

Environmental Crisis in the Rocky Mountain Region & Artist's Books as the Solution

by Ian D. Warren

B.F.A in Sculpture, May 2013, Kansas City Art Institute

A Thesis submitted to

The Faculty of
The Columbian College of Arts and Sciences
Of The George Washington University
In partial fulfillment of requirement
For the degree of Master of Arts

May 15, 2016

Thesis Directed by

Kerry McAleer-Keeler

Program Head, Art and the Book Graduate Program
Associate Professor, Art and the Book

Dedication

The author wishes to dedicate this thesis to those who fight for the environment and longevity of this planet, against the power of money, greed, and injustice.

Acknowledgements

The author wishes to acknowledge, Hannah, Jack, Sean and Margot Warren,
as well as Betty and Ralph Toren for their unwavering support in my development as an
artist.

Abstract of Thesis

Environmental Crisis in the Rocky Mountain Region & Artist's Books as the Solution

The Rocky Mountain region of the United States has been a stopping point and destination for many people; pioneers and tourists alike. The Rocky Mountains were a major obstacle; harsh winters, and unpredictable weather in the summer made crossing them incredibly dangerous. These hurdles made many pioneer families abandon their journey west and settle in the front range, so began the colonization of the West. Since then the region has seen many changes from an influx of population in Colorado, Oil Pipelines running through Montana, and Hydraulic Fracturing in Wyoming. Many agencies are fighting to counter the adverse effects of these issues, such as The Nature Conservancy, but they cannot solve these problems on their own. This paper argues that art can be a catalyst for social change and that artists' books offer a way to educate and advocate for the protection of our natural areas. The work of John Risseeuw, Ilse Schreidber-Noll, and Kathy Hettinga will serve as examples of rare book artist whom are working with art as activism. The paper will go onto to argue that rare books are not suitable for activism and that the democratic multiple is the most effective book form for activism.

List of Figures

Image 1: *Disasters of War: Not This* Francisco de Goya, Etching. Image credit,

<http://www.learn.columbia.edu/goya/>

Image 2: *Disasters of War No. 72*, Francisco De Goya. Image credit,

<http://arthistorynewsreport.blogspot.com/2014/01/goya-disasters-of-war.html>

Image 3: *Boom*, John Risseuw. Image credit,

<http://vampandtramp.com/finepress/c/cabbagehead-BOOM-L.jpg>

Figure 4: *Commit*, Ilse Schreiber-Noll. Image credit, <http://www.ilseschreibernoll.com>

Figure 5: *Voices for Peace Book II*, Ilse Schreiber-Noll, Image credit,

<http://www.ilseschreibernoll.com>

Figure 6: *Voices for Peace Book I*, Ilse Schreiber-Noll. Image credit,

<http://www.ilseschreibernoll.com>

Figure 7: *Peace Tower*, Ilse Schreiber-Noll, Image credit,

<http://www.ilseschreibernoll.com>

Figure 8: *4 3 2 CRY*, Kathy Hettinga. Image credit,

<http://www.vampandtramp.com/finepress/h/kathy-432cry-L.jpg>

Figure 9: *The Ground*, Tate Shaw. Image credit, <http://www.tateshaw.com>

Figure 10: *Nine Swimming Pools and a Broken Glass*, Ed Ruscha. Image credit,

http://www.artvalue.com/image.aspx?PHOTO_ID=1040129&width=500&height=500

Figure 11: *The New West*, Robert Adams. Image credit, <http://blog.tuum.com>

Table of Contents

Dedication.....	ii
Acknowledgments.....	iii
Abstract.....	iv
List of Figures.....	v
Introduction: Environmental Crisis	1
Chapter 1: Environmental Impacts of Heading West	2
Chapter 2: Environmental Crisis in the Rocky Mountain Region Today.....	5
Chapter 3: Art as Activism	17
Conclusion:	24
Figures:	27
Bibliography:	38

INTRODUCTION

The Rocky Mountain region of the United States has been a stopping point and destination for many people; pioneers and tourist alike. The Rocky Mountains were a major obstacle: harsh winters, and unpredictable weather in the summer made crossing them incredibly dangerous. These hurdles made many pioneer families abandon their journey west and settle in the front range, so began the colonization of the West. Since then the region has seen many changes from an influx of population in Colorado, Oil Pipelines running through Montana, and Hydraulic Fracturing in Wyoming. Many agencies are fighting to counter the adverse effects of these issues, such as The Nature Conservancy, but they cannot solve these problems on their own. This paper argues that art can be a catalyst for social change and that artists' books offer a way to educate and advocate for the protection of our natural areas. The work of John Risseeuw, Ilse Schreidber-Noll, and Kathy Hettinga will serve as examples to how book arts can serve as a voice for social change and a call to action.

ENVIRONMENTAL IMPACT OF HEADING WEST

Manifest Destiny, is a term that is considered familiar to most Americans today—the idea that we have a God-given right to go forth and claim whatever we see. Frederick Merk defines it, "It meant expansion, prearranged by Heaven, over an area not clearly defined. In some minds it meant expansion over the region to the Pacific; in others, over the North American continent; in others, over the hemisphere."¹ In the mid 19th century, it was on everyone's mind. The initial thought was that one could head West and stake their claim wherever he/she may find themselves. The fact that others already called these regions home did not scare off any home seeking settlers. Whether it was disease, climate, or Native Americans, no obstacle would impair their right to "Manifest Destiny." Manifest Destiny was not the American West's first experience with settlers. Much of the Southwest had been explored and settled by Spaniards years before. This bold declaration of Manifest Destiny meant something for them as well. "It meant opportunity to gain admission to the American Union. Any neighboring peoples, established in self-government by compact or by successful revolution, would be permitted to apply."² Thus, the American expansion could enter its full swing. With the insurance of almost guaranteed admittance to the Union, the West was open for business.

In 1849, California experienced a gold rush and conditions became just right for expansion. Everyone was in search of the next big rush and hopes were set high. With rumors of gold in the mountains, would-be miners set out on the main expeditions. One of the first finds in what is now Denver, Colorado. "The initial discovery of placer gold,

¹ Merk, Fredrick. *Manifest Destiny and Mission in American History*. Massachusetts: Harvard University Press, 1963

² Merk, Fredrick. *Manifest Destiny and Mission in American History*. Massachusetts: Harvard University Press, 1963

near where Denver one day would be, dated June 1850,"³ writes Duane A. Smith in *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Expeditions were mounted in search of the gold that was found and every time the story was told the amount was exaggerated. Many traveled to the future Denver and most failed, some would stay, and some would continue to the next rumor or just give up. It was a rough time to be a miner, often set out with high hopes but met with great disappointment. Out of failure, some found other ways to prosper. With more and more traveling to the region, it was realized by some failed miners that it may be nice to have more convenient locations to rest and resupply. "There was more than one way to make money in a gold rush, and the Lawrence party set about to do so by laying out Montana City, a site on which they built a few cabins... Thus did urbanization arrive at the future site of Denver."⁴ Denver closely followed as being declared a township on November 22, 1858.⁵

Despite the fact there was little gold being found, Eastern Colorado began to boom with investors and promoters moving to Denver to the house, entertain, and supply those who fell to the legends. In 1859, the rumors became reality when, "Four companions eventually fought their way up the snow-clogged north fork of Clear Creek to near its head, where they panned and found the bonanza they had been seeking."⁶ The gold rush in Colorado later became a mineral rush leading to the mining of silver, iron, lead and even plutonium during the Cold War.

³ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

⁴ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

⁵ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

⁶ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

Like any rush that involves man and nature, they both affected one another. Pioneers learned how harsh and unforgiving the West can be. Though the environmental impact had been considered it was not until the 1960's that the people began to be more vocal about the impacts. "Dredges had left behind their "dung," mines their dumps, and smelters their tailing piles on mountainsides and river valleys,"⁷ writes Duane A. Smith. He goes on to say, "Mining roads, cut into tundra around mountains and through valleys, had caused erosion and environmental damage that would take decades to recover from."⁸ The mining industry, due to environmentalist and lack of resources, eventually came to a halt but not the environmental impacts left behind.

⁷ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

⁸ Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009

ENVIRONMENTAL CRISIS IN THE ROCKY MOUNTAIN REGION

TODAY

Mining

Across Colorado modern mining still exist, there are gravel queries, and it is still legal to prospect and claim mining rights on federal land. However, for the most part, it has become part of the past; the foundation on which the West was built. Most major mines are now tourist attractions, and abandoned sites can be spotted by rusting carts and tools. However, with the absence of mining, problems have not also dwindled. The citizens of Durango Colorado met face to face with the mess that was buried in the mountains on August 5, 2015 when the Environmental Protection Agency caused a leak while testing that water in the Gold King Mine. The EPA estimates that "It will cost about \$3 million to set up and operate a temporary water treatment system."⁹

In Wyoming, mining is still king but in a new kind of way. Unlike sites in Colorado, mines continue to spring up in Wyoming, but miners are no longer in search of a metallic precious metal; the quest is now for crude oil and coal. According to CNN, Wyoming was, "One of America's top economic growth engines in 2014."¹⁰ It was also ranked as the number one coal provider in 2013 by the U.S. Energy Information Administration and number 8 for crude oil in 2015. Unlike the first prospectors in Colorado, modern mining is done by major corporations that use sophisticated technology to find and extract resources. One of those companies is Powder River Coal Company.

⁹ Paul, Jesse. "EPA: Treatment at Colorado Mine spill site will cost \$3 million." *The Denver Post*, September 9, 2015

¹⁰ CNN. "America's 6 fastest growing state economics." Last updated June 12, 2015, <http://money.cnn.com/gallery/news/economy/2015/06/11/6-fastest-growing-states/4.html>

Powder River Coal Company, a subsidiary of Peabody Energy mines, “More than 140 million tons of coal each year,”¹¹ according to their website. Peabody also has sites in Australia, China, and India, like its fellow energy companies, it has a global and influential reach. According to *USA Today* Peabody is, "The world’s largest publicly traded coal company."¹² They were also recently made to come to a settlement to, "Make fuller public disclosures about the risks climate change poses to its business in a resolution of charges that it misled investors and the public."¹³ After they had generated false documents about the effect, new coal taxes would have on their business. Coal mining is a perfect example of a new "rush" where these corporations are in a search for that last big stockpile of whatever they can get out of the earth. Much like miners in Colorado, progressive thinking combined with observable negative consequences may eventually drive them out of business.

Fracking

Coal, however, is not the only fuel source being mined in Wyoming. The other mining rush that is currently hitting Wyoming is hydraulic fracturing, otherwise known as fracking. While its current use has come under the spotlight more recently, it is not a new process. The idea has been around since 1860¹⁴ but wasn't experimented with as a

¹¹ Peabody Energy. “Powder River Basin Operations.” <http://www.peabodyenergy.com/content/247/us-mining/powder-river-basin-and-southwest>

¹² McCoy, Kevin. “Peabody Energy reaches climate-change settlement.” *USA Today*, November 9, 2015. <http://www.usatoday.com/story/money/2015/11/09/peabody-energy-climate-settlement/75445914/>

¹³ McCoy, Kevin. “Peabody Energy reaches climate-change settlement.” *USA Today*, November 9, 2015. <http://www.usatoday.com/story/money/2015/11/09/peabody-energy-climate-settlement/75445914/>

¹⁴ Mendoza, Abraham O. Olson, James S. *American Economic History: A Dictionary and Chronology*. California: Greenwood, 2015

way to drill for oil until 1947 when, "The first experiment using this more modern approach was conducted by Stanolind Oil in the Hugoton gas field in Grant County, Kansas,"¹⁵ as James S. Olson and Abraham O. Mendoza describe in their book, *American Economic History: A Dictionary and Chronology*. It is just in the past few years that fracking has come to be part of normal conversation but it is sometimes unclear exactly what it is and how it works. BBC has a very simple explanation.

Fracking is the process of drilling down into the earth before a high-pressure water mixture is directed to release the gas inside. Water, sand, and chemicals are injected into the rock at high pressure that allows the gas to flow out to the head well. The process is carried out vertically or, more commonly, by drilling horizontally to the rock layer. The process can create new pathways to release gas or can be used to extend existing channels.¹⁶

Several issues arise with the process; this process requires an enormous amount of water and fracking fields are more often than not in areas where there is little water, such as, the high plains of Wyoming. According to *State Impact* and *NPR*, "The average amount of water used per well is 4.4 million gallons."¹⁷ These news organizations show that that quantity of water is equivalent to what 11,000 families use per day.¹⁸ According to the US Census Bureau, the population of California, which is suffering a major drought, in 2014

¹⁵ Mendoza, Abraham O. Olson, James S. *American Economic History: A Dictionary and Chronology*. California: Greenwood, 2015

¹⁶ BBC. "What is fracking and why is it controversial?" June 27, 2013
<http://www.bbc.com/news/uk-14432401>

¹⁷ State Impact, NPR. "How Much Water Does it Take to Frack a Well?" March 12, 2013. <https://stateimpact.npr.org/pennsylvania/2013/03/12/how-much-water-it-takes-to-frack-a-well/>

¹⁸ State Impact, NPR. "How Much Water Does it Take to Frack a Well?" March 12, 2013. <https://stateimpact.npr.org/pennsylvania/2013/03/12/how-much-water-it-takes-to-frack-a-well/>

was 38,802,500.¹⁹ If an average family size is four people and the population is divided by four, then that means there are about 10 million families in California. Divide the actual number by 11,000, it equals 881.875 wells. According to FRACTRACKER Alliance, there are 66,492 wells in Wyoming as of February 2014; the state of Wyoming did not release which wells were made using fracking methods.²⁰ Many areas where fracking is going on, water is not readily available. Therefore, every well created by fracking has to truck in 4.4 million gallons of water. After using the water to blow apart shale some of it is returned. The problem that presents itself to the environment is that the water waste has also been mixed with sand, gravel, and a mixture of chemicals used in the fracking process. With the US fighting to become more self-reliant when it comes to oil and with companies becoming hungrier for profit, fracking fields are growing closer and closer to places of residence. In 2013, Wyoming passed new requirements for testing the water quality of the surrounding areas. "It is the latest of several groundbreaking regulations related to energy production issued by Wyoming, which in 2010 became the first state to require disclosure of some of the chemicals used in the drilling process known as hydraulic fracturing or fracking."²¹ Gov. Mathew H. Mead had this to say, "I am not going to accept the question of do you want a clean environment or do you want

¹⁹ United States Census Bureau. <http://www.census.gov/search-results.html?q=california+population&page=1&stateGeo=none&searchtype=web&cssp=Typeahead>

²⁰ Kelso, Matt. "Over 1.1 Million Active Oil and Gas Wells in the US" *Fracker Tracker Alliance*, March 4, 2014. <http://www.fractracker.org/2014/03/active-gas-and-oil-wells-in-us/>

²¹ Galbrath, Kate. "Strong Rules on Fracking in Wyoming Seen as Model" *The New York Times*, November 22, 2013. http://www.nytimes.com/2013/11/23/business/energy-environment/wyomings-strong-fracking-rules-may-be-a-model.html?_r=1

energy."²² The new law requires oil companies to test the water quality of nearby water sources both before and after drilling. The test includes the measurement of, "Temperature, bacteria, dissolved gasses like methane and propane, and roughly 20 chemical compounds and elements including barium, benzene, strontium and nitrates."²³ These chemicals effect human health in several ways and they are not always clear.

Barium, according to the Agency for Toxic Substance & Disease Registry barium is, "A silvery-white metal that exist only in ores containing mixtures of elements. It combines with other chemicals such as sulfur or carbon and oxygen to form barium compounds."²⁴ ATSDR goes on to state, "Barium compounds are used by the oil and gas industries to make drilling muds."²⁵ Barium is one of the chemicals added to the mixture of sand and water used to drill the lines for the fracking process and it has several health effects. According to ATSDR higher than normal exposure to barium can cause side effects such as diarrhea, abdominal issues, numbness in the face, and muscle weakness. If one lived in an area near fracking sites where drilling has been going on for years without testing exposure can also lead to kidney failure and possibly death.

Benzene, is highly flammable and occurs naturally in nature and through man-made processes. A familiar and toxic place it can also be found is in the exhaust of volcanos and cigarettes. According to ASTDR, it is also a natural part of crude oil and

²² Galbrath, Kate. "Strong Rules on Fracking in Wyoming Seen as Model" *The New York Times*, November 22, 2013. http://www.nytimes.com/2013/11/23/business/energy-environment/wyomings-strong-fracking-rules-may-be-a-model.html?_r=1

²³ Galbrath, Kate. "Strong Rules on Fracking in Wyoming Seen as Model" *The New York Times*, November 22, 2013. http://www.nytimes.com/2013/11/23/business/energy-environment/wyomings-strong-fracking-rules-may-be-a-model.html?_r=1

²⁴ Agency for Toxic Substances & Diseases Registry. "Total Substances Portal – Barium" <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=326&tid=57>

²⁵ Agency for Toxic Substances & Diseases Registry. "Total Substances Portal – Barium" <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=326&tid=57>

gasoline, two products of the drilling process. The health effects of Benzene can be more detrimental than those of barium, and include, "Drowsiness, dizziness, and unconsciousness; long-term benzene exposure causes effects on the bone marrow and can cause anemia and leukemia."²⁶

Strontium is the mildest of the afore mentioned chemicals. According to a public health statement released by the Agency for Toxic Substances and Disease Registry, "Strontium is found naturally in soil in amounts that vary over a wide range, but the typical concentration is 0.2 milligrams per kilogram (kg) of soil (or 0.2 mg/kg)."²⁷ The strontium found in normal soil is non-hazardous and just a part of daily life. It is only until it is radioactive that it becomes hazardous and can lead to stunted growth and bone weakness in children.

There is evidence that Fracking can cause tremors and even raise the risks of earthquakes in some areas. The National Association of Geoscience Teachers states that "Scientists refer to the earthquakes caused by the injection of fracking wastewater underground as "induced seismic events."²⁸ According to the US Geological Survey, "The Number of earthquakes has increased dramatically over the past few years."²⁹ USGS also states that man-made earthquakes are most often the result of the draining of underground aquifers and natural gas deposits. Earthquakes directly caused by the

²⁶ Agency for Toxic Substances & Diseases Registry. "Total Substances Portal" <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=14>

²⁷ Agency for Toxic Substances & Diseases Registry. "Public Health Statement: Strontium" <http://www.atsdr.cdc.gov/toxprofiles/tp159-c1-b.pdf>

²⁸ Hoffman, Joe. "Potential Health and Environmental Effects of Hydrofracking in the Williston Basin, Montana." *Geology and Human Health*. http://serc.carleton.edu/NAGTWorkshops/health/case_studies/hydrofracking_w.html

²⁹ Ellsworth, William. Roberston, Jessica. Hook, Christopher. "Man-Made Earthquakes Update" US Geological Survey, <http://www.usgs.gov/blogs/features/printemail/?post=180902>

fracking process, (immediate results of the injection of water and chemicals into the ground) are small and go unnoticed, the long-term effects of draining underground deposits are something that will unveil itself in the future. There is currently a threshold that is used to determine whether or not drilling is safe. It is, “If seismic activity exceeds preset thresholds, reduction in injection would be made. If seismicity continues or escalates, operations could be suspended.”³⁰ While there is a push back and protests the profit to the US and oil companies currently outweighs the environmental impacts.

Oil Pipelines

As new ways of harvesting oil yield higher results, in North America companies are in search of ways to quickly transport their product, one of which is oil pipelines. With the use of technologies such as fracking, oil yields have been higher than ever in North America. However, with higher product volume comes a higher need for mass transportation of that product. The American railways system has been in use for decades and has been vital in transporting products such as wheat, livestock, and coal. However, trains are not the most efficient way to transport massive, free flowing sources of crude oil. Almost simultaneously with the invention of drilling, oil producers realized there was a cheaper transportation system for the liquid product that also included free fuel, that being gravity. The convenience of oil is that its raw product is a liquid that, with the proper equipment, can be easily transported via a gravitational assist. Using vehicle transportation requires the continuous cost of fueling and maintaining a fleet of trucks and train cars. The transportation of oil via pipeline is low cost, the highest cost being the cost

³⁰ Ellsworth, William. Roberston, Jessica. Hook, Christopher. “Man-Made Earthquakes Update” US Geological Survey, <http://www.usgs.gov/blogs/features/printemail/?post=180902>

of building the pipeline and maintenance of that pipeline.

According to the Pipeline and Hazardous Materials Safety Administration, a branch of the US Department of Transportation, there are 2,307,981 miles of pipeline in the US.³¹ These pipelines carry everything from hazardous liquid to natural gas distribution and PHMSA has the task of managing the safety of these pipelines. The moon is 250,000 miles away from us.³² That means that if one were to travel the length of pipeline in the US they would travel the equivalent of 9 trips to the moon.

PHMSA refers to the pipeline network as, “The arteries of the Nation’s energy infrastructure, as well as one of the safest and least costly ways to transport energy products.”³³ and that, “Pipelines enable the safe movement of extraordinary quantities of energy products to industry and consumers, literally fueling our economy and way of life.”³⁴ In the past twenty years, there have been 360 fatalities related to pipeline incidents.

On January 17, 2015, the Poplar Pipeline ruptured and spilled, “30,000 gallons of

³¹ Pipeline and Hazardous Materials Safety Administration. “General Pipeline FAQs” <http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.6f23687cf7b00b0f22e4c6962d9c8789/?vgnextoid=a62924cc45ea4110VgnVCM1000009ed07898RCRD&vgnnextchannel=f7280665b91ac010VgnVCM1000008049a8c0RCRD>

³² NASA. “Distance to the Moon” http://www.nasa.gov/sites/default/files/files/Distance_to_the_Moon.pdf

³³ Pipeline and Hazardous Materials Safety Administration. “General Pipeline FAQs” <http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.6f23687cf7b00b0f22e4c6962d9c8789/?vgnextoid=a62924cc45ea4110VgnVCM1000009ed07898RCRD&vgnnextchannel=f7280665b91ac010VgnVCM1000008049a8c0RCRD>

³⁴ Pipeline and Hazardous Materials Safety Administration. “General Pipeline FAQs” <http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.6f23687cf7b00b0f22e4c6962d9c8789/?vgnextoid=a62924cc45ea4110VgnVCM1000009ed07898RCRD&vgnnextchannel=f7280665b91ac010VgnVCM1000008049a8c0RCRD>

crude oil into the Yellowstone River.”³⁵ The spill was due to a faulty pipeline 12 inches in diameter. Pipelines in Montana have a long track record of spills as well. Montana is one of the states that function as a middleman for oil companies transporting oil from the North and distributing to the South. In 2011, one of Exxon Mobil's pipelines experienced a similar rupture, "Releasing 63,000 gallons of oil that washed up along an 85-mile stretch of riverbank,"³⁶ CBS News states. They say that, "Exxon Mobil is facing state and federal fines of up to \$3.4 million from the spill."³⁷ Since then the governor of Montana has asked the US Department of Transportation for more inspectors in the state so that the pipelines can be better monitored; at the time only one inspector was overseeing, "3,800 miles of pipelines for the state."³⁸ Pipelines are only required to be buried 4 feet under the river bed. Due to natural flooding and erosion these shallow pipelines are susceptible to damage. According to the Associated Press and [PHYS.org](http://phys.org), "An analysis of past spills found 16 pipeline breaches caused by flooding since 1993. They released a combined 2.4 million gallons of oil, gasoline, propane and other hazardous liquids."³⁹

The Keystone Pipeline, which runs from Alberta, Canada to Oklahoma, has been

³⁵ Montana.gov, Montana Department of Environmental Quality. "Poplar Pipeline Oil Spill on the Yellowstone River near Glendive"

<http://www.deq.mt.gov/yellowstonespill2015.mcp>

³⁶ CBS News. "Cleanup after "unfortunate incident" in Yellowstone." January 19, 2015 <http://www.cbsnews.com/news/oil-spill-in-yellowstone-river-in-montana-caught-pretty-quick/>

³⁷ CBS News. "Cleanup after "unfortunate incident" in Yellowstone." January 19, 2015 <http://www.cbsnews.com/news/oil-spill-in-yellowstone-river-in-montana-caught-pretty-quick/>

³⁸ Brown, Mathew. "Montana governor calls for deeper pipelines after oil spills." *Associated Press*, February 13, 2015. <http://phys.org/news/2015-02-montana-governor-deeper-pipelines-oil.html>

³⁹ Brown, Mathew. "Montana governor calls for deeper pipelines after oil spills." *Associated Press*, February 13, 2015. <http://phys.org/news/2015-02-montana-governor-deeper-pipelines-oil.html>

a big topic of discussion in the news and Whitehouse. However, the Keystone XL plan campaigned for an expansion to the existing pipeline. This expansion includes building more pipeline in Montana to bring more oil from Canada to Texas and the Gulf of Mexico where many refineries lie. The battle against the pipeline has been raging for years as Canada continues to dig into unconventional sources of oil known as oil sands. The XL plan would have raised the amount of mining in those oil sands exponentially. The *New York Times* states that, the pipeline would carry, "800,000 barrels a day of carbon-heavy petroleum from the Canadian Oil Sands to the Gulf Coast. In November of 2015, President Obama announced that he would deny Canada the expansion of the Keystone Pipeline. Stating, "America is now a global leader when it comes to taking serious action to fight climate change,"⁴⁰ and that, "approving this project would have undercut that global leadership."⁴¹ The *New York Times* states, "Both sides saw the Keystone rejection as an important symbolic step, a sign that the president was willing to risk angering a bipartisan majority of lawmakers in the pursuit of his environmental agenda.

Over-Crowding Impact

One hundred years ago, in early September, a staple of the United States was opened, Rocky Mountain National Park. "Hundreds of Colorado residents and other honored guests gathered at the newly created Rocky Mountain National Park to offer

⁴⁰ Davenport, Coral. "Citing Climate Change, Obama Rejects Construction of Keystone XL Oil Pipeline." *The New York Times*, November 6, 2015.

http://www.nytimes.com/2015/11/07/us/obama-expected-to-reject-construction-of-keystone-xl-oil-pipeline.html?_r=0

⁴¹ Davenport, Coral. "Citing Climate Change, Obama Rejects Construction of Keystone XL Oil Pipeline." *The New York Times*, November 6, 2015.

http://www.nytimes.com/2015/11/07/us/obama-expected-to-reject-construction-of-keystone-xl-oil-pipeline.html?_r=0

thanks to its supporters and to enjoy the fruits of their labor,”⁴² writes Jerry J. Frank in *Making Rocky Mountain National Park*. It was considered to be an incredible feat to create a 415 square mile National Park and now it is a tourist destination welcoming people from around the world. According to National Geographic it is the fifth most visited national park in the US.

Tourism is a big deal in Colorado, from skiing in the winter to hiking in the summer, the state supports a year-round tourist industry. According to Netstate the, “Service industries make up the largest portion of Colorado’s gross state product.”⁴³ Skiing is probably the State’s biggest tourist industry. *5280 Magazine*, a local Denver magazine, states that 150 ski areas have operated in Colorado since the 1930s.⁴⁴ Due to climate change, competition, and other factors the numbers have reduced to 25 since 2012. The state is able to sustain so many ski resorts for several reasons; the most obvious one is that the Rocky Mountains literally split the state in two. This offers two slopes for potential skiing, the Western and Eastern Slope. Each are their own ecosystems and have dramatically different weather patterns. Another is that a lot of the ski resorts are at higher altitudes such as Arapahoe Basin and Loveland Ski Area meaning it snows earlier in the year and sticks around for longer. But, one of the major reasons these resorts are able to stay open is that they are owned by a few different parent companies, the biggest being Vail Resorts.

⁴² Frank, Jerry J. *Making Rocky Mountain National Park: the environmental history of an American treasure*. Kansas: University Press of Kansas, 2013

⁴³ Netstate.com “Colorado Economy”
http://www.netstate.com/economy/co_economy.htm

⁴⁴ “How Many Ski Areas have Called Colorado Home?” *5280 Magazine*, January, 2012.
<http://www.5280.com/magazine/2012/01/how-many-ski-areas-have-called-colorado-home>

According to Vail’s website they own and operate, “the eleven premier resorts.”⁴⁵ Four of these resorts are in Colorado, Vail, Beaver Creek, Breckenridge and Keystone. Vail Resorts also ensure that one has a quality experience at these locations. They provide countless hotels, snowmaking, lessons, rentals, and at select resorts, fresh baked cookies for skiers all over the mountain. Everything is made incredibly convenient which is why skiing in Colorado is considered some of the best.

who were visiting Colorado decided that they would rather live there, and so began a population influx. The Denver Post stated in 2014 that, “In the 12 months through June, Colorado ranked fourth among all states with a 1.59 percent gain in population and added 83,780 people, the eighth most of any state, the U.S. Census Bureau reported.”⁴⁶ It goes on to state that, “The office forecast the state population to increase 1.6 percent as of July 1, 2014, before ramping up to a 1.7 percent rate as of July 1, 2015, and as of July 1, 2016.”⁴⁷ It’s hard to say exactly what led to this rise because there are many factors that have played into its boom. More companies are moving to Colorado for its moderately temperate climate, in the front range, and because they believe their employees enjoy the lifestyle. People are moving to Colorado so quickly that at one point there was not enough homes to move to. CNBC states that, “The year (2014) ended with just over 5,300 active listings, the lowest inventory in more than a

⁴⁵ VailResorts.com <http://www.vailresorts.com/Corp/info/company-profile.aspx>

⁴⁶ Svaldi, Aldo. “Colorado ranks fourth among states for populations gains.” *The Denver Post*, December 23, 2014. http://www.denverpost.com/business/ci_27195411/colorado-ranks-fourth-among-states-population-gains

⁴⁷ Svaldi, Aldo. “Colorado ranks fourth among states for populations gains.” *The Denver Post*, December 23, 2014. http://www.denverpost.com/business/ci_27195411/colorado-ranks-fourth-among-states-population-gains

decade.”⁴⁸

Yet the biggest problem for Colorado in regards to population sprawl is not the fact that people are moving to Colorado, it’s that they all want to live in the same place. That area is the midpoint between the mountains and Denver and that is where most developing is occurring. There is a gap of open space between Denver proper, Boulder, and Golden. That gap is getting smaller due to new housing development and there very little stopping them.

⁴⁸ Olick, Diana. “Denver housing hurt by too few listings.” *CNBC.com*, January 30, 2015. <http://www.cnbc.com/2015/01/29/denver-housing-hurt-by-too-few-listings.html#>.

ART AS ACTIVISM

A man hangs from the stump of a cut tree, he has been hanging there for hours. He no longer moves, sways, or twitches. Only stillness and his fallen comrades offer peace in his final day. Smugly and admiringly sits a uniformed soldier. He wears a long coat, tall boots, a tall hat, and a content, proud grin. He gazes at his prize as it rest in mid air, in its stillness. This man, however, does not sit in stillness. He lazily leans back admiring and enjoying the spoils of war. A scene like this is meant to evoke the viewer to despise this man, to hate everything he stood for and to want to stop him and anyone like him. This is the point of art as activism, to stir emotion, to invoke movement and call for action. Figure 1 is from Francisco de Goya's collection, "The Disasters of War." It was his response to the French invasion of Spain and the horrors they performed on each other. When hearing the word "activism" and "art" together one's first thought may lead them to a civil rights poster from the 60's or Rosy the Riveter from the 40's but Goya's series dates back to 1820.

In another print from Goya's series, No. 72, (figure 2) a man lies dead; being picked at by a ravenous beast that resembles a hybrid of an owl and bat. In the background more of these creatures fly in to enjoy the spoils. In this print Goya is referring to the civilians who were brutally raped, maimed, and murdered by soldiers. As art and design book publisher, *Phaidon Press*, puts it, "Unflinchingly he depicts mutilation, torture, rape and many other atrocities besides – performed, indiscriminately, by French and Spanish alike."⁴⁹ At the time images of war were glorious, Napoleon on

⁴⁹ Phaidon Press. "How Disasters of War made Goya a 'modern artist'" <http://www.phaidon.com/agenda/art/articles/2012/february/13/how-disasters-of-war-made-goya-a-modern-artist/>

his horse gazing over a won battlefield, or naval ships sinking an enemy, they were meant to capture the glory of the victor. Goya, however, felt that there was no glory or victor, only and singularly loss and death. The way Goya depicted war is akin to many photos that came out of the Middle East during the Bush Administration, particularly those illustrating torture. Imagine if Goya's etching were photographs, they'd be seared into the brain as much as the images of hooded naked Iraqis. *Phaidon* makes the point that, "In its detail, honesty and immediacy, it prefigured wartime photojournalism and helped Goya earn his reputation as 'the first modern artist.'"⁵⁰ Goya, who wasn't the first artist to use the arts for activism, paved the way for future activism in print.

Art as activism can be a powerful tool in our contemporary world. With the advent of a more visual based culture, people are becoming more and more used to reading imagery. From Instagram, to creative use of type, we are surrounded by imagery waiting to be interrupted. One field in particular is book arts. Book artists, are exploring the book as activism and discovering different ways to engage the viewer to support their causes. Several artists who work primarily in activism are, John Risseeuw, Ilse Schreidber-Noll, and Kathy Hettinga. These three artists are working hard in their fields to not only make beautiful objects but also produce call to action for topical and important causes.

John Risseeuw, a professor at Arizona State University, has generated several projects dealing with the aftermath of war. One of which is his accordion book, *Boom* (figure 3) deal with the issues of what is left behind after war, in particular landmines.

⁵⁰ Phaidon Press. "How Disasters of War made Goya a 'modern artist'" <http://www.phaidon.com/agenda/art/articles/2012/february/13/how-disasters-of-war-made-goya-a-modern-artist/>

Landmines have appeared in the battlefield for centuries in many different forms. They are used to blow the tracks off tanks, injure or kill personal, and are constantly left behind due to their discrete nature. An effective landmine is one that can't be seen and still gets the job done. Because it's extremely difficult to recover them. The UN states that, "Landmines are unaffected by cease-fire or peace. The only way to deactivate them is by individual removal at a cost of US\$ 300-1000 per mine."⁵¹ The UN also claims that, "110 million mines have been spread throughout the world into an estimated 70 countries."⁵² Risseeuw has paid very close attention to these issues and has dedicated these two projects to helping the victims of collateral damage from wars that may have ended decades ago. In the project statement he proclaims, "The twin purposes of this project have been public education to the problems of landmines and fun-raising for the organizations that assist the victims."⁵³

Arguably there's no better way to educate the public than artist's books and broadsides. A key component to artist's books is their tangibility, the way they feel in your hands, the smell, and a lot of these qualities emerge in the paper itself. John Risseeuw is aware of this quality and utilizes it in *The Paper Landmine Project* and *Boom*. "The project involves making handmade paper and printing landmine images, facts, and stories."⁵⁴ The paper is made from the clothing of victims as well as plants from the regions where the landmines incidents occurred. The currency from the country that made the mine is also used in the paper. By offering us something that may feel nice

⁵¹ UN.org. "Demining" <http://www.un.org/en/globalissues/demining/>

⁵² UN.org. "Demining" <http://www.un.org/en/globalissues/demining/>

⁵³ Risseeuw, John. "The Paper Landmine Print Project" <http://www.cabbageheadpress.com/landminesstmt.html>

⁵⁴ Risseeuw, John. "The Paper Landmine Print Project" <http://www.cabbageheadpress.com/landminesstmt.html>

and be aesthetically luring, Risseeuw beckons us to discover the weight and brutality that the viewer holds in their hands. Asking the viewer to think about the story of not only the prints but of the paper itself.

The structure of *Boom* also tells a story. It is bound as an accordion which its verticality alludes to some kind of structure or building, the paper is torn and beaten resembling a war zone. All of these factors are achievements that cannot be provided through other mediums. John Risseeuw's work is calling for action, an action to help support and heal the victims of live landmines. His work evokes thought and emotion through the impact of material choice and imagery; all requirements of art as activism.

Ilse Schreiber-Noll's work *Peace Projects* is another example of art as activism and functions as a public works project. *Peace Projects* is a multi-work collection of four collaborations and a public work. *Commit*, (figure 4) *Voices for Peace Book II* (figure 5), *Voices for Peace Book I* (figure 6), and *Peace Tower* (figure 7). *Commit* was "An Interactive book, 2010, shown at Collaborative Concepts at Saunders Farms in Garrison, NY."⁵⁵ Collaborative Concepts is a nonprofit organization based around artists working together. They host a wide range of artists from sculptors to book artist and all works focus around engaging the community and collaboration. Schreiber-Noll's work engages the community by asking them to sign her book and to make a commitment to making the world a better place on a local and global scale. Their signature was a promise to take action and to make an effort to help the earth. This book is a perfect example of art as activism because it is asking the viewer to engage in the process of making as well as calling them to action. The act of signing is an international symbol of a promise and

⁵⁵ Schreiber-Noll, Ilse. "Project Discriptions, Commit." <http://www.ilseschreibernoll.com/peace-projects.html>

ownership and this symbolism has a powerful impact. *Voices for Peace Book I* functions in a similar way, “Visitors signed for Peace. Over the next years pages were added with images and poems by many artists.”⁵⁶ States Schrieber-Noll. The book calls for peace and uses the action of signing in the same way as *Commit*. The addition of collaborative works from other artists adds to the impact, as you are hearing the voice of many people with the same mission for peace. This book took place through the span of 2002 to 2007 and has accumulated 50 pages of varied works and signatures. The mass of signatures and art is an overwhelming warming experience and a great example of art as activism.

Kathy Hettinga’s artist book, *4 3 2 CRY* (figure 8), falls more along the lines of this paper. The book is about a farm in Weld County, Colorado where she once lived. After visiting, she discovered her old home had become the site of a fracking field, “Well pads puncturing the farmhouse’s backyard, condensate tanks dotting the horizon, a haze hanging in the sky.”⁵⁷ The title of the work is very specific to the book’s central theme and Hettinga’s personal relationship to the farm, “For the book, Kathy created her own coded sign using the numbers 4, 3, 2 and the cryogenic code “CRY” to symbolize a “Countdown to Environmental Lament” she says, where “CRY” works as “both a wailing, and a freezing of the heart against environmental stewardship.”⁵⁸ Her personal connection to the farm and the environment makes this book powerful because her care can be felt. The book not only deals with environmental destruction in Colorado. It also

⁵⁶ Schrieber-Noll, Ilse. “Project Discriptions, Voices for Peace Book I.”

<http://www.ilseschreibernoll.com/peace-projects.html>

⁵⁷ Bratovich, Jenn. “A Lamentation and Goodbye: Kathy Hettinga’s “4 3 2 CRY”
Women’s Studio Workshop, September 8, 2014. <http://www.wsworkshop.org/2014/09/4-3-2-cry/>

⁵⁸ Bratovich, Jenn. “A Lamentation and Goodbye: Kathy Hettinga’s “4 3 2 CRY”
Women’s Studio Workshop, September 8, 2014. <http://www.wsworkshop.org/2014/09/4-3-2-cry/>

works as a eulogy to her husband who died early. Hettinga states, “That’s the trajectory of the book: it’s an all-out lament for the loss of a beautiful young man—and then the salt in the wound to find out that the place we so loved had been raped, really, by corporate greed.”⁵⁹ Akin to Goya she not only recognizes these tragedies as a political issue but also as a personal vendetta. Similar to Goya’s man hanging still in the air—Kathy’s nostalgia does too. The book also includes facts and satellite imagery of the area which provides proof and serves as an educational tool that one would need to discover a reason for action. Kathy says it best when she explains, “How can you get content out and in the hands of the people, is outside of the museum?”⁶⁰ What the artist can do is take something that people can tune out and make personal and important.” In this statement she gets to the heart of why artist’s books are shining examples of art as activism. One is able to sit down and share an intimate experience with the work, they are given a chance to learn and understand what is going on. This is an experience that may not be obtainable with an image on a wall.

People are not seeing the afore mentioned environmental changes in their own backyard especially in the Rocky Mountain region and many are not experiencing it dramatically enough to care. A small town being ruined by a near by fracking site may mean nothing to a SUV driver on the East Coast but if they could see the actual impacts maybe they too would fight for fuel alternatives. That is how art can be used as a catalyst

⁵⁹ Bratovich, Jenn quoting Kathy Hettinga “A Lamentation and Goodbye: Kathy Hettinga’s “4 3 2 CRY” *Women’s Studio Workshop*, September 8, 2014.

<http://www.wsworkshop.org/2014/09/4-3-2-cry/>

⁶⁰ Bratovich, Jenn quoting Kathy Hettinga “A Lamentation and Goodbye: Kathy Hettinga’s “4 3 2 CRY” *Women’s Studio Workshop*, September 8, 2014.

<http://www.wsworkshop.org/2014/09/4-M3-2-cry/>

for real social change, to show the world what is happening. Using art as activism, in particular artist's books, we can show the masses images of the direct effects of climate change, spilled oil, and over crowding. Books are they best way to do this because they can be taken off the hall and handed out worldwide.

The Democratic Multiple—The Solution

According to Johanna Drucker there is a large taxonomy of artist's books. In *The Century of Artists' Books* she quotes Lucy Lippard who says, "One day I'd like to see artists' books ensconced in supermarkets, drugstores, and airports."⁶¹ This quote perfectly defines what the democratic multiple is all about, mass publication of artists books and offering them at affordable prices. This movement was more focused around spreading ideas, concept and thought. Tate Shaw's artist book *The Ground* (figure 9) is an example of that. In *The Ground* Shaw printed images he took in Pennsylvania and Iceland, after printing the pictures he blurred them so that only the man made object in the picture was clear. He then scanned them and had the book printed by a third party printer. In this book Shaw is not exploring how to make a beautiful object, nor is he selling a small edition for large price. Shaw simply presents a concept to the viewer, which is anyone with \$40 and an internet connection. That was the point of the democratic multiple. Ed Ruscha created his book *Nine Swimming Pools and a Broken Glass* (figure 10) simply because he was fascinated by the way things look from above.⁶² Ruscha cheaply made the book and sold it for a few dollars. There is more to this than a cheap book; when *The Ground* is experienced one begins to understand what Shaw wanted to express. The man

⁶¹ Drucker, Johanna. *The Century of Artists' Books*, New York, Granary Books 2004

⁶² YouTube, "TateShots: Ed Ruscha's Photography Books"

made objects that remain un blurred are machinery, such as pipelines, that are using the Earth's resources. He is putting an exclamation point next to the idea that when a man made object is placed into nature it overtakes the beauty of its surroundings. Tate Shaw is illustrating the visual pollution that is a result of people harvesting natural resources. Robert Adams' book (figure 11) *The New West* is another example of the democratic multiple. Adams set out to document the construction of suburbs in Colorado Springs, CO. With his work he is able to portray mans take over of the western landscape. Deconstructing a natural prairie into simple homes all created from the same design.

The democratic multiple came to be because artists were frustrated with galleries, with who was buying their work, and the impact it was having. They wanted to make art more conceptual and less about a specific aesthetic, to portray an idea through series and sequence allowing them to fully explore their ideas. The democratic multiple has potential beyond print as well. An artist can digitally publish works making them more widely accessible. This means the spreading of ideas on a global scale and being as inclusive as possible. This way of making and the ethics of the democratic multiple can be applied to art as activism because it has the potential to be more widely spread. It's up to new generations of artists to explore the possibilities and further potential of the democratic multiple.

CONCLUSION

Think about a magazine, about how many people are reading that magazine and the information it's providing. This is where rare books fall short as tools for activism. Similarly, to a magazine the true democratic multiple is wide spread, it starts on a grass roots level and expands. Many of the book artists in this paper exist within a niche' and esoteric system that is not keen on mass production and spreading information. These artists are not exploring all the factors art as activism should be. Today it is imperative for an activist/artist to be producing democratic work that can be shared through print, the web, and cheaply. The edition size for *4 3 2 CRY* is 46 and sells for \$450, Risseeuw's is helpful on a grass roots level but isn't large enough to actually help in removing landmines, and Schreiber-Noll's books are too specific to be effective on anyone other than people who have experienced it themselves. Activism is about spreading knowledge about a struggle or a problem that needs to be opposed. Tate Shaw offers his work at a reasonable price and is informing people about the way we effect the Earth in a aesthetically pleasing manner. Young artist must go forward as masters of it all. They must be willing to share their ideas and solutions with the masses, not exclude an audience by assuming they won't get it, and share their work in ways they may not be comfortable with, such as free online versions. Today there are numerous ways to self publish and spreads. The author of this paper will be making his democratic multiple available through iBook, the e-book platform run by Apple. Artist can also self publish through other platforms such as Kindle and Blurb. It's by using these systems that ideas can spark change and involvement. Not by calling something precious, they spark change through sharing information in informative, innovative and, interesting ways.

IMAGES



Image 1: *Disasters of War: Not This* Francisco de Goya, Etching. Image credit, <http://www.learn.columbia.edu/goya/>



Image 2: *Disasters of War No. 72*, Francisco De Goya. Image credit, <http://arthistorynewsreport.blogspot.com/2014/01/goya-disasters-of-war.html>

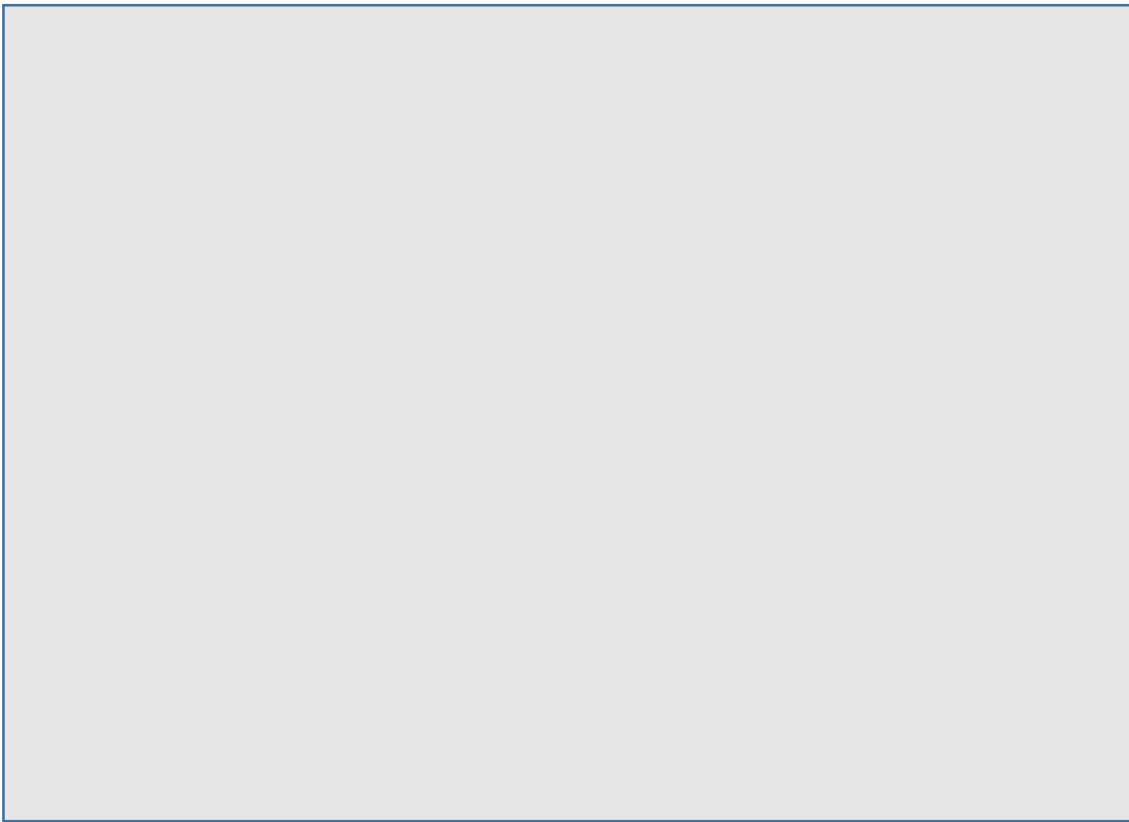


Figure 3: *Boom*, John Risseuw. Image credit,
<http://vampandtramp.com/finepress/c/cabbagehead-BOOM-L.jpg>



Figure 4: *Commit*, Ilse Schreiber-Noll. Image credit, <http://www.ilseschreibernoll.com>



Figure 5: *Voices for Peace Book II*, Ilse Schreiber-Noll, Image credit, <http://www.ilseschreibernoll.com>



Figure 6: *Voices for Peace Book I*, Ilse Schreiber-Noll. Image credit, <http://www.ilseschreibernoll.com>



Figure 7: *Peace Tower*, Ilse Schreiber-Noll, Image credit, <http://www.ilseschreibernoll.com>



Figure 8: 4 3 2 *CRY*, Kathy Hettinga. Image credit,
<http://www.vampandtramp.com/finepress/h/kathy-432cry-L.jpg>

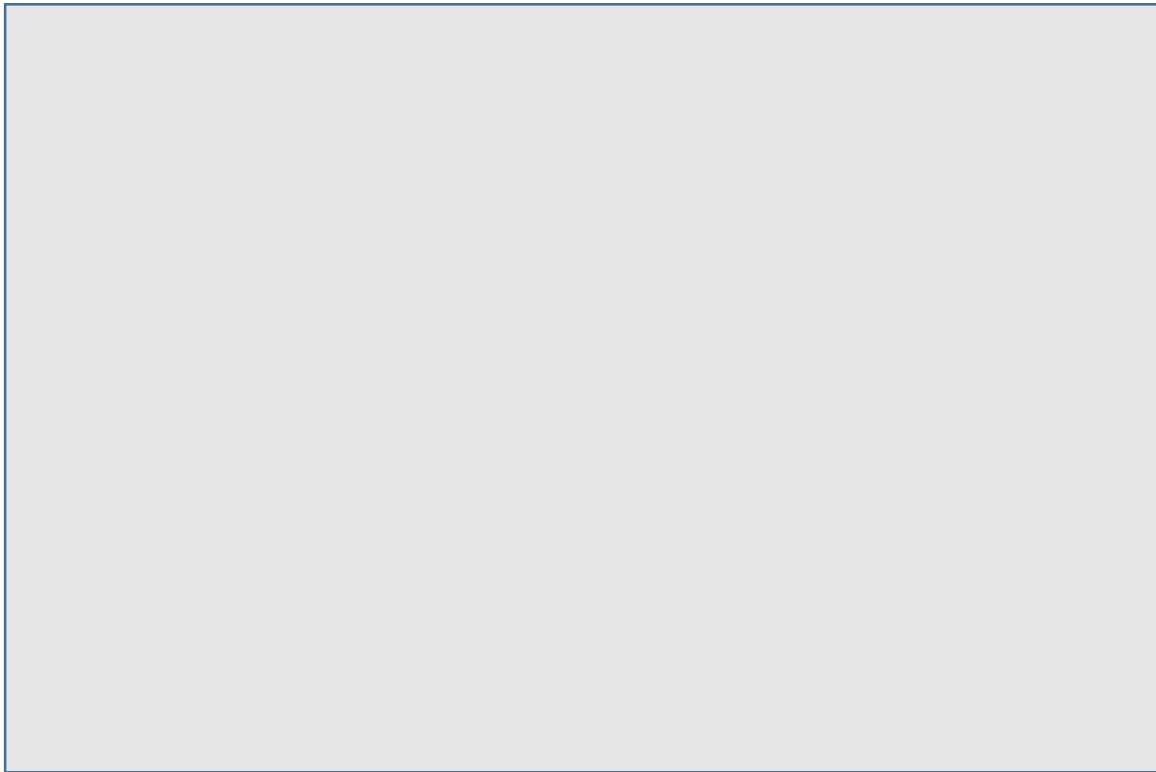


Figure 9: *The Ground*, Tate Shaw. Image credit, <http://www.tateshaw.com>



Figure 10: *Nine Swimming Pools and a Broken Glass*, Ed Ruscha. Image credit, http://www.artvalue.com/image.aspx?PHOTO_ID=1040129&width=500&height=500



Figure 11: *The New West*, Robert Adams. Image credit, <http://blog.tuum.com>

Bibliography

1. Merk, Fredrick. *Manifest Destiny and Mission in American History*. Massachusetts: Harvard University Press, 1963
2. Smith, Duane A., *The Trail of Gold and Silver: Mining in Colorado, 1859-2009*. Colorado: University Press of Colorado, 2009
3. Paul, Jesse. "EPA: Treatment at Colorado Mine spill site will cost \$3 million." *The Denver Post*, September 9, 2015
4. CNN. "America's 6 fastest growing state economics." Last updated June 12, 2015, <http://money.cnn.com/gallery/news/economy/2015/06/11/6-fastest-growing-states/4.html>
5. Peabody Energy. "Powder River Basin Operations." <http://www.peabodyenergy.com/content/247/us-mining/powder-river-basin-and-southwest>
6. McCoy, Kevin. "Peabody Energy reaches climate-change settlement." *USA Today*, November 9, 2015. <http://www.usatoday.com/story/money/2015/11/09/peabody-energy-climate-settlement/75445914/>
7. Mendoza, Abraham O. Olson, James S. *American Economic History: A Dictionary and Chronology*. California: Greenwood, 2015
8. BBC. "What is fracking and why is it controversial?" June 27, 2013 <http://www.bbc.com/news/uk-14432401>
9. State Impact, NPR. "How Much Water Does it Take to Frack a Well?" March 12, 2013. <https://stateimpact.npr.org/pennsylvania/2013/03/12/how-much-water-it-takes-to-frack-a-well/>
10. United States Census Bureau. <http://www.census.gov/search-results.html?q=california+population&page=1&stateGeo=none&searchtype=web&cssp=Typeahead>
11. Kelso, Matt. "Over 1.1 Million Active Oil and Gas Wells in the US" *Fracker Tracker Alliance*, March 4, 2014. <http://www.fractracker.org/2014/03/active-gas-and-oil-wells-in-us/>
12. Galbrath, Kate. "Strong Rules on Fracking in Wyoming Seen as Model" *The New York Times*, November 22, 2013. http://www.nytimes.com/2013/11/23/business/energy-environment/wyomings-strong-fracking-rules-may-be-a-model.html?_r=1
13. Agency for Toxic Substances & Diseases Registry. "Total Substances Portal – Barium" <http://www.atsdr.cdc.gov/toxfaqs/tf.asp?id=326&tid=57>
14. Agency for Toxic Substances & Diseases Registry. "Total Substances Portal" <http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=14>
15. Agency for Toxic Substances & Diseases Registry. "Public Health Statement: Strontium" <http://www.atsdr.cdc.gov/toxprofiles/tp159-c1-b.pdf>
16. Hoffman, Joe. "Potential Health and Environmental Effects of Hydrofracking in the Williston Basin, Montana." *Geology and Human Health*. http://serc.carleton.edu/NAGTWorkshops/health/case_studies/hydrofracking_w.html

17. Ellsworth, William. Roberston, Jessica. Hook, Christopher. "Man-Made Earthquakes Update" US Geological Survey,
<http://www.usgs.gov/blogs/features/printemail/?post=180902>
18. Pipeline and Hazardous Materials Safety Administration. "General Pipeline FAQs"
<http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.6f23687cf7b00b0f22e4c6962d9c8789/?vgnextoid=a62924cc45ea4110VgnVCM1000009ed07898RCRD&vgnnextchannel=f7280665b91ac010VgnVCM1000008049a8c0RCRD>
19. NASA. "Distance to the Moon"
http://www.nasa.gov/sites/default/files/files/Distance_to_the_Moon.pdf
20. Pipeline and Hazardous Materials Safety Administration. "General Pipeline FAQs"
<http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.6f23687cf7b00b0f22e4c6962d9c8789/?vgnextoid=a62924cc45ea4110VgnVCM1000009ed07898RCRD&vgnnextchannel=f7280665b91ac010VgnVCM1000008049a8c0RCRD>
21. Pipeline and Hazardous Materials Safety Administration. "Pipeline Incident 20 Year Trends." <http://phmsa.dot.gov/pipeline/library/data-stats/pipelineincidenttrends>
22. Montana.gov, Montana Department of Environmental Quality. "Poplar Pipeline Oil Spill on the Yellowstone River near Glendive"
<http://www.deq.mt.gov/yellowstonespill2015.mcp>
23. CBS News. "Cleanup after "unfortunate incident" in Yellowstone." January 19, 2015 <http://www.cbsnews.com/news/oil-spill-in-yellowstone-river-in-montana-caught-pretty-quick/>
24. Brown, Mathew. "Montana governor calls for deeper pipelines after oil spills." *Associated Press*, February 13, 2015. <http://phys.org/news/2015-02-montana-governor-deeper-pipelines-oil.html>
25. Davenport, Coral. "Citing Climate Change, Obama Rejects Construction of Keystone XL Oil Pipeline." *The New York Times*, November 6, 2015.
http://www.nytimes.com/2015/11/07/us/obama-expected-to-reject-construction-of-keystone-xl-oil-pipeline.html?_r=0
26. Frank, Jerry J. *Making Rocky Mountain National Park: the environmental history of an American treasure*. Kansas: University Press of Kansas, 2013
27. Netstate.com "Colorado Economy"
http://www.netstate.com/economy/co_economy.htm
28. "How Many Ski Areas have Calles Colorado Home?" *5280 Magazine*, January, 2012. <http://www.5280.com/magazine/2012/01/how-many-ski-areas-have-called-colorado-home>
29. VailResorts.com <http://www.vailresorts.com/Corp/info/company-profile.aspx>
30. Svaldi, Aldo. "Colorado ranks fourth among states for populations gains." *The Denver Post*, December 23, 2014.
http://www.denverpost.com/business/ci_27195411/colorado-ranks-fourth-among-states-population-gains
31. Phaidon Press. "How Disasters of War made Goya a 'modern artist'"
<http://www.phaidon.com/agenda/art/articles/2012/february/13/how-disasters-of-war-made-goya-a-modern-artist/>

32. UN.org. “Demining” <http://www.un.org/en/globalissues/demining/>
33. Risseuw, John. “The Paper Landmine Print Project”
<http://www.cabbageheadpress.com/landminesstmt.html>
34. Schreiber-Noll, Ilse. “Project Discriptions, Commit.”
<http://www.ilseschreibernoll.com/peace-projects.html>
35. Schreiber-Noll, Ilse. “Project Discriptions, Voices for Peace Book I.”
<http://www.ilseschreibernoll.com/peace-projects.html>
36. Bratovich, Jenn. “A Lamentation and Goodbye: Kathy Hettinga’s “4 3 2 CRY”
Women’s Studio Workshop, September 8, 2014.
<http://www.wsworkshop.org/2014/09/4-3-2-cry/>
37. Bratovich, Jenn quoting Kathy Hettinga “A Lamentation and Goodbye: Kathy
Hettinga’s “4 3 2 CRY” *Women’s Studio Workshop*, September 8, 2014.
<http://www.wsworkshop.org/2014/09/4-3-2-cry/>
38. <http://www.wsworkshop.org/2014/09/4-3-2-cry/>
39. United Nations. “Adoption of the Paris Agreement” December 12, 2015
<https://www.documentcloud.org/documents/2646001-Final-COP21-draft.html>
40. Drucker, Johanna. *The Century of Artists’ Books*, New York, Granary Books 2004
41. YouTube, “TateShots: Ed Ruscha’s Photography Books”