

History 6960  
Tulane University

Mining the Americas  
Fall 2018

Instruction: Prof. Kris Lane, Office Hours: 9:30-10:30 pm, T/Th (and by appt.)  
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“Gold is most excellent.” – Christopher Columbus  
“All gold is fool’s gold.” – Edward Abbey

From the time of Columbus until today, the Americas have been perceived as one of the earth’s greatest storehouses of mineral treasures. In addition to industrial metals, coal, and soft minerals such as clay and asbestos, the Americas still produce significant quantities of gold, silver, diamonds, and emeralds. The history of mining in the Americas stretches far back into pre-Columbian times, but it has changed most rapidly in the last 150 years or so with the advance of mechanized techniques of extraction and refining and ballooning global demand. Awareness of the negative environmental and health effects of mining also has a long history, but the numerous problems caused by mining and refining, from worker deaths to polluted air and streams, have only reached a wide audience and prompted legislative controls in recent decades. This course explores the history of mining and its effects on humans and their surroundings in the Americas from ancient to modern times with a special focus on precious metals.

Learning Outcomes: You will not be trained in mining, as this would require a separate laboratory section and considerable fieldwork, not to mention a pile of liability forms, but you will leave this course able to identify the main features and contours of mining history in the Western Hemisphere; to calculate the costs and benefits of mining in the Americas across the centuries; to compare and contrast the several waves of mineral extraction that have altered American landscapes, for example the gold rushes in Brazil and California; to analyze primary and secondary sources; to differentiate between reliable and spurious claims; to write clearly and succinctly about mining history, and to read critically several types of texts - and also critique a few films. These outcomes will be assessed through written assignments, including response papers, reviews, and a research essay, plus a map. They will also be assessed by in-class discussions each week.

### Assignments

In addition to participating in class discussion of readings, which will include one assigned book report beyond the core list (10%), you will be writing two film critiques (10% combined), drawing three maps (10% combined), writing two book reviews (10% combined), and writing a ca.15pp. research paper (60%). Good work will be generously rewarded. Late work will be promptly recycled.

Sample Paper Themes (in need of a compelling research question):

New Almaden, California  
Huancavelica, Peru

Mining the Canadian Shield  
Mercury Amalgamation

WV Coal  
Asbestos

Top EPA Mining Cleanup Sites	Phosphates	Quarries
Cement Manufacture	Minnesota Taconite	Silicosis
Mexican Copper	Rainforest Gold Mining	Anaconda
Bolivian Tin	Brazilian Gemstones	Bauxite
Petroleum Refining	Deep Sea Oil Drilling	Oil Shale

### Core Readings

Ali, Saleem H. *Mining, the Environment, and Indigenous Development Conflicts*. Tucson: University of Arizona Press, 2003.

Bakewell, Peter. *Miners of the Red Mountain: Indian Labor in Potosí, 1545-1650*. Albuquerque: University of New Mexico Press, 1984.

Brown, Kendall. *A History of Mining in Latin America*. Albuquerque: University of New Mexico Press, 2012.

Ferry, Elizabeth Emma. *Not Ours Alone: Patrimony, Value, and Collectivity in Contemporary Mexico*. New York: Columbia University Press, 2005.

Furtado, Júnia. *Chica da Silva: A Brazilian Slave of the Eighteenth Century*. New York: Cambridge University Press, 2009.

Isenberg, Andrew. *Mining California: An Ecological History*. New York: Hill & Wang, 2006.

McNeill, J.R., ed. *Mining North America: An Environmental History Since 1522*. Oakland: University of California Press, 2019.

### Discussion Topics

Week 1: Mining & Meaning in Ancient America: Archeological and Artistic Evidence

Readings: Selections on Blackboard + Brown to p.45

Week 2: Gold: Lure of the Conquistadors

Readings: Brown to p. 70, begin Bakewell + selections (Brading & Cross)

Week 3: Silver Cities: Mining & Society in Colonial Spanish America

Map Ass. 1, “Gold, Silver, Copper, and Precious Gem Mines of the Colonial Americas”

Readings: finish Bakewell, Brown to p.90, read Studnicki-Gizbert in McNeill

Film: “The Devil’s Miner”

Week 4: The Problem of Mercury: Almadén and Huancavelica

Readings: Kendall Brown, “Workers’ Health” (on JSTOR), begin Furtado

Week 5: Gold Rush/Diamond Rush: Mining & Society in Colonial Brazil

Readings: finish Furtado

Film: “Xica da Silva”

Week 6: Mining & Refining in Colonial and Antebellum North America

Map 2, “Mineral Resources of North America Before & After 1849”

Readings: selections on Blackboard, begin Isenberg, cont. McNeill

Week 7: Gold and Mercury in California’s Sierra Nevada

Readings: finish Isenberg + selections on Blackboard

Week 8: Cripple Creek, Leadville, & the Race to the Rockies

Readings: McNeill + selections on Blackboard

Week 9: The Golden Age of Coal & Iron

Readings: selections on Blackboard, cont. McNeill, Brown to p.122

Week 10: Yankee Engineers in Latin America

Film: “Streams of Gold”

Readings: Ferry, all

Week 11: The Quest for Worker Safety and the Rise of Labor

Readings: Brown to p.172

Week 12: Discovering the Environment

Films: “The Price of Gold,” selection from “Decade of Destruction”

Readings: Brown to p.200, begin Ali, finish McNeill

Week 13: Lessons from the Age of Cleanup

Map 3, "Mercury's Spread, c.1500-2010"

Film: "All That Glitters"

Week 14: Mining and Indigenous Rights

Readings: finish Ali

final papers due last day of regular classes

Some Readings for Weekly Reports:

Alan Craig & Robert West, eds. *In Quest of Mineral Wealth: Aboriginal and Colonial Mining & Metallurgy in Spanish America*. Baton Rouge: Louisiana State University Press, 1994.

Peter Bakewell, *Silver and Entrepreneurship in 17<sup>th</sup>-Century Potosí*. Albuquerque: University of New Mexico Press, 1988.

Bakewell, Peter. *Silver Mining and Society in Colonial Mexico: Zacatecas, 1546-1700*. New York: Cambridge University Press, 1973.

Brading, David A. *Miners and Merchants in Bourbon Mexico, 1763-1810*. New York: Cambridge University Press, 1971.

Cleary, David. *Anatomy of the Amazon Gold Rush*. Iowa City: University of Iowa Press, 1990.

Couturier, Edith. *The Silver King: The Remarkable Life of the Count of Regla in Colonial Mexico*. Albuquerque: University of New Mexico Press, 2003.

Godoy, Ricardo. *Mining and Agriculture in Highland Bolivia: Ecology, History, and Commerce among the Jukumanis*. Tucson: University of Arizona Press, 1990.

Guerrero, Saúl. *Silver by Fire, Silver by Mercury: A Chemical History of Silver Refining in New Spain and Mexico, 16th to 19th Centuries*. Leiden: Brill, 2017.

Holliday, J.S. *Rush For Riches: Gold Fever and the Making of California*. University of California Press, 1999.

Kathleen Higgins, *Licentious Liberty in a Brazilian Gold Mining Region*. State College: Penn State University Press, 1999.

Jameson, Elizabeth. *All that Glitters: Class, Conflict, and Community in Cripple Creek*. Urbana: University of Illinois Press, 1998.

Thomas Klubock, *Contested Communities: Class, Gender, & Politics in Chile's El Teniente Copper Mine, 1904-1951*. Durham: Duke University Press, 2001.

Ladd, Doris. *The Making of a Strike: Mexican Silver Workers' Struggles in Real del Monte, 1766-1775*. Lincoln: University of Nebraska Press, 1988.

Morse, Kathryn Taylor. *The Nature of Gold: An Environmental History of the Klondike Gold Rush*. Seattle: University of Washington Press, 2003.

Mulholland, James A. *A History of Metals in Colonial America*. University, AL: University of Alabama Press, 1981.

Smale, Robert. *I Sweat the Flavor of Tin: Labor Activism in Early Twentieth-Century Bolivia*. Pittsburgh: University of Pittsburgh Press, 2010.

Taussig, Michael. *My Cocaine Museum*. Chicago: University of Chicago Press, 2005.

Warhurst, Alyson. *Mining and the Environment: Case Studies from the Americas*. Ottawa: IDRC, 1999.

#### other books

Ali, Saleem. *Treasures of the Earth: Need, Greed, and a Sustainable Future*. New Haven: Yale University Press, 2009.

Craddock, Paul T. *Early Metal Mining and Production*. Washington: Smithsonian Institution, 1995.

MINING THE AMERICAS: SOME THEMES & TERMS

1. WHAT ARE THE DIFFERENT TYPES OF MINING?
2. WHAT DO WE KNOW OF PRE-COLUMBIAN MINING? AND REFINING?
3. WHAT MEANINGS WERE ATTACHED TO MINERAL EXTRACTION?
4. HOW DID MINING CHANGE WITH EUROPEAN ARRIVAL? AND REFINING?
5. WHAT FORMS OF LABOR TOOK SHAPE IN MINING DISTRICTS, AND WHY?
6. WHAT IS THE RELATIONSHIP BETWEEN MINING AND DEVELOPMENT?
7. WHAT WERE THE ENVIRONMENTAL EFFECTS OF COLONIAL MINING?

GOLD PLACERS	VEIN/LODE DEPOSITS	NATIVE COPPER
CLAY PITS	OBSIDIAN/FLINT CACHES	NEPHRITE
EMERALDS	QUARTZ CRYSTALS	TURQUOISE
QUARRYING	ARSENICAL BRONZE	CINNABAR
HUSHING	PROSPECTING	BLASTING
SLAVERY	ENCOMIENDA/MITA	SHARECROPPING
MULE TRAINS	ACEQUIAS/DAMS	TIMBERING
AMALGAMATION	PATIO PROCESS	HUANCAVELICA

Esteemed Miners for a Heart of Gold (or Silver),

It appears that the Brown preview on Google Books is pretty extensive, and Bakewell's 'Miners of the Red Mountain' is online via the library. I've also posted a very short piece on Blackboard about early silver mining at the very first Spanish settlement in the Americas, written by a team of archaeologists and metallurgists.

Here are some questions we'll discuss next week after tackling the first chapters of Brown and the Bakewell book to p.60 (plus the little article):

1. What does Brown conclude about pre-Columbian mining and metallurgy, and how does this square with the readings for week 1 and our class discussion?
2. What links does Brown make between these pre-Columbian practices and early Spanish colonial ones?
3. When was silver discovered and where? (here's where the archaeologists' recent piece adds something new)
4. Where did 'New World' gold and silver fit into the early modern world economy?
5. Based on your reading of Bakewell and Brown, how would you characterize early silver mining and refining in Potosi (up to c.1570)?
6. What are Bakewell's key sources, and how does he use them?
7. Who were the 'indios varas' and 'indios ventureros'? How are they important to Bakewell's thesis?
8. According to Brown, how did Mexico's early colonial mines compare with Potosi?
9. What about gold? What do we learn of El Dorado?

That's probably enough heavy metal for now.

Until next Tuesday,  
Prof. Lane

Mine friends,

As you ease into this steamy weekend dreaming of silver mountains, please consider the following Bakewell/Potosi questions:

1. What role did geography and geology play in Potosi's discovery? What do we know of the name?
2. How was it discovered, and how do we know?
3. How was early mining organized? How productive was it, and how do we know?
4. When did Potosi become a city? And a 'Villa Imperial'?
5. What methods of mining and refining prevailed to 1570?
6. Who were the 'indios varas' and 'indios ventureros'?
7. What were Viceroy Toledo's major innovations?
8. How did the mita function?
9. What explains the appearance of the mingas?

10. What do we know of the effects of disease on native Andean populations in the greater catchment zone of Potosi?
11. What does Bakewell say about mine and refinery labor itself? And slavery? (see his appendix)
12. How does Potosi compare with other contemporary mining districts, according to Bakewell?

Happy reading,  
Prof. Lane

#### Map Assignment 1: Gold, Silver, Copper, and Precious Gem Mines of the Americas

1. On two sheets of standard paper kindly hand draw (I recommend not trying to do this from memory, although it need not be an exact tracing) the North and South American continents, fitting the major Caribbean islands into one or the other as best fits.
2. Identify the main source regions for pre-Columbian copper. Key here is the Great Lakes source and Copper Man's last mining endeavor in Chile, but a few others will be appreciated.
3. Identify at least one pre-Columbian gold source in the Caribbean, one in Mexico, one in Central America, and three in South America. Also identify the La Tolita-Tumaco region where platinum was exploited and worked.
4. Identify the main source of pre-Columbian turquoise in New Mexico, the source of most jade or nephrite in Central America, and the main sources of emeralds in Colombia and pearls in Venezuela.
5. Identify Zaruma, Carabaya, and five other significant goldfields developed under Spanish rule in the Americas.
6. Identify Porco, Potosí, Oruro, Huancavelica, Castrovirreina, Tegucigalpa, Zacatecas, Guanajuato, Parral, Taxco, Pachuca, and San Luis Potosí.
7. Identify the main zones of iron production in colonial British America and the gold and diamond zones of colonial Brazil.

Prezados amigos das minas,

As we move on from the silver districts of the Andes and Mexico to the gold and diamond fields of Brazil, please prepare to address the questions below (way below) based on your reading of Furtado.

Also, as are fast approaching mid-semester, it may be wise for us to plot out remaining assignments. Your first maps look great, so you'll have an idea what to expect for maps 2 and 3. Map 2, due on 30 October, will focus on the mining boom in the U.S. and Canada



(I'll post instructions soon), and map 3, due 27 November, will address fossil fuels and major mineral exploitation underway or planned today in the Western Hemisphere.

Since I and the folks in media services have not been able to lay hands on a copy of the vintage 1976 Brazilian film 'Xica da Silva,' I'll be asking you to write your first film critique of 'The Devil's Miner.' Since we've seen a portion of it and discussed it in class, it should not be too difficult to view the rest and offer a historically minded assessment of this documentary in about 750 words (+/- 50), due next Tuesday (typed, double-spaced, no need for cover sheets, etc.). The second film just came in. It's called 'Butte, USA.' My plan is to show this documentary on 30 October, and for you to hand in your reviews of it the following Tuesday, Election Day. It is a 20th-century story that links the U.S. copper mining industry with that of Chile.

This reminds me that class on 9 October is probably impossible for many, so let's call that one a miners' holiday.

On the 2 book reviews (same length as the film reviews), please alert me to your interests and I can help you identify books on which to report. It would probably be wise to get at least one of these finished before too much time passes. I have several good possibilities for next week, two on Brazilian gold mines and a couple on Mexican silver in the late colonial era, but you'll have to tell me what you'd like to learn about, and we'll take it from there.

Best wishes, and happy reading!  
Prof. Lane

#### Furtado Questions

1. What do we learn about Brazil's 18th-century diamond district? And about the town of Tejuco? What was the Portuguese crown's role here?
2. What do we learn of slavery in this region? Of gender divisions of labor and race relations?
3. What is the legacy or myth of Chica da Silva, according to Furtado? (described at the front and back of the book)
4. What is the reality or historical 'truth' about Chica da Silva, according to Furtado?
5. How did Chica da Silva compare with other women in Tejuco?
6. How well connected and wealthy was Joao Fernandes de Oliveira, and how did he end his days?
7. What do we know of the children of Chica da Silva?

8. How did she run her household and how many slaves did she possess?

William Byrd II of Westover, "A Progress to the Mines, in the year 1732"

1. Who is this Byrd fellow, anyway?
2. What do we learn of his journey to the iron mines and forges of colonial Virginia?
3. What's the scale of this industry, who does the work, and what technology is involved?
4. Where's the iron going, or do we know?
5. What else does Byrd say that is of interest to us?

As you dig into California pay dirt as described by Andrew Isenberg, please think of questions such as the following:

1. To what degree does the California gold rush seem like a continuity or 'repeat' of earlier American bonanzas?
2. In what ways is it distinct?
3. What are the main social effects of this rush according to Isenberg? And political ones?
4. How does placer mining alter the California environment, and how do various people react to this alteration?
5. What role does mercury play in the gold rush and aftermath?
6. Is Sacramento another Potosi? How is the site of the city altered, and what does Isenberg make of this?
7. What does Isenberg mean by 'capitalizing on nature' in chapter 3? Did 'Anglo' settlers 'mine' the redwoods?
8. Is California at this stage (late 19th century) on the path to development?

And last, please have a look at retired Penn State professor Richard L. Garner's website 'history datadesk'. You'll see that he has a whole online book, plus many useful links, on the Comstock Lode, just across the border from CA in Nevada. This was Mark Twain country, and the objective was silver - the closest thing to a US Potosi in terms of richness. Read up and be prepared to compare the transitions and innovations developed here with the placer cycle or boom-and-bust of CA.

Map Assignment 2: "Mineral Resources of North America Before & After 1849"

On a sheet of paper, outline North America and fill in the states and provinces (or territories) of the U.S., Canada, and as much of Mexico as you can squeeze in. Then

identify the following:

- a. the major goldfields of the California Gold Rush and 5 key towns and cities spawned by the rush, plus the mercury mines of New Almaden
- b. the Comstock Lode and 2 key towns associated with it
- c. Cananea, Mexico, and 2 major copper fields of AZ
- d. Deadwood, Telluride, Silverton, Cripple Creek, Blackhawk, Leadville, Butte, Coeur d'Alene, Tombstone, Creede, Silver City, and Prescott, with the main metal (sometimes obvious) that made them famous.
- e. the main coalfields of Appalachia (lignite and anthracite), plus the coal districts around Ludlow, CO, and Rock Springs, WY (both sites of worker massacres)
- f. Minnesota's fabled iron range plus the birthplaces of Bob Dylan and Judy Garland
- g. the coal mines of Canada's Maritime Provinces
- h. the major gold mines of Canada's west, plus Alaska

Esteemed ore-mongers,

For next week's discussion, please take a (close) look at the following articles, easily available on JSTOR. Be ready to discuss.

Gavin Wright, "The Origins of American Industrial Success, 1879-1940" *American Economic Review* 80:4 (1990): 651-68.

David St. Clair, "New Almaden and California Quicksilver in the Pacific Rim Economy" *California History* 73:4 (1994-95): 278-95.

Mark Kanazawa, "Immigration, Exclusion, and Taxation: Anti-Chinese Legislation in Gold-Rush California" *Journal of Economic History* 65:3 (2005): 779-805.

Lucie Cheng Hirata, "Free, Indentured, Enslaved: Chinese Prostitutes in 19th-Century America" *Signs* 5:1 (1979) 3-29.

There will be blood!