that an act is bad whenever it directly decomposes a relation, whereas it is good whenever it directly compounds its relation with other relations. (Deleuze 1988: 35) **To be responsible,** on this understanding**, is to refrain from connecting one’s body with other bodies in ways that decompose the relations** that constitute them or diminish their powers**, and instead to find compositions with others that enhance the powers of both.** Becoming, therefore, involves a measure of responsiveness to others that precludes it from rendering women the mere vehicles of men’s becomings. The responsibility inherent in becoming requires, rather, that men become-woman in a way that does not reterritorialize women’s bodies and selves but that facilitates women’s own becomings**.**

The discourse of sustainability and protection of the environment for future generations is entrenched in an anthropogenic, deterministic, and normalizing mindset that is the precondition for exploitation. Markley:

**The era in which Longfellow wrote—before Darwin but after the revolutions in geology that challenged (or allegorized) the Mosaic history of creation—had to contend with competing traditions of history and try to negotiate between biblical chronology and a nascent understanding of deep time.5 Western conceptions of Nature have been shaped, to a significant extent, by the incommensurate traditions of Judeo-Christian and pagan views of the natural world, and remain caught between competing historiographic methods, narrative modes, and conceptual models: a Judeo-Christian perception of history as the mysterious unfolding of God’s will and a pagan view of historical experience that resists teleological explanation.6 In Genesis, humankind is exiled from Paradise because Eve and Adam sin. Their expulsion from the Garden into a world of labor and scarcity makes the fall of nature an effect of humankind’s willful disobedience. In Book X of Paradise Lost, John Milton figures original sin as the fall from an eternal spring into the unstable climate patterns that characterized northwestern Europe during the Little Ice Age: the Creator calling forth by name His mightie Angels gave them several charge, As sorted best with present things. The Sun Had first his precept so to move, so shine, As might affect the Earth with cold and heat Scarce tolerable, and from the North to call Decrepit Winter, from the South to bring Solstitial summers heat. … Some say he bid his Angels turne ascanse The Poles of Earth twice ten degrees and more From the Suns Axle; they with labour push’d Oblique the Centric Globe … … to bring in change Of Seasons to each Clime; else had the Spring Perpetual smil’d on Earth with vernant Flours, Equal in Days and Nights … (X: 649–56, 668–71, 678–80) Milton describes an unpredictable and demonized nature as a mark of the fall not only into postlapsarian history but also into the extremes of the seasons: the Angels literally push the earth into its obliquity, the 24 degrees of deviation in its angle of rotation, and thus end the “Spring/ Perpetual” that Milton erroneously believes would be a consequence of a perpendicular rotational axis.7 An idealized May or June day in the English countryside becomes emblematic of an unfallen nature. As this passage from Paradise Lost implies, the Judeo-Christian understanding of historical time is implicated in the theology of sin, labor, and longed-for redemption; God’s displeasure and favor thus are deeply bound up in a sacrificial economy that seeks to mitigate the effects of “Decrepit Winter” and “Solstitial summers heat.” The account in Genesis of Cain and Abel measures the moral difference between their offerings by assuming that agricultural and livestock yields reflect the moral status of the giver. In Book XI of Paradise Lost, Milton contrasts the sacrifices of the “sweatie Reaper who brought/ First Fruits, the green Eare, and the yellow Sheaf,/ Uncull’d, as came to hand” to those of the “meek” shepherd, who sacrifices “the Firstlings of his Flock,/ Choicest and best” with “all due Rites perform’d.” Although Cain, Milton declares, “was not sincere” and “inlie rag’d” that Abel’s sacrifice was received favorably, the moral distinction rests on the fiction that the productivity of a fallen world will allow for the sacrifice of the “Choicest and best.” In an important sense, such sacrifices are always devoted to a statistical inference of climatic stability—the predictability and abundance symbolized by Abel’s offering. In an agro-pastoral culture, the point of sacrifice is to stabilize or maintain the climatic conditions that promote social cohesion and regularize the consumption of fruits, game and domesticated animals, cereals, fish, and so on: send rain, thaw the land for planting, end the drought, let the flood waters recede, bring back the elk or fish or bison. A sacrificial economy perceives and treats sin, transgression, and violation as both the cause and effect of the climatic instability—the earth off-kilter—that Milton imagines. Climatic change, therefore, characteristically is figured in terms of catastrophes that mark the limits of historical time, the irruption of God’s wrath and vengeance.**

1. Robert Markley, W. D. and Sara E. Trowbridge Professor of English, Writing Studies, and Center for East Asian and Pacific Studies at University of Illinois, Urbana-Champaign, “Time: Time, History, and Sustainability” in *Telemorphosis: Theory in the Era of Climate Change, Vol. 1*, [↑](#footnote-ref-1)
2. Erinn Cunniff Gilson. “Responsive Becoming: Ethics between Deleuze and Feminism” in *Deleuze and Ethics*. 2011. [↑](#footnote-ref-2)