

# Symposium on Natural Resources Governance for Young Scholars November 15-16, 2018

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## Program Organizer

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Dean is Professor of Economics and Director of the Program on Governance of Natural Resources at the Ostrom Workshop at Indiana University. He also Affiliated Professor at the Maurer School of Law. His areas of research are the economics of contracts and property rights, economic organization, law and economics, and environmental-natural resource economics. He has been a guest lecturer and visiting faculty member at many colleges and universities in the United States and abroad. He has served as John M. Olin Faculty Fellow in Law and Economics at the Yale Law School and as Distinguished Visiting Professor of Law and Economics at the University of Toronto. He is the co-author (with Douglas W. Allen) of *The Nature of the Farm* (MIT Press 2003) and a contributing co-editor (with Karen Bradshaw) of *Wildfire Policy: Law and Economics Perspectives* (Resources for the Future Press, 2012). He has published numerous articles in such journals as the *American Economic Review*, the *Journal of Law and Economics*, the *Journal of Political Economy*, and the *RAND Journal of Economics*. He was a Lone Mountain Fellow at PERC in August 2015 where he studied the economics of environmental agencies. His current research projects include the behavior of environmental agencies, land demarcation, environmental voting, and the domestication of wild animals. He earned his Ph.D. in Economics from the University of Washington, his M.S. in Environmental Studies from the University of Montana, and his B.A. in Biology (Magna Cum Laude) from Gonzaga University. Prior to his academic career he was a smokejumper with the U.S. Forest Service in McCall, Idaho.

## The Importance of Institutions in Natural Resource Use and Conservation

### Readings:

- North, Douglass C., Gardner Brown, and Dean Lueck. 2015, "A Conversation with Douglass North," *Annual Review of Resource Economics* 7:1–10.
- Gordon, Scott. 1958, "Economics and the Conservation Question," *Journal of Law and Economics* 1:110-121.

## Senior Scholars

**BENITO ARRUÑADA**, Department of Economics & Business, Pompeu Fabra University & BGSE, Trias Fargas, 25-27 08005-Barcelona (E-SPAIN); T: (+34) 935 422 572; E: [benito.arrunada@upf.edu](mailto:benito.arrunada@upf.edu); <http://econ.upf.edu/~arrunada>  
Benito is Professor of Business Organization at Pompeu Fabra University, Barcelona (Spain). Former President of the Society for Institutional and Organizational Economics, his research lies in the conjunction of law, economics and organization and relates to specific problems of competition policy and business regulation and contracting, as well as broader aspects related to the reform of the business environment. His research has been published in, among others, *Economic Journal*; *Harvard Business Review*; *Journal of Law & Economics*; *Journal of Law, Economics & Organization*; *Journal of Economic Behavior & Organization*; and *Journal of Comparative Economics*. He has served as consultant to various corporations, foundations and governmental agencies and has given expert testimony before parliamentary committees and courts on topics closely related to his research interests. In the last five years, he has applied to new areas (including blockchain) the analytical framework developed in his last book (*Institutional Foundations of Impersonal Exchange*, University of Chicago Press 2012).

## Coase and Institutional Analysis

### Readings:

- Coase, Ronald, H. 1960, "The Problem of Social Cost," *Journal of Law and Economics* 3(1):1-44.
- Coase, Ronald, H. 1991, "The Institutional Structure of Production," Nobel Prize Lecture, December 9.

**DOMINIC PARKER**, Agricultural and Applied Economics, University of Wisconsin, 427 Lorch Street, Madison, WI 53706; T: (608) 262-8916; E: [dominic.parker@wisc.edu](mailto:dominic.parker@wisc.edu); <https://aae.wisc.edu/dparker/> Nick is a newly tenured Associate Professor of Agricultural and Applied Economics at the University of Wisconsin-Madison. His research spans topics in natural resource and development economics and includes studies of conflict minerals, oil booms and busts, private land conservation, fishery regulation, and Native American economies. This research focuses on the role that property rights, governance, and institutions play in affecting the extent to which societies and individuals benefit from their natural resource endowments. Parker's articles appear in economics and law journals and have been featured in popular press outlets, including BBC News, Washington Post, and Wall Street Journal.

### **Doing Empirical Analysis of Resource Governance in the Credibility Revolution**

#### **Readings:**

- Angrist, Joshua D. and Jorn-Steffen Pischke. 2010. "The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics," *Journal of Economic Perspectives* 24(2): 3-30.
- Parker, Dominic P. Forthcoming. "Questions of Property Rights" Chapter 2 in *Research Agenda for New Institutional Economics*, eds. C. Menard and M. Shirley. Edward Elgar, London.

**JAMES M. WALKER**, Professor of Economics and Senior Research Fellow, former Co-director, Ostrom Workshop in Political Theory and Policy Analysis, and Director of the Interdisciplinary Experimental Laboratory, Indiana University; T: (812) 855-2760; E: [walkerj@indiana.edu](mailto:walkerj@indiana.edu); <https://economics.indiana.edu/about/faculty/walker-james.html> Jimmy's principal research focus is the use of experimental methods in the investigation of individual and group behavior related to the voluntary provision of public goods and the use of common pool resources. He is a recipient of the Indiana University "Student Choice Award," and was the recipient of the College of Arts and Sciences, James P. Holland teaching award. Selected publications include, *Rules Games, and Common Pool Resources*, University of Michigan Press, published with Lin Ostrom and Roy Gardner.

### **The Commons – Institutions, Incentives, and Behavior in Experiments**

#### **Readings:**

- Ostrom, Elinor, James Walker, and Roy Gardner. 1992. "Covenants With and Without a Sword: Self-Governance is Possible." *American Political Science Review* 86(2) (June): 404–17.
- Blanco, Esther, and James M. Walker. Forthcoming 2019. "Common-Pool Resource Appropriation and Conservation: Lessons from Experimental Economics." In *Routledge Handbook of the Study of the Commons*, edited by Blake Hudson, Jonathan Rosenbloom, and Daniel Cole. New York: Routledge.

## **Young Scholars**

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### ***Moral Hazard, Wildfires, and the Economic Incidence of Natural Disasters***

**Abstract:** Worsening wildfires are one of the most salient impacts of climate change in North America. A large share of the total social costs of wildfires comes from wildland firefighting costs, which in the U.S. are mostly borne by the federal government. We measure the degree to which this arrangement subsidizes development in high risk locations. To do this, we assemble administrative firefighting expenditure data from multiple federal and state agencies, yielding the most comprehensive database of firefighting costs in existence. We merge this to parcel-level data on the universe of western U.S. homes. Our main empirical contribution is to calculate the expected additional future cost to the federal government to protect a home from wildfire, in great spatial detail for the entire western U.S. We use natural variation in ignition locations to measure how firefighting expenditures increase when homes are threatened, and then compile each home's history of fire protection costs in an actuarial calculation of expected future protection cost. We find that a large share of the resources devoted to wildland firefighting are spent to protect homes. Consistent with a model of locally non-rival firefighting benefits, the marginal effect of homes on firefighting costs is rapidly decreasing in development density. Thus, wildland firefighting represents a large implicit subsidy to landowners in high-risk, low-density places. For our highest-cost categories of homes, we find that the expected present value of additional future firefighting costs exceeds 10% of the transaction value.

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### ***Wholesale Electricity Markets and Blackouts: Evidence from India***

**Abstract:** In the United States, demand for electricity among utilities in the wholesale spot market is assumed to be perfectly inelastic. Consumers therefore face power outages only as a result of infrastructure failure -- never because a utility does not purchase enough electricity to satisfy demand. This also implies that inefficiencies on the generation side of the market which raise price do not impact quantity consumed by retail customers. In this paper, we provide evidence that utilities participating in the Indian wholesale market are extremely price elastic: as prices rise, they purchase less power on the wholesale market, meaning that load shedding increases when prices rise. Using data on plant-specific marginal costs, we document substantial deviations from first-best electricity generation, half of which can be explained by plant outages. These inefficiencies increase the wholesale price, and therefore contribute substantially to rampant blackouts.

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### ***Does When You Die Depend on Where You Live? Evidence from Hurricane Katrina***

**Abstract:** "We follow Medicare cohorts over time and space to estimate Hurricane Katrina's long-run mortality effects on elderly and disabled victims initially living in New Orleans. Inclusive of the initial shock, the hurricane *improved* survival eight years past the storm by 1.74 percentage points. Migration to lower-mortality regions explains most of this survival increase. Migrants to low- versus high-mortality regions look similar at baseline, but migrants' subsequent mortality is 0.83–0.90 percentage points lower for each percentage-point reduction in local mortality, quantifying causal effects of place on mortality among this population. By contrast, migrants' mortality is unrelated to local Medicare spending"

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### ***Land Ownership and Irrigation on American Indian Reservations***

**Abstract:** We examine agricultural land use and irrigation on parcels on and adjacent to the Uintah-Ouray Indian Reservation in eastern Utah to understand how land ownership institutions affect agricultural development. Land within the reservation is held in trust by the federal government and has significant restrictions on its use and development. We use the exogenous allocation boundaries of a 1905 land allotment as a natural experiment, employing both a regression discontinuity (RD) design to explore how land ownership has affected agricultural land use, irrigation levels, and irrigation investment. Our results suggest that the original allocations provided land of similar quality across the border. Despite this, tribal lands are around 18 percentage points less likely to be irrigated today, and conditional on being irrigated, tribal land has a 31 percentage point lower rate of capital-intensive sprinkler irrigation. Tribal land is also less likely to grow high-value crops. These results suggest that trust ownership creates significant barriers to the acquisition of capital for agricultural investment, and helps explain lagging agricultural development on reservations.

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### ***Inefficiency in Water Pricing and Incentives for Conservation***

**Abstract:** Agriculture uses much of the world's water and groundwater depletion is an important policy issue in many countries. We use two randomized controlled trials across 544 villages of rural Bangladesh to study a simple conservation technology called "Alternate Wetting and Drying (AWD)". The AWD technology — proven to increase water efficiency in agronomic experiments — is a simple PVC pipe that allows farmers to monitor soil moisture to plan their irrigation schedule. The first RCT shows that in areas where water is priced volumetrically, i.e. it has a nonzero marginal price, AWD reduces water use and increases farm profits, but has no effect in villages where farmers pay fixed per-acre water prices. Building on these findings, the second RCT randomly distributed debit cards that

approximate volumetric water pricing by converting farmers from fixed-price contracts to hourly billing. The debit cards cause significant shifts in demand for AWD — demand becomes less price sensitive, i.e. uptake increases at higher prices. Taken together, these results stress the importance of fixing a simple yet fundamental inefficiency in water pricing. Namely, setting the marginal price of water so it more closely tracks the marginal cost incentivizes adoption of technologies that increase water use efficiency.

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### ***The Slaughter of the Bison and Reversal of Fortunes on the Great Plains***

**Abstract:** In the late 19th century, the North American bison was brought to the brink of extinction in just over a decade. We show that the bison's slaughter led to a reversal of fortunes for the Native Americans who relied on them. Once the tallest people in the world, the generations of bison-reliant people born after the slaughter were among the shortest. Today, formerly bison-reliant societies have between 20-40% less income per capita than the average Native American nation. We argue that federal restrictions limiting the mobility and employment opportunities of Native Americans hampered their ability to adjust in the long-run.

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### ***Property Rights and Path Dependence: 19th Century Land Policy and Modern Economic Outcomes***

**Abstract:** Coase's (1960) analysis of transaction costs suggests that tying ownership of multiple resources to land rights creates a basis for contracting, thereby lowering transaction costs. In theory, bargaining to manage resources such as water, oil, or habitat is made less costly by the clear delineation of rights which serve as a basis for assigning responsibilities and distributing rents (Anderson and Libecap 2014). In a world of zero transaction costs, the initial distribution of land would be immaterial because rights could be severed and/or reconfigured to the optimal shape, size, and spatial distribution for the management of different resources. When transacting is costly, the demarcation of land can significantly affect economic efficiency (Libecap and Lueck 2011)—the economics literature is rife with example of rent dissipation that occurs when private parcels are not scaled to match the efficient scale of management for natural resources, suggesting significant barriers to market-bases readjustment of parcel size Are these barriers more accidents of history or fundamental features of systems of property to land? This project assesses the importance of transaction costs in the distribution of property to land by in investigating whether constraints on initial parcel size during the Homestead Era affect modern outcomes in Western U.S. Counties. We use recently digitized data on every land patent issued by the Federal Government from 1776 onward to estimate the relationship between initial parcel characteristics and modern farm sizes, population density, income from a variety of sources, and land use at the both county and parcel level, exploiting variation in land disposal policy over time and space as an instrument for the initial distribution of land. This research illuminates how the design of systems of land tenure can prevent or contribute to rent dissipation associated dynamically changing scales of optimal management.

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### ***The Legacy of Mexican Land and Water in California***

**Abstract:** We use a natural experiment to examine the effects of land demarcation on farms' values and agricultural decisions in nineteenth-century California. Land demarcation occurs in two dominant forms: metes and bounds (MB) and the rectangular system (RS). In MB, individuals specify land parcels. In RS, land is surveyed and demarcated prior to settlement and is organized in a uniform grid of square plots. We use farm-level data from the 1880 Agricultural Census for California to test predictions about farms' land demarcation pattern on economic outcomes in nineteenth-century California. Our results indicate that MB farmers had more valuable and productive farms, and focused in different agricultural activities than RS farmers.

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***Common Pool Resources, Spillover Effects, and Local Security: A Theoretical Foundation with Preliminary Evidence***

**Abstract:** Existing research suggests that communities can successfully govern common pool resources to ensure long-term viability of the resource (Ostrom 1990, Agrawal and Chhatre 2006). However, little research has been done to evaluate the potential spillover effects of these forms of local cooperation for other realms of behavior beyond natural resource management. Drawing on the case of community managed forests in Casamance, Senegal, a region affected by a 30 year secessionist conflict, I explore the theoretical potential of spillover effects of common property management regimes (CPMs) at the community level for local security. To what extent might participation in CPMs of natural resources effect local security outcomes? Relying on a simultaneous games framework (Bednar and Page 2007), I provide four hypotheses about the relationship between common pool resource management regimes and local security. I then provide some suggestive empirical results from a survey of villagers in Casamance, Senegal conducted in July-September 2018 to evaluate the relevance of each of these hypotheses. Given the limited scholarship on behavioral spillovers from CPMs, this study provides the groundwork for comparative empirical testing that will shed light on the local geography of conflict, the behavioral dimensions of coupled human and natural systems, and potential policy implications for property rights regimes, and their effect on conflict immunity at the local level.

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***Norms Formation: The Gold Rush and Women's Roles***

**Abstract:** How does the scarcity of women affect gender norms? We explore the Gold Rush in Western United States in the late 19th century as a natural experiment to answer this question. We use a geographic difference-in-difference methodology, exploiting the location and discovery of the gold deposits and its influence on sex ratios, to understand short term and medium term changes in women's labor market participation and marriage market opportunities. Gold mining, likely through the oversupply of marriageable men with income, increased marriage rates among women. Women also married older men with higher prestige occupations. Men were less likely to marry. In parallel with the changes to marriage markets, the Gold Rush created a market based service sector economy, potentially catering to men with money but poor marriage prospects. We find support for the hypothesis that these effects persist in the medium term using the 1940 census, also when controlling for contemporaneous sex ratio and presence of mining.