

## Telling Time with Mammoths

### *Frozen Flesh and Temporal Arrangement in the Circumpolar North Since 1800*

▼ **SPECIAL ISSUE ARTICLE** in *Entangled Temporalities*

▼ **ABSTRACT** Until recent decades, permafrost-preserved frozen mammoths were among the rarest of scientific specimens: only one was successfully collected between 1806 and 1902. With global warming and increased industrial activity in the circumpolar north, in the twenty-first century discovering these creatures has become a seasonal phenomenon. This article traces this broad trajectory, examining how distinct temporalities—planetary, industrial, and Indigenous—intersect and inform distinct frozen mammoths that surfaced over the last 223 years. Told in four acts, the article considers how frozen mammoths tell time, informing debates over the planet's past, present, and possible futures according to the moment into which they emerged. Frozen mammoths function as material loci for time and temperature, enabled by the cold of the circumpolar region, and enabling multi-temporal epistemologies to take shape around their remains.

▼ **KEYWORDS** Mammoths; Paleontology; Circumpolar Arctic; Natural History

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Woolly mammoths are icons of the Pleistocene, the most recent glacial period, lasting from 110,000 years ago until about 12,000 years ago. Since the last remnant populations of woolly mammoths died out roughly four thousand years ago,<sup>1</sup> they have been known to humankind only through the fossilized relics—bones, teeth, and tusks—of their bodies. These bodily fragments are extraordinarily evocative, with the power to conjure images of the Earth's past.<sup>2</sup> A creature whose evolutionary demise evokes the ascent of our own species, mammoths have played an outsized role in the history of paleontology, art, imaginative literature, and culture more broadly. Increasingly, they are known not only through their ossified remains, but through their soft tissues as well: hair, hide, flesh, and organs, all preserved against the passage of time by the deep cold of circumpolar permafrost.<sup>3</sup> Such extraordinary instances amplify the species' evocative power. In such creatures, temperature and temporalities collide, forming and reforming layers of meaning.

Frozen mammoths entangle present, past, and futures in their singular, temporally-laden animal bodies. The moment at which a woolly mammoth emerges from the frozen ground marks a collision of temporalities most often encountered as distinct. In the bodies of frozen mammoths, industrial, planetary, and Indigenous notions of time and scale meet and mingle, shaping their reception in the present into which they emerge, and in turn, informing how those around conceptualize past and possible future. Artifacts of the planet's geological past, frozen mammoths are released into the present by the apparatus of human industry. Framed by local Indigenous peoples into systems of meaning that sometimes predate the interest of Western savants and scientists, contemporary frozen mammoths are subject not only to scientific assay, but to the priorities of Indigenous stakeholders, as the response to Nun Cho Ga, the frozen baby mammoth recently unearthed on Tr'ondek Hwech'in land in the Yukon Territory demonstrates. None of these temporalities is static or unchanging, but rather always operating under conditions of formulation and reformulation, not least as human engagements with, and relations to cold itself, continue to undergo change.

In what follows, I explore the varied temporal entanglements that have marked frozen mammoths since 1800. Over the last two centuries, as human presence and activity in the circumpolar north has increased, and as permafrost melts due to climate change, the meaning of these creatures has changed dramatically. From the most elusive of scientific specimens (only one specimen was successfully collected in the nineteenth century), frozen mammoths now emerge seasonally from softening permafrost, serving as bellwethers for a warming planet. Across the arc of this transformation, frozen mammoth bodies crystalize the relationship between different kinds of planetary time and

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1 Graham et al., "Timing and Causes"; Vartanyan, Garutt, and Sher, "Holocene Dwarf Mammoths."

2 Cohen, *Fate of the Mammoth*.

3 Chu, "Mapping Permafrost Country"; Chu, "Encounters with Permafrost."

temperatures. Their status as epistemic objects is predicated on the present moment into which they emerge, and the past as it is understood at that moment. Frozen mammoths are thus constituted of multiple intersecting temporalities “held together in provisional tension,” as the editors articulate in the introduction to this collection.<sup>4</sup> I identify three such primary temporalities: planetary time, which encompasses deep time (Earth’s propensity to preserve its own record); industrial time, the *tempos* of human activity, especially as it is informed by the carbon economy and intensifying extractive industries like mining, that destabilize the presumed progression of deep time and its artifacts; and Indigenous temporalities, those associated with the rhythms, *tempos*, and belief systems of the Indigenous peoples upon whose labor, knowledge, and cooperation the collection of frozen mammoths is dependent, and who, over the last two hundred years, have been variously dismissed, derided, and more recently embraced.

I trace this arc in a series of four acts, emphasizing the partiality and provisionality of my account. Each act successively unpacks different configurations of temporal entanglement that mark frozen mammoths as epistemic objects. Whereas the “first” frozen mammoth was enrolled into debates over the geological past of the planet and whether or not the circumpolar north had always been a cold place, mid-twentieth-century finds played out according to the quickened tempo of the Great Acceleration. More recently, our contested era of the human (the Anthropocene) and its possible futures shapes discourse around frozen mammoths. The cold that preserved their bodies, rendering them visible to the present of the nineteenth and twentieth centuries and permitting them to bear on debates about the temporality of the Earth, is now itself a scarce resource, as Mark Carey has argued, an endangered relic at risk of extinction as temperatures rise, higher and faster.<sup>5</sup> Frozen mammoths have come to signify the possibilities of planetary salvation and transcending time itself through the interconnected projects of de-extinction and paleo-ecological restoration of entire lost landscapes.<sup>6</sup>

Drawing on the work of Joanna Radin and Emma Kowal, recent accounts of frozen mammoths have emphasized their cryopolitical latency—a temporal indeterminacy achieved through low temperature that enacts a refusal of death and decay.<sup>7</sup> Dmitry Arzyutov describes this state with respect to frozen mammoths as an “in-betweenness” permitting them to speak to different *tempos* and time horizons, while for Charlotte Wrigley cryopolitics renders frozen mammoths “atemporal...removed from [their] historical context in the ancient permafrost” and reconfigured into potential “*future capital*.”<sup>8</sup> This cryopolitical framing foregrounds the cold at work in persevering frozen

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4 Hsiung, Lenel, and Meister, “Introduction.”

5 Carey, “The History of Ice.”

6 Wrigley, “Ice and Ivory.”

7 Joanna Radin and Emma Kowal, *Cryopolitics*.

8 Arzyutov, “Environmental Encounters”; Wrigley, “Ice and Ivory, 792.”

mammoths. Yet it is not just cold and its preservative properties but melting that permits these creatures' temporal and cryopolitical possibilities. As Krause has argued, it is the complementary melting and freezing of solid fluids—ice, snow, water, and muck—that condition the rhythms of life in the circumpolar north—a transnational space marked by the staging of scientific endeavors where time and temperature supersede the confines of national stakeholders.<sup>9</sup> Despite the best efforts of nation states who claim sovereignty in the region, the circumpolar regions resist colonization by “national time,” instead raising questions of planetary and Indigenous time—and what happens when these intersect with industrial time.<sup>10</sup>

No less, frozen mammoths are the product of both freezing and thawing. While contemporary frozen mammoths are firmly yoked to the fears and realities of global warming in the circumpolar north, early instances emerged and became knowable—to Indigenous people and European naturalists alike—only due to seasonal thawing. These seemingly paradoxical effects of temperature mirror frozen mammoths' paradoxical marking of time: in resisting time's passage, their remains simultaneously manifest planetary time by calling to mind a past that precedes the human historical record.<sup>11</sup> By tracing a longer history of frozen mammoths' associations with time and temperature, this article sheds light on the conditions that have made possible these animals' evocations of cryopolitical futures marked by de-extinction and climate anxiety in recent scholarship.<sup>12</sup>

## Mammuthus Primigenius

The first frozen mammoth to index planetary time and temperature in the circumpolar North was recovered from Siberia's permafrost in 1806. Called the Adams Mammoth after Mikhail Adams, the adjunct naturalist of the St Petersburg Academy of Science who collected it, this creature was in fact discovered seven years earlier by Ossip Schoumacoff, a Tungusic hunter-herder.<sup>13</sup> Schoumacoff came across the mammoth while searching for fossil ivory—a lucrative article of exchange used locally and exported to global markets—along the Arctic Ocean.<sup>14</sup> Where the Lena River, a major waterway of eastern Siberia, empties into the Arctic Ocean, Schoumacoff spotted a strange object protruding from an eroded bank. As it gradually melted out of the ice over

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9 Krause, “Tempo of Solid Fluids.” For circumpolar histories of science, see Stuhl, *Unfreezing the Arctic*; Bocking and Heidt, *Cold Science*; Bocking and Martin, *Ice Blink*; Jones-Imhotep, *The Unreliable Nation*.

10 Chu, “Mapping Permafrost Country”; Jones-Imhotep, *The Unreliable Nation*.

11 Passarello, *Animals Strike Curious Poses*, 14.

12 Wrigley, “Ice and Ivory”; Piotrowska, “Meet the New Mammoth.”

13 For the history of the St. Petersburg Academy of Sciences, see Gordin, “Importation of Being Earnest”; Schulze, “Russification.”

14 Chaiklin, “Ivory in World History”; Tilesius, “De Skeleto Mammonteo Sibirico,” 411.

the course of several summers, Schoumacoff realized that it was the body of a mammoth preserved in “rock ice” and frozen ground, with its hair, hide, and flesh mostly still intact.<sup>15</sup> The skeleton and soft tissue of the mammoth held no value in the local economy—rather, the reverse. When Schoumacoff reported his find, his elders interpreted the emergence of the strange creature as a bad omen, a harbinger of sickness and death, and advised him to leave it in place. Schoumacoff did indeed fall ill, fulfilling the mammoth’s prophecy, but when he recovered, the perceived value of the tusks outweighed his kin’s warnings. In 1804, he harvested its tusks, leaving the carcass behind, and exchanged them in Yakutsk, a regional center several weeks journey to the south, for merchandise reportedly worth fifty roubles.<sup>16</sup> Two years later, Adams arrived in Yakutsk after the diplomatic mission to China, to which he formed part of a scientific contingent, collapsed, where Schoumacoff’s find was described to him as “an animal of extraordinary size” with its skin, hair, and flesh “in good preservation.”<sup>17</sup>

Adams’s timing was fortuitous: elephantine bones and tusks were well-known throughout Europe, but the preserved flesh and fur of these still-mysterious creatures were rare in the early nineteenth century. Sixteenth- and seventeenth-century European travellers to Siberia had reported scattered instances of such finds, yet in only one case had soft-tissue remains—the head and a foot of a woolly rhinoceros—been successfully collected by European naturalists.<sup>18</sup> Adams therefore hastened up the Lena River to the site of the creature’s (dis)interment, where he found that the carcass had been scavenged, though the skeleton “was entire...with the exception of the forefeet.”<sup>19</sup> He packed up the remains, including its hair and “three-fourths of its skin,” and sent them back to St Petersburg.<sup>20</sup>

The mammoth’s significance as the first complete skeleton of an extinct proboscidean—let alone with flesh, skin, and hair preserved—ever successfully collected in the name of knowledge was immediately recognized. Its skeleton was mounted and displayed in the Academy’s *Cabinet d’Histoire Naturelle*, while the dramatic nature of Adams’ find, communicated through a widely translated account of his expedition up the Lena River, ensured the specimen’s fame well beyond Russia. Samples of its hair were put into circulation, making

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15 Adams, “Relation d’un Voyage.” Permafrost, as a concept and as an environmental object, did not come into being until the 1920s. Chu, “Mapping Permafrost Country.”

16 Michael Adams, “Journey,” 147.

17 Ibid, 141. *Mémo. de l’Académie impériale* (1809), 72. For the scientific contingents on voyages of exploration, see Djindjian, “Jean Potocki (1761-1815)”;

Werrett, “Technology on Display.”

18 Pallas, *Voyages Du Professeur Pallas*, 215-16. Cf. Tolmachoff, “Carcasses of the Mammoth,” 22-23; Tammiksaar and Kalling, “Siberian Woolly Mammoths.”

19 Adams, “Journey,” *Phil. Mag.*, 147.

20 Ibid, 148.

their way to Paris, Berlin, Stuttgart, and the United States, while Adams' narrative reached audiences in German, French, and English.<sup>21</sup>

The celebrity mammoth arrived in a present moment in which the very nature of time on the planet was unsettled.<sup>22</sup> By the early nineteenth century, received wisdom surrounding the antiquity of the Earth, conventionally linked to Biblical temporalities, was under strain from emerging geological and paleontological knowledge and specimens.<sup>23</sup> As historians of science have shown, novel forms of geological inquiry, many of which were stimulated by Europe's emerging carbon economy, shook scriptural temporalities.<sup>24</sup> Time deepened beyond the human scale as relics of strange life forms preserved in rock formations suggested a longer planetary history populated by plants and animals no longer extant. Even as evidence for an extended timescale—and for the possibility of life forms being extinguished—mounted, calling into question assumptions about the perfection of God's creation, debate over the age of the Earth, and the nature of changing life forms on it, continued well into the nineteenth century.

Proboscideans figured prominently in these debates, as Claudine Cohen has shown.<sup>25</sup> Contemporary experience and observation taught that elephants were tropical creatures, unsuited to the cold climes of the northern hemisphere, yet the fossilized teeth and bones of animals that clearly resembled living African and Indian elephants were found in abundance throughout the circumpolar north as well as lower latitudes. Early investigations connected them to elephants,<sup>26</sup> but temperature intersected with entangled temporalities in these accounts. Diluvial theories that saw them brought north in a Biblical flood took precedence.<sup>27</sup> This explanation persisted until well into the nineteenth century, even as deep time coalesced as an understanding of the planet's history, and was joined by a range of other views. Some localized fossil collections were connected to Hannibal's elephants, famously marched north into battle during Antiquity,<sup>28</sup> while others interpreted the remains of elephant-like creatures as an indication that the circumpolar north had been warm and tropical in the past.<sup>29</sup>

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21 Within five years, Adams's entire account had appeared in five English language translations, been translated into German by the mineralogist Karl Johann Bernhard Karsten, and back into French by Cuvier and the Comte de Lacépède, and further paraphrased by Cuvier in an addendum to the first volume of *Recherches Sur les ossements fossils*. Adams, "Journey," *Phil. Mag.; Scots Mag.; Phil. Med. and Phys. J.; Sel. Revs.; Emp. Arts and Sci.*; Cuvier and Lacépède, "Rapport sur le cadavre"; Cuvier, "Additions et Corrections."

22 Rudwick, *Worlds Before Adam*.

23 Rudwick, *Worlds Before Adam*; Cohen, *Fate of the Mammoth*, 72-78.

24 Jonsson, "The Coal Question"; Rudwick, *The Great Devonian Controversy*.

25 Cohen, *Fate of the Mammoth*.

26 Ibid; Breyne, "Description of Some Mammoth's"; Sloane, "An Account of Elephants."

27 Cook, "Elephants in the Collection"; Howorth, *Mammoth and the Flood*. Cf. Ides, *Three Years Travels*, 26, who reports similar views from "old Siberian Russians."

28 As Cuvier reports in his "Memoir on the Species," 21.

29 Ides, *Three Years Travels*, 26.

In these debates, notions of how the Earth itself changed over time intersected with novel methods for making sense of fossils. Geology, paleontology, and contemporary anatomy together produced new understandings of life, time, and temperature on the planet. The naturalist, Georges Cuvier, for example, grounded his novel interpretations of the planet's past in the evidence produced by methods of comparative anatomy.<sup>30</sup> By carefully measuring and describing fossil remains, Cuvier demonstrated that the Earth's strata were strewn with the remains of creatures no longer found alive. He became an early proponent of the notion of extinction, and by 1812, he was wielding the story of the Adams Mammoth, particularly its woolliness, in support of his theories.<sup>31</sup> Having examined its hair, several strands of which had made their way to a colleague in Paris,<sup>32</sup> Cuvier proclaimed it conclusive proof that Earth's life forms underwent change over time, and that the circumpolar north had always been cold. Its thick hide and coarse wool, described in Adams' published account, distinguished mammoths from living elephants, and proved, as he put it, "beyond a doubt, that these fossil elephants were animals of cold lands, and that they never inhabited the torrid zone."<sup>33</sup> Historical climate change could not account for the presence of elephant bones in the far north.

Though Cuvier's arguments were by no means the last word on the contested making of deep time in the nineteenth century, the Adams Mammoth was clearly pivotal in these debates. Having time-travelled from the planet's deep past into the present of the 1810s, this extraordinary specimen played a singular role in scientific controversies over the deep time history of the planet. Its unique, cold-preserved bodily remains—hair, hide, and flesh that belied the passage of thousands of years—made manifest new knowledge of the planet's past. The "knotted topology"<sup>34</sup> of time frames here invoked—the past present of the mammoth's "discovery," and the understandings of planetary time it permitted—lent shape to the animal itself, and to the temporalities it engendered.

## Burrowing Giant

Adams' musings and Cuvier's argumentation were not the only, or even the primary, modes in which the fleshly, bodily remains of mammoths were received into the present. Although his European compatriots bestowed credit on Adams for the "remarkable discovery" of "his" mammoth, the Tungusic

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30 Outram, *Georges Cuvier*; Rudwick, *Bursting the Limits*; Rudwick, *Lyell and Darwin*.

31 Cuvier, *Les Ossements Fossils*, 11.

32 Cuvier, "Additions et Corrections," 13.

33 Ibid. Cf. Rudwick and Cuvier, *Georges Cuvier*, 34-35. Cuvier had identified Eurasian mammoths as distinct from living African and Asian elephants and extinct American mastodons on the basis of comparative anatomy, particularly analysis of the teeth and jaws, in 1796. Rudwick, *Georges Cuvier*, 16.

34 Hsiung et al., "Introduction."

hunter Schoumacoff is the clear claimant to that honor. That we do not remember the mammoth as “Schoumacoff’s mammoth” is evidence of how historically, Indigenous knowledges and temporalities that challenge Western counterparts are written out of Western narratives, chronologies, and knowledge systems.

Traces of Schoumacoff’s priority, and the challenge it presented for Adams, can be found in Adams’ own narrative of discovery, the bulk of which is a narration within a narrative, the “history of the discovery of the mammoth,” as he puts it, “related to me [Adams],” by Schoumachoff, who first spotted the strange creature, “in nearly the following terms.”<sup>35</sup> Thus promising to hew faithfully to Schoumachoff’s own story, Adams details how, over successive summers beginning in 1799, Schoumachoff watched the mammoth emerge from “rock ice” upon a small peninsula at the mouth of the Lena River. The following year it was “freer from the ice,” and he was able to discern “two similar pieces” protruding: these would turn out to be the mammoth’s feet. By the end of the following summer (1801), the “entire flank of the animal and one of the tusks had come out from under the ice.”<sup>36</sup>

When Schoumachoff related his discovery to his kin, the news was met with consternation. Old-timers recounted “that they had heard their forefathers say that a similar monster had formerly shown itself in the same peninsula, and that the whole family of the person who discovered it had become extinct in a very short time.” Consequently, “the mammoth... was unanimously regarded as auguring a future calamity:” the time it told to its first set of interlocutors was of impending doom, not of the planet’s deep past. Schoumachoff, Adams reports, “felt so much inquietude... that he fell dangerously ill.” But he soon recovered, and his thoughts turned to “the profit he might gain by selling the tusks of this animal.”<sup>37</sup> So he returned to claim his prize in March 1804, when “at last,” according to Adams, “the ardent desires of Schoumachoff were happily accomplished.” The ice “which inclosed [sic] the mammoth” had melted enough to allow it to topple out of the cut in which it was embedded and Schoumacoff, “having got his horns cut off, he changed them with Baltounoff the merchant for merchandise of the value of 50 roubles.”<sup>38</sup>

Even the structure of Adams’ accounting raises questions about the faithfulness of his act of ventriloquism.<sup>39</sup> Set apart as an extended quotation, Schoumachoff’s portion of Adams’ narrative is nonetheless told in the third person: Schoumachoff appears as “he,” his family members and relations as “they”—never “I,” never “we.” Moreover, his narrative includes a basic ethnographic account of the Tungus people (referred to as “these innocent children

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35 Adams, “Journey,” 145.

36 *Mémoires de l’Académie impériale*, 126.

37 Adams, “Journey,” 146.

38 *Ibid.*, 147.

39 Chaplin, *Subject Matter*, esp. 194.



of nature”).<sup>40</sup> Evidently Adams’ gloss for his intended audience, these are details that Schoumachoff would have taken for granted, and evaluations of his culture he would not have made, and therefore would not have related to his interlocutor. Describing the final stage in which the mammoth falls free of the frozen ground, Adams, still ostensibly quoting Schoumachoff, notes that “two Tougouses [who] were witnesses...accompanied me in my journey”<sup>41</sup> in reference to his own 1806 expedition, a slippage revealing Adams’ hand on the quill.

These irregularities in Adams’ prose belie his claim that the “history of the discovery of the mammoth” he imparts to his readers was “related to me...in nearly the following terms.”<sup>42</sup> Rather than a faithful account of Schoumacoff’s experience, Adams’ “Report” appears to blend the viewpoints of various actors—Schoumacoff, Popoff, the *négociant*; Boultonoff, the merchant; and other locals with first or second-hand knowledge of the creature—and present it in a way calculated to install confidence in his tale among his European readers. Rhetorically for Adams, recounting how “superstition” causes Schoumachoff to fall ill between first sizing up the beast and later harvesting its tusks for profit as part of the mammoth’s origin story serves to keep Schoumachoff in his proper place, which is to say subordinate to Adams. And rather than presenting Schoumacoff’s ultimate sale of the tusks as a triumph of the rationale of the market, Adam depicts him as avaricious as well as credulous and irrational, in contrast to his own self-presentation as a level-headed man of learning.<sup>43</sup>

But also embedded in this strangely-structured narrative is evidence suggestive of Indigenous ways of knowing the preserved remains of woolly mammoths of which they, as the dwellers and the knowledge-keepers of the Siberian permafrost, were—and remain—the rightful experts. The soft tissue remains of Pleistocene megafauna were common enough for Indigenous Siberians to develop systematic explanations for how it was that such creatures were never seen alive but that periodically, their remains—evidently recently deceased, which is to say smelling strongly of decay and clearly not fossilized—were found on riverbanks, in landslides, and where spring freshets eroded and disturbed the land. Indigenous Siberians, including those of the northern Chinese borderlands, shared stories of subterranean animals, called *mammuth* or *mamant*, that plowed back and forth under the surface of the earth, leaving furrows and pits in their wake and expiring the moment they “smell or discern the air.”<sup>44</sup> Such accounts of giant, mysterious, burrowing creatures had for centuries formed part of the narrative complement of returning voyagers from

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40 Adams, “Journey,” 145.

41 Ibid, 147.

42 Ibid, 145.

43 Although the precarity of his status as such is revealed in small details of his journey, such as his “great difficulty in sitting upon a reindeer,” which he admits “often occasioned me very disagreeable falls.” Ibid, 143.

44 Ides, *Three Years Travels*, 26.

the deep interior of the Eurasian continent, and generally speaking, Europeans discounted such accounts as “simple,” naive or fanciful.<sup>45</sup> Cuvier’s summary dismissal was representative: “None of this,” he declared, “could satisfy an enlightened mind.”<sup>46</sup>

Approached from another angle, though, such beliefs account for the phenomenon of recently deceased bodies of unfamiliar animals, explaining both the state of the animal remains, and the nature of their surroundings: surfacing is a messy business, and the sudden exposures caused by seasonal melting would, indeed, resemble the disturbance caused by vigorous tunnelling or burrowing. Eurocentrism, though, condemned Indigenous logic to mere fancy. Repeatedly surfacing into successive present moments, Indigenous accounts emphasized how to live with frozen mammoths, whether as augurs of future times, or as recently-deceased remains, demonstrating the capacity of these creatures to contain multiple epistemologies and multiple temporalities. Adams’ narrative instability further makes evident the epistemic instability of frozen mammoths and the profound reliance of Western accounts and chronologies on Indigenous knowledge, even as it refuted such interdependency.

## Industrial Mammoths

The Adams Mammoth remained a singular specimen for nearly a century. Despite a handful of reported sightings of similarly preserved creatures in Siberia, only a few other fragments of Pleistocene-era flesh were collected before 1902, when naturalists for what was by then the Russian Imperial Academy of Sciences unearthed the Beresovka Mammoth. This creature, a young male animal, was so spectacularly well-preserved that his excavators were able to partially reconstruct the manner of his death. He was found crumpled forward, his front legs splayed out, his back legs folded under him, and his pelvis broken. Clearly in his “primary position of entombment,”<sup>47</sup> Otto Herz and Eugene Pfizenmeyer, the naturalists for the Russian Academy of Sciences who oversaw the excavation of this animal, were able to infer that he died after falling into a crevasse. So perfectly was the Beresovka Mammoth preserved that time seemed to have stood still since the moment of his death, his last bite of vegetation remaining preserved between his teeth.<sup>48</sup>

In the Beresovka Mammoth, the industrial time of the present and the planetary time of the Pleistocene collided. It was first espied in August 1900 by S. Tarabykin, a Lamut hunter-herder, who noticed its tusks while “chasing

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45 Ibid, 25.

46 Cuvier, “Memoir on the Species,” 22.

47 A common contemporary phrase. Cf. Quackenbush “Alaskan Mammoth Expeditions,” 124.

48 Herz, “Frozen Mammoth in Siberia,” 614.

a deer.”<sup>49</sup> News of the mammoth reached St Petersburg in April of 1901. By May 3, Herz, Pfizenmeyer, and a geologist named Sevastianoff had set off towards the mammoth, and had arrived in Mysova, north of Irkutsk, by August 31.<sup>50</sup> The nearly four-month rail journey was light speed compared with Adams’s years-long journey to reach the mouth of the Lena River via Irkutsk and Yakutsk. In 1901-2, the nearly completed Trans-Siberian railroad expedited both the arrival of collectors and the transport of the mammoth’s remains, allowing unprecedented quantities of the mammoth’s corpse (including its organs, tissue, fat, and blood as well as skin, hide, hair, and skeleton) to be subjected to scientific analysis.

The well-publicized Beresovka Mammoth lent momentum to American efforts to secure a similar specimen. By the turn of the twentieth century, mammoths, mastodons, and other subspecies of extinct Proboscidea had been imbued with nationalist significance for more than a century.<sup>51</sup> And though fossil mammoth and mastodon remains could be found in great abundance throughout North America, frozen specimens remained frustratingly rare in the early twentieth century, eluding emissaries of the US National Museum (Smithsonian) and the American Museum of Natural History (AMNH) for decades. Despite pursuing reports of mammoth carcasses encased in Alaskan ice, neither the Smithsonian nor the AMNH were able to obtain more than a small lump of fat, collected in 1896 (Smithsonian), and several straggly chunks of skin and hair collected for the AMNH in 1908.

At the time, searching for frozen mammoths was an artisanal practice. Connections to elite institutions like the Russian Academy of Sciences, the Smithsonian, or the American Museum did little to increase the likelihood of finding and successfully collecting frozen Pleistocene remains. Though such reports were more frequent in Siberia, before the twentieth century, Russian collectors rarely arrived in time to preserve the fragile remains of frozen mammoths, the primary exception being the Adams Mammoth.<sup>52</sup> All collectors relied on local, often Indigenous people to report sightings. Reports of Alaskan frozen mammoths habitually deployed Indigenous testimony as a mark of authenticity—the word of “an old Indian” conveyed by white settlers or miners—a form of tacit, rhetorical recognition that newcomers relied on Indigenous peoples for valuable knowledge of the territory.<sup>53</sup> And though such reports raised the hopes of museum administrators, American institutions were repeatedly disappointed. Having pursued one such account of “a complete animal, including flesh and hair,” only to find “a skull and tusks,” in 1907 the

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49 Ibid, 612.

50 Ibid, 611.

51 Semonin, *American Monster*.

52 Tammiksaar and Kalling, “Siberian Woolly Mammoths.”

53 For example, Startzman and E.W. Graham to Reed, 30 Dec 1906 (Copy). AMNH Central Archives 590, Box 162, Folder “Alaska Mammoth Exp. 1906.”

head of the USNM declared himself “not further disposed to place confidence in any of these stories.”<sup>54</sup>

Beginning in the 1930s, though, the way institutions prospected for paleontological specimens underwent a set of important changes that, in 1948, produced Effie, the first and—until very recently—the only frozen mammoth collected from the North American Arctic. Lukas Rieppel has documented the close connections between resource mining and palaeontology in the nineteenth century, showing how dinosaur bones were a valuable sideline to the mining industry.<sup>55</sup> Similarly, the Yukon gold rush of the 1890s produced a bump in boney fossils from the Pleistocene era. And while paleontological collecting had long been symbiotic with mining, technological developments in 1930s mining helped to realize American dreams of an Alaskan frozen mammoth.

Strip mining used hydraulic equipment to “systematically expose...acres and acres of surface” by “thaw[ing] and wash[ing] out of the way” surface soil, giving miners access to gold-bearing gravel positioned beneath it. Developed during the California goldrushes in the mid-nineteenth century, by the 1920s gold miners in Alaska were using hydraulic techniques. Strip mining also exposed the fossilized remains of Pleistocene fauna in unprecedented numbers.<sup>56</sup> The AMNH entered into an agreement with the Fairbanks Exploration Company by which the latter would “single out and salvage desirable material” for the Museum as it laid bare huge swaths of Alaskan territory surrounding Fairbanks. Advocates for the Museum celebrated these efforts as an opening of the “vast icebox” of nature,<sup>57</sup> which revealed not only tusks and bones aplenty but, in August 1948, the front half of a baby mammoth, named “Effie” in honor of the mining corporation that facilitated its discovery.<sup>58</sup> These partial remains were a major coup for the Museum. Effie was embalmed locally before flying “air express” back to New York, where she was temporarily displayed in a “Home Freezer...simulat[ing] the condition under which it had been preserved for so many years.”<sup>59</sup> In the present into which Effie emerged, human industry served as a technological proxy for planetary time and temperature; the title of its display, “Nature’s Deep Freeze,” playing on the temporality and temperature of planetary time, while simultaneously celebrating anthropogenic industrial versions as, themselves, natural. Effie’s artificial “deep freeze” reveled triumphally in the accelerated pace of postwar America.

The present into which the hydraulic dredges of the Fairbanks Exploration transposed Effie marked the onset of the Great Acceleration—decades of

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54 Richard Rathbun to H. C. Bumpus, 30 April 1907 (Copy). AMNH Central Archives 590, Box 162, Folder “Alaska Mammoth Exp. 1906.”

55 Rieppel, *Assembling the Dinosaur*.

56 Anthony, “Nature’s Deep Freeze,” 299.

57 *Ibid*, 298.

58 *Ibid*, 299.

59 *Ibid*, 300.

unrivalled widespread growth, expansion, and consumption that followed World War Two, and from which we have perhaps only recently emerged. This moment was undoubtedly an inflection point in human history, and perhaps the history of our planet, hastening the processes of climate change, habitat bifurcation, and biodiversity loss we are witnessing all around us—and accelerating the rate at which frozen remains of Pleistocene creatures emerge from the circumpolar North. And while vested nation states claimed frozen mammoths as national emblems, the accelerating tempo of the present into which these creatures emerged was not partisan. National time failed to fully colonize the temporality, topography, and temperatures of the circumpolar north. In the North American Arctic, the region resisted nationalistic efforts to collect a frozen mammoth until the 1940s. In Siberia, a growing human population energetically enacted human industry,<sup>60</sup> dramatically altering the rate at which frozen mammoths, rhinos, horses and bison were found and collected: between 1949 and 1999, at least thirty-four such specimens were collected from Siberia; in the first two decades of the twenty-first century, as many frozen Pleistocene animals have already emerged as were found throughout the entire course of the twentieth century.

Effie's arrival in 1948, then, was no coincidence. The emergence of a 27,000-year-old creature at the outset of the Great Acceleration marks not only the formal cooperation between mining companies and museums—relationships which persist in various forms to this day—but the collision of temporalities: the planetary time of Effie's preserved present, the accelerating industrial time of the circumpolar north that made possible its excavation, and the excavation of others like it. No longer subject to the ravages of exposure and scavengers, as the Adams Mammoth and other nineteenth-century finds had been, twentieth-century (and more recent) frozen mammoths are subject instead to the sharp cleavages of large-scale equipment. These Pleistocene time-travellers have become creatures of the Anthropocene, arriving ever more frequently.

## Lazarus

The frozen mammoths of the last two hundred years have imbricated temporalities constitutive not only of the planetary pasts that produced them, but the presents into which they emerged, forming unstable epistemologies themselves subject to revision over time. The Adams Mammoth emerged into a moment in which the temporality of the planet was under construction, and when Indigenous epistemologies and temporalities were summarily dismissed, while Effie and its mid-twentieth-century contemporaries surfaced into a dawning Anthropocene marked by the acceleration of the very forms of human industry

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<sup>60</sup> Fein, "Scientific Crude"; Chu, "Encounters with Permafrost"; Demuth, *Floating Coast*.

that facilitated their emergence. Now, the frozen mammoths of the twenty-first century emerge into a present moment marked by climate crisis, where the future itself is contested. Today these creatures are increasingly invoked by de-extinction prognosticators like George Church and Stuart Brand as material for the reconstitution of their own species and the world in which they lived. Mammoths are the proposed keystone of the intertwined projects of de-extinction and paleoecological restoration.<sup>61</sup> Using the gene editing technology, CRISPR, researchers are working to produce mammoth-elephant chimeras by splicing pieces of the woolly mammoth's genome into that of the Asian elephant; while the plant matter found in their intestines furnishes material for the design of the mammoth steppe that will constitute the rewilded circumpolar they'll roam.<sup>62</sup> The stated goal of Nikita and Sergey Zimov's Siberian Pleistocene Park project, already in the works, is to reverse climate change by "slow[ing] the melting of the Arctic permafrost and prevent[ing] a catastrophic global warming feedback loop."<sup>63</sup> Resurrected mammoths are thus conjured to be saviors of our own species and the planet.<sup>64</sup>

This rosy image of "Pleistocene parks" populated by Lazarus-like mammoths is at odds with another (arguably more likely) climate future in which Siberia, stripped of its permafrost by anthropogenic climate change, becomes a bread basket for the eastern hemisphere.<sup>65</sup> De-extinction and the resurrection of the mammoth carry ethical implications, too, that are at odds with recent scholarship calling for new approaches to wildlife management at a moment of mass extinction, an ethics of care that Juno Salazar Parreñas calls "hospice for a dying planet."<sup>66</sup> Such an ethic acknowledges the incalculable losses we, and the life forms all around us, are experiencing, without inflicting further harm upon remnant species and individuals in the name of conservation.

We might, then, consider alternatives to the promise of resurrected mammoths. In June 2022, an employee of Treadstone Mining, working a claim near Dawson City in the Yukon, unearthed the preserved body of a baby mammoth. Remarkably intact, Nun Cho Ga, as she has been named in the Hän language of the Tr'ondëk Hwëch'in First Nation on whose land she was found, is only the second full-bodied baby mammoth ever to be collected, and the first from Canadian territory. Thus replete with scientific significance, she is no less culturally and spiritually significant for the Tr'ondëk Hwëch'in.<sup>67</sup> Nun Cho Ga is more than a symbol of planetary salvation, an object of superstition, or a key to the planetary past. She is an ancestor, a connection to the First

61 Cf. Mezrich, *Woolly*; Shapiro, *How to Clone*. On ecological restoration, see Martin, *Wild by Design*.

62 Zimov, "Pleistocene Park."

63 <https://reviverstore.org/projects/woolly-mammoth/>. Accessed 13 January 2021.

64 Wrigley, "Ice and Ivory."

65 Andersen, "Welcome to Pleistocene Park"; Lustgarten, "How Russia Wins."

66 Parreñas, *Decolonizing Extinction*.

67 Proulx, "Frozen Baby Woolly Mammoth."

Nation's past and a "conduit" to a better future.<sup>68</sup> As Debbie Nagano, the Heritage Director for the Tr'ondëk Hwëch'in, explained in an interview with the Canadian Broadcasting Corporation, the arrival of Nun Cho Ga raised the same questions as would the finding of "a burial of one of our members...it's that close." Connecting past to present, seeing Nun Cho Ga is "almost like one of your ancestors that you're making that connection to," while the Tr'ondëk Hwëch'in hope that the "spectacular" baby mammoth can help "instill more pride within our community so that when the youth do go out on the land, they hold their heads up a little higher."<sup>69</sup>

In the recent surfacing of Nun Cho Ga, Indigenous, industrial, and planetary times are thus refolded into yet another set of configurations. Like Effie, Nun Cho Ga was revealed by the hydraulic tools of gold miners. But unlike Effie, or others of her ilk, in Nun Cho Ga's past, present, and possible futures, Indigenous temporalities, priorities, and desires promise to be as fully considered as those of the scientific establishment and the Canadian state that lays claim to the Yukon Territory. Tr'ondëk Hwëch'in elders convened for a protocol on the day of Nun Cho Ga's arrival, blessing her and wrapping her in a "traditional native blanket" to ensure that her scientific stewards would "look after [her] *good*, in a respectful way," and later performed a ceremonial blessing at the site at which she was found.<sup>70</sup> The scientists involved in Nun Cho Ga's collection agree that "there is no immediate rush," in the words of Jeff Bond, the head of surficial geology with the Yukon Geological Survey, and that "it's probably best for Nun Cho Ga, too, to take some time and just reflect on who she is and make the best decisions."<sup>71</sup>

Over the last two centuries, as human presence and activity in the North increases, and as permafrost melts due to climate change, what these frozen mammoths signify to humans has changed dramatically. From the most elusive of scientific specimens, frozen mammoths and their Pleistocene contemporaries now emerge seasonally from softening permafrost and have become bellwethers for a warming planet. The temporal configurations invested in their remains, and their relationship to temperature have also shifted. Whereas the first frozen mammoths were enrolled into debates over the geological past of the planet, the stakes of contemporary finds play out according to our contested era of the human, the Anthropocene, and its possible futures. Once indicia of the Earth's hidden history, frozen mammoths now signal not only the consequences of anthropogenic climate change, but for some, a salvatory future that invokes the planetary past. Throughout, Indigenous people have been central, albeit often overlooked, sources of insight and knowledge. As the cold that preserved these animal bodies, rendering them visible to the presents

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68 Galloway, "Symbol of Hope."

69 Ibid.

70 Ibid.

71 Ibid.

of the last two centuries and permitting them to bear on debates about the temporality of the Earth, itself becomes endangered,<sup>72</sup> the industrial temporalities that enable the collection of frozen mammoths are less celebrated, scientific concerns take less precedent, and increasingly Indigenous priorities are considered paramount in the future of these Pleistocene time travellers. Frozen mammoths continue to fold and refold intersecting temporalities in their material remains, shaping and reshaping the understandings of past, present, and future among those around them.

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72 Carey, "The History of Ice."



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