QUALITIES OF DEMOCRACY AND CIVIL-MILITARY NUCLEAR INTERDEPENDENCIES: EXPLORING INTERNATIONAL PATTERNS AND THE UK’S NUCLEAR AMBITIONS

Phil Johnstone

Presentation for Greenpeace Conference, ‘Critically examining Nuclear as a (false) climate solution, October 13th and 14th, 2020

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Introduction
background and motivations for our research

• Why is nuclear power proving so surprisingly resistant in particular places around the world, to dramatically changing global energy market conditions and structures for electricity supply? In other words, why is it so challenging to discontinue nuclear power in certain contexts?

• Against backdrop of stark decline in the worldwide nuclear industry, nuclear new-build remains a major area of investment in a few specific countries. Intense attachments persist despite nuclear clearly becoming much less attractive, when compared with competing low-carbon options.

• This question clearly presents a classic focus for social science research. Unavoidable complexities, ambiguities, time-dynamics and associated ‘mess’ underscore need to triangulate multiple methods.

• Systematic criteria-based analyses; Pattern testing; UK/Germany comparison; international patterns; UK case study.

• In contexts of persistent commitment to nuclear power, what are most important drivers? What possible role might be played in specific settings & perspectives, by military nuclear pressures?
Comparing nuclear trajectories in Germany and the UK
factors under direct focus in mainstream ‘regime theory’

1) General market conditions
2) Penetration of nuclear in the generation mix
3) Strength of nuclear industry
4) Renewables resource potential
5) Strength of renewables industry
6) Public attitudes and social movement activity
7) General national political institutions and cultures
8) Qualities of democracy
9) Scales of military-related nuclear interests

<table>
<thead>
<tr>
<th>criterion case</th>
<th>GENERAL MARKET CONDITIONS (GMC)</th>
</tr>
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<tbody>
<tr>
<td>- Germany</td>
<td>- ‘coordinated economy’</td>
</tr>
<tr>
<td></td>
<td>- more state intervention</td>
</tr>
<tr>
<td></td>
<td>- higher public spending</td>
</tr>
<tr>
<td>- UK</td>
<td>- ‘market economy’ neoliberalism</td>
</tr>
<tr>
<td></td>
<td>- less public spending</td>
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</table>
### Table: Nuclear Energy Production and Characteristics

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Germany</th>
<th>UK</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production of nuclear energy in 2010 (GWh)</td>
<td>140556</td>
<td>62120</td>
</tr>
<tr>
<td>Average reactor size in 2010 (Mwe)</td>
<td>1196</td>
<td>548</td>
</tr>
<tr>
<td>Average annual production 1990-2016 (GWh)</td>
<td>144,020</td>
<td>78,461</td>
</tr>
<tr>
<td>Historic maximum nuclear production in one year (Gwh)</td>
<td>171,305 (in 2001)</td>
<td>99,486 (in 1998)</td>
</tr>
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Sources: Lévêque (2010)

**Figure 6a: Cost resource curve for onshore wind in European countries**


**Figure 6b: Cost resource curve for offshore wind in European countries**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Public Attitudes and Social Movement Activity</th>
</tr>
</thead>
</table>

Source: NEA (2010) *Public Attitudes to Nuclear Power*

**Figure 16: Public strongly opposed to nuclear power ranked 1-7**

**Figure 18: Perceived knowledge and perception of risks of nuclear power**

Source: Financial times (2020)
<table>
<thead>
<tr>
<th>criterion</th>
<th>GENERAL NATIONAL POLITICAL INSTITUTIONS AND ELITE CULTURES</th>
</tr>
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</table>

**Distribution of seats in the 19th electoral term**  
Last updated: January 2019

<table>
<thead>
<tr>
<th>Party</th>
<th>Seats</th>
</tr>
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<tbody>
<tr>
<td>CDU/CSU</td>
<td>246</td>
</tr>
<tr>
<td>SPD</td>
<td>152</td>
</tr>
<tr>
<td>AfD</td>
<td>91</td>
</tr>
<tr>
<td>FDP</td>
<td>80</td>
</tr>
<tr>
<td>The Left Party</td>
<td>69</td>
</tr>
<tr>
<td>Alliance 90/The Greens</td>
<td>67</td>
</tr>
</tbody>
</table>

* 4 independent Members

Source: Budenstag.de (2020)

<table>
<thead>
<tr>
<th>Majoritarian</th>
<th>Consensual</th>
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<tbody>
<tr>
<td>Executive power</td>
<td>Concentration of executive power in single party</td>
</tr>
<tr>
<td>Executive-Legislative relationships</td>
<td>Executive is dominant</td>
</tr>
<tr>
<td>Party system</td>
<td>Two party system</td>
</tr>
<tr>
<td>Voting system</td>
<td>Disproportionate representation</td>
</tr>
<tr>
<td>Interest group systems</td>
<td>Pluralist interest groupings with ‘free-for-all’ competition</td>
</tr>
</tbody>
</table>

Source: Lijphart (2002) *Negotiation democracy versus consensus democracy*
<table>
<thead>
<tr>
<th>criterion</th>
<th>NATIONAL DEMOCRACY RANKINGS</th>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive power</td>
<td></td>
</tr>
<tr>
<td>Concentration of executive power in single party</td>
<td>Power-sharing in coalitions</td>
</tr>
<tr>
<td>Executive is dominant</td>
<td>Executive-legislative balance</td>
</tr>
<tr>
<td>Two party system</td>
<td>Multi-party system</td>
</tr>
<tr>
<td>Disproportionate representation</td>
<td>Proportional representation</td>
</tr>
<tr>
<td>Pluralist interest groupings with ‘free-for-all’ competition</td>
<td>Coordinated and corporatist interest group systems aimed at compromise and concentration</td>
</tr>
</tbody>
</table>

Source: Lijphart (2002) *Negotiation democracy versus consensus democracy*

Sources: Economist Intelligence Unit analysis, Global Democracy Ranking, Democracy Barometer.
The difference between the UK and Germany regarding nuclear weaponry is stark. Put briefly: the UK is one of only five official nuclear weapons states recognised under the global Non Proliferation Treaty and Germany is not.

The UK has a large industrial base employing over 30,000 people committed to the production of nuclear weapons and submarines. Germany does not.

Broad global patterns are consistent with civil-military nuclear links

- The leading global military powers are the most committed to large-scale new nuclear build.
- There is no global or regional military power that does not hold an active history of very strong pressures for civil nuclear power.
- No country either with or planning nuclear weapons or submarines is currently pursuing either a nuclear moratorium or a phase-out.
Military rationales are openly declared in many countries

In the few countries where nuclear support persists most strongly, key reason is military

- **Russian military priorities for civil nuclear industry**: “…[r]eliable provision of Russia’s defense capability is the main priority of the nuclear industry” [Rosatom 2017]

- Many **US** reports **highlight military priorities for civil nuclear industry**, especially by former Energy Secretary Ernest Moniz emphasising “**need to provide for nuclear Navy requirements**”

- **Leaked US** Government Memorandum (2018): “Our national security also relies ... on a robust civilian nuclear power industry to support the entire US nuclear enterprise and US **nuclear leadership** abroad”

- **France**: Media debate risks to ‘Force de Frappe’ of civil nuclear decline. Environment Minister Hulot resigns; attributed in press to secret report emphasising civil-military nuclear interdependence

- **Military drivers of civil nuclear programmes** are also clear in frequent high-level statements in **Japan**, Brazil, Saudi Arabia, Iran, Egypt, Turkey, UAE and elsewhere
UK case study:
clarity in military policy / silence in energy policy

- Military debates show UK nuclear submarine capabilities heavily depend on civil nuclear programme
- Industry says UK without “financial or personnel resources to develop both programmes in isolation”
- Redacted MoD report: capabilities “are at the bare minimum necessary to deliver the programme”
- UK submarine industry openly states aims to “mask” military costs behind civil nuclear programme
- But UK energy policy documents (and wider debates) leave these pressures almost entirely hidden
- NAO audits: civil non-energy “strategic factors”; assume non-defence support for “submarine base”
- NAO in 2016 shows nuclear “top-up payments” amount at least to many tens of billions of pounds
- Defence chief (lead in EDF talks) tells PAC civil-military links need “concerted Government action”
- Energy Minister: need to involve MoD in energy policy - time “artificial distinction ... came to an end”
Rare surfacings of the submarine issue in UK debates

Advantages to the UK’s nuclear deterrent programme

A UK SMR programme would increase the security, size and scope of opportunities for the UK supply chain significantly, enabling long-term sustainable investment in people, technology and capability.

The Indigenous UK supply chain that supports defence nuclear programmes requires significant ongoing support to retain talent and develop and maintain capability between major programmes. Opportunities for the supply chain to invest in new capability are restricted by the limited size and scope of the defence nuclear programme. A UK SMR programme would increase the security size and scope of opportunities for the UK supply chain significantly, enabling long-term sustainable investment in people, technology and capability.

Expanding the talent pool from which defence nuclear programmes can draw from would bring a double benefit. First, additional talent means more competition for senior technical and managerial positions, driving excellence and performance. Second, the expansion of a nuclear-capable skilled workforce through a civil nuclear UK SMR programme would relieve the Ministry of Defence of the burden of developing and retaining skills and capability. This would free up valuable resources for other investments.

BBC

Science & Environment

Nuclear: Energy bills ’used to subsidise submarines’

By Roger Harrabin

BBC environment analyst

5 June 2019

Motion S5M-17597: Bill Kidd, Glasgow Anniesland, Scottish National Party, Date Lodged: 06/06/2019

Link Between Civil and Military Nuclear Use

That the Parliament notes an analysis by the University of Sussex, which suggests that energy bills are inflated to partly subsidise the UK’s nuclear weapons arsenal; highlights that the university’s Science Policy Research Unit has published evidence brought to light by Professor Andy Stirling and Dr Phil Johnstone identifying “that the need to maintain submarine nuclear capabilities in the military sector has played an influential role in the UK’s decisions to champion nuclear power” and the finding that suggests that this provides “a compelling explanation for the UK’s resolute commitment to nuclear energy projects... despite the widespread criticism of its economic and technical feasibility”; believes that the UK Government spends £2.2 billion per year on nuclear weapons and that a single nuclear weapons system could cost from £74 billion to £140.5 billion over its lifetime; recognises calls on the UK to adopt the 2017 UN Treaty on the Prohibition of Nuclear Weapons, and encourages investment into green energy to facilitate the transition towards a sustainable future.

Supported by: John Finnie, John Mason, Alison Johnstone, Fulton MacGregor, Richard Lyle, Kenneth Gibson, Gillian Martin, Mark McDonald, Stuart McMillan, Sandra White, Colin Beattie, David Torrance, Jenny Gilruth
Meanwhile in the USA…

V. CONCLUSIONS AND RECOMMENDATIONS

The United States has a large educational, R&D, and industrial-support system that underpins its civilian nuclear power sector, as well as its military nuclear enterprise. Closure of nuclear reactors erodes this system and impacts both current and future military operations, technologies, and the national security innovation base.

This report concludes that—based on conservative estimates of the value it provides due to human capital, dependability of the energy supply, vibrancy of the supply chain, and contributions to green power—the civilian nuclear energy industry contributes at least $42.4 billion annually to the pursuit of US national security priorities. In other words, an economic shock of at least that size, as well as almost-immediate federal budget implications, would result immediately in the case of a more rapid erosion of civilian nuclear capacity than the one currently underway. Therefore, this report recommends that the federal policy and bud-

This analysis defines this complex as also including universities, national and independent research-and-development laboratories, fuel providers, and suppliers of equipment and technical services. These companies and institutions are active internationally. Nuclear fuel, technology, and services exports are also included in this national security equation. The role of these institutions in innovation and the R&D of new technologies is also of growing importance. The Trump Administration’s National Security Strategy and National Defense Strategy both highlight the need to maintain and enhance what is being called the “National Security Innovation Base” and the increasing interaction between civilian and military technologies.

A major component of the US nuclear power complex is the development, operation, and maintenance of nuclear reactors in the US Navy’s fleet. The nuclear fleet includes sixty-eight submarines; eleven aircraft carriers; and four research, development, and training platforms, and constitutes 45 percent of the navy’s major
The UK discussion: democratic challenges
The Never-ending cycle of UK nuclear enthusiasm

- The AGR programme
- The legacy of UK fast breeder reactors
- The legacy of UK nuclear waste and the Sellafield Facility
- THORP and MAGNOX reprocessing plants and MOX fuel production
- The Thatcher Government’s nuclear new build agenda.
- The very recent economic history of nuclear in the UK: e.g. the ‘other’ Hinkley C, the Bail-out of British Energy.
- Now SMR euphoria.

- Incredible lack of discussion on the question of ‘why’ in academia, media, and politics.
Conclusions on military drivers of civil nuclear commitments: evidence is sufficiently strong, to put onus of persuasion on denial

- As is routine in long-run technical change, innovation is driving growing obsolescence of nuclear power - but nuclear infrastructures remain globally unique in the intensity of their institutional commitments

- Pattern-testing shows social theory fails to explain major divergence in UK / Germany energy policy - factors emphasised in regime theory predict opposite pattern. Democracy and military come to fore.

- Strong circumstantial links are also evident in intensities of global civil & military nuclear commitments - increasing acknowledgement in many nations: US, Russia, France, Japan, Brazil, Turkey, Saudi Arabia

- In-depth case study of UK confirms this picture; highlights unequivocal confirmation on military side - but almost complete silence on energy side and in wider policy and media debates

- In cases where intensity of civil nuclear commitments are even only partly driven by military pressure - significant queries arise on rigour, robustness & cost-effectiveness of energy policy in its own terms

- In cases (like UK) where such a interdependency is not justified (even acknowledged) in energy policy - wider grave implications arise for policy accountability and the quality of democracy more widely.
The nuclear debate: Give peace (and democracy) a chance...

- There is a danger of becoming stuck in the narrow frames of policed nuclear ‘debate’.
- Discussions of *demilitarising* energy systems and *democratising* energy systems were key to early green movements however arguably the discussion has become more technocratic.
- On a technical level we can see that renewables and energy efficiency clearly offer more cost effective and rapid means of decarbonising energy systems.
- Questioning the persistence of nuclear incumbency, and the military, geopolitical, and political reasons behind this persistence is necessary and useful to work towards more democratic and peaceful energy futures.