UNDER FIRE AND UNDER WATER

Fighting for Climate Resilience in the America West
Questions Addressed in the Book

1. How do natural and human legacies shape climate resilience politics in the American West?

2. What are the different policy/political challenges posed by drought, wildfires and sea level?

3. Extending beyond the book, what does climate policy teach us about democracy design?
Policy shaped by Climate: Aridity/Seasonality/Variability

*Note: NOAA does not provide data for Alaska or Hawaii for this time period. (Washington Post)*
Climate Change adds more water stress to Arid/Semi-Arid West....
A “too little” water problem...longer, more intense droughts

Drought in California from 2000–Present

The U.S. Drought Monitor started in 2000. Since 2000, the longest duration of drought (D1–D4) in California lasted 376 weeks beginning on December 27, 2011, and ending on March 5th, 2019. The most intense period of drought occurred the week of July 29, 2014, where D4 affected 58.41% of California land.

The U.S. Drought Monitor (USDM) is a national map released every Thursday, showing parts of the U.S. that are in drought. The USDM relies on drought experts to synthesize the best available data and work with local observers to interpret the information. The USDM also incorporates ground truthing and information about how drought is affecting people, via a network of more than 450 observers across the country, including state climatologists, National Weather Service staff, Extension agents, and hydrologists. Learn more.

Latest Available Data: 2023-01-31

[Graph showing drought conditions from 2000 to 2023]
A “too much” water problem: sea level rise and flooding

Sea-Level Rise: a Slow-Moving Emergency

Select Committee Report of August 2014

Richard S. Gordon, Chair
Katcho Achadjian
Toni G. Atkins
Steven Bradford
Rocky J. Chávez
Jeff Gowell
Bonnie Lowenthal
Al Muratsuchi
Nancy Skinner
Philip Y. Ting
Ellen Hou, Committee Staff
“Seasonality issues”: wildfires and smoke
More Climate Stress=More Political Stress

• Stresses existing water infrastructure

• Worsens political tensions over water shares to fish, farms and people

• Disputes between states that share aquifers/rivers

• Rising costs associated with liability, disaster relief, utility bills, insurance, fire fighting
Climate Policy also shaped by political legacies

Federal Govt. led/incentivized/funded Western Development

- **Occupation** of West lands (Homestead Act)
- **Transportation** to West (RR Act, Highway construction)
- **Infrastructure** in West (Dams/Levees, Irrigation)
- **Security** (Foreign wars, Native-American displacement.)

The shift to environmental protection post-WW2
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Climate Adaptation Clashes with Western Expansion Legacies

- Legacy of people/businesses in risky/disaster prone area
- Legacy of fractured government when coordination at scale needed
- Legacy of varying local capacity and motivation
- Legacy of appropriative water rights
Building in very arid areas…

'A State of Drought': Coachella Valley grapples with shrinking water supplies

By Lisa M. Krieger | lkrieger@mercurynews.com

POSTED: 10/03/2016 12:45:22 PM PDT | UPDATED: ABOUT 11 HOURS AGO

1/30
And building in areas subject to sea level rise

Property at Risk

- $100 billion dollars at *current* value and level of development.
- *Only* buildings and contents.

Replacement value of buildings and contents (billions of dollars*):
- 0.1
- 1
- 10
- Coastal County

[Map showing coastal counties with replacement values and property at risk]

[Text: Pacific Institute]

[Logo: The Bill Lane Center for the American West]
Living in and near fire prone areas

Figure-02
Number of Houses in the WUI by State

- **Number of Houses**
  - Dark Brown: 3,000,001 – 4,457,884
  - Brown: 1,500,001 – 3,000,000
  - Orange: 1,000,001 – 1,500,000
  - Light Orange: 500,001 – 1,000,000
  - Light Yellow: 505 – 500,000
Climate Adaptation Clashes with Western Expansion Legacies

• Legacy of people/businesses in risky/disaster prone area

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• Legacy of varying local capacity and motivation

• Legacy of appropriative water rights
Fighting over water across states

ENVIRONMENT

Deadline for Colorado River water cuts passes with no agreement

The river basin supplies water to seven states - six of them agreed on a plan before the Jan. 31 deadline. But California rejected that plan and submitted its own.
Perverse government incentives...

- Local governments **derive needed revenue** from commercial and residential development.

- State and Federal governments provide **relief and emergency funds**.

- States and private companies provide **insurance that incentivizes risk**.
The limits of water coordination: IRWMs

The Challenge of Externally Generated Collaborative Governance: California’s Attempt at Regional Water Management

Bruce E. Cain¹, Elisabeth R. Gerber², and Iris Hui¹

Abstract
Creating successful collaborative governance regimes is difficult, but can be especially hard when collaborations are externally generated by higher levels of government as opposed to self-generated by local agencies and stakeholders due to the lack of spontaneity. We analyze this problem as it applies to California’s Integrated Regional Water Governance Program. Public administration theory indicates that a core element in a successful collaboration is empowering local leaders who share the collaboration’s intended goal. However, the political concessions to local autonomy necessary to enact an externally generated collaboration can undermine its success. The tensions between maintaining local autonomy and creating a regional approach are inherently strong in a “layered collaborative governance” approach that acknowledges and accommodates local boundaries. Drawing on the concept of role differentiation, we hypothesize that the roles participants play in layered collaborative governance will frequently derive from their preexisting issue areas, geographic orientations, and power relations, but that program design incentives can influence which groups participate in the effort and how they engage. We test these hypotheses in the context of California’s Integrated Regional Water Management (IRWM) program. We find evidence of role differentiation on grant leadership both with respect to the initial goal of regional collaboration as well as later efforts to address the water issues of disadvantaged communities.

Keywords
collaborative governance, integrated water management, institutional layering, role differentiation, grant design
Adaptation Clashes with Western Expansion Legacies

- Legacy of people/businesses in risky/disaster prone area
- Legacy of fractured government when coordination at scale needed
- Legacy of varying local capacity and motivation
- Legacy of appropriative water rights
Those who can do and those who can’t, don’t!

From the Daily Journal archives

Foster City levee bond passes

Measure P receives 80 percent of vote

By Zachary Clark Daily Journal staff  Jun 5, 2018  1

Foster City property owners will pay $90 million to upgrade the city’s existing levee system as mandated by FEMA and amid concerns about sea level rise after semi-official election results show 81 percent of voters approved Measure P.

“We’re very excited. Our community is well educated and always understood the issue at the end of the day and understood we needed to protect our community so tonight’s election results are a big win for Foster City,” said Mayor Sam Hindi.
Protective Levees...

Sources: Adapting to Rising Tides program, San Francisco Bay Conservation and Development Commission; San Mateo County; San Francisco Estuary Institute; Natural Earth Data; ESRI Earth Imagery; NASA Elevation Data
With consequences for the neighbors...
Adaptation Clashes with Western Expansion Legacies

• Legacy of people/businesses in risky/disaster prone area

• Legacy of fractured government when coordination at scale needed

• Legacy of varying local capacity and motivation

• Legacy of appropriative water rights
Western Appropriative Surface Water Rights

Figure 9.1. Governance by water rights in the U.S.

Landowner Groundwater Rights Lead to Depletion

In 2015, groundwater provided 29% of the total freshwater used in the United States. However, eight states and at least one territory depended on groundwater for at least 50% of their freshwater supply:¹

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mississippi</td>
<td>84%</td>
</tr>
<tr>
<td>Kansas</td>
<td>71%</td>
</tr>
<tr>
<td>Arkansas</td>
<td>69%</td>
</tr>
<tr>
<td>California</td>
<td>67%</td>
</tr>
<tr>
<td>Hawaii</td>
<td>63%</td>
</tr>
<tr>
<td>Nebraska</td>
<td>59%</td>
</tr>
<tr>
<td>Florida</td>
<td>63%</td>
</tr>
<tr>
<td>Nebraska</td>
<td>61%</td>
</tr>
<tr>
<td>South Dakota</td>
<td>60%</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>53%</td>
</tr>
<tr>
<td>U.S. Virgin Islands</td>
<td>50%</td>
</tr>
</tbody>
</table>

The states that use the largest total volumes of groundwater tend to have large populations and/or extensive farmland in arid areas. In 2015, just five states accounted for 54% of national groundwater use, mostly for irrigation:¹

<table>
<thead>
<tr>
<th>State</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>21% (80% for irrigation)</td>
</tr>
<tr>
<td>Arkansas</td>
<td>11% (97% for irrigation)</td>
</tr>
<tr>
<td>Texas</td>
<td>9% (62% for irrigation)</td>
</tr>
<tr>
<td>Nebraska</td>
<td>7% (93% for irrigation)</td>
</tr>
<tr>
<td>Idaho</td>
<td>6% (92% for irrigation)</td>
</tr>
</tbody>
</table>

References
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Climate Change and Capitalist Democracies

- Climate Policy is a **planned economy exercise** that seeks to shift consumers away from dependence on fossil fuels (decarbonization) and to incentivize them to protect homes/businesses/themselves from extreme weather (adaptation).

- Normally planned economies are the **M.O. of centralized socialist states** with public ownership of the means of production not Capitalist Democracies.

- Wars/Pandemics/etc. required similar planning/control but were motivated by **immediate visible problems** but global warming is a future problem manifested in diverse forms of extreme weather.

- **The US has a particularly strong cultural commitment to free enterprise/market economy and a weaker state design due to horizontal and vertical fracture across states and the federal government.**
Strong Federalism in the US and Climate Policy

- High Horizontal fracture and frequent turnover in the US makes it **hard to have consistent progress** at the national and international level.
- High Vertical Fracture results in more outcome variance and inequality in reaching climate goals.
- Polarization, geographic sorting and rising inequality **exacerbate the structural vulnerability** to fracture.
- Both decarb and resilience require state and local actions in areas of reserved powers, which raises **substantial principal-agent problems** in national and state environmental problems.
What does this mean going forward?

- Reserved powers doctrine incentivizes **more reliance on sermons/carrots** and less on sticks—the importance of strong federalism

- This may mean a **lower ceiling on progress**, but also a **higher floor** in the long run that guarantees more progress when there are shifts in the national govt for whatever reason

- The local inequalities may mean that the US efforts in resilience and decarbonization will **vary more by income and lag behind other OECD** in realizing ambitious goals like net zero by 2050

- The niche for the US will likely remain **innovating new tech and pushing early adoption of first mover** communities and individuals