

論文要旨

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論文題目（外国語の場合は、和訳を併記すること。）

Observing Fukushima: A Case Study of Japanese Nuclear Policy through

Niklas Luhmann's Social Systems Theory

フクシマを観察する：ニクラス・ルーマンの社会システム理論に基づいた日本

の原発政策の事例研究

論文要旨（別様に記載すること。）

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Since the Fukushima disaster in 2011, there has been a lot of discussion in Japan about the role of nuclear power. Nuclear power policy was adopted in the 1950s in the wake of President Eisenhower's "Atoms for Peace" speech to the U.N. Seen as the energy of the future, it seemed to present Japan with a way of solving many of the problems it faced. Japan soon began to pursue nuclear power and by the turn of the millennium was one of the major players in the nuclear power industry. Japanese engineering was seen as being of the highest standard, with accidents like the ones at Three Mile Island or at Chernobyl unable to happen.

This safety illusion, the *anzen shinwa*, was burst when the megathrust earthquake off the coast of Honshu triggered a huge series of tsunami which devastated the coastal regions of Tohoku. Four nuclear power stations were automatically shut down after the earthquake; the subsequent tsunami which followed it swept towards the Fukushima Daiichi and Daini plants. Whilst plant operators at Daini were able to stabilise the reactors there, at Daiichi the failure of backup generators and of other reactor cooling mechanisms led to problems arising.

Nuclear planners had never envisaged a disaster of such a magnitude occurring to a Japanese nuclear plant. Less than 24 hours after the tsunami swept over the sea barriers which were meant to protect it, the situation at the Daiichi plant seemed as if it might spiral out of

control. Prime Minister Naoto Kan said that if things had continued to deteriorate at the plant, it might have necessitated the evacuation of Tokyo and effectively spell the end of Japan as a functioning sovereign nation state.

Three reactors partially melted down at the plant and the situation there is chronic to this day. Even the most conservative estimates for clean-up run into hundreds of billions of dollars. This is to say little of those displaced from around the plant who may never be able to return to their homes. Far from a nuclear disaster being impossible in Japan, Fukushima has now entered the world consciousness in the same way Chernobyl did a generation before; a reminder of the hubris of man and of the catastrophe that nuclear energy can bring.

In the wake of this disaster, Japanese nuclear policy switched from increasing nuclear power to provide 50% of energy needs to eliminating it by the 2030s. This was the most popular nuclear policy position with the public according to polls; some scholars such as Eiji Oguma would go even further and demand that nuclear power was halted immediately.

In December 2012 however the Liberal Democratic Party (LDP), led by Shinzo Abe, beat the incumbents and came once again back to power. They soon pledged to review nuclear power policy and soon came to see nuclear power as a necessary evil to provide Japan's energy needs. As of 2017, government policy dictates around 20% nuclear energy for the foreseeable future.

Citizen demands for an end to nuclear power led to mass demonstrations outside the Diet, with many famous Japanese taking part or organising music concerts and other events in order to publicise their cause. These protests led to the formation of other mass protests, including the ones led by SEALDs against security legislation changes in 2015. These protests however had no effect on government policy and have disbanded.

The LDP has not found itself punished at the ballot box however for its lack of resonance with citizen demands. The LDP has won landslides in all the national elections since 2012, leading to questions arising as to the gap between citizens, the government, opposition parties, and policy. It is one thing for governments to enact unpopular policies, it is another for the citizens to say they are against such policies but vote in the same government again anyway.

It is the aim of my thesis to look at these problems and suggest ways in which nuclear policy post-Fukushima can be understood. Fukushima has exposed many of the ways that Japanese society manages itself and the way different parts of that society interact together. By considering nuclear policy through the lens of the disaster, it will allow many aspects of modern socio-political functioning to be described.

I am using the term nuclear power policy in a loose sense, not just strictly related the way central government forms it. I will include in this discussion the concept of nuclear regulation; how nuclear safety data is constructed and observed; how the public have reacted to the Fukushima disaster, nuclear policy, and other controversial legislation through protest; and the state of party politics in Japan and whether this constitutes a legitimacy problem for Japanese central decision-making.

There is already a large amount of literature on these various topics. Within them many problems arise however. Most of the literature is prescriptive in nature, taking a very narrow view on the problem of policy and making claims that cannot be widely substantiated. There is also lacking a guiding theory for nuclear policy post-Fukushima, one which can tie together nuclear safety, regulation, policy-making, protest, and party politics under one general approach.

To this end I will use the Social Systems Theory of Niklas Luhmann. Luhmann's theory attempts to construct a general theory of society, one which moves away from anthropocentric

ideas of social theory to one based on observing social systems. Using Luhmannian concepts such as functional differentiation, observation, risk, legitimacy and protest, I shall show how the socio-political consequences of the Fukushima disaster can be considered through this framework.

To explore the issues related to nuclear policy, I shall first look at the issue of nuclear safety. The field of Science and Technology Studies (STS) has contributed a great deal to the literature surrounding the Fukushima disaster, with risk experts such as Charles Perrow, Nassim Taleb, and John Downer, all applying their understanding to the issue. Downer's contribution especially is important as it deals with the different ways risk observers have attempted to paint the Fukushima disaster as a not being of relevance to nuclear safety assessments in general.

By using Luhmann's systems theory, I look at the STS literature and consider both its contribution in terms of sociology and the limits of its findings. The literature contributes a great deal in terms of identifying the heterogeneous nature of nuclear safety and how different factors, both engineering and social, impact this. It is limited however in its claims towards the future of nuclear power: STS is a field within science, not politics, and therefore cannot make prescriptive statements about nuclear energy policy. By using Luhmann's theory to understand the wider sociological consequences of nuclear safety in modern society, it allows the multi-layered nature of the issue to be better described.

I shall also look at the concept of risk from a sociological perspective and the different ways it has been described. To understand nuclear policy post-Fukushima, I propose, a Luhmannian understanding of risk is best suited to observing the ways in which bureaucratic organisations managed nuclear safety and make decisions. As risk is, for Luhmann, the attribution of a loss to a previously made decision, risk can only be understood through

discussing the ways in which risky decisions about nuclear power were implemented. I will show the ways in which safety organisations operated before the Fukushima disaster and the ways in which reforms hope to prevent many of the structural problems that existed from impacting safety again. Through this I will show that whilst these reforms should improve communication between different regulatory systems, absolute safety cannot be guaranteed.

Safety regulators are part of the political system but they exist on the periphery of the system. They can organise how safety measures are to be implemented, they do not however directly decide policy. This is a matter for the centre of the political system. I shall take a look the question of nuclear policy in Japan directly, exploring both how nuclear power policy came to be formed and the changes to policy post-Fukushima.

Two key Luhmannian themes shall be used to describe this: that of political programs and that of political resonance. Programs are guides for system operations, in the case of politics they help the government in directing its decision-making. Due to the problems Japan has faced with regards to natural resources, especially in the post-War period, nuclear power became a guiding principal for energy policy. This was solidified during the oil shocks and with global warming becoming a worldwide political issue. As Japan still faces these issues despite the disaster at Fukushima, this is one of the reasons I believe policy has remained pro-nuclear.

The other theme I shall explore is that of political resonance. Economic resonances with politics have been too strong, whereas other resonances, such as citizen demands, have been weak. In the case of nuclear power citizen worries were ignored, as were the demands for more stringent safety measures. This was due to the strong resonance that Japanese politics had with nuclear plant operators and industry. Exploring this problem from the perspective of the nuclear village, I shall discuss the problems of regulatory capture and influence. I shall conclude

however that the term nuclear village, as a catchword, conflates too many phenomena under one term and this makes it less useful analytically. Luhmann's systems theory allows the different observers and the way they interact with each other, in terms of influencing policy and regulation, to be better understood.

Japanese citizens, angry with what happened at Fukushima, took to the streets in its aftermath to protest the use of nuclear power. The failure of this movement, and subsequent ones, to enact change on the policy level has led to questions about what the protests meant. I will explore the reasons that protestors protested and how protest is in itself not political, even though it aims to be recognised as such. Using Luhmann's theory of protest I shall first discuss the different groups that attended the protests and their motivations for protesting. I shall then explore how protest forms itself and frames its issue, discussing how protest confuses its creation of an issue with reality itself.

Many of the protestors questioned how the Japanese government could create policy which so many of its citizens showed they were against, with SEALDs in particular claiming that the Abe administration was acting unconstitutionally. Such questions of political legitimacy in modern Japan have been raised since at least the 1980s and have come to the fore once more in the wake of the Fukushima disaster. By first considering the voting system in Japan and its reforms in the early 1990s, I shall discuss how Japan has attempted to create for itself a two party system and how this has so far failed. Whilst some have claimed that a de facto one party system is illegitimate, through using Luhmann's theory I shall discuss how the question of legitimacy can be reframed. Legitimacy is not external to politics, it is created internally through the realisation of contingency through the government/opposition coding. This coding has been somewhat ineffective in Japan's case as there has rarely been a change in government. Yet the

political system is set up in a way such that the opposition can mobilise itself to win votes and take power.

The problem for Japan though is that the lack of opposition has led to a lack of new themes entering political communication. This can be seen as a cause of the resonance problems discussed and the failure of policy to account for citizen's demands. Japanese voters however tend to vote along traditional lines, despite their preferences. This makes it difficult for the opposition to win votes. Luhmann's theory can identify a problem in political opposition in Japan but it cannot explain in detail the reason for Japanese voter behaviour.

This is the key finding of this thesis. Functionally differentiated society requires the performance of its social subsystems in order to maintain itself. As seen with the Fukushima disaster in Japan, nuclear policy was implemented without regard to proper organisational control through regulation. This problem was exacerbated by strong resonances with economic concerns rather than those of other parts of society, such as the citizens. Japan's guiding nuclear energy policy was not questioned for decades. The only way this could have possibly been questioned was by the introduction of new themes into political communication, in other words at the party politics level of society. This though, for a number of reasons, has not happened. Problems at this level cannot be blamed directly for the Fukushima disaster but they most likely contributed to the situation where lax regulations and excessive resonances were not fixed.