Linking Knowledge with Action
an approach to science grantmaking

Kai Lee
David & Lucile Packard Foundation

National Research Council workshop, Measuring the Impacts of Federal Investments in Research

April 19, 2011

Packard Foundation

- Grants: $236 m in 2010
- Population & Reproductive Health
- Children, Families & Communities
- Local
- Conservation & Science, $154m in 2010

Science at the Packard Foundation

- Monterey Bay Aquarium Research Institute
- Packard Fellows in Science & Engineering
- Communications Partnership for Science & the Sea (COMPASS)
- Center for Ocean Solutions
- Partnership for Interdisciplinary Study of Coastal Oceans
- ***Linking Knowledge with Action***, ~$3m/yr

Linking Knowledge with Action

- Use-inspired research & synthesis (instead of curiosity-driven)
- Aligned with conservation programs
  - Western Pacific, Gulf of California, Coastal California, Fisheries; Western Conservation, Agriculture, Science
  - ClimateWorks
- A heuristically inclined practitioner

Linking Knowledge with Action

- Science- and scientist-led action (dominant approach)

  + Ecological perspective (Rachel Carson)
  + Conservation biology -> protected areas in economically marginal areas (wilderness, ocean)

  - Adaptive management, ecosystem-based management – sensible to a scientist, hard/impossible in practice.
  - Conservation biology, in economically established areas.

Linking Knowledge with Action

- Use-inspired (emergent approach)
  - To support advocacy
    - Polarization
    - Risks damage to credibility & legitimacy
    - Sometimes necessary (toxics, ocean acidification)
  - To support decision making *and learning*
    - Works best in a collaborative setting (governance to solve problems)
    - Reinforces institutions
    - Requires some conflict (to recognize problems)

Source: Clark, William C., Ronald B. Mitchell, and David W. Cash 2006. Evaluating the Influence of Global Environmental Assessments. Chap. 1 of *Global Environmental Assessments: Information and Influence, eds. R.B. Mitchell, W.C. Clark, D.W. Cash & N.M. Dickson, Cambridge: MIT Press.*

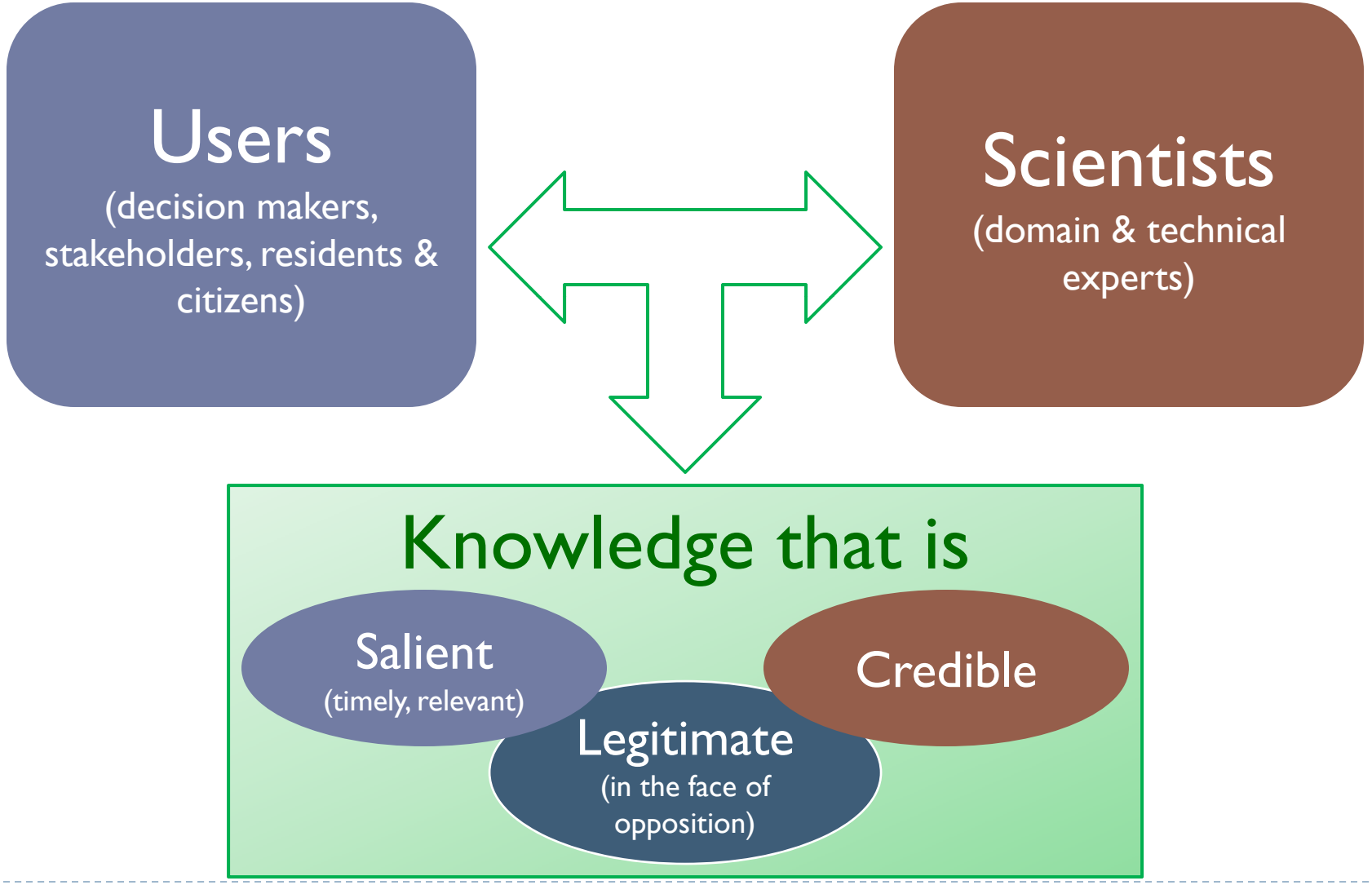
Modes of learning

each mode of learning	makes observations...	and combines them...	to inform activities...	...that accumulate into usable knowledge	example
Laboratory experimentation	controlled observation to infer cause	replicated to assure reliable knowledge	enabling prediction, design, control	theory (it works, but range of applicability may be narrow)	Semiconductor physics & computer chips
adaptive management (quasi-experiments in field situations)	systematic monitoring to detect surprise	integrated assessment to build system knowledge	informing model-building to structure debate	strong inference (but learning may not produce timely prediction or control)	Green Revolution agriculture
trial & error	problem-oriented observation	extended to analogous instances	to solve or mitigate particular problems	empirical knowledge (it works but may be inconsistent & surprising)	Learning by doing in mass production
unmonitored experience	casual observation	applied anecdotally	to identify plausible solutions to intractable problems	models of reality (test is political, not practical, feasibility)	most statutory policies

Linking Knowledge with Action

- *Use-inspired science* to support trial & error and adaptive management
- Projects: >1 grant; 2-3 yr; $500-1500k.
  - Emerging contaminants (State Water Board; expert panel)
  - Gulf of California protected area monitoring (CONAPESCA; PANGAS)
  - Tehachapi wind corridors (BLM, FWS, county govts; Southern Sierra Partnership/Conservation Biology Institute)
  - Climate Adaptation, Monterey Bay (Coastal Commission; Natural Capital Project)
  - Monitoring & value of info (CA Monitoring Enterprise, DLPF, UC Davis, TNC/UW, WWF)

Linking Knowledge with Action



Linking Knowledge with Action

- Output-oriented grantmaking
  - Focus on decisions, decision-makers at outset
  - Deliverables, include LKwA process outcomes
  - Aligning users and researchers
- Seeking to learn from surprises
  - LKwA appraisal; questions for reporting—explicit expectations; expect surprise.
  - "We work with grantees to identify specific outcomes and indicators, and closely monitor and evaluate their progress. Over time this allows us to learn the types of short- and medium-term interventions in which the Foundation can have greatest impact. We expect that this knowledge, in turn, will help further advance the understanding of how science can more effectively be used in conservation decision making."

Linking Knowledge with Action--Appraisal

- Ripe situation: Are there openings for rethinking?
- Spanning boundary: Do actors agree that the questions to be investigated are important, even when they disagree on desirable answers? Is there a boundary organization?
- Capacity: Do those conducting the research have the interest and capacity to work with decision makers and stakeholders?
- *Joint* production: Is the knowledge salient, credible & legitimate?
- Behavioral changes: what difference does the knowledge make?

Context

- Functions of Scientific Information (Graffy, USGS)

Stage in policy process	Contribution of science	Knowledge to Action
1. Emergence	Announce discovery	Credibility = legitimacy
2. Framing	Perspective on issues	Need authorizing environment for legitimacy
3. Priority-setting	Test decision options	Need authorizing environment for legitimacy
4. Legislate or set rules	Estimate tradeoffs or validate choices	Risks of advocacy
5. Implement goals	Inform implementation	Instrumental

Source: Graffy, Elisabeth A. 2008. Meeting the Challenges of Policy-Relevant Science: Bridging Theory and Practice. *Public Administration Review* 68:1087-1100.

Context

- Advocacy Coalition Framework (Sabatier)

	Adversarial	*Collaborative (incl LKwA)*
Role of science	Political resources to shape rules (high conflict)	Instrumental knowledge to implement rules (lower conflict)
Impact of knowledge	Persuasive narrative for change or to discredit	Integration into institutional routines for management
Consequences	Salient, but credibility problematic; legitimacy for winners	Credible, but salience can be difficult; legitimacy when solutions found

Source: Weible, Christopher M., Andrew Pattison, Paul A. Sabatier 2010. Harnessing expert-based information for learning and the sustainable management of complex socio-ecological systems. *Environmental Science & Policy* 12:522-534.

Linking Knowledge with Action

- An emergent approach
- Centered on problem-solving in conservation
- Theory of change:
  - recognize boundary between science and action
  - joint production
  - to create knowledge that is used in action
- Learning to nurture user-scientist relationship via philanthropy

What philanthropy can('t) do

- Science derived from conservation (e.g., new species)
- Seed new fields of study (e.g., marine microbiology)
- Initiate new modes of action (e.g., eco-labeling)
- Spotlight scientists with "crossover" potential (e.g., Lubchenco)
- Create science-based NGOs (e.g., EDF)
- Foster collaborative decision making (LKwA)
- Implicit assumption: philanthropy prepares way for large-scale adoption & implementation …by others.

- Critiques welcome
  - klee@packard.org
  - http://www.packard.org/categoryDetails.aspx?RootCatID=3&CategoryID=68