Science-Policy Review

ESD.864

Noelle Selin

February 7, 2013

MIT ESD
Massachusetts Institute of Technology
Engineering Systems Division

Framing the problem

- Models of the policy process:

  How technical knowledge fits in
- Conceptualizing science-policy as social construction (Jasanoff)
- Scientific information is critical to face new policy challenges (Lubchenco)

Why do we need theories/frameworks?

- Policy process is enormously complex
- Analysts must simplify to understand it
- What do we look for, and how do we classify it?
- Through a scientific method

Theoretical frameworks: how policy is made

- Traditionally, policy cycle/stages
  - Agenda-setting
  - Policy formulation, legitimation
  - Implementation
  - Evaluation
- Critiques: not causal, inaccurate, too legalistic, oversimplifies different levels of analysis
- But lots of technical analysts still use this as a working model

New theoretical models

- Institutional Rational Choice
- Multiple stream model (e.g. garbage can)
- Punctuated equilibrium framework
- Advocacy coalition framework
- Policy diffusion framework
- Funnel of causality
- Social construction

Further reading: Sabatier, Theories of the Policy Process (on reserve in the library or used on amazon for $14…)

Institutional Rational Choice

- How institutional rules alter behavior of rational, self-interested actors
- Definitions of institutions:
  - Multiple, but incorporate not just organizations but set of rules, norms, strategies
- Rational actors operate within institutions, rules, economic assumptions

See Ostrom chapter in Sabatier book for more

Multiple stream model

- Emerged as a critique of rational models; not an organized system
- Kingdon's 3 streams: problems, politics, policies
  - At critical points, the streams collide to create a policy window
- Critiques: are the streams independent? How do you explain action in some areas but not others?

Punctuated Equilibrium Framework

- Inspired by biological theory of punctuated equilibrium
- Policy is mostly sticky, but can change dramatically by large, less-frequent events (large changes in society, government)

Advocacy Coalition Framework

- Key role for sci/tech info
- "Policy subsystem" is unit of analysis
- Over a decade or more
- Beyond "iron triangle"
  - Plus: journalists/researchers/analysts, and policy-makers at different levels
- Policies as belief systems

Iron Triangle

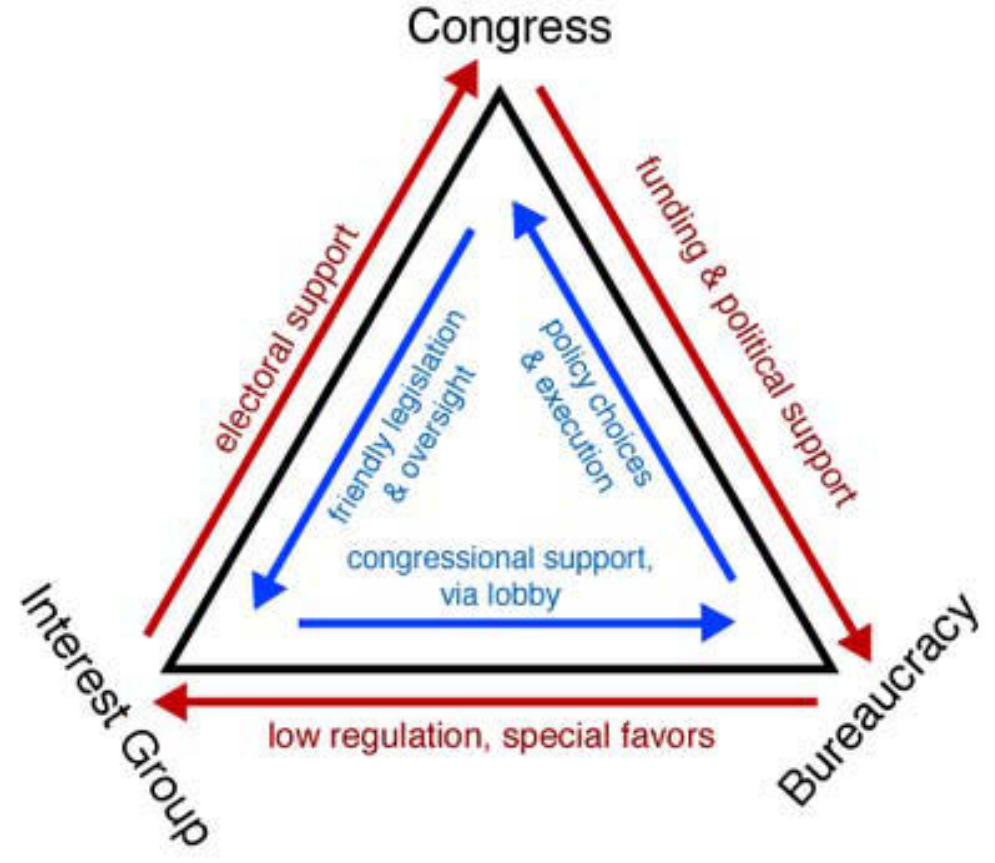
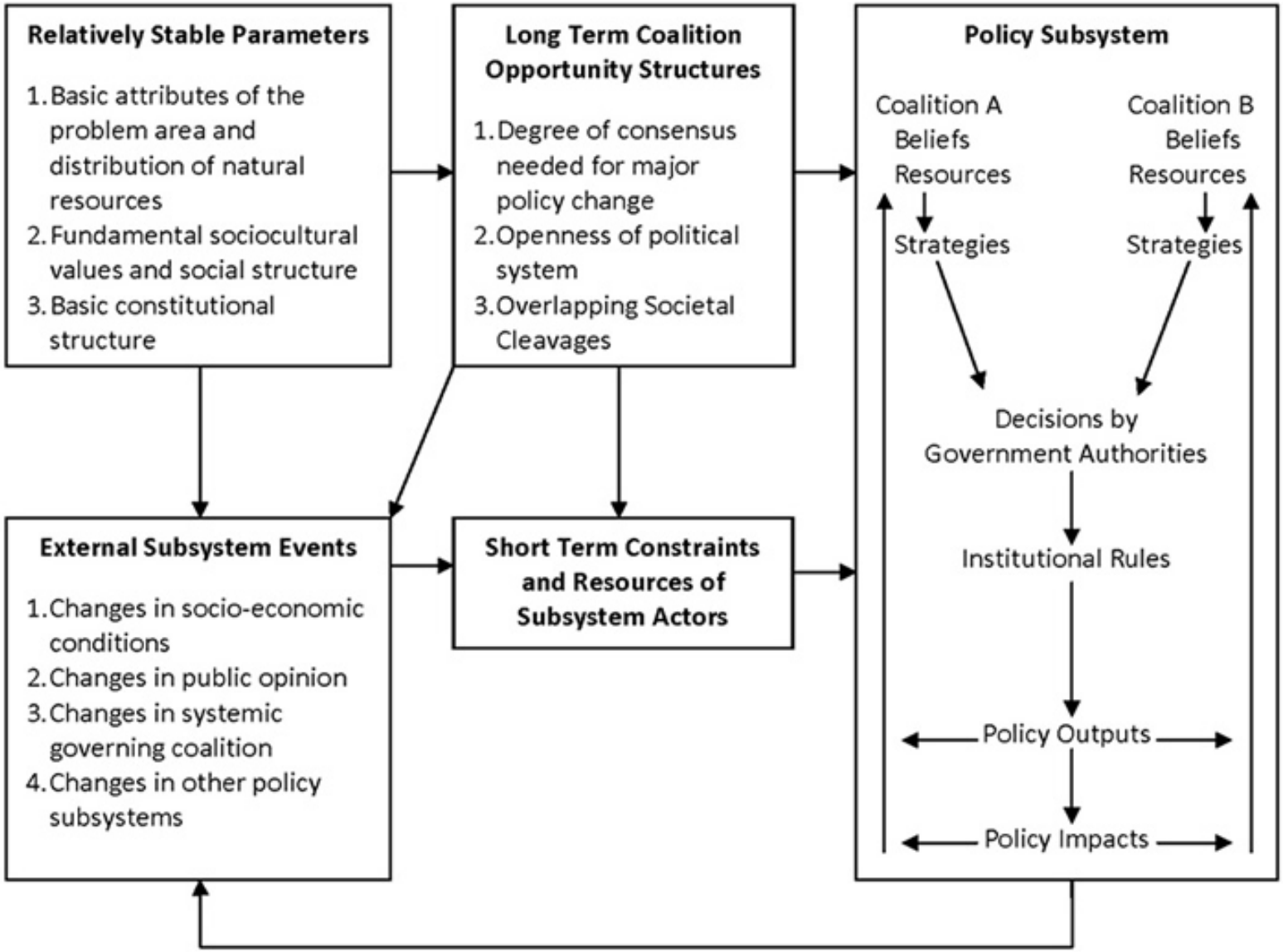


Figure by Ubernetizen in the public domain.



Source: Weible, Christopher M., Paul A. Sabatier, et al. "A Quarter Century of the Advocacy Coalition Framework: An Introduction to the Special Issue." *Policy Studies Journal* 39, no. 3 (2011): 349-60.

Policy Diffusion Framework

- Explains how policies are adopted/copied across different states
- Can be through interaction, regional activities, neighbors, leading-lagging, vertical
- Incorporates learning

Funnel of Causality

- Uses institutional, socioeconomic, public opinion variables to explain variation in policy outcomes
- Broader issues funnel into closer/more important ones that affect decision-making (e.g. voting)

Relevance to our work

- As an analyst: understand where technical info fits in the process
- Be aware of implied frameworks and models which might affect the structure of technical advice processes

Is Science Socially Constructed, and how can it inform policy?

- Ideas come out of science and technology studies (STS)
- First level: what science gets funded, and promoted, reflects societal decisions and forces (widely accepted by scientists) = "weak form" of cultural construction
- STS wants to know how, why, through what mechanisms (useful?)

Some context

- Jasanoff is addressing scientists who view constructivist thoughts as wrong or threatening
- Address to AAAS (scientist organization)

Lessons for Science in Policy?

- Helpful questions from constructivist perspective:
  - Why does someone believe that he/she is right, and someone else is wrong?
  - How were beliefs about right and wrong facts/claims arrived at?
  - Are there disagreements about what the "right" question really is?

Discussion Questions: Jasanoff

- Comments or questions on what social construction is?
- Do you think constructivist perspective helps in your own work?
- How to embrace social constructivist critique without falling victim to "not…but" fallacy?

Lubchenco: New Social Contract for Science

- Who is Lubchenco?
  - Marine ecologist, environmental scientist
  - In 1998: President of American Association of the Advancement of Science (AAAS), scientific professional society
  - Later: Administrator of National Oceanic and Atmospheric Administration (NOAA) (until late 2012)

Social contract:

- "Old" social contract (1940s+): invest in research, and we win the war (Cold War, space race, eliminate disease)
- New needs (2000s+): is science ready? Lubchenco says no.
- 4 key questions:
  - How is our world changing?
  - What are the implications of these changes for society?
  - What is the role of science in meeting the challenges created by the changing world?
  - How should scientists respond to those challenges?

How is our world changing?

- Unprecedented scale of human domination of SYSTEMS
  - Physical, chemical, biological systems, e.g. land surface, carbon dioxide, water, species extinctions….
  - Social changes: inequality, technology, communication, information
  - =formidable challenge for science (& engineering) to understand these systems, and for society to cope

What are the implications of these changes for society?

- "Ecosystem services" threatened (as opposed to resources)
  - Value: Trillions of $US
  - Any updates since 1998? Have things gotten worse or better?
- "Environment" encompasses health care, the economy, social justice, national security

What is the role of science in meeting societal challenges?

- What is science? Pursuit of knowledge about how the world works.
- Why does society support science? Learning, but also providing useful outputs. (See 1945 Bush report)
  - Investment for monetary return (technologies, processes)
  - Knowledge to inform policy and management decisions
- Knowledge needs are changing: complex systems, communication, decision-making guidance

How should scientists respond?

- New Social Contract for Science
  - Address societal needs, communicate knowledge
  - Fundamental research still needed
  - New research/management approaches: interdisciplinary problems, multiple scales, bridging science-policy-management
  - Train interdisciplinary scientists to work at science-policy-management interface
  - Communication improvements
- And scientists should be leading the dialogue….

The Secret to Happiness is Short-Term, Stupid Self-Interest

Calvin and Hobbes comic removed due to copyright restrictions.

Discussion questions: Lubchenco

- 10+ years later, what's changed?
- What responsibility do you think scientists have, in return for public funding?
- To what extent should scientists and engineers become involved in policy decision-making processes?

Review of last time (I)

- Morgan: Technically-focused policy analysis
  - What's the difference between science-for-policy and policy-for-science?
  - Some examples of tools mentioned by Morgan? Others he misses?
  - How do his examples fit with different policy theories?

Review of last time (II)

- What are the main differences between Silver's outlook on technical analysis for decision-making and Morgan's?
- How do they differ on defining the problem? Their solutions?

ESD.864 / 12.844J Modeling and Assessment for Policy
Spring 2013