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Changing public attitudes toward nuclear energy☆

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ABSTRACT

The public has always seen two faces of nuclear energy—the face of immense promise and the face of peril. The more the face of promise presents itself, the more the face of peril fades. Analysis of long-term public opinion trend data and in-depth public opinion research studies shows what influences public opinion about nuclear energy and how public opinion could be influenced in the future. The potential for attitude change is great, as most people take middle positions on nuclear energy and most do not feel very well informed about the subject. Research shows how to bring clarity to the face of promise, which currently is not well defined. In a time of energy abundance, it is necessary to show that nuclear energy is not just another energy option; its unique role as the 24/7 clean air energy source makes nuclear energy vital and irreplaceable. The analysis draws from the 34-year program of public opinion research on nuclear energy sponsored by the Nuclear Energy Institute and directed by Ann Stouffer Bisconti, supplemented by illustrative polling data from the U.S. and other countries.

Filmmaker David Schumacher, a convert to nuclear energy, recently offered his view that public opinion is one of the biggest challenges to the future of nuclear energy. “The big storylines that have historically informed public opinion on nuclear energy have involved danger and destruction,” he said. “The resulting negative opinion has driven policy over the past 40 years or so. I think it would take a positive new narrative on nuclear to move the needle …” (Interview by Laura Scheele, 2016) There is partial truth in that description; there is indeed a need for a new narrative, but there is also this puzzling fact: underlying ideas about nuclear energy that are rooted in mythology are long-standing and persistent, yet the needle has risen in the past. What causes the needle to rise and fall, even when these underlying ideas remain in the conscious or subconscious mind? What kind of new narrative is needed to move the needle up?

1. Two faces of nuclear energy predate the technology

The “big storylines” that formed public opinion about nuclear energy begin with mythology. As brilliantly laid out by historian Spencer Weart in his groundbreaking book, Nuclear Fear, the imagery surrounding nuclear energy from the start predates the technology's actual delivery. The imagery of a great powerful source of energy that could be both enormously beneficial and enormously destructive can be traced back to science fiction, alchemy, and even the Bible:

> “Modern thinking about nuclear energy employs imagery that can be traced back to a time long before the discovery of radioactivity. That fact is disturbing, for it shows that such thinking has less to do with current physical reality than with old, autonomous features of our society, our culture, and our psychology.” (Weart, 1988)

The public has always seen two faces of nuclear energy—the face of immense promise and the face of peril. Spencer Weart describes “ambiguous monsters,” and “uncanny rays” offering “hideous death or miraculous new life,” “apocalypse” and “Golden Age.” Today's public opinion research finds both faces present to some degree in the public's thoughts about nuclear energy. The more the face of promise presents itself, the more the face of peril fades.

President Eisenhower lit the face of promise with his Atoms for Peace agenda. Dedicating the first commercial electricity generating nuclear power plant at Shippingport, Pennsylvania on May 26, 1958, he told the world:

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> "THIS PLANT–using the power of the atom to supply electrical power–represents what can be done, not only in America, but throughout the world, to put the atom to work for the good of mankind, not his destruction. It represents the hope of our people that the power of the atom will be able to open up a vast new world of peaceful development–that atomic power will ease mankind's burdens and provide additional comforts for human living." (http)

Even in this statement that lights the face of promise, Eisenhower alluded to the face of peril: "for the good of mankind, not his destruction."

2. Accidents and their impact on attitudes

Proponents of nuclear energy are quick to point out that nuclear power plants are designed to be safe and that the history of six decades of operations shows that they have one of the best safety records among energy sources. But the mythological beginnings and fear associated with the bomb and radiation magnifies the impact of accidents on public opinion. All the negative imagery flashes before the public. This imagery is long-lasting; people around the world can name Three Mile Island, Chernobyl, and Fukushima.

However, the impact of accidents on public attitudes can be surprising and varies depending on several factors, including perception of need, proximity, perception of control, and the communications surrounding the "teachable moment."

2.1. Perception of need

The more the public sees a need for nuclear energy, the lower the impact of accidents on public attitudes. The importance of the perception of need for nuclear energy is exemplified by the public opinion trends in the U.S. before and after the Three Mile Island accident on March 28, 1979. After the Three Mile Island accident, it took three years for support for building more nuclear power plants to drop. Why? In 1979, there was an energy crisis and revolution in Iran. By 1982, energy was off the public agenda; absent a perceived need for new plants, support for building more plants dropped. See Fig. 1.

The accident itself had little impact as long as the need for energy was foremost in the public mind. That phenomenon shows that the face of peril is not the sole driver of attitudes toward nuclear energy. However, the accident has remained ingrained as a peg point for worries whenever perceived need and benefits are not in the forefront—such as during the period of 1980s energy abundance.

2.2. Proximity

Accidents have greater impact among populations that believe they could be personally affected, so proximity makes a difference. The Chernobyl accident on April 26, 1986 caused panic in Europe. Medical researchers in Greece calculated that 23 percent of early pregnancies in May were terminated by abortion (Trichopoulos et al., 1987). The International Atomic Agency estimated that fear of Chernobyl radiation caused 100,000 to 200,000 abortions in Europe as a whole (Newsline, 1987).

In the U.S., instead, the percent favoring nuclear energy changed little—from 49 percent in February 1986 to 42 percent in May 1986 (after the accident) to 52 percent in November 1986. See Fig. 2. Proximity was undoubtedly a part of the difference between reactions in Europe and the U.S.

When the historic tsunami hit Japan in March 2011, the world watched with horror the meltdown of the Fukushima Daiichi nuclear power plant that was struck by the tsunami. The tsunami itself killed 16,000 to 18,000 people and wiped out large swaths of towns and villages. The nuclear power plant meltdown resulted in no known direct casualties but forced large-scale evacuations due to the radiation released. TV footage of devastation conflated what was due to the tsunami and what was due to the nuclear power plant meltdown. Iconic images such as a beautiful little girl wearing a mask as protection against Fukushima radiation could not help but remind one of Hiroshima and Nagasaki.

In a national survey by the Associated Press with GFK in July—August 2011, the Japanese public volunteered that the two most important problems facing the country were 1) the nuclear power plant accident and 2) the earthquake and recovery—in that order. The survey found that 55 percent wanted nuclear power plants in Japan to be decreased, 4 percent wanted them to be increased, and 35 percent wanted then left the same.

Nearly five years later, in December 2015, opinions had not become more favorable, according to a survey of the Japanese public by NHK, Japan's public broadcasting company: 71 percent wanted nuclear power plants to be decreased or eliminated, 3 percent wanted them to be increased, and 26 percent wanted them left the same.

Far from Japan, however, the impact was less severe and less durable. A WIN-Gallup poll in 47 countries in April 2011 just after the Fukushima Daiichi disaster found an average of 49 percent feeling favorable to nuclear energy. By respondents' own estimation, 57 percent had been favorable to nuclear energy before the accident. That is a decline but a moderate one.

In the U.K., trend data from national polls by Ipsos MORI showed a decline of 12 percentage points in favorable impressions of nuclear energy from November 2010 before Fukushima (40 percent) to June 2011 after Fukushima (28 percent). By December 2011, the decline was completely erased and favorability was back at 40 percent.

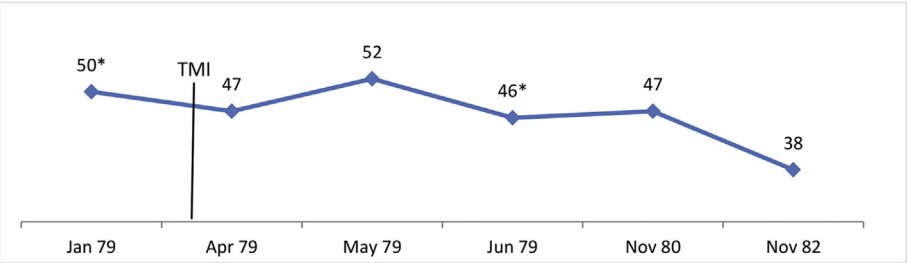

Fig. 1. Percent of the U.S. public in favor of building more nuclear power plants before and after the three Mile Island Accident (March 1979). Sources: Cambridge Reports, ABC/Harris/EEI.

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