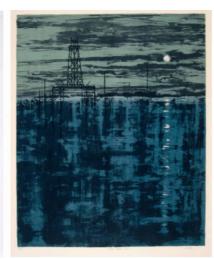
E-Museum Teaching Guide

Extraction









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Introduction

The Extraction e-museum focuses on artworks that depict how industries and individuals subtract materials from the planet. A few of these materials can be considered renewable (for example, some forms of biomass used for energy can be regrown). Some can be made sustainable (for example, a crop of silkworms can be hatched reliably each year). Most are irreversible (for example, minerals and fossil fuels), as well as contribute to long-term and even permanent ecological changes (for example, global climate change). Since the Industrial Revolution of the late eighteenth century and especially since the population explosion of the mid-twentieth century, industrial extractive processes have intensified exponentially, extending deeper into the planet's crust, further beneath its oceans, and more expansively across its surface. Given the scarcity of any nonrenewable or unsustainably managed "natural resource" (a phrase that implies extractive thinking), extractive industries tend to be highly profitable, often proving vital to local and national economies. The materials they extract have also become integral to modern, everyday conveniences in developed nations: they are used in or as building materials, heating and cooling systems, fuel for vehicles, electrical wiring, circuitry, smartphone batteries, and so forth. Consequently, most extractive processes are entangled with histories of exploitation and harm, both human and nonhuman. The quest to extract the planet's materials-a quest driven by investor demand for higher profits, by nation-state demands for resources, and by consumer demand for less expensive goods and faster transportation-has contributed over time to everything from colonialism, imperialism, slavery, war, epidemic, and famine, to deforestation, pollution, desertification, erosion, seismic instability, and climate change.

The Extraction e-museum focuses primarily on unsustainable or irreversible forms of extraction. Given the character of the university's art collection, this e-museum has an especial focus on American mining, fossil fuel production, old-growth logging, and excavation

(for commercial and for military purposes). Given the histories involved, many works in the e-museum date to the Great Acceleration, or the period since the early-to-mid twentieth century when human population growth and activity intensified across a range of measures. Most works in the e-museum highlight processes whereby valuable metals, minerals, rocks, soils, and fuels are extracted from the ground and refined. Some reference particular events, like World War II or the silver "rushes" of the late nineteenth century. The gallery also includes several selections from two different photographic series: mass-produced American stereographs from around 1900 that document the process of silk production and extraction in Japan, and photographs that Berenice Abbott took in the 1940s to capture the industrial processes used to log, transport, and mill old-growth Ponderosa pine forests in northern California.

Though many of the works in the Extraction e-museum have a social documentary quality, each work—documentary or not—implies some kind of stance towards the industries, practices, and environmental impacts that it depicts. We invite you to think critically about how different works use form, content, and style to create these stances, especially when considering their different aims and target audiences.

Keywords: extraction, excavation, mining, logging, drilling, offshore drilling, dredging, whaling, industry, mine, pit, quarry, refinery, well, sawmill, labor, construction, minerals, fossil fuels, coal, oil, silk, gold, silver, zinc, nickel, steel, marble, cement, seashells, industrial sublime, ghost town, trench

Teaching Strategies: General Questions

Individually and collectively, the works in the e-museum can help students think critically about how different artworks represent, comment on, and shape ideas and feelings about:

- Different processes, methods, and technologies of extraction
- Individual, community, and global entanglements with specific elements of the planet
- Ecological impacts of different extractive industries
- Aesthetic genres and conventions that have been developed for representing extraction
- Histories of labor related to extraction
- Histories of gender, class, and race related to extractive industries
- Histories of settlement, colonialism, and imperialism related to extraction

Each of these bulleted points can easily be converted into a general discussion prompt for a specific artwork by prefacing it with the phrase "How does this artwork represent (or comment on, or shape ideas about, or prompt feelings about)...?"



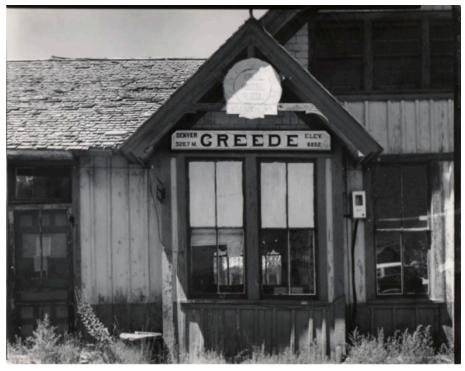
Night Dredging, David Burke [Object 1996.0008]

Ecological and Cultural History

Introducing more specific ecological and cultural context for the kind of extraction that an individual artwork references can transform how students experience the work and provoke thoughtful discussion of how its significance might have changed over time. Two examples:

Todd Webb's photographs Creede Rail Road Station, Colorado [Object 1992.238] and Old Stone, Silver City, Idaho [Object 1981.1972] capture buildings in former silver "boom towns," roughly 70 years after their boom period ended. The wealth to be derived from silver-rich ore deposits in Colorado, Nevada, and Idaho helped fuel westward expansion in the nineteenth century. Silver City, Idaho, sits on the unceded ancestral land of the Bannock and Shosone tribes, while Creede, Colorado, is located on the ancestral summer home of the Ute, Apache, and Pueblo peoples. Silver City was founded in the 1860s after a silver discovery there, growing into a thriving gold- and silver-mining town by the 1880s (pop. 2,500). The town went into a period of slow decline as largescale mining became less profitable, eventually becoming a "ghost town" by the 1940s. Creede, Colorado, still exists today, although both its rise and fall as a mining community were more sudden and dramatic than Silver City. Creede was one of the last silver boom towns, its population exploding by more than 1,600% in just two years between 1889 and 1891, by which time it had over 10,000 residents. A silver panic in 1893, which caused the value of silver to plummet, eventually shuttered silver mining operations in Silver City in 1895. At the time Webb took his photograph of the railway station in Creede, the city's census population was 350. Though a small mining industry still operated there, it was devoted to mining lead and zinc and not silver.

Silver is difficult and expensive to mine because silver-bearing ores are composed predominantly of lead and copper and contain very little silver, thus requiring further extractive processes. Mercury was used historically to extract silver from ore, through a process that released significant mercury emissions into the atmosphere. The planet continues to register the impacts of nineteenth-century silver rushes through the global mercury cycle, wherein mercury in the atmosphere deposits into



Creede Rail Road Station, Colorado, Todd Webb [1992.238]

soil and water and then cycles back into the atmosphere through the burning of plants that have absorbed it, and through evasion in lakes and oceans. Even low-level mercury exposure damages organs and stunts brain development in many mammals, including humans, and scientists have just begun to understand its long-term harmful effects on bird and fish populations. The process of flooding abandoned silver mines with groundwater in the twentieth century also leached toxic metals over time into local water supplies in many historic silver-mining areas, including Creede.

Ecological and Cultural History cont.

Have your students discuss which aspects of these histories Webb's photographs do and don't capture and how that affects their sense of the photographs' significance. What elements of environmental history are and are not made visible in some way in these photographs (considering, too, what each of these buildings was for)? What affective stances do these photographs evoke towards the buildings they depict and the histories tied to them? What elements of the photograph lead you to answer this way?



Old Stone, Silver City, Idaho, Todd Webb [Object 1981.1972]

Ecological and Cultural History cont.

Richard Florsheim's 1978 color lithograph <u>Catalysts</u> [Object 1979.0025] depicts an endless landscape of fluid catalytic cracking reactors at an American petroleum refinery. Fluid catalytic cracking is the process of boiling something until it becomes a vapor and then bringing that vapor into contact with a mineral catalyst that "cracks" off the heavier components of the vapor, leaving behind a vapor that reconstitutes as a lighter liquid when it cools. In the petroleum industry, fluid catalytic cracking helps convert low-grade gasoil (derived from the distillation of crude oil taken from the ground) into a grade of gasoline nearly ready for use as automobile fuel. Fluid catalytic cracking units tend to operate around the clock, their fires making them among the more noticeable features of a petrochemical refinery, especially at night.

Petroleum fluid catalytic cracking is used primarily in the United States, China, India, Japan, and Russia, where the demand for gasoline is high relative to demand for diesel and kerosene (which can be produced without fluid catalytic cracking). "Cracking" is so essential to supplying the United States' high demand for gasoline that it has been credited with enabling the nation's rapid economic development in the twentieth century. The United States has performed more fluid catalytic cracking annually than any other nation every year since World War II. By the early 1990s, products created through fluid catalytic cracking met 17% of all U.S. energy demand.

From an ecological standpoint, the process carries tremendous costs. Even without considering the ecological impacts of crude oil drilling itself, or the fact that the gasoline created through fluid catalytic cracking later creates greenhouse gas emissions when it is burned as fuel, fluid catalytic cracking units generate substantial and harmful emissions. Since the Clean Air Act passed in 1970, catalytic cracking has been subject to strict regulation in the United States, though it continues to be the largest contributor to air pollution within any refinery that employs the process. Cracking releases sulfur oxides into the atmosphere, which contribute



Catalysts, Richard Florsheim [Object 1979.0025]

to global warming, acid rain, haze, smog, and, in humans, respiratory problems. A 2020 NIH study also found a higher incidence of several cancer types among communities living in proximity to refineries that use catalytic cracking units. The large quantities of solid minerals used as catalysts in fluid catalytic cracking units (minerals acquired through extractive mining practices that carry their own environmental impacts) require replacement every few years, and, once spent, are a form of toxic waste replete with heavy metals that can contaminate soil and water if landfilled. The petroleum industry continues to try to develop ways to recycle spent catalysts.

Have your students discuss the ways that Florsheim's image (created less than a decade after the passage of the Clean Air Act) engages with different aspects of the ecological significance of petroleum catalytic cracking. What commentaries do they see the image making and/or affective responses do they see it trying to evoke? How so? What time of day do they think the image is capturing? How does that matter to their response? What sort of vantage point does the image adopt, and how does that matter to students' sense of the reactions the image seems to be trying to evoke? What are some other ways of representing catalytic cracking that might produce different kinds of ecological commentaries or affective responses?

Artist, Artistic Process, and Audience

You can also ask your students more directed questions based on biographical information about the artist, information about the methods and techniques used in creating the artwork, or information about the audiences for which a given artwork was created. Two examples:

American illustrator Mary Petty's watercolor and ink <u>cover art for</u> the September 12, 1953, issue of *The New Yorker* [Object 1979.0715] depicts a well-to-do woman in the bedroom of her New York City home, unpacking seashells she acquired while traveling. Petty, a prolific illustrator, contributed 38 covers and 272 cartoons to *The New Yorker* during her successful four-decade career. Born into a middle-class family, Petty's illustrations often lampoon the behaviors, pretensions, foibles, and fussy decorating tastes of wealthy and somewhat dull New York City elites, people who often seem in her images like residual holdovers from an earlier historical era. While her cartoons punch upwards, they are rarely mean.

When this cover art appeared in 1953, commercial air travel was rapidly becoming mainstream among the wealthy (in relative terms, airline tickets cost nearly five times what they do today). One effect of the new culture of commercial airline transportation was that residents of the Global North more than ever before began looking to the tropics and to beaches for vacations. Seashells became standard souvenirs of such vacations, to the point that various studies have linked precipitous declines in the abundance of seashells on tropical beaches in part to the rise of modern beach tourism. Seashells are key components of marine ecosystems, both helping prevent erosion and contributing to biodiversity by providing homes, temporary shelter, or attachment sites for marine flora and fauna. Animal populations, including certain fish, that rely on seashells to avoid predators have declined precipitously in various marine areas since the late twentieth century. In the twenty-first century, several national governments in tropical nations have made it illegal to remove specific varieties of shells from their beaches, and many governments prohibit the collecting of shells that have creatures already living in them.

Have your students discuss how the different components of Petty's identity—race, class, nationality, gender—factor into the commentaries they see her cartoon making on the extractive practice of seashell collecting. To what extent do they regard the commentary as an ecological one and to what extent do they regard it as a social one? What details in the cartoon contribute to how they answer this question?



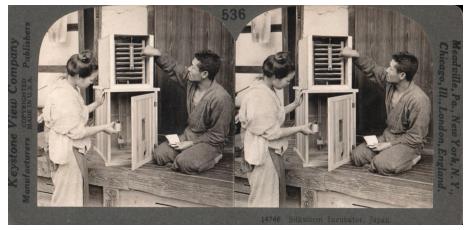
[Unpacking seashells], Mary Petty [Object 1979.0715]

Artist, Artistic Process, and Audience cont.

The Extraction e-museum includes four stereographs made around 1900 by the Keystone View Company, an American firm devoted to mass-producing stereographs. Part of a larger series of about a dozen images, theydepict laborers in Japan engaging in different stages of the silk-making process: tending an incubator used to hatch silkworm eggs [Object 1987.270], creating nests for silk cocoons [Object 1987.266], feeding mulberry leaves to silkworms [Object 1987.271], and weaving extracted silk fibers into fabric in a textile factory [Object 1997.0269].

A stereograph is an immersive media form that consists of paired photographs of the same scene, taken from 2-3 inches apart, or roughly the distance between a human being's eyes. When viewers look at a stereograph through a stereoscope, an optical instrument that artificially separates their left and right eyes' fields of vision, the paired photographs appear to fuse into a single three-dimensional image. Nearly every middle-class and upper-class American household owned a stereoscope by 1900. The Keystone Company marketed its stereographs as illustrative educational tools, as entertainment, and as means of armchair travel. Stereoscope use also afforded an education in how binocular vision creates three dimensional sight (many stereoscopes were packaged for sale with accompanying scientific treatises on optical science).

One thing to have your students think about is how knowing the target audience for these stereographs (i.e., American schools and households) affects how they interpret these images of silk extraction. What kinds of education about silk extraction do these images offer, and with what potential effects? How might looking at images like these have shaped or reshaped their viewers' relationship to Japanese silk or Japanese silk production? What does and doesn't appear in the various images, and how does this matter to thinking about such questions? How does viewing these scenes in three dimensions (through a stereoscope) as



<u>Silkworm Incubator, Japan</u>, unidentified photographer for the Keystone View Company [Object 1987.270]



Making Nests for the Silkworms, Japan, unidentified photographer for the Keystone View Company [Object 1987.266]

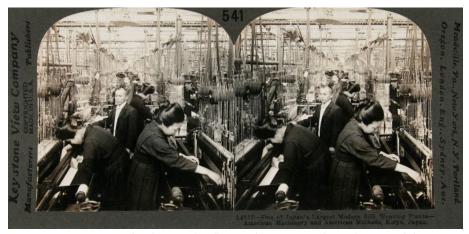
Artist, Artistic Process, and Audience cont.

opposed to looking at the same scenes in two-dimensional photographs potentially matter to thinking about such questions?

Silk cultivation involves raising huge quantities of live silkworms (technically, caterpillars) from eggs until they spin cocoons, which are then harvested and sold to silk producers. Silk producers soak the cocoons in hot water to loosen the long silk fibers nested in the inner portion of the cocoon, which are then wound into thread and reeled onto spools. However, the act of dropping silkworm cocoons into hot water (thereby killing the live silkworm and loosening the cocoon's silk fibers) is not documented anywhere in these stereographs—or in the broader series from which they are excerpted.). How does the fact that this part of the extractive process gets omitted matter to the ways in which the stereographs shape viewers' relationships to or attitudes towards silk?



<u>Feeding Mulberry Leaves to the Voracious Young Silk Worms, Japan,</u> unidentified photographer for the Keystone View Company [Object 1987.271]



One of Iapan's Largest Modern Silk Weaving Plants - American Machinery and American Methods, Kiryu, Japan, unidentified photographer for the Keystone View Company [Object 1997.0269]

Visual Analysis

Any of the above approaches can be combined with more targeted questions about elements of form, composition, color, or style, based on student contributions to discussion. For example:

- How does the artist's chosen medium (painting, print, photograph, drawing, sculpture, etc) and material (paint, wood, metal, ceramic, etc.) shape your experience of the artwork and the ideas it communicates? Why might the artist have chosen this particular medium or materials?
- How do the style and colors of this work factor into the way that you're experiencing it as an image that codes what it is depicting positively (or negatively)? How might a different style or a different color scheme for the exact same composition have contributed to a different affective experience than the one you're articulating? To what extent would you characterize its colors as "natural" or "unnatural" in context, and how does that matter to your response?"
- What decisions do you see this artist making about what to include and not to include in the image? What about the angle or perspective they adopt in the image? How do these compositional choices contribute to the kind of ecological statement you see the artwork making (or failing to make) about the aspects of extraction it depicts? Specific to photographs, what things in the artwork seem beyond the artist's control and how do they matter? How is the subject of the photograph also one of its authors?
- There is a long tradition in art of creating works that try to activate an experience of "the sublime," or a sense of being pleasurably overwhelmed or awed, in relation to natural landscapes (traditional subjects for such art include massive mountains and plunging waterfalls). Art historians refer to depictions of industry and manufacturing that do the same as the "industrial sublime." Would you characterize the image of extraction in this work as an instance of "the industrial sublime"? Even when the image seemingly tries to make what it depicts "ugly," does it also seem to be trying to overwhelm the viewer or make the viewer experience pleasure or awe? How does this matter to thinking about the work's commentaries on extraction? What are alternatives to the "industrial sublime" for engaging with different extractive processes and their ecological significance?
- How do the figures matter to how you are interpreting this artwork's ecological project or significance? What about the background? The relation between the two? In the case of works that have multiple figures, what different functions do these figures serve? Or what different relational vectors to other figures, or to their surroundings, do they establish?
- Are there any visual elements of this artwork that seem to function symbolically?



Coal Miners, Alabama, Howard Cook [Object 1964.802]

Pairings and Groupings

Many of the works the "Extraction" e-museum make for critically provocative pairings or groups. Some of our suggested groupings for discussion include:

- **Petroleum extraction and refining:** Richard Florsheim's lithographs <u>Explorers</u> [Object 1979.0027], <u>Offshore Rig</u> [Object 1977.124], and <u>Catalysts</u> [Object 1979.0025]; Terry Haass's print <u>Oil Well 120</u> [Object 1958.17]; and the advertising agency <u>animation still of an offshore Exxon oil rig</u> pumping crude oil into a cargo ship [Object 1994.525]
- Logging: unidentified artist's photograph [Bamboo floating downriver] [Object 1995.0580]; unidentified artist's stereograph Splitting Bamboo [Object 1992.634]; Harry Mills Walcott's painting [Woodcutter removing something from his shoe] [Object 1990.207]; Berenice Abbott's photograph Lumber Road, Great Northern Paper Company [Object 1981.2442], and her photographs of old-growth Ponderosa pines in northern California being felled [Object 1981.2371], measured [1981.2319], floated to a sawmill [Object 1981.2329], milled into paneling sheets [Object 1981.2689], and stacked for shipping [Object 1981.2321]; Todd Webb's photograph of hardwood logging in Ghana [Object 1981.2097]; and Charles E. Martin's cover illustration for The New Yorker of Christmas trees being transported [Object 1967.1096]
- American coal mining and miners during the Great Depression: Seth Hoffman's lithograph <u>Coal</u> [Object 2011.0107]; Howard Cook's painting <u>Coal Miners, Alabama</u> [Object 1964.802]; Berenice Abbott's photograph <u>Coal Miners, Jenkins, Kentucky</u> [Object 1981.2666]; and Harry Gottlieb's lithographs <u>Coal Mine Country</u> [Object 1966.2104] and <u>Coal Pickers</u> [Object 1966.2108]
- Boomtowns and ghost towns: Frederic Whitaker's painting <u>Memento of the Gold Rush Era</u> [Object 1980.465]; Todd Webb's photographs of abandoned buildings from nineteenth-century silver rushes in <u>Creede, Colorado</u> [1992.238] and <u>Silver City, Idaho</u> [Object 1981.1972]; and Frederick Montague Charman's painting <u>Central City, Denver, Colorado, U.S.A.</u> [Object 2012.0223]
- Heavy metal extraction: Harry Gottlieb's lithograph <u>Zinc Plant</u> [Object 1966.2100]; W. Eugene Smith's photographs <u>Men Working –</u>
 <u>International Nickel</u> [Object 1984.134] and <u>Distant View of the International Nickel Plant</u> [Object 1984.133]; and Richard Florsheim's lithograph <u>Steel Mills</u> [Object 1967.730]
- Building/infrastructure excavation and dregdging: unidentified artist's engraving New York Incidents in the Construction by Negro Labor, of the West Shore Railway, Along the Hudson [Object 2019.0121]; Berenice Abbott's photographs of excavations to build New York City's Rockefeller Center [Object 1981.2725 and 1981.2405]; Pablo O'Higgins's lithograph Brick Maker [Object 2014.0020]; David Burke's silkscreen Night Dredging [Object 1996.0008]; Melody Vaughn's lithograph Earth Pushers [Object 2019.0130.12]; and Nick Brandt's photograph Road Junction with Qumquat & Family [Object 2022.0088]
- Ouarrying: Bolton Coit Brown's lithograph <u>Upper Quarry</u> [Object 1957.062]; Reginald Marsh's etching <u>The Drillers</u> [Object 1964.071]; Harry Gottlieb's lithograph <u>Cement Piles</u> [Object 1966.2109]; Frederic Whitaker's 1940 <u>painting of a landscape with a steam shovel</u> [Object 2000.0025]; Rudolf Kugler's etching <u>Marble Quarry</u> [Object 1959.052]; and Berenice Abbott's photograph <u>Granite quarry at Stonington, Maine</u> [Object 1981.2465]
- Russian wartime excavation/blasting: Underwood & Underwood stereograph of an <u>Explosion of a Russian Earth-Mine</u> [Object 1992.656]; and Dmitri Baltermants's photographs *In the Foxholes* [Object 2021.0393] and *In the Trenches* [Object 2021.0375]

Pairings and Groupings cont.

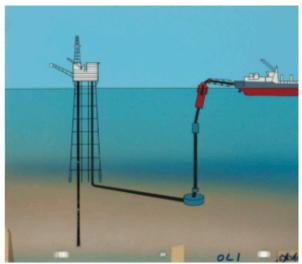
- Silk extraction: unidentified artist's photograph of a Japanese <u>Cocoon Merchant</u> [Object 1995.0678]; Keystone View Company stereographs <u>Silkworm Incubator</u>, Japan [Object 1987.270], <u>Making Nests for the Silkworms</u>, Japan [Object 1987.266], <u>Feeding Mulberry Leaves to the Voracious Young Silk Worms</u>, Japan [Object 1987.271]; and <u>One of Japan's Largest Modern Silk Weaving Plants American Machinery and American Methods</u>, <u>Kiryu, Japan</u> [1997.0269]
- Shell collecting: Utamaro's woodcut <u>Shell Divers Triptych Woman</u> [Object 1967.1691]; unidentified artist's photograph <u>Picking up shells, near Yokohama</u> [Object 1996.0408]; Mary Petty's watercolor and ink cover art for *The New Yorker* [Unpacking seashells] [Object 1979.0715]; and Olivia Parker's photograph <u>Whelks</u> [Object 2007.0021.01]
- o **The industrial sublime:** Seth Hoffman's lithograph <u>Coal</u> [Object 2011.0107]; Berenice Abbott's photographs of building Rockefeller Center [Object 1981.2725 and 1981.2405]; W. Eugene Smith's photograph <u>Men Working International Nickel</u> [Object 1984.134]; Richard Florsheim's lithographs <u>Steel Mills</u> [Object 1967.730] and <u>Catalysts</u> [Object 1979.0025]; and Nick Brandt's photograph <u>Road Junction with Qumquat & Family</u> [Object 2022.0088]
- Excavation and mining labor: Jacques Milbert's lithograph <u>Coal-Mine of Treuil</u> [Object 1994.002]; unidentified artist's engraving <u>New York Incidents in the Construction by Negro Labor, of the West Shore Railway, Along the Hudson</u> [Object 2019.0121]; Bolton Coit Brown's lithograph <u>Upper Quarry</u> [Object 1957.062]; Reginald Marsh's etching <u>The Drillers</u> [Object 1964.071]; Howard Cook's painting <u>Coal Miners, Alabama</u> [Object 1964.802]; Berenice Abbott's photograph <u>Coal Miners, Jenkins, Kentucky</u> [Object 1981.2666]; Harry Gottlieb's lithograph <u>Coal Pickers</u> [Object 1966.2108]; Boris Artzybasheff's drawing <u>Ladder Drilling, Atlas COPCO, No. 4</u> [Object 1965.1084]; and W. Eugene Smith's photograph <u>Men Working International Nickel</u> [Object 1984.134].







Explorers, Richard Florsheim [Object 1979.0027]



Exxon, unidentified artist [Object 1994.525]

Assignments and Further Resources

For general assignments related to this and other e-museums, consult "Art, Ecology, and Climate E-Museums: A Teaching Guide." You can access the guide via the Project's webpage (under the "Learn" pulldown menu on the Syracuse University Art Museum's website).

Additional context on topics relevant to this e-museum can be found in the teaching guides for other e-museums created as part of the Art, Ecology, and Climate Project. For the following topics, consult the contextual writeups on the following artworks in the relevant AEC Project teaching guide on the Project's webpage. The guide is listed in parentheses after the artwork

Coal mining:

Harry Gottlieb, <u>Bootleg Mining</u> (lithograph, 1937; American) (Environmental Justice)

Petroleum extraction:

Ed Kashi, OKRIKA, NIGERIA | 2004 (photograph, 2004; American) (Entanglement)

Ron Kleeman, *Gas Line* (screenprint, 1979; American) (The Anthropocene)

Petrochemical industries:

W. Eugene Smith's <u>View of Monsanto Chemical Plant</u>, <u>Chemical Workers at Monsanto</u>, and <u>Mound of a Coarse Chemical Material</u> (photographs, 1953; American) (Pollution and Contamination)

- Semi-precious stone mining: unidentified artist, [Carved mountain landscape with monks] (jade sculpture, 20th century; Chinese)
 (Environmentalisms)
- **Silk extraction:** [Carpet with hunting scene] (textile, 1960; Iranian) (Materials)

Much more artwork related to extraction can be found throughout the Art, Ecology, and Climate e-museums, including "Power and Energy," "Pollution and Contamination," and "The Anthropocene."



Gas Line, Ron Kleeman [Object 1993.190.09]

Further Reading on Art and Extraction

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