Earth-O-Meter: Color Studies Ochre

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Ochre is always in a state of becoming—becoming color, becoming blood. Ancient, stellar death becoming current, terrestrial life; geological memory becoming future technology. Humans have evolved with Ochre: a polyphonic *being* threading iron though our bodies, our lands, our cultures, and our knowledge. Among other things, Ochre is iron oxide: a multivalent material combining iron with oxygen in an endless number of geological and biological forms. I relate to Ochre through design research and critical making. Design becomes epistemic tool beyond aesthetic representation.

I join a body of academic and community scholars around the globe who think with Ochre from a variety of disciplines. How have we evolved through and with Ochre? What future does Ochre bring as art or technology? How can Ochre remediate legacies of extraction? How can we return to the material from our current abstraction and commodification of color? How can we relate to terrestrial beings beyond anonymous resource? How can Ochre reveal plural realities of time and place through erased or forgotten narratives?

This exploration has become the Field Studio Geontological Survey (FSGS), a design research collective assembling and extending Ochre dimensions to expand human/nonhuman inter-subjectivity. The collective is inspired by the United States Geological Survey (USGS), which has surveyed, mapped, and catalogued the U.S.—and the world—extensively and completely, translating earth matter into anonymous "natural" resources. Through its manipulation of geopower, USGS mediates our human relation to the more-than-human. The Geontological Survey diverts USGS tactics—survey, map, catalog, archive—towards a future feminist Ochre imaginary though collective practice in field, community, and studio operations. Ochre bodies, pigments, swatches, and the maps and artifacts produced with/by them, are archived at UnknownProspect.org.

Earth-O-Meter 231101 (see Fig. 1) is assembled with thirty-six Ochres from FSGS Folio 2301,[1] all surveyed in field operations at Temple Mountain Mining District in the San Rafael Swell, Utah. The swell is a geological anomaly at the edge of the Colorado Plateau, an anticline pushed up 60 million years ago during the Laramide Orogeny. It measures roughly 64

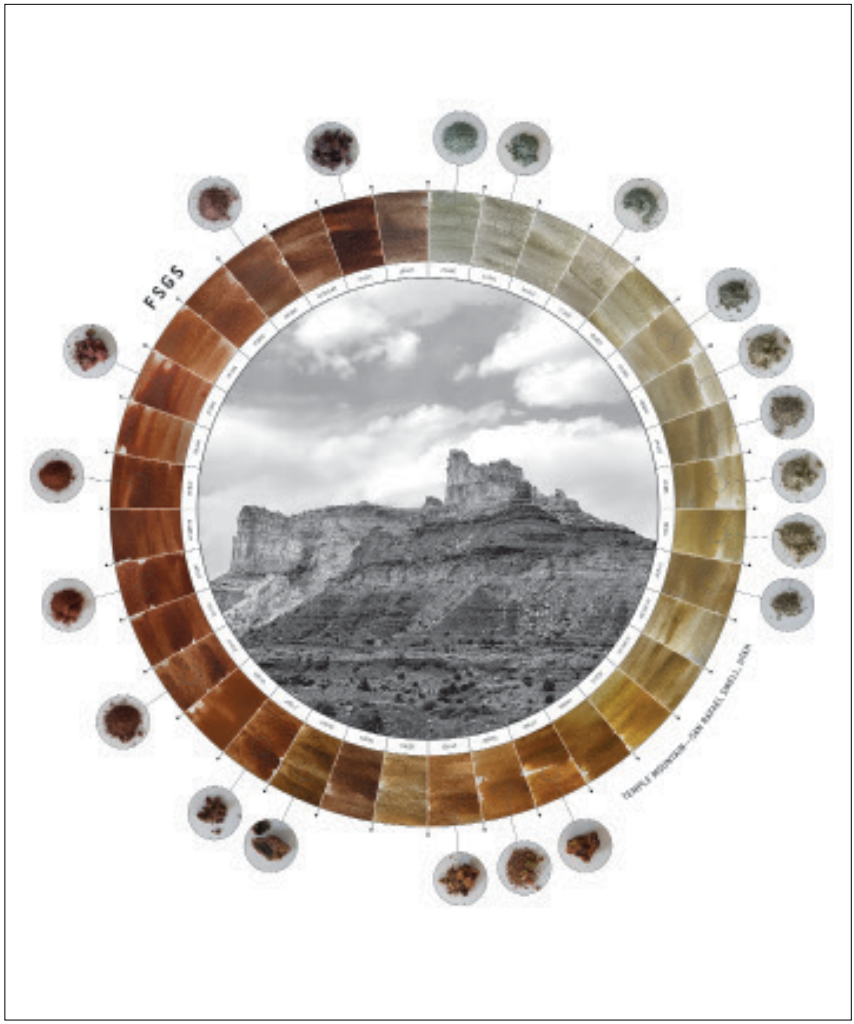

Figure 1: Earth-O-Meter 231101: Ochre bodies from Folio 2301 and their respective swatches made with pigment in gum arabic and water. Full-scale color image and more on Ochres from Folio 2301 can be seen at unknownprospect.org.

km wide and 121 km long. Erosion has revealed millions of years of geological time exposed to the desert sun along the reef edge where so-called Temple Mountain emerges from the southeast flank. An ancient marine environment left us the Chinle Formation in the Triassic Period—a formation marked by colorful instances of oxidation or reduction based on

fluctuating sea levels and water conditions. The meter begins and ends with Ochre that appears "green" (28.006) alongside Ochre that appears "violet" (18.003). They arrive next to one another just as they are found in the landscape: green nestled in violet, reminding us of lapping waters so long ago.

Folio 2301 and the Earth-O-Meter are lines of flight for a material color theory, one in which color is not an abstract, perceived characteristic observed by physics, or a trick debating its place in or out of the mind. Color, or chroma, are material signs in the universe. Folio 2301 archives Ochre bodies from Temple Mountain alongside their respective pigments and the registry of community members who prepared them. The pigments were swatched to produce eight plates containing color studies or "palettes of place." In Ochre, heat moves iron from yellow to red, water differentiates green from violet. Fluctuations of heat, time, pressure, electromagnetic field, and energy all play a part in the matter of color.

While it is inspired by the cyanometer, a tool made to measure the blueness of the sky,[2] the Earth-O-Meter is not a tool for measuring color, or earth-ness. It is a portal and a sign where the energy and intelligence of iron is flowing and evolving—all around us, before us, and after us. The cyanometer is made using Prussian blue, which is an oxidation of ferrous ferrocyanide salts. Prussian blue is known as the "first synthetic pigment." By tinting Prussian blue to create the spectrum of the sky, technics modify iron to produce a divergent color in order to measure an ephemeral effect of atmosphere. The sky's blueness is our experience of a human sensation, an effect of light, reflection; a mere projection or depiction of waves racing in and out of our proximity. As it circles this blue halo, the blood of the earth, iron, reproduces our planetary breath.

Iron needs human hands to urge it to Prussian Blue, but with phosphorus, iron itself brings about vivianite, or Viv, the "diva pigment,"[3] a fugitive born of iron dancing on death. "Fresh" vivianite, upon exhumation, is white. As it is exposed to light, it reveals its blue, and continues to shift through darker shades, sometimes green, to black. In one of their studies, pigment scholars Melonie Ancheta and Heidi Gustafson discovered that blue viv will turn to green if heated. Turn up the temperature and green shifts to yellow. Raise it higher and yellow becomes orange, until higher yet, orange finally reaches red. The color spectrum is not only an abstract theory or phenomenon of perception and lightwaves; it is also the trans/formation[4] of iron—the so-called non-life, geological heart of our earth, blood to our bones.

Like Ochre, Prussian blue is also a medicine. It was discovered by accident from the contamination of blood (unsanctioned iron arrives to change the course of human techne). Iron binds to cyanide to render it

harmless. In one pigment, iron behaves like us (with oxygen); in another, it protects us. Perhaps holding the cyanometer to the sky is a gesture of diplomacy instead of domination. Each meter is a study in color and also a votive, a wish. Not through depiction or representation, but signaling through the Earth's magnetic field, through non-life origins, to geologic intelligence in the pluriverse. Ochre moves us, bends time, heals the sick, shields the sun. Perhaps the visible hues of Ochre(s) are a demonstration of their slow-moving, always-shifting, behind-the-scenes tinkering, prodding, and proving.

Whisper: "Ochre is life."

In assembling Ochre, we learn how it responds to the world—how iron exchanges oxygen and carbon, the product of its respiration building empire after empire. Or, how heat inspires iron to shift hues, expressing a noncontiguous body, a multiplicity in its trans/matter/reality.[5] It's not so much that I am trying to argue that geos are bios, that nonlife is life. I'm suggesting perhaps they are not separate things. Geo is bio is life is nonlife. Perhaps the distinction is not a line; this is what color can show us. Many scholars describe how humans have evolved "through their use of ochre," but I believe we are becoming with Ochre, our ancient blood/iron relative from a common ancestor—not only in the stars, but of the stars. How does one move through the world if geology is not just a matter of anonymous grounds to stand on? If geologic beings are an evolving, agential, extension of our kinds? What worlds are possible? The meter is an aperture for looking.

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Notes

1. The full title is "Folio 2301: Siderophillic Siderophile, Siderophilliac," exhibited in Time Space Existence at Palazzo Mora in Venice, Italy, from May-Nov 2023.
2. Attributed to Horace-Bénédict de Saussure and Alexander von Humboldt.
3. Viv is a nickname given by Melanie Ancheta and Heidi Gustafson.
4. The slash here invokes Karen Barad's trans/materialities.
5. See Barad.

Work Cited

Barad, Karen. "TransMaTerialiTies Trans*/Matter/realities and Queer Political imaginings." *GLQ: A Journal of Lesbian and Gay Studies*, vol. 21, no. 2-3, May 2015, pp. 387-422.