Neolithic Props: A Case for Scenographic Materiality

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A geological sensibility has been gaining ground in architecture lately, from the authored rock pile to the megalithic stack. Some architects are giving form to the precarious physics of heavy things;[1] some are playing up the material qualities of the excavated or the rough;[2] some are mobilizing a stratigraphic reference to deep time.[3] While these tendencies might seem to add up to a common underlying motive, they represent a range of design practices with very different aims.

Ensamble Studio, for example, translates geological processes into methods of assembly, extending hands-on material experimentation to the scale of architecture. Practices such as Design Earth or NEMESTUDIO pursue the geological as a new scale of design speculation, and in contrast to the Ensamble Studio's experiments in construction, these projects remain within the realm of representation where multiple scales and information come together.

Given this divergence, this essay does not set out to collect various rock projects under a unified theory of the geologic in contemporary architecture. Instead, I want to erect a kind of experimental scaffolding that might furnish us with terms and criteria for understanding more nuanced distinctions in the conceptual, technical, and aesthetic choices behind various architectural appropriations of the geologic. To do this, I'll start at the turbulent beginnings of the modern science of geology when Scottish naturalist Charles Lyell appropriated a piece of architecture as geologic evidence.

Lyell's first and most significant contribution to the emerging field of modern geology was to substantiate his predecessor James Hutton's gradualist theories of planetary change, challenging the cataclysmic arguments that dominated early 19th century thought.[4] Lyell also addressed what had been a methodological challenge for the discipline: how to verify supposed causes of geologic change that occurred in the distant past. The subtitle of Lyell's *Principles of Geology*, first published in 1830, summarizes this objective: "Being an attempt to explain the former changes of the earth's surface by reference to causes now in operation." In his multi-volume book, Lyell claimed that to understand these unobservable phenomena, one could study analogous processes underway in present time. And given the uniform action of these forces of change over the earth's history, one's current moment offers a glimpse into all previous epochs. Critical of the "armchair speculations" of theoretical geologists whose work guided the field up to then, Lyell argued for empirical observations as the basis for a modern earth science.[5]

Many specifics of Lyell's theories have since been updated or contested. However, his insistence on accessing earth's distant past via the present might offer some guidance for understanding the nested temporalities that are possible in architecture. This paper discusses the role Lyell's architectural appropriation played in his work in order to formulate possible directions for architecture as a medium between geologic time and contemporary experience. Another ambition for this paper is to use this brief glimpse into geology's foundations to help contextualize the influence of Anthropocene theories on architecture discourse and production. At the end of the essay, I will briefly raise some recent criticisms of this theory to provide a background for current design work.

PILLARS OF SERAPIS

In 1830, Charles Lyell published the first volume of his *Principles of Geology*, which consolidated years of fieldwork into a substantial body of evidence for what later came to be known as the theory of uniformity. The frontispiece to this first edition is an engraving (Figure 01) of an architectural ruin, the misidentified "Temple" of Serapis on the coastline in Puzuolli, Italy, now known to have been a Roman market. The caption reads: "Present State of the Temple of Serapis at Puzzuoli." The drawing frames the three standing columns of this Roman structure, with the reflective surface of water in the foreground, and the hills of Campania behind. Two human figures populate the drawing: one standing nearby the leftmost column, giving scale to the critical dimensions Lyell's reader will soon come to learn. The second figure is perched on a dry mound gazing back at the scene. Lyell's book features detailed accounts of various topographic features throughout western Europe and the American continents, so it is striking that the prominent illustration is not an extraordinary landform or stone specimen, but an architectural artifact made of stone.

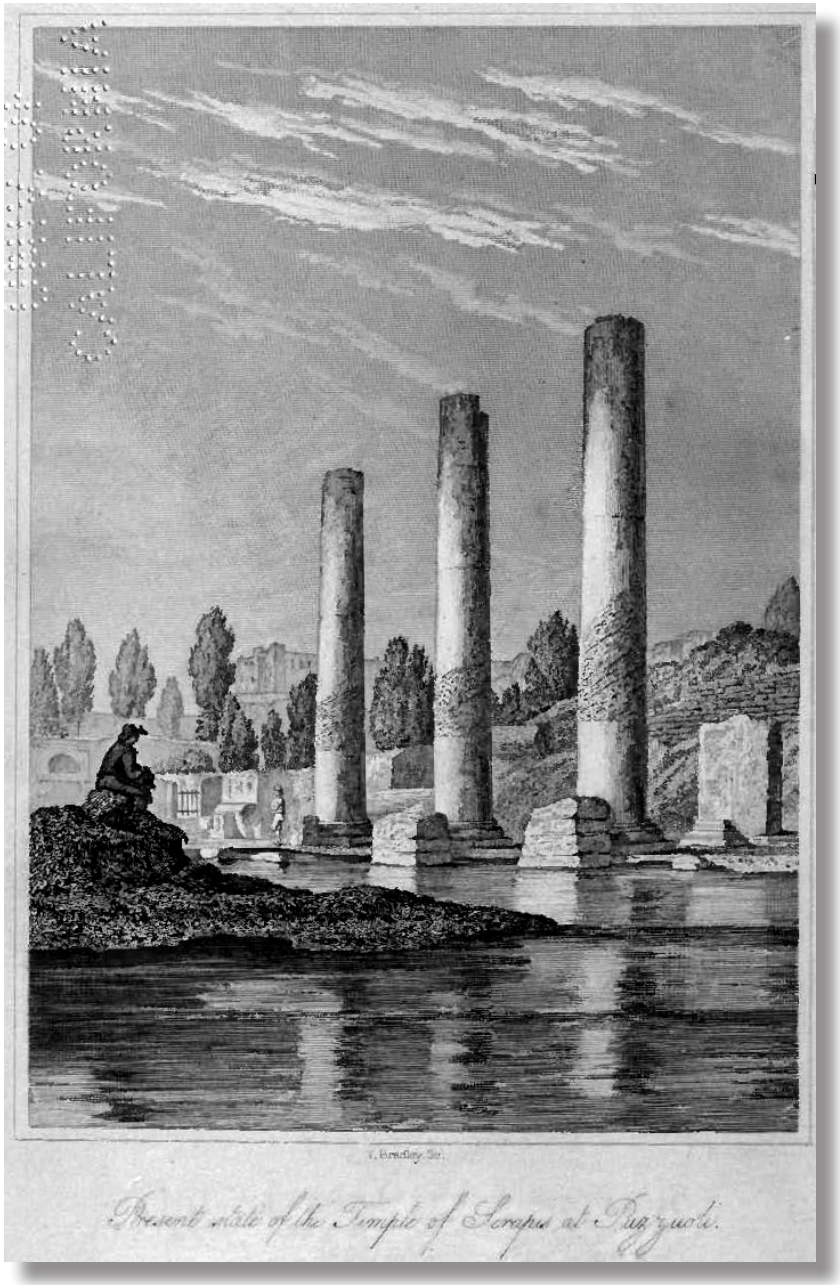

Figure 1: Charles Lyell, frontispiece to the first edition of *Principles of Geology,* Vol.1 (1830).

Why did Lyell single out the columns of Puzuolli to preface not just the first edition, but all subsequent editions of the book? (There were 11 editions in his lifetime with at least 3 versions of this scene.) A simple explanation is that the significance of this "temple" for Lyell and other naturalists centers on that swath of texture stretching across all three columns. These small perforations are boreholes made by lithophaga, or "rock-eating" clams, some of which remain fossilized in the holes (Figure 2). The top of this perforated zone measured 23 feet above the high tide mark at the time of Lyell's observations. Considered alongside incremental changes in mean sea level recorded along the coast, Lyell extrapolated a longer period of the ground beneath the "temple" subsiding and swelling up again. The columns provided visible proof of his theory: that gradual geologic change is taking place within modern history.

As a more complicated, unauthorized version, I will pose four hypotheses for the significance of this architectural scene to Lyell's argumentation. Each hypothesis is a speculation on the scientific and cultural circumstances behind Lyell's decision to appropriate the Roman ruin at Puzoulli as an icon for his life's work. Each hypothesis also suggests parallel motivations for architecture to cultivate a geologic sensibility—less as a stylistic inclination and more as a discursive tool. These hypotheses are not equal in length or importance. Again, the aim here is not to be comprehensive but to build up a critical apparatus for discerning a more differentiated field of "neo-lithic" architecture.

HYPOTHESIS 1: MATERIAL HISTORY

In the ruins of Puzzuoli, Lyell had selected a convenient timestamp. Archaeologists exhumed the ruins from a muddy embankment along the Mediterranean in 1749[7] (about 80 years before Lyell's first visit there). Inscriptions dedicating the complex to leaders of the Roman Empire dated the building to the second century A.D. On a geological scale of time, the intervening 1500 years between the building's construction and its excavation seems trivial. But these events bracketed the period in which the land apparently moved 23 feet below the highwater mark, and back up again. Of course, this conclusion relied on a couple more pieces of the timeline to add up. It seemed safe to assume, for example, that the clams had not already infested the marble the Romans selected to build their temple (or market building). And given the scientific community's knowledge of contemporary mollusk species versus extinct ones, this exact species of lithophaga was one that still populated the shallow waters of the nearby Mediterranean—but notably only clear water. And this is another piece of the timeline: that the smooth surfaces from the base of the columns up to about 12' must have been buried in volcanic ash during the eruption of Solfatara, a nearby volcano. Lyell wrote "The pumice and other matter ejected from that volcano might have fallen in heavy showers into the sea, and would thus immediately have covered up the lower part of the columns."[8]

The volcano will return to our consideration later on, but the materially evidenced timeline is important. Here, the architecture of the "temple" stands in for a near-distant past, a human history inscribed within a geologic one. The surface variations in the stone point to a time remote enough for the building to have undergone various actions of biological and geological ruination, but close enough for these processes to be understood as still operating in the present. Assembling this timeline not only requires a *literal* appraisal of the material components (rock, mollusk, seawater…), their qualities (smooth, dry, perforated...), and dimensions, but it also requires an *imaginative* reconstruction of events, a re-telling of the architecture's *material history*.

HYPOTHESIS 2: EXPANDED AUTHORSHIP

Lyell's timeline is necessarily much more meticulous than what I have recounted here, and a pragmatic reason for his focus on these ruins was the sheer amount of available data. Several other naturalists, geologists, and a local architect were engaged in taking measurements of the water level at the ruins and keeping records of the mean sea level at this coast over many years. Charles Babbage, inventor of the difference engine and close friend Lyell's was among them, and many of his observations furnished Lyell with pieces of the sequence.[9]

The misidentified Temple of Serapis was a stop on the European Grand Tour for 19th century men and women of learning, and it was already part of Lyell's itinerary well before he arrived in southern Italy. He wrote to a colleague from southern France to ask for recommendations of sites to visit that would support his research on the gradual movements of strata.

> "I should therefore be anxious to examine such parts of the coast of Sicily or Calabria as afforded evidence of elevation or subsidence, either by the aid of buildings, &c., raised or sunk, as at Baiae, Temple of Serapis (if the latter be not otherwise explicable), or by help of modern species of shells lifted up, or sea beaches."[10]

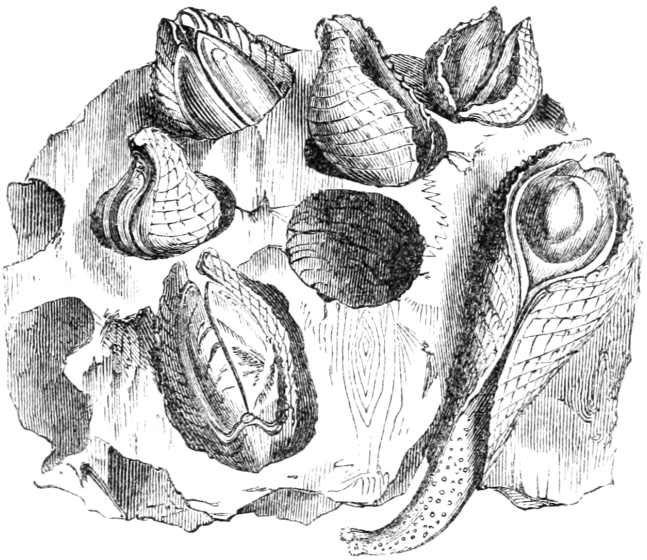

Figure 2: "Pholas," from Philip Henry Gosse, *Natural History: Mollusca* (1854).

Figure 3: Joseph Wright of Derby, *Vesuvius from Portici* (1774-1776)

Clearly this architectural artifact already belonged to a community of interested observers, and even after publishing the *Principles*,

Lyell solicited reports from others on the slow encroachment of seawater back into the ruin as the ground continued to subside. This was good news for Lyell, since the even continuation of past forces affirmed his uniformitarian views.

The value of this classical work of architecture to this community was not in its preservation or restoration; rather, its instability, as meticulously recorded by a network of observers, rendered visible the slow actions of various unseen forces. This expanded field of authors and environmental agents also led to different narratives. For example, the same fossilized clams found high up a coastal promontory were to Lyell proof of recent changes of elevation. To some of his contemporaries, however, the same clams were proof that the ancient Romans carried shells up from the sea to lay foundations for their roads and buildings.

HYPOTHESIS 3: IMAGE CURRENCY

The next hypothesis distinguishes between the "temple of Serapis" as a place and as a representation. As a geographic location, Pozzuoli was a short detour from the zone of active and inactive volcanoes inland. Naples, Herculaneum, Pompeii are nearby. Volcanic formations were a primary focus for Lyell's trip in 1828,[11] when he made his way from southern France to Sicily. Catastrophism was the leading geological theory at this time, which claimed that major events like volcanic eruptions and floods were the sole agent of change to the earth's surface and environments. The gradualist in Lyell sought to shift the focus from sudden and sporadic events to the ongoing effects of related forces such as subsurface heat, erosion, sedimentation, and so on.[12] To win over generations of emerging geologists, he had to compete with the sublime imagery of explosive peaks and fiery lava flows, as well as their implicit reference to an all-powerful creative force (Figure 3).

While less spectacular, Lyell's ruin also echoed the tradition of the sublime – the juxtaposition of human figure, ruin, landscape. However, in place of vast, unknowable nature, this drawing gives us

an informed encounter with visual data. Reprinted and reproduced in nearly every treatise, textbook, and website that mentions Lyell's name, the drawing has the currency of an image (Figure 04).

The image does not stand in for viewing the physical artifacts themselves. It does other work in circulating information, ideas and sentiments that change according to contexts and audiences.

HYPOTHESIS 4: SCENOGRAPHIC MATERIALITY

Trained as a lawyer before pursuing geology, Lyell is very careful and persuasive in crafting his language to communicate his observations, as if conferring his ability to read earth's deep history in its surface characteristics to the reader—to render his interpretations self-evident. The same can be said about the repeated use of this scene; through its careful representation, the materiality of the perforated rock renders his arguments visual and exceedingly clear. Architecture and site visually merge within a slow-moving topographic event, and you as the author's surrogate observor are there to witness it. This final hypothesis extends from this scenographic relationship with the materiality of the ruin. And by that I don't mean the literal materiality of the perforated rock, but its careful representation: a prop.

As a representation, the scenographic does not distinguish between the physical and the mediated. It instead brings together multiple layers of mediation to place the viewer into a visual and spatial relationship with objects and environments. This means images and materials interact within the same scene, bringing nested histories while remaining open to an expanded authorship of environmental agents and multiple subjects.

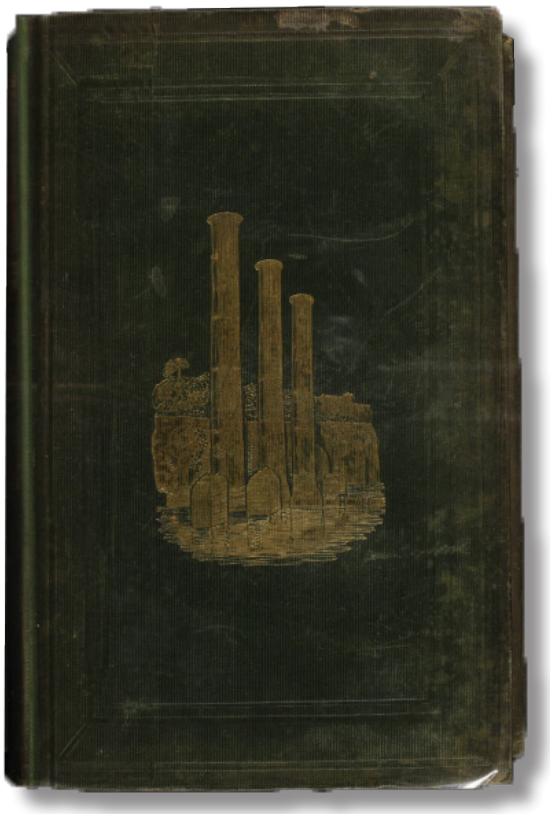

Figure 4. *Principles of Geology,* 11th edition.

HYPOTHESIS 5: IN PLACE OF A CONCLUSION

Not yet a formally recognized epoch, the Anthropocene Age is a popular scientific term that distinguishes the earth's current geologic phase as that which has been irreversibly impacted by the human species. There have been a growing number of criticisms of Anthropocene theory. Elizabeth Povinelli describes the ethical dangers of universalizing the human race as the singular agent of environmental decline, when different populations' share in the causes and the effects of this decline are far from equivalent. Povinelli suggests a politics of (*bios*) or life and (*geos*) non-life, between varied forms of subjectivities and things, living and non-living.[13]

Another criticism that has particular relevance to thinking geologically is the problem of distancing. How can individuals remain enrolled in the day-to-day project of environmentalism when the formidable momentum of humans-as-geologic-force presses on, with or without us? And does that conceptual distance prevent us from seeing the effects and processes of planetary change here and now?

To update Lyell's model of seeing the past through the present requires paying attention to the unevenly distributed material aggregations and cultural sedimentations that define our environments today. The Capitolocene, as Donna Haraway and others have proposed as an alternative to the Anthropocene, is perhaps the better name for this contemporary epoch. I believe a geological sensibility today cannot ignore the material formations of the Capitolocene, such as plastic waste, vacant buildings, and even the proliferation of images as a material condition. These examples here are recent projects that I and my collaborators in T+E+A+M have done that all in some way pursue questions of material, history, environment, and image. We continue to return to what we've been calling a scenographic mode of designing and representing these projects, where reused and recycled material reuse combine with images to suggest an alternate present condition. The ambition (and I don't believe we have reached it yet) is to find other, contemporary subjectivities, to differentiate the many "anthros" of the Anthropocene.

In place of a conclusive endpoint, I will punctuate this with a quote from Lyell's *Principles* that addresses the interactions among vision, knowledge, temporality, and planetary change:

> "A false theory it is well known may render us blind to facts, which are opposed to our prepossessions, or may conceal from us their true import when we behold them. But it is time that the geologist should in some degree overcome those first and natural impressions which induced the poets of old to select the rock as the emblem of firmness—the sea as the image of inconstancy."[14]

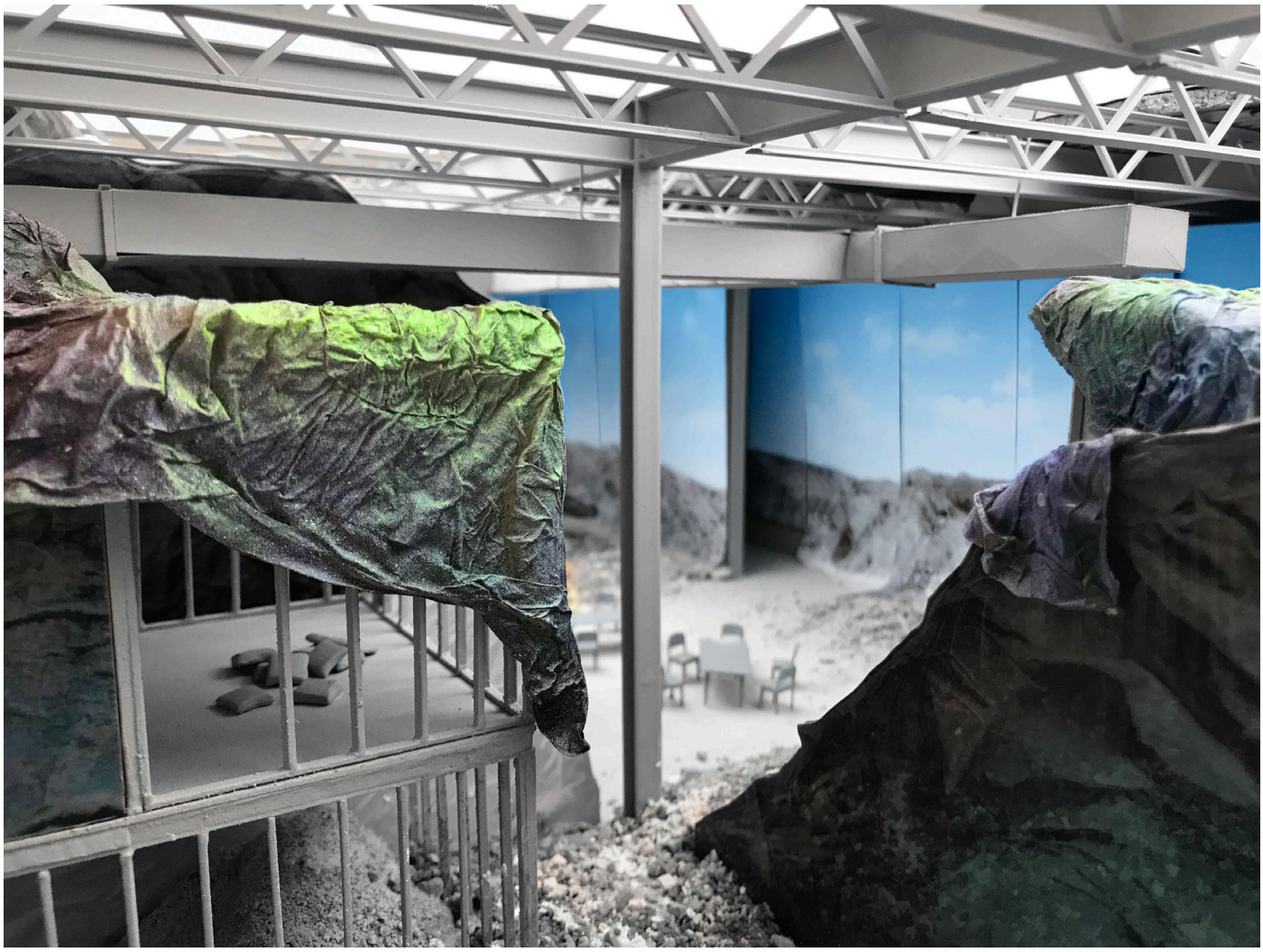

Figure 5. T+E+A+M, *Ghostbox* (2017).

ENDNOTES

1. For example, Ensamble Studio's Beartooth Portal at Tippet Rise Art Center in Montana; https://www.ensamble.info/beartooth-portal or Matter Design's McKnelly Megalith, http://www.matterdesignstudio.com/mcknelly-megalith/
2. For example, Anne Holtrop's Batara models and installation, https://www.archaic-mag.com/magazine/batara-studio-anne-holtrop
3. For example, the practices of Design Earth and NEMESTUDIO both address the geologic through speculative interventions at the planetary scale. See Design Earth's After Oil, http://design-earth.org/projects/after-oil/ and NEMESTUDIO's Museum of Lost Volumes, http://nemestudio.com/projects/museum-of-lost-volumes
4. Kennedy, Barbara. *Inventing the Earth: Ideas on Landscape Development since 1740.* (Malden, Massachusetts: Blackwell Publishing, 2005), 23.
5. Gould, Stephen Jay. "Lyell's Pillars of Wisdom," *Natural History* (Apr. 99, Vol. 108 Issue 3), 28.
6. Lyell, Charles, and G. P Deshayes. *Principles of Geology: Being an Attempt to Explain the Former Changes of the Earth's Surface, by Reference to Causes Now In Operation*. London: J. Murray, 1830.
7. Babbage, Charles. *Observations On the Temple of Serapis At Pozzuoli Near Naples: With an Attempt to Explain the Causes of the Frequent Elevation And Depression of Large Portions of the Earth's Surface In Remote Periods, And to Prove That Those Causes Continue In Action At the Present Time. With a Supplement. Conjectures On the Physical Condition of the Surface of the Moon.* (London, 1847), 3.
8. From Lyell's *Principles*, quoted in Gould, Stephen Jay. "Lyell's Pillars of Wisdom,"32.
9. *Life, Letters and Journals of Sir Charles Lyell.* (J. Murray, 1881) p. 395. http://books.google.com/books?id=XMQQAAAAIAAJ&oe=UTF-8
10. ibid., 201.
11. ibid, 200-201.
12. Gould, "Lyell's Pillars of Wisdom," 25.
13. Povinelli, Elizabeth, "Geontologies: A Requiem to Late Liberalism," Keynote Lecture at HKW Anthropocene Project, January 11, 2013, https://www.youtube.com/watch?v=W6TLlgTg3LQ
14. Lyell, *Principles of Geology,* Vol. 1, 459.