

How Nuclear Science Professional Society Presidents Frame Nuclear Energy

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Introduction

- The climate change crisis and need for clean energy highlight the connection between **science, society, and policy**
- **Nuclear energy technologies** hold potential to address global energy and change energy policy
- Understanding the **forms of reasoning** used by scientists and engineers in talk among themselves can enable productive avenues for developing **nuclear energy policy**



Forms of Reasoning

- Reasoning is the act of constructing a logical argument with a claim and support
- Technical reasoning includes forms of argument that produce legitimate scientific and engineering knowledge
- Prudential reasoning involves forms of argument that produce judgments based on value
- Previous research indicates that nuclear professionals use technical reasoning among themselves and prudential reasoning with the public
- **Our hypothesis is that the presidents of a prominent nuclear organization use prudential reasoning when communicating policy and community culture to their membership**

Methodology

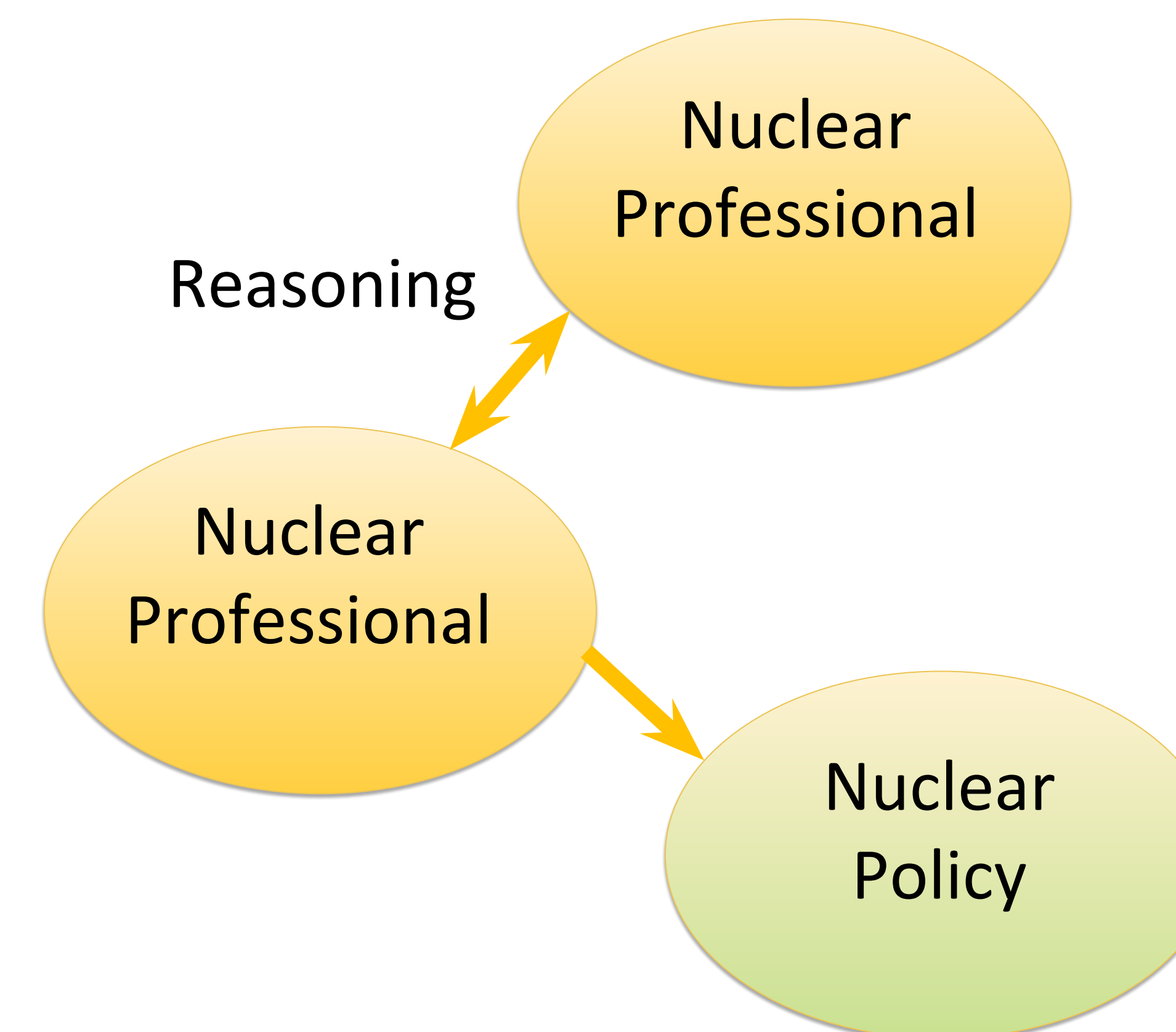
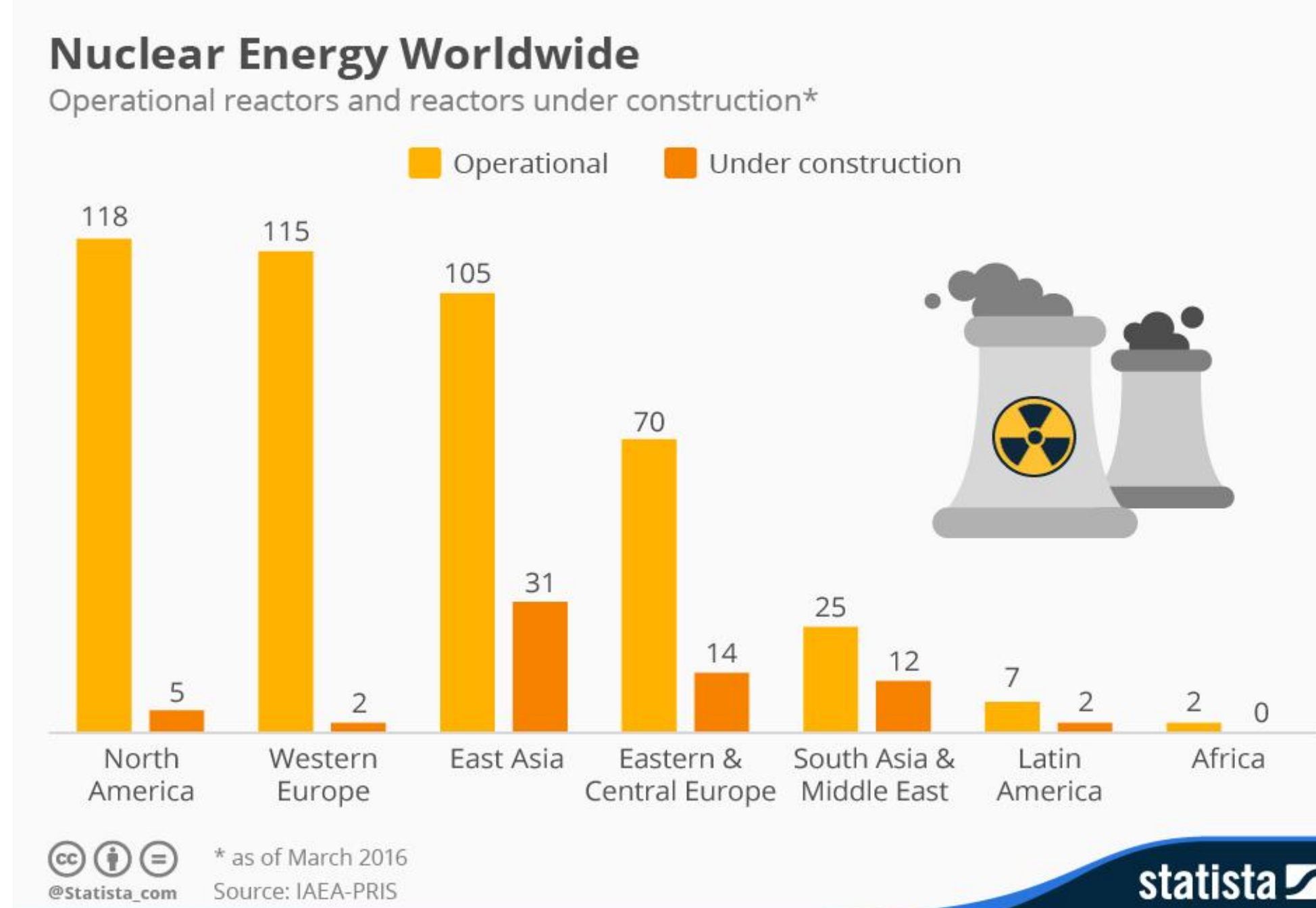
- Sentence-level analysis using Nvivo
- Socio-Political Evaluation of Energy Deployment (SPEED) framework is an interdisciplinary, systematic approach for analyzing development and deployment of emerging energy technologies
- Examines (1) cultural, (2) economic, (3) environmental, (4) political-legal, (5) technical functions
- Measures tone as **positive** or **negative**

Data Collection

- President's column in bimonthly newsletters
- Years 1999-2016
- 108 total columns
- Over 1750 lines

What is a Nuclear Science Professional Society?

- Largest nuclear association in the world with 11,000 members
- 45 countries represented
- President serves for 12 months



Preliminary Findings

Sample: 562 lines

Most Prominent Themes:

Cultural Identity - Positive: 31%

Environmental - Positive: 14%

Technological - Positive: 12%

Political-Legal - Negative: 12%

Preliminary Themes

- Nuclear energy works in conjunction with, but is superior to, other “clean” technologies, i.e. it produces more electricity, is more reliable, and is not as geographically limited
- The general public’s fear of nuclear energy is irrational and radiation is natural
- Due to the media’s misguided portrayal of nuclear energy, there is a shortage of available workers in the nuclear field
- Members are encouraged to be advocates to combat misleading info

Examples

- *“I ask that we all work to for the continuing increase in the demand for energy by the developing countries, a demand I believe the world cannot meet with oil, coal, natural gas, and renewables.”*
- *“You will be pleased to learn that the health effects of low-level radiation—100 mrem per year above natural background levels—cannot be distinguished from those of everyday, natural health hazards.”*
- *“Dr. Lovelock (a noted British environmentalist) went on to say that ‘opposition to nuclear energy is based on irrational fear fed by Hollywood-style fiction, the green lobbies, and the media.’”*
- *“This “grassroots” effort would do much to get our message out to our target audience directly, since changing the media’s perception is much more difficult and takes longer.”*

Implications

- Prudential reasoning is often used to invalidate public concerns through an adversarial approach (us vs. them) to refute public criticisms, i.e. radiation
- Nuclear science is viewed as a cultural phenomenon with encouragement to advocate on nuclear’s behalf

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