

# The Improvised Expert

Performing expert authority after Fukushima  
(2011-2018)

Makoto Takahashi

Emmanuel College

July 2019

This thesis is submitted for the degree of Doctor of Philosophy

## Declaration

This thesis is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text. It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my thesis has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. It does not exceed the prescribed word limit for the relevant Degree Committee.

## Thesis Summary

G.K. Chesterton famously claimed that ‘art, like morality, consists in drawing the line someplace’. So too does much of radiological protection. At every turn, those responding to the 2011 Fukushima Daiichi nuclear power plant disaster can be found drawing lines, which determine: where people can live, what they can eat, and who receives additional protections (Potassium Iodide pills, for example). The essential questions of radiological protection pertain to how these lines are drawn. Questions regarding who has the authority to draw these lines, where, and on what basis are well recognised by scholars in this field. But those who advise on such issues in Japan today face an additional complication, in that the disaster has dramatically damaged the public’s confidence in experts. My interest lies in how actors interpret and narrate this political situation, and how expert bodies adapt to these conditions by improvising new performances of their credibility.

This thesis examines how claims to expert authority are made in conditions of low public trust; focusing on the debates surrounding civilian radiation exposure in Japan. In so doing, it contributes to the disciplines of Political Geography and Science and Technology Studies (STS), as well as scholarship on nuclear politics and the Fukushima Daiichi nuclear power plant disaster, specifically. As the most severe radiological event since Chernobyl, this disaster has been selected for study on the basis of both its historic quality and its effect on the public perception of experts. Over four substantive chapters, this thesis uses the idiom of ‘improvisation’ to evoke the ‘performed resourcefulness’ of its actors; moving from an examination of actors’ competing efforts to ‘set the scene’ through their narrations of their disaster, to an ethnographic focus on how the prosaic performance of expert authority is adapted to reflect and influence these broader narratives.

This thesis is organised thematically. Chapter Two outlines the methodological approach of the text, which draws on interviews, textual analysis, and participant observation, conducted over 11 months of residential fieldwork. Chapter Three examines the spatial metaphors actors use to frame the nuclear disaster, thereby framing the experience of radiation exposure. Chapter Four builds on the preceding chapter, exploring how the role of experts has been narrated in relation to the disaster’s imagined geographies. In particular, I examine how the common notion of Japan’s public debate as a battle against the irrational fear of radiation – to be fought by experts, who are to teach the public to “fear correctly” (*todashiku kowagaru*) – is imbricated in the imagination of Fukushima as a national crisis. Moving from the macrosocial to the microsocial, Chapters Five and Six provide ethnographic accounts of expert workshops staged in Fukushima by two authoritative bodies: the OECD Nuclear Energy Agency (NEA) and the International Commission on Radiological Protection (ICRP). Both, I contend, are not only understudied organisations, but provide case studies in improvisation: the constitution of their workshop spaces being altered to reflect the organiser’s understandings of the disaster and the broader political situation.

For my grandparents.

Rosina Horner  
(1936 – 2001)

Thomas Victor Horner  
(1935 – 2008)

Akira Takahashi  
(1934 – 2012)

&

Junko Takahashi  
(1937 – )

# CONTENTS

<b>CHAPTER ONE: INTRODUCTION</b>	<b>13</b>
<b>1.1. PERFORMING EXPERT AUTHORITY</b>	<b>17</b>
1.1.1. <i>THE JAPANESE CONTEXT AND CONDITIONS OF LOW PUBLIC TRUST</i>	21
1.1.2. <i>NUCLEAR GEOGRAPHIES</i>	24
<b>1.2. RESEARCH QUESTIONS</b>	<b>28</b>
<b>1.3. THESIS STRUCTURE</b>	<b>29</b>
<b>CHAPTER TWO: METHODS</b>	<b>33</b>
<b>2.1. THE GLASS CEILING</b>	<b>34</b>
2.1.1. <i>OBSTRUCTED ETHNOGRAPHIES</i>	36
<b>2.2. METHODS</b>	<b>38</b>
<b>2.3. DOING RESEARCH: POSITIONALITY, NOTE-MAKING, AND LINGUISTICS</b>	<b>45</b>
2.3.1. <i>STUDYING UP: A WOULD-BE EXPERT STUDIES EXPERTISE</i>	46
2.3.2. <i>CONDUCTING RESEARCH IN JAPAN AS A ‘HALF’</i>	47
2.3.3. <i>SHIFTING POSITIONALITIES</i>	49
2.3.4. <i>OBSERVATION</i>	49
2.3.5. <i>THE FIELD JOURNAL</i>	50
2.3.7. <i>TRANSCRIPTION</i>	56
<b>CHAPTER THREE: NARRATIVES OF RADIATION EXPOSURE: RECONSTRUCTION, SACRIFICE, AND THE NUCLEAR VILLAGE</b>	<b>58</b>
<b>3.1. RECONSTRUCTION AND REBIRTH</b>	<b>60</b>
3.1.1. <i>STATUS QUO ANTE: FUKUSHIMA AS GRANARY</i>	64
<b>3.2. SACRIFICE ZONES AND JAPAN’S INTERNAL COLONY</b>	<b>70</b>
3.2.1 <i>SACRIFICE ZONE</i>	75
3.3.1 <i>THE VILLAGE’S STRUCTURE</i>	79
<b>3.4 CONCLUSION</b>	<b>83</b>
<b>CHAPTER FOUR: SMILING RADIATION AWAY: THE ROLE OF ‘RADIOPHOBIA’ IN JAPAN’S PUBLIC DEBATE</b>	<b>84</b>
<b>4.1. A BRIEF HISTORY OF RADIOPHOBIA</b>	<b>85</b>
4.1.1. <i>HISTORICAL CONTESTATIONS OF THE TERM</i>	86
<b>4.2. RADIOPHOBIA IN THE CONTEXT OF RECONSTRUCTION (FUKKŌ)</b>	<b>88</b>
4.2.1. <i>FUKUSHIMA HEALTH MANAGEMENT SURVEY</i>	90
<b>4.3. ORDERING FEAR AND ORDERING SOCIETY</b>	<b>92</b>
<b>4.4. THE FORTUITOUS OBSTACLE</b>	<b>94</b>
<b>4.5. CONCLUSION</b>	<b>96</b>
<b>CHAPTER FIVE: STAGING AUTHORITY AT AN OECD NUCLEAR ENERGY AGENCY WORKSHOP IN FUKUSHIMA</b>	<b>98</b>

<b>5.1. FEARING FOOD FROM FUKUSHIMA</b>	<b>99</b>
<b>5.2. DRAMATURGICAL PERFORMANCE AND IMPROVISATION</b>	<b>101</b>
5.2.1. <i>IMPROVISATION</i>	102
<b>5.3. METHODOLOGY</b>	<b>104</b>
5.3.1. <i>OECD NUCLEAR ENERGY AGENCY</i>	104
5.3.2. <i>WORKSHOP ON POST-ACCIDENT FOOD SAFETY SCIENCE</i>	105
5.3.3. <i>DATA COLLECTION</i>	106
<b>5.4. THE WORKSHOP'S ARCHITECTURE OF AUTHORITY</b>	<b>107</b>
5.4.1. <i>PERSUASIVE RHETORIC</i>	107
5.4.2. <i>VOUCHING</i>	109
5.4.3. <i>FORGING A SINGLE VOICE</i>	110
5.4.4. <i>STAGE MANAGEMENT</i>	110
<b>5.5. AN IMPROVISED WORKSHOP</b>	<b>113</b>
5.5.1. <i>PERFORMING THE INTERNATIONAL</i>	114
5.5.2. <i>THE AUTHORITY OF WITNESSING</i>	116
5.5.3. <i>THE EXPERT'S BODIES AS EVIDENCE</i>	118
<b>5.6. CONCLUSION</b>	<b>119</b>

---

**CHAPTER SIX: CO-EXPERTISE AS THERAPY: THE ICRP'S PARTICIPATORY DIALOGUES IN FUKUSHIMA  
(2011–2018)** **121**

---

<b>6.1. JUSTIFICATION</b>	<b>123</b>
6.1.1. <i>THE INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION</i>	123
6.1.2. <i>THE ICRP DIALOGUES AND FUKUSHIMA DIALOGUES</i>	125
<b>6.2. LITERATURE REVIEW</b>	<b>126</b>
6.2.1. <i>CRITIQUES OF THE DIALOGUES AND ITS PREDECESSORS</i>	126
6.2.2. <i>CRITICAL ERRORS</i>	127
6.2.3. <i>DESCRIPTION AND THE LIMITS OF CRITIQUE</i>	128
<b>6.3. METHODS</b>	<b>129</b>
<b>6.4. CO-EXPERTISE: AN IMPROVISED AND IMPROVISATIONAL CONCEPT</b>	<b>130</b>
<b>6.5. CO-EXPERTISE: WHO PARTICIPATES AND ON WHAT TERMS?</b>	<b>134</b>
6.5.1. <i>ETIC AND EMIC ANALYSES OF THE DIALOGUE SESSIONS</i>	135
6.5.2. <i>STRUCTURED DIALOGUES' CATEGORISATION OF PARTICIPANTS</i>	137
6.5.3. <i>LOCAL PEOPLE</i>	138
<b>6.6. THE PURPOSE OF DIALOGUE: TO LEARN AND TO EMPOWER</b>	<b>141</b>
6.6.1. <i>INSTITUTIONAL LEARNING</i>	141
6.6.2. <i>EMPOWERING PARTICIPANTS</i>	141
6.6.3. <i>EMPOWERMENT AS FEELING ABLE TO MAKE CHOICES</i>	142
<b>6.7. CONCLUSION</b>	<b>145</b>

---

**CHAPTER SEVEN: CONCLUSION** **146**

---

<b>7.1. THESIS SUMMARY</b>	<b>147</b>
<b>7.2. KEY FINDINGS AND DEVELOPMENTS</b>	<b>148</b>
<b>7.3. EPILOGUE: WRITING IN A TIME OF 'POST-TRUTH' POLITICS</b>	<b>154</b>

---

**BIBLIOGRAPHY** **158**

---

## List of Figures

### Chapter One

**Figure 1.1** Anti-nuclear protest outside the Prime Minister’s Office

**Figure 1.2.** Self-reported numbers of protestors at MCAN protests

### Chapter Two

**Figure 2.1.** Storage of irradiated materials on Mount Shinobu

**Figure 2.2.** Sign asking onlookers to refrain from photography

**Figure 2.3.** Additional steps taken by GoTranscript to enforce confidentiality

### Chapter Four

**Figure 4.1.** Pages from ‘Nasubi asks questions’

**Figure 4.2.** Banner image of the FGMSC homepage

**Figure 4.3.** Organisational diagram of FGMSC

### Chapter Five

**Figure 5.1.** National affiliation of presenters by session

### Chapter Six

**Figure 6.1.** ICRP Dialogue Participants visit Hachioji Shrine

**Figure 6.2.** The basis for and use of ICRP recommendations

**Figure 6.3.** Seminar Four

**Figure 6.4.** Seminar Five

**Figure 6.5.** Seminar Six

**Figure 6.6.** Seminar Seven

**Figure 6.7.** Seminar Eight

**Figure 6.8.** Seminar Twelve

### Chapter Seven

**Figure 7.1.** Japanese Twitter campaign (Ōtemachi Station, April 2017)

---

## List of Tables

### Chapter One

**Table 1.1.** Self-reported number of protestors at MCAN protests

### Chapter Two

**Table 2.1.** List of interviews

**Table 2.2.** Observed demonstrations

**Table 2.3.** Observed seminars

## **Chapter Five**

**Table 5.1.** Japanese radiological criteria

**Table 5.2.** International radiological criteria

**Table 5.3.** Organisations listed on the Workshop Agenda

**Table 5.1.** National affiliations of presenters

## **Chapter Six**

**Table 6.1.** Topics addressed by the Dialogue seminars

**Table 6.2.** Comparison of the number of participants reported by the ICRP and Kimura

**Table 6.3.** Frequent participants in the ICRP Dialogues

**Table 6.4.** The categories used to order participants in the structured Dialogues

---

## List of Acronyms

ALARA	‘As Low As Reasonably Achievable’
ANT	Actor-Network Theory
BEIR	National Research Council Committee on the Biological Effects of Ionising Radiation
CBRN	Chemical Biological Radio-Nuclear
CEFAS	Centre for Environmental Fisheries and Aquaculture Science
CEPCO	Chugoku Electric Power Company
CEPN	Centre for the Study of Protection Evaluation in the Nuclear domain ( <i>le Centre d’étude sur l’Evaluation de la Protection dans le domaine Nucléaire</i> )
CNIC	Citizens Nuclear Information Centre
CORE	Cooperation for the Rehabilitation of Life Conditions in the Contaminated Territories of Belarus
CRPPH	OECD-NEA Committee on Radiological Protection and Public Health
CUSAS	Cambridge University Anthropological Society
DSM-IV	<i>Diagnostic and Statistical Manual of Mental Disorders</i> , fourth edition
EC	European Commission
ENEA	European Nuclear Energy Agency (1958-1972, now NEA)
EPA	Environmental Protection Agency
ESRC	Economic and Social Research Council
FGMSC	Fukushima Global Medical Science Centre
FMU	Fukushima Medical University
HEPCO	Hokkaido Electric Power Company
HPS	History and Philosophy of Science
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
INES	International Nuclear Event Scale
IPCC	Intergovernmental Panel on Climate Change
IRSN	Institute of Radiological Protection and Nuclear Safety ( <i>Institut de radioprotection et de sûreté nucléaire</i> )
IXRPC	International X-Ray and Radium Protection Committee
JAEC	Japanese Atomic Energy Commission
JHPS	Japan Health Physics Society
JLPT	Japanese Language Proficiency Test
JR	Japan Rail
KEPCO	Kansai Electric Power Company
LNT	Linear No-Threshold model
MAFF	Ministry of Agriculture, Forests, and Fisheries
MCAN	Metropolitan Coalition Against Nukes
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MHLW	Ministry of Health, Labour, and Welfare
MoE	Ministry of Environment
MoFA	Ministry of Foreign Affairs
NAIIC	Nuclear Accident Independent Investigation Commission
NAS	National Academy of Science
NEA	OECD Nuclear Energy Agency

NERIS	European Nuclear and Radiological Emergency Management and Rehabilitation Strategies Information Website.
NGO	Non-Governmental Organisation
NHK	Nippon Housou Kyokai (Japanese State TV)
NIRS	National Institute of Radiological Science
NISA	Nuclear Industrial Safety Agency
NPO	Non-Profit Organisation
NRA	Nuclear Regulation Authority
NRC	Japan National Radiation Council
NRC	United States (US) National Research Council
NRPA	Norwegian Radiation Protection Agency
NSC	Nuclear Safety Commission
OECD	Organisation for Economic Co-operation and Development
OIC	(Fukushima Medical University's) Office of International Cooperation
PHE	Public Health England
PTA	Parents and Teachers Association
PTSD	Post-Traumatic Stress Disorder
RIR	Research Institute of Radiology
RMSC	Radiation Medical Science Centre
SAGE	Scientific Advisory Group for Emergencies
SCJ	Science Council of Japan
SCK-CEN	Studiecentrum voor Kernenergie-Centre d'Etude de l'énergie Nucléaire
SRAJ	Society for Risk Analysis Japan
SSK	Sociology of Scientific Knowledge
STS	Science and Technology Studies
TEPCO	Tokyo Electric Power Company
THE	Times Higher Education
TMU	Tokyo Metropolitan University
UN	United Nations
UNDP	United Nations Development Programme
UN-FAO	United Nations Food and Agricultural Organisation
UNICEF	United Nations International Children's Emergency Fund
UN-OHCHR	United Nations Office of the High Commissioner on Human Rights
UN-SCEAR	United Nations Scientific Committee on the Effects of Atomic Radiation
WHO	World Health Organisation
WNA	World Nuclear Association

## Acknowledgements

It is said that success has a hundred fathers, but defeat is an orphan. If this is true, writing is the exception. Every author is supported by a coterie of colleagues, friends and family, whose names will never grace the spine of the finished manuscript. They would never claim any credit for themselves, yet there would be no thesis without them. I have a few pages to combat their modesty and give them the recognition they deserve.

The arguments in this thesis are the product of four years spent studying expert authority in relation to the Fukushima Daiichi nuclear power plant disaster. Much of this work has been completed at the University of Cambridge's Department of Geography, with the support of the Economic and Social Research Council (ESRC Award Number 1560363). My thanks go to all the staff of the department for their warmth and collegiality. I am particularly indebted to my supervisor, Alex Jeffrey, who has been my rock throughout my graduate studies. When Alex agreed to supervise my undergraduate thesis, shortly after he arrived in Cambridge in 2012, he could not have envisioned that I would still be knocking on his door seven years (and two degrees) later. His mentorship has been indispensable. My thanks go also to my PhD advisors, Ash Amin and Philip Howell, as well as my examiners, Andrew Barry and Mike Hulme. The suggestions they made during my first-year review and my *viva voce* have been invaluable in sharpening my thought. Some additional thanks are owed to Mike, for his capable leadership of the *Geographies of Knowledge* (GoK) research group, and Phil, who kindly edited numerous chapters of this thesis. As an undergraduate, I was one of many students at Emmanuel College to benefit from the energy that Phil poured into his role as a Director of Studies (DoS). He deserves no small amount of credit for my decision to pursue a path in post-graduate study, which has culminated in this text.

This project has also benefitted from periods spent away from my home institution. I would like to thank Mikihiro Tanaka and Sheila Jasanoff for hosting me at Waseda and Harvard universities, respectively. Both have proven to be formative experiences. At Waseda, I profited from Tanaka's critical insights into media controversies, his experience as the co-founder of the Science Media Centre of Japan, and his introductions to the Japanese Science and Technology Studies (STS) community. As an STS Fellow at Harvard's Kennedy School of Government, I similarly enjoyed the boon of Sheila's prodigious acumen and the camaraderie of both the STS Fellows' Group and the wider Science and Democracy Network (SDN). I hope to continue contributing to these communities for years to come and look forward to the work ahead of us.

Arguably the deepest debt that any ethnography owes is to its research informants. Over the course of this project, I met a host of politicians, bureaucrats, experts, citizen scientists, and activists, who were consistently generous with their time. In many cases, the need for anonymity prevents me from naming them. But my gratitude to them for agreeing to share their stories cannot be quantified. I hope this thesis does their experiences justice and that they will be able to recognise themselves in the text, whether they are named or not. I am especially grateful to the International Commission on Radiological Protection (ICRP), Metropolitan Coalition Against Nukes (MCAN), OECD Nuclear Energy Agency, and the Takagi School of Citizen Science for accommodating periods of participant observation. My thanks go also to 3.11 Action for their tours of Fukushima Prefecture. Special thanks go to Christopher Clement, Hiroaki Koide, Edward 'Ted' Lazo, Jacques Lochar, Misao Redwolf, Hisako Sakiyama, Chieko Shina, Aileen Smith, and Thierry Schneider for their steadfast support.

Researchers often fail to acknowledge all those who acted as facilitators by opening doors or suggesting promising avenues of enquiry. No list is exhaustive, but Watanabe Kohei's magnanimity is particularly warmly remembered. So too is the generosity of Matsumoto Hiroaki and Masayuki Azemi. I am also thankful for the opportunities that Daisaku Yamamoto, Fanny Bazille, Peter Wynn Kirby, Rob Doubleday and the team at Centre for Science and Policy have provided.

Sadly, not all those who were generous enough to show an interest in my work are here to see its completion. Jeffrey Patterson was kind enough to let me interview him on numerous occasions when I was conducting preliminary, pre-doctoral work on the Fukushima crisis. His willingness to squeeze a young student into his busy schedule made an ethnography of experts seem more plausible. Nakajima Takako was similarly generous, meeting with me twice during a short visit to the UK in 2018. Her enthusiasm for the historicising line of argument that I develop in Chapter Three animated my editing of the chapter. They will be missed.

Funds necessary for fieldwork and conference-attendance have been generously provided by the Economic and Social Research Council (*Discretionary Fund*), Royal Geographical Society (*Dudley Stamp Memorial Prize*), the Department of Geography (*Philip Lake II Fund, University Fieldwork Fund*) and Emmanuel College. The college also supported my writing-up process through the *Late Eighties / Early Nineties Fund*.

My biggest thanks go to those I love. I would be remiss if I did not take this opportunity to thank my parents for their tireless dedication and sacrifice. This project would not have been possible without their myriad investments in my education, especially the focus they placed on bilingualism throughout my childhood. I am eternally grateful for their continued encouragement. Last but by no means least, I want to thank Magdalen Connolly, who has supported my work on three continents. Her keen interest, steadfast nature, and good humour in the face of adversity has made this journey a pleasure.

This thesis is dedicated to my grandparents. Of the four, only one lived to see me complete my graduate studies. Sadly, Rosina passed before I finished primary school; Thomas<sup>1</sup> before I finished secondary; and Akira before I finished my BA. They never had the opportunity to visit Cambridge, but their names will now rest in the University Library for years to come. I hope that they would have been proud. My thesis is dedicated to their memory and to Junko's continued good health. May we continue to enjoy her company for many more years to come.

<sup>1</sup> Having spent much of his career at a nuclear power plant in County Durham, Thomas would no doubt have enjoyed my choice of topic.

## Chapter One

### Introduction

---

Figure 1.1. Anti-nuclear protest outside the Prime Minister's Office



Source: Author's own collection

The civil servant who leaves her ministry in Kasumigaseki, Tokyo between 6.30pm and 8.00pm on a Friday does not walk the same streets she took to work that morning. For seven years now, her path has been lined with placards; the air made thick with music and chanting. ‘They [the authorities] can’t keep us safe,’ she hears the people sing. ‘Cowards can’t protect us.’ These are old lyrics set to an older tune – yet the song remains a regular feature of the Metropolitan Coalition Against Nukes’ (MCAN) protests, today. For nine months in 2016 and 2017, I observed their weekly protests. On most weeks, a middle-aged man could be found demonstrating across the road from the House of Representatives, adjacent to the Kansei Memorial Park. His spot falls between the two focal points of the event: the main cluster of demonstrators, who chant facing the Prime Minister’s Official residence, and a small stage erected opposite the National Diet Building’s Main Gate, where individuals are given the opportunity to address the congregation. Periodically joining in with the chanting – broadcast throughout the area, using a system of speakers – the man erects a small portrait

of Japan's late 'king of rock', Kiyoshi Imawano, and plays 29 of his songs from 13 albums.<sup>2</sup> The ordering of these songs varies from week to week, but an anti-nuclear cover of Eddie Cochran's *Summertime Blues* (1958) is always the final item, played as the protest is ending (Imawano 1988).<sup>3</sup> As fellow protestors drift home, many stop to sing along. 'They [the authorities] can't keep us safe,' they reprise; 'the spineless can't protect us'. Our civil servant, identifiable in her muted suit and lanyard, sidles past uncomfortably as a group of twenty-something protestors hit the end of the bridge with gusto: 'no one trusts you!'

This thesis examines how claims to expert authority are made and contested in conditions of low public trust. Its empirical focus is the aftermath of the 2011 Fukushima Daiichi nuclear power plant disaster, a nuclear event recognised by the International Atomic Energy Agency (IAEA) as the worst since Chernobyl (IAEA 2011) and hailed by Japanese Prime Minister, Naoto Kan as the 'most severe crisis' of any kind that Japan has 'faced in the 65 years since the Second World War' (Kan 2011). The disaster has been selected as an object of study, not just for its historic quality, but for its ability to illuminate one of the great paradoxes of our time. Namely, that 'the cases in which scientific advice is asked most urgently are those in which the authority of science is questioned most thoroughly' (Bijker, Bal, and Hendriks 2009:1). Faced with the release of radioactive materials from units one, two, and three of the Fukushima Daiichi nuclear power plant, Japan turned to experts to help contain and manage the disaster, even as the nation grew vocally dubious of their assurances. Few could forget that Japan built its nuclear plants amid assurances of their absolute safety (Noggerath, Geller, and Gusiokov 2011; Benedict 2014).<sup>4</sup> Or that citizens were assured that the situation at the Fukushima Daiichi nuclear power plant was under control, hours before explosions were broadcast on national television. This thesis uses the idiom of improvisation to examine how experts perform claims to credibility in this unusual time.

Any account of how expert authority has been performed in response to the Fukushima Daiichi disaster will necessarily be partial. As events continue to unfold, expert advice is sought on an ever-growing multitude of issues. When the Great East Japan Earthquake (*higashi nippon dai shinsai*), and subsequent tsunami took from the Fukushima Daiichi nuclear plant much of its access to electricity, and with that its ability to reliably cool its six reactors, advice was urgently sought on how to avert a nuclear catastrophe. Nuclear physicists and engineers were consulted on topics ranging from: the possibility of securing access to other sources of electricity to the probability of hydrogen explosions occurring within the reactor buildings; the wisdom of venting the reactors to the efficacy of using sea-water as a coolant. Once explosions had been observed at units one, two, and three, exposing spent fuel to the atmosphere, a new cache of problems relating to containment and 'clean up' came to demand expert attention. For eight years now, experts have continued to consult on issues ranging from how best to remove fuel rods from damaged reactors, to the plausibility of freezing the soil around the plant as a method of stymieing the flow of groundwater into its basements.

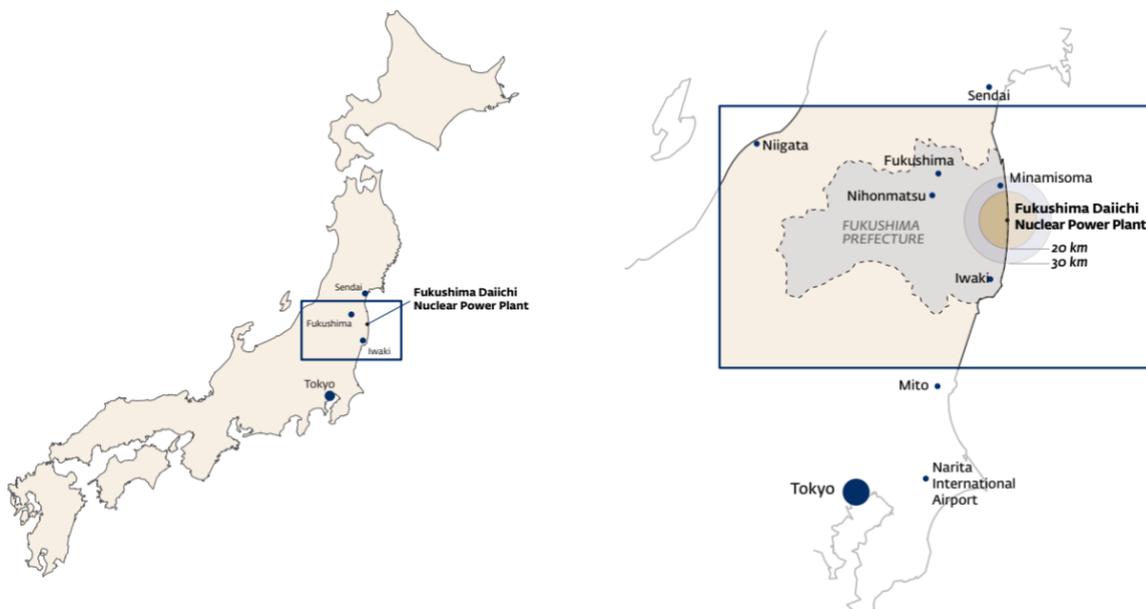
<sup>2</sup> The albums *COVERS* (1988) and *TIMERS* (1989) are most heavily featured, accounting for five and nine tracks, respectively. Both are albums penned in the wake of Chernobyl and released amid conflict with the record label, Toshiba EMI and various broadcasting stations, owing to the former's anti-nuclear content and the latter's criticism of music industry censorship (Manabe 2016).

<sup>3</sup> The protestors appeared to play a live recording, in which Imawano ad-libbed sections of the bridge. The same recording was always used, however, allowing the protestors to sing along.

<sup>4</sup> The narrative of nuclear power as absolutely safe is popularly remembered as the 'myth of safety' (*anzen shinwa*).

Of the plethora of issues raised by the Fukushima disaster, it is those that directly pertain to public health have proven the most contentious. In this thesis, I focus on these debates. Questions of who to evacuate and what (not) to eat have been a source of controversy since the disaster began. As an emergency measure, the Japanese government evacuated a 2km, 3km, 10km, then 20km radius of the stricken nuclear power plant within 48 hours, before expanding the evacuation zones based on air radiation dose on 22 April 2011. Japanese radiation exposure limits are set on the assumption that the incidence of cancer is proportional to dose. This Linear Non-Threshold (LNT) model dictates that there is no ‘safe level’ of exposure at which no ill effects would be predicted. Rather, the problem of radiation protection is to determine how much exposure to deem ‘acceptable’. Under ‘normal’ conditions, only areas with an air radiation dose of 1mSv/year or less are considered suitable for civilian habitation. However, this limit is set with the understanding that it is too stringent to be enforced in the event of a nuclear disaster – evacuation being recognised as a threat to both bare life – in that it can disrupt the continuity of care, but also because it can lead to depression, even suicide – and to ways of life – in that it dislocates communities. Taking these factors into consideration, the Japanese government announced that it would be using a reference dose of 20mSv/year in April 2011. This threshold continues to be used in designating areas as safe for evacuation orders to be lifted. From April 2011, debates surrounding the adequacy of this framework have revolved not just around matters of fact, but around the identities and credibility of those intervening in this debate. It therefore provides a rich case study for analysis.

**Fig.1.2** Map of Japan and Fukushima Prefecture



Source: NAIIC (2012)

In focusing on the debates surrounding civilian exposure, this thesis examines closely how expert advisors secure claims to credibility in drawing the line between ‘acceptable’ and ‘unacceptable’ risks. G.K. Chesterton famously wrote that that ‘art, like morality, consists of drawing the line somewhere’ (in Clarkson 2014:1). It is my position that so too does much of radiological protection (Takahashi 2017). At every turn, practitioners are asked to draw boundaries: between the habitable and the uninhabitable; the edible and the inedible; those who need additional protections (Potassium Iodide pills, for example) and those who can do without. The logician concerned with social epistemology might ask how these boundaries *ought* to be established. Questions of who should draw

said boundaries, at what point, and on what basis might comfortably be answered from the armchair, with recourse to thought experiments designed to parse the credible expert from her putative contenders (Goldman 2001), august knowledge from mere belief (Gettier 1963; Goldman 1976, 1979; Kripke 2011; Lewis 1973; Nozick 1981; Sosa 1999). Yet such work does little to illuminate how extant experts actually secure and exercise their authority, remaining aloof from the messy realities of political debate. This thesis adopts an opposing posture. Rooted in the traditions of Political Geography, Anthropology, and Science and Technology Studies (STS), I analyse the public contestation of expert authority in ethnographic detail, drawing on: 11 months of residential fieldwork; participant observation of workshops staged by expert bureaucracies; 53 interviews with 46 politicians, scientific advisors, protestors, and public figures; and the analysis of textual documents.

This thesis is informed by seven years of academic engagement with the Fukushima Daiichi disaster, which began with the proposal of an undergraduate thesis entitled *Godzilla Natures* in February 2012. My private engagement with the disaster, however, began before this point. As a person of Japanese descent, and a member of the diaspora, I joined the nation in watching as the disaster unfolded on national television, and fastidiously followed the issue with 16.5 million countrywomen in the pages of two national newspapers (*Yomiuri Shimbun* and *Asahi Shimbun*) – communicating with family and friends in the region at every given opportunity. From a distance, I noted tangible shifts in the national debate: from how a lack of clear information in traditional news outlets saw a proliferation of alternative news sources emerge in Spring 2011; to how *Asahi Shimbun* sought to reclaim the issue, and the public’s trust, by supporting ‘watchdog journalism’: running a series of special features on Fukushima, titled *The Prometheus Trap*, and elevating the ‘triple disaster’ of March 2011 to its own category of news on its websites (Fackler 2016). On extended visits to Japan in 2011 (3 months), 2012 (4 months), 2013 (3 months), 2016 (6 months), and 2017 (7 months), I witnessed the disaster’s intrusions into everyday life, first-hand. I commuted on trains made dark to save electricity (*setsuden*), when Japan’s remaining 44 nuclear reactors<sup>6</sup> were taken offline for safety inspections, threatening the possibility of rolling blackouts in the summer of 2011. I stumbled across formerly-empty lots of land repurposed to provide housing to Fukushima’s evacuees, or transformed into ‘temporary storage sites’ for soil and plant-matter contaminated in the disaster, stacked meters high in black plastic bags. And at dinner tables in 11 prefectures, I listened as arguments about the efficacy of the state’s radiological protection measures were made and re-made; interpreting the specifics of this nuclear controversy in relation to broader understandings of the ‘political situation’ (Barry 2012), by placing it within histories of other (superficially unrelated) controversies or grand narratives of Japan and the Tohoku region.

This thesis benefits also from the time I have spent playing the role of a junior expert in the networks of authority that I analyse. Over the course of the PhD, I have had the opportunity to present my work on ten occasions across six nations (namely, in France, Ireland, Japan, Portugal, UK, and USA). Many of these presentations have been to policy practitioners, working in the nuclear domain. On 15 May 2017, for example, I presented at the Maison Française d’Oxford at the invitation of the French

<sup>5</sup> Japan’s first and second biggest daily newspapers by circulation, *Yomiuri Shimbun* and *Asahi Shimbun* have a daily circulation of approximately 9 million and 6.5 million, respectively, in 2016. *Yomiuri Shimbun* is a centre-right publication, while *Asahi Shimbun* stands in the centre-left.

<sup>6</sup> Prior to 11 March 2011, Japan had 54 nuclear reactors across 18 facilities. Of these, the six at the Fukushima Daiichi nuclear power plant were either rendered inoperable or shut down. A further four at the Fukushima Daini power station shut down automatically on 11 March.

Embassy, subsequently co-authoring the workshop summary (see: Pini et al. 2017). This inaugural Anglo-French workshop on the ‘human, social, and ethical dimensions’ of nuclear power brought me into conversation with expert bureaucrats from both Britain and France, as well as UK Scientific Advisors, who had advised on the evacuation of British citizens in the vicinity of the Fukushima Disaster as members of the Scientific Advisory Group for Emergencies (SAGE). These conversations were continued in 2018 at a second workshop hosted in the British Embassy in Paris. On other occasions, I addressed those that I had more explicitly studied, either to offer my reflections as an outside observer of their activities or to participate in various fora as a colleague. It was in the former capacity that I was invited to submit a memo to the *Strategic Meeting on the Future of the Dialogues*, held by the International Commission on Radiological Protection (ICRP) in Fukushima on February 2018. While it was in the later capacity that I was encouraged to participate in the 3<sup>rd</sup> and 4<sup>th</sup> NERIS workshops – hosted by the Portuguese Environment Agency (*agencia portuguesa do ambiente*) and Irish Environmental Protection Agency (EPA) at the Instituto Superior Tecnico and Dublin Castle, respectively – and to publish a paper in the 2017 conference volume (see: Takahashi 2017). It is in this capacity also, that I was invited to deliver a lecture at the CEPN headquarters in Paris on 22 March 2018. This embeddedness in the radiological protection community has undoubtedly enriched my accounts of the prosaic practices through which claims to credibility are fashioned.

## 1.1. Performing Expert Authority

This thesis’ interest in the performance of expert authority is justified by the central role that scientific experts play in the governance of contemporary societies. As Hilgartner reminds us, an ‘unobtrusive army of science advisors’ stands ‘behind the headlines of our time’ (2000:3); advising on everything from the chemicals used in our toothpaste to the speed at which we drive our cars. As these experts ‘advise the government on nearly every area of policy, playing an indispensable role in the modern state... it is [therefore] important to understand how science advisors work to achieve credibility’ (ibid.:3).

While scientific experts play a powerful role in modern societies, they are also forced to defend their position, and its attendant authority, with great regularity. One need only turn to popular aphorisms to see that a scepticism of expertise is so normal as to be banal. Faced with an inconvenient expert opinion, one might recite Gibson’s Law: ‘for every PhD there is an equal and opposite PhD. If the expert responds by mobilising statistical analyses, one might retort that ‘there are lies, damn lies, and then there are statistics’.<sup>7</sup> And when the exasperated expert asks why she was consulted at all, if she is only to be ignored, one might reach for the words of celebrated science fiction author, Robert Heinlein: ‘Always listen to the experts. They’ll tell you what can’t be done, and why. Then do it.’

<sup>7</sup> Mark Twain popularised this saying, but attributed its origin to the British Prime Minister, Benjamin Disraeli. To the best of my knowledge, there are no recorded instances of Disraeli uttering the phrase.

<sup>8</sup> Robert Heinlein (1907 - 1988) is remembered as ‘the dean of science fiction writers’ and is commonly regarded to be one of the genre’s ‘big three’, alongside Isaac Asimov and Arthur C. Clarke. The quote is taken from the ‘intermission’ of his 1973 novel, *Enough Time for Love*, which received both the Hugo and Locus Award in 1974. The ‘intermission’ is explained to be a series of ‘excerpts from the notebook of Lazarus Long’, the novel’s protagonist. In practice, it is a series of aphorisms penned by Heinlein himself. The sentiment of this aphorism somewhat mirrors Clarke’s First Law: ‘When a distinguished but elderly scientist states that something is possible, he is almost certainly right. When he states that something is impossible, he is very probably wrong.’

Though the irreverence of such sayings may be humorous, ideas of expert advice as partial, interested, and value-laden, are a notable and salient feature of late-modern politics. Climate deniers resist assertions of a scientific consensus on anthropogenic climate change (Oreskes 1995, 2004) by claiming that biases exist in research funding (see, for example: Payne 2015). Anti-vaxxers similarly point to ‘Big Pharma’s’ distorting influence on scientific research (see, for examples: Boseley 2018; and Lord 2010). Such causes are readily dismissed as ‘regressive’ or ‘reactionary’, commanding no serious attention within the academy, except as objects of study and/or intervention. Yet, a symmetrical treatment of ‘progressive’ contemporary causes finds many are no less quick to assert the value-laden nature of expertise, albeit in manifestly different ways. From the 1960s onwards, ‘environmental and consumer activists... [have] demand[ed] extensive public participation in decisions about science and technology’ (Hilgartner 2000:4). In the late-1980s, AIDS activists similarly managed to secure an active role in the production of scientific knowledge about the condition (Epstein 1995). As Wajcman (1995:189) reminds us, feminist scholars have long argued that science is masculinist, either in the sense that women’s access to scientific posts are limited (Cowan 1976, 1979, 1983; Fox 1995; McNeil 1987; Rossiter 1982; Vetter 1981; Zuckerman 1987), or in the sense that the logics of western science are inherently patriarchal (Corea 1985; Corea et al. 1985; Griffin 1978). In a similar vein, post-colonial scholars observe the uneven geographies of science, pointing to a European and North American hegemony over practices of knowledge-making (Anderson 2009, 2015). Given the wealth of challenges to the authority of experts, it is therefore important to understand how experts actively police, not just the boundaries between the ‘safe’ and the ‘risky’, but the boundaries that demarcate their own claims to authority from that of their competitors (Gieryn 1999).

This constructivist perspective suggests that authority is not a right, granted to all who demand or deserve it, but a relational quality, which one must work to maintain. The nature of this relational quality is difficult to articulate, even to those who possess it (Arendt 1961). Merje Kuus (2011) cautions that the scholar who asks a bureaucrat to explain what expert authority is, or how it functions in the context of their organisation, is liable to be met with an unhelpful answer: ‘it is very complex’ (ibid.:277). An alternative tactic, suggested by Hannah Arendt (1961), is to trace the genealogy of the term. At first glance, this seems no more promising than asking the expert bureaucrat. The Latin root of authority, *auctoritas* is itself a ‘notoriously undefinable word’ (Grant 1949:98), which has long vexed Classicists. Wolfgang Hefler warns us that ‘its meaning is not always clear and attempting to translate it causes even more trouble’, counselling that a ‘wise person will do better to refrain from the effort’ (in Furedi 2013:60. See, also: Balsdon 1960). In the work of 19<sup>th</sup> Century Jurist and Classicist, Theodor Mommsen, however, we find a useful lead. While recognising the complexity of the term, Mommsen offered an approximation of *auctoritas* as ‘more than advice and less than a command, an advice that one cannot safely ignore’ (1888:1033-1034). I contend that this definition also serves as a serviceable approximation of contemporary authority. Authority demands obedience but precludes coercion (Arendt 1961:92-93). Where one must resort to force, be it of arms or argument, one’s authority is already in question (ibid.:93). Its smooth functioning therefore demands that it be recognised by both parties in a given interaction (Kuus 2011:277). And while the recipient of authoritative advice is not compelled to comply, nor are they easily able to ignore it – often being forced to defend and justify their non-compliance.

Despite definitional difficulty, a considerable body of scholarship has traced, in empirical detail, how authority is established; confident that we recognise our object when we see it (see, for examples: Jeffrey 2012; Kuus 2011; McConnell 2016). In Political Geography, the primary object of study

remains the state, reflecting the subdiscipline's founding stylisation of 'Politics... with a capital P... understood as the realm of the state and formal political processes' (Dittmer 2013). As Harris (2019) notes, the cultural turn, animated by an expansion of what is considered political, has prompted Geographers to engage with the state in novel ways. Most obviously, we see the emergence of ethnography as a means to study states as everyday entities (Bernstein and Mertz 2011; Marsden Ibañez and Henig 2016; Mountz 2007). Mobilising notions of 'performance' (Goffman [1956] 1990) and 'performativity' (Austin [1962] 2018; Butler [1990, 1999] 2006; Lyotard 1986), this work has drawn our attention to the importance of image and identity in exercising authority, suggesting that a condition of being (or becoming) a state is to act like one (Visoka 2018). The power of performance is perhaps most clear in accounts of fledgling nations, who must improvise claims to statehood in lieu of stable traditions (Jeffrey 2012), and unconventional entities, such as governments-in-exile, who seek to claim statehood absent of territory (McConnell 2016; McConnell, Moreau, and Dittmer 2012). Though this corpus of work has expanded the practices and settings in which we locate the state and its authority, the subdiscipline has been slow to move beyond 'methodological nationalism', with comparatively few examining the performance of authority by non-state actors.

Addressing this methodological nationalism is important as the state's place within politics is changing. The Dutch political scientist Maarten Hajer (2003, 2009) is an eloquent guide to the state's decline. Hajer's central contention is that the state's dominance of the policy arena is waning, and with this its ability to discipline actors into adopting specific political norms. At a time when 'established institutional arrangements often lack the power to deliver the required or requested policy results on their own', Hajer argues, states and intergovernmental bodies are increasingly taking part in 'transnational, polycentric networks of governance in which power is dispersed' (Hajer 2003:175). Old and new (civil society) actors increasingly collaborate within 'institutional voids', outside traditional structures of governance, resulting in a politics characterised by a 'double dynamic': its protagonists acting within a broadly accepted political process on the one hand, while seeking to negotiate the very terms of political action on the other (Leong 2017). This negotiation lies at the heart of what Hajer refers to as the 'authority problem' of modern governance. In the absence of 'clear and generally accepted rules and norms according to which politics is to be conducted', the question of what constitutes "acting authoritatively" remains forever open (Hajer 2009:34). For those engaged in policy-making, this process of negotiating authority is complicated by a second characteristic of modern politics: mediatisation. As political actors are now continually under surveillance, and their past positions easily accessible on the internet, they must be cognisant of how a persona adopted with one audience might "play" with others. The art of aligning performances aimed at separate audiences, so as to stabilise policy coalitions, is thus revealed to be integral to contemporary authority.

Hajer's notion of the 'institutional void' reflects more than a plurality of non-state actors engaging in governance activities: it reflects the rise of new modes of political practice. Nation states have long set policies on radiation exposure with reference to the strategic guidelines of the International Commission on Radiological Protection (ICRP), who – in turn – have drawn on evaluations of the scientific literature produced by the United Nations Scientific Commission on the Effects of Atomic Radiation (UN-SCEAR) and the US National Research Council's (NRC) Committee on the Biological Effects of Ionising Radiation (BEIR). However, the existence and considerable influence of such bodies does not challenge the centrality of the state, in and of itself. These are 'classical modernist' political institutions, associated with the Western post-war order. The notion that nations should decide upon their own thresholds for radiological exposure, informed by intergovernmental bodies, reflects a commitment to 'representative democracy, a differentiation between politics and

bureaucracy, the commitment to ministerial responsibility and the idea that policy making should be based on expert knowledge' (Hajer 2003:176). In short, said institutions reflect the idea that experts advise, and politicians decide. But even these organisations are now engaged in new forms of political practice, which take place '*next to or across*' traditional institutional configurations (ibid.). In response to the Fukushima Daiichi disaster, for example, the ICRP has made efforts to directly engage with, and be of assistance to, the people of Fukushima, in addition to its traditional role as an advisor to the nation state (see: Chapter Six). Its new practices are legitimated not through the machinery of representative democracy, but through discourses of deliberative democracy; implicitly expanding the scope of political authority beyond a narrow focus on electoral legitimation.

In addition to organisations 'above' the state adopting new forms of political practice, the contemporary era is characterised by the 'proliferation' of actors 'below' the state, in civil society (Barry 2012). In discussing the increased prominence of civil society actors in environmental controversies, Kimura (2017) and Fassert and Hasegawa (2019), among others, have spoken of the ascendancy of 'counter-expertise': modes of expertise, such as citizen science, which fall outside conventional frameworks of credentialisation (Williams and Moore 2019). This includes established NGOs, such as the Citizen's Nuclear Information Centre (CNIC), and citizen science groups, such as the Takagi School, which have acted as alternative sources of information about the nuclear disaster. But it also includes the multitude of grass roots organisations brought into being by the disaster itself. Scholars in STS (Latour 2004; Latour and Wiebel 2005) and geography (Hinchliffe 2001; Whatmore 2002, 2009) have long been interested in controversies as generative events 'in their potential to foster the disordering conditions in which reason is forced to "slow down"' (Whatmore 2009). Admittedly, this attraction has much to do with the use of controversies as a methodological device – one which allows us to see that 'science and technology are political... by other means' (Latour 2007). But they are also moments in which conventional "political actors", such as citizens groups – who STS has traditionally neglected (see: Winner 1993) – *do* science (Latour 2007:2). Controversies can bring into being new communities of citizens, organised around a particular 'matter of concern' and engaged first-hand in knowledge-production (Chilvers 2008; Whatmore 2009). Fukushima is no exception. Like Chernobyl, it has transformed a region into a 'richly endowed laboratory', filled with new coalitions of citizen-scientists (Wynne 1992:281), which Kimura (2017) describes as Citizen Radiation Monitoring Organisations (CRMOs). Many are modest in size and ambition: a small network of actors checking the level of contaminants in foods available to the community, for example. Others are engaged in mapping the effects of the disaster at a grand scale. Established in March 2011, Safecast aims to 'crowd map' levels of ionising radiation in Japan. Any citizen can purchase a kit to assemble one of two mobile Gieger counters – the bGeigie and the bGeigie nano – and upload readings taken on foot or in a vehicle via the Safecast API to help produce an open-access map of levels of environmental radiation exposure (Brown et al. 2016). (At the time of writing, more than 130 million readings have been made.) The multiplication of civil society actors engaged in producing knowledge about the nuclear disaster, and able to independently do the work of making radiation visible, poses new challenges for conventional experts, who must do the boundary work of distinguishing their claims to authority from these new challengers.

The emergence of these new communities also speaks to STS (Latour 2005) and critical geography's (Hinchliffe 2001; Whatmore 2002) shared interest in interrogating the assumed opposition between nature and culture, and illuminating the more-than-human nature of the social. 3.11 is commonly referred to as a 'triple disaster' in reference to the combined effects of the earthquake, tsunami, and nuclear disaster. The hybridity of the event is plain, but (as I go on to discuss) maintaining a

distinction between ‘natural’ and ‘man-made’ disasters, and plotting the Fukushima Daiichi incident in either the former or the latter, came to be an important element of political discourse, closely tied to the politics of blame. For critical geographers, however, the earthquake and tsunami are powerful reminders of non-human agency, while the multiplication of citizen science organisations draws our attention to how a novel, non-human presence in a given community – be it Bovine Spongiform Encephalopathy (BSE) or Caesium-137 – can become an ‘epistemic thing’: a scientific objects ‘whose unknown characteristics are the target of experimental enquiry’ (Hinchliffe 2001:258). The devices used in these enquiries have their own politics. The bGeigie, for example, is designed to be easy to use – ‘allowing “set and forget” operation by even non-technical operators’ (Brown et al. 2016:85). But the kits are not cheap. Although Safecast does not sell the components at a profit, and has used open source hardware and software, the parts for a bGeigie nano still retail at \$600 at the time of writing. The device also requires a solder to assemble. The “public” involved in Safecast’s crowd mapping is therefore a distinct subset of the ‘general public’. Safecast is well aware of this – arguing that the barriers to entry select for ‘relatively technically adept and motivated volunteers’, while admitting that it disqualifies the poor (Brown et al. 2016). Japan’s public controversy thus speaks to interests in both non-human agency, and the politics of scientific artefacts which have powerfully animated critical geographical enquiry in the last two decades.

### 1.1.1. *The Japanese Context and Conditions of Low Public Trust*

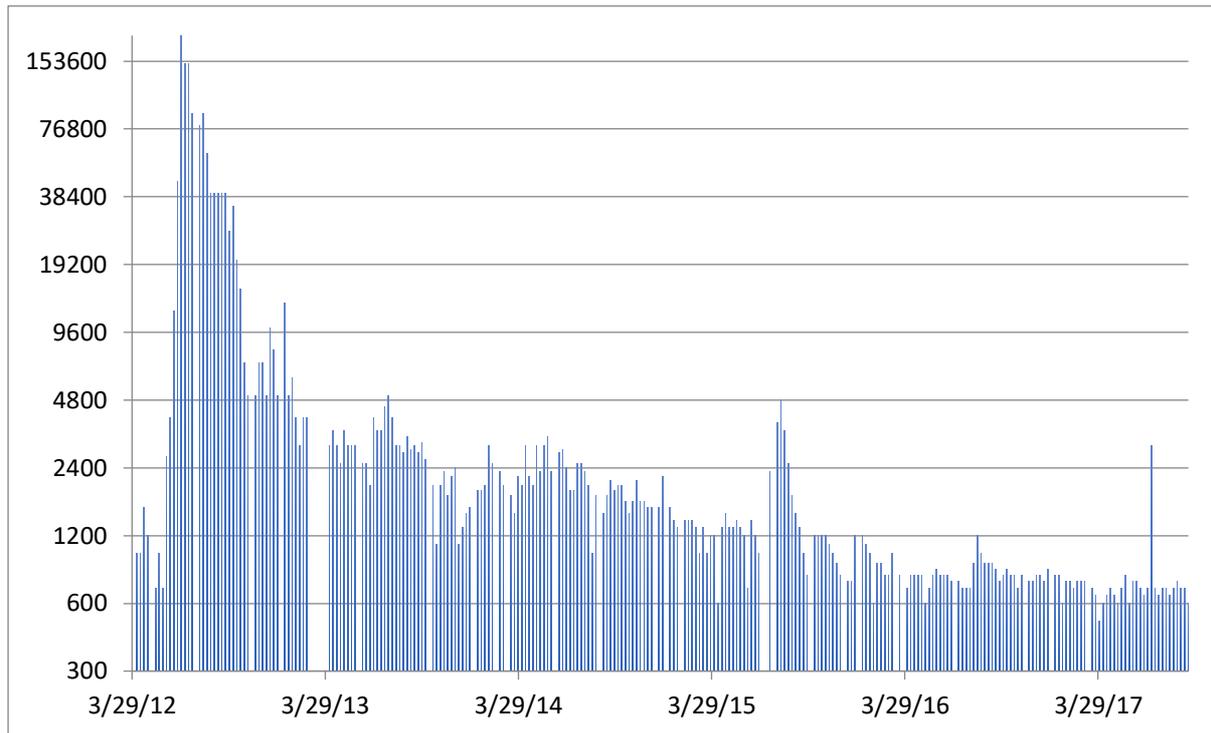
Despite the influence of various international bodies, the epistemic contests examined in this thesis remain importantly embedded in the Japanese context. As Sheila Jasanoff’s (2005:247-271) work on ‘civic epistemology’ reminds us, ‘science, no less than politics, must fit itself into established ways of knowing’ (Jasanoff 2004). How publics expect science to be presented and defended in policy processes is culturally specific. Comparing modes of public reason across nations, Jasanoff lends empirical teeth to the concept by identifying US (‘contentious’), UK (‘communitarian’), and German (‘consensus-seeking’) civic epistemologies; each characterised by different styles of knowledge-making, registers of objectivity, accepted foundations of expertise, norms of transparency, and bases for (dis)trust in experts (ibid.:259). The existence of scientific bodies ‘above’ the state does not circumvent these national modes of public reason. As the case of climate change is documented to show, assertions of a scientific consensus (Oreskes 2004) supported by international bodies (e.g., Intergovernmental Panel on Climate Change (IPCC)) do not automatically close national debates (Hulme 2009), which are fought on notably distinct terms (Jasanoff 2011; Miller 2008). The pronouncements of international bodies on radiological protection in Fukushima can similarly be expected to be interpreted and contested in a culturally specific manner. As little work has been done on Japanese civic epistemology to date, this thesis’ ethnographic account of a Japanese epistemic contest works toward filling this lacuna.

Just as the controversy is embedded in a particular space, so too is it embedded in a particular time, during which Japanese civic epistemology has been placed under considerable strain. The notion of ‘conditions of low public trust’, used to frame this thesis, can be understood in affective terms – the disaster marking the beginning of a period of intense public hostility toward Japanese experts and expert institutions. Thrift has noted that ‘there is no stable definition of affect’ or consensus on how it can be documented (2004:59). Yet it cannot be controversial to claim that affects are felt – to claim that the anger in the air was tangible in the aftermath of the disaster, just as the atmosphere of hope that surrounded Barack Obama’s election was (Anderson 2014: 3). Nor can it be controversial to

claim that traces of affect can be seen on placards brandished at the largest and most durable protests Japan has seen since 1960 (Oguma 2015. See also: fig. 1.2).<sup>9</sup> Or that it is heard in the tearful voices of demonstrators: ‘We have been abandoned. We sigh deeply from heartbreak and fatigue... we can’t help but to say, ‘don’t treat us like fools’’ (Muto 2011:2). But for many, it is the quantitative attempt to ‘know’ affect, made by those organisations that concern themselves with the ‘mood’ of the market (Anderson 2014:4), that provide the most striking sketch of Japan’s affective landscape. As a leading public relations company, Edelman is one such entity. The results of its annual ‘Trust Barometer’ indicate that 3.11 triggered a collapse of confidence in the institution of government, as well as in industry, the media and Non-Governmental Organisations (NGOs) (Edelman 2012). This was, in turn, eclipsed by a dramatic decline in the perception of experts and government officials, among others, as credible spokespeople (ibid.). ‘The fragility of trust was never more evident than this past year in Japan’, CEO and President, Richard Edelman pronounced in 2012. Six years on, (that is to say, at the time at which my fieldwork was conducted,) Japan’s collective consciousness continued to bear the scars of its experience – public confidence in experts still falling far short of pre-Fukushima levels by Edelman’s metrics (Edelman 2013, 2014, 2015, 2016, 2017, 2018). A focus on the issue of exposure over this longer time period is one of the core contributions of this thesis. Much of the scholarship on issues related to Fukushima Daiichi tells a story of crisis, focused on a period of less than a year (Lochbaum et al. 2014; Samuels 2013). Yet, the issue of civilian radiation exposure has continued to be hotly contested long after the crisis at the nuclear power plant was declared to be over (Kan 2011b). ‘The accident is over,’ Japanologist, Norma Field declared on 5 May 2012; ‘the catastrophe begins.’

<sup>9</sup> The MCAN demonstrations, with which this thesis started, are the largest demonstrations Japan has seen in half a century. At its height, MCAN mobilised as many as 200,000 people on a weekly basis and inspired anti-nuclear groups in 87 cities across the country to adopt the format of a Friday night protest (Oguma 2016: 7). Though MCAN now only musters 100s on a weekly basis – with its larger, quarterly events attended by numbers in the 1000s – the protests have also enjoyed great longevity. On 27 July 2018, MCAN celebrated its 300<sup>th</sup> protest, by which time contemporaneous movements such as Occupy Wall Street and the Umbrella movements had become distant memories.

Figure 1.2. Self-reported numbers of protestors at MCAN protests



Source: compiled by the author using figures reported by MCAN.

Japan's extended period of low public trust can be understood to reflect the dominant understanding of the nuclear disaster, as one symptomatic of the failings in Japan's nuclear knowledge-order. As the renowned Japanologist, Richard Samuels (2013) has documented, the immediate aftermath of the disaster was characterised by a struggle to establish its meaning. The operators of the stricken plant, for example, narrated the disaster was naught but an unfortunate accident, caused by a force majeure – tragic but demanding no change. If anything, Tokyo Electric Power Company (TEPCO) executives suggested, the challenge that befalls the nation is to avoid over-reacting, and in so doing disrupting an otherwise functional social order. 'To what extent can we burden the ratepayer to prepare for disasters that occur only every several hundred years and that considerably exceed in scale what the nation has foreseen?' asked TEPCO vice president, Fujimoto Takashi (in *ibid.*:36). This was an 'unforeseeable' (*soteigai*) disaster, the utility insisted. In the face of such an event, the nation must simply 'stay the course' (*ibid.*). However, TEPCO would be alone in this narration. In 2012, independent reports commissioned by the Cabinet (Hatamura et al. 2012), National Diet (Nuclear Accident Independent Investigation Commission (NAIIC), 2012), and Rebuild Japan Initiative Foundation (2012) concluded that the Fukushima Daiichi disaster had been avoidable. In the words of the Diet's NAIIC, it was a disaster 'Made in Japan' (NAIIC 2012: 9). Its root cause was not an exogenous shock but 'negligence' – made possible by a collusive culture of co-operation between the government and the nuclear industry, which saw the 'regulation [of nuclear power] entrusted to the same government bureaucracy responsible for its promotion' (*ibid.*:9). Reports of conflicts of interests in the Nuclear Safety Commission (NSC) and the stigmatisation of those who raised concerns about the adequacy of Japan's nuclear safety standards cemented this image in the public consciousness (Clenfield 2011; Samuels 2013). Under mounting pressure, key actors in this drama offered striking admissions of guilt. Called to appear before the National Diet on 15 February 2012, NSC Chairman, Madarame Haruki admitted that while 'global standards kept improving, we [the NSC] wasted our time coming

up with excuses for why Japan didn't need to bother meeting them' (in *Asahi Shimbun* 2012). By October of the same year, TEPCO retreated from its insistence that the disaster was an 'unforeseeable' (*soteigai*) act of God (TEPCO 2011, 2012a), and began to self-identify as 'the operator that caused this tragic accident' through its 'pride and overconfidence' ([emphasis added] 2012b). In a report compiled by a committee of internal and external specialists, TEPCO admitted that: it had been alerted to the possibility of extreme seismic activity in the region, and had chosen to ignore it (ibid.:7, 9-12); its staff were undertrained in crisis management (ibid.:7, 13-16); and the company had deliberately avoided implementing additional safety measures, as the act of preparing for disaster could 'spread concern' about the safety of nuclear power plants (ibid.:11).

Although civic epistemologies are 'reasonably stable' knowledge-orders, which 'persist[...] over relatively long periods of time', this definition does not preclude change, Miller (2008:1898) argues. As 'ways of knowing and reasoning about policy problems entwined with ways of organising political order', changes in either epistemic or political conditions can affect the other (ibid.; see, also: Shapin and Shaffer 1985). The equilibrium between the two is dynamic. 'This dynamism may mean, over short periods of time, that epistemic and social processes may diverge, until divergence becomes sufficiently recognised to force reintegration' (Miller 2008:1898). Conceiving of the conditions of low public trust that frame this thesis in these terms is consistent with Brianne Wynne's (1989, 1992, 1996) canonical work on risk communication. Focussed on communication with sheep farmers in Cumbria following the Chernobyl disaster, Wynne's papers are best remembered as a critique of the deficit model, which posits that public resistance to specific technologies or policies stems from its ignorance and can be corrected through public education. Wynne argues that far from reflecting failures of understanding, public distrust in science reflects a failure to 'recognise' and 'identify' with experts, 'morally speaking' (Wynne 1992:281). Social relationships, not knowledge, is understood to form the basis of public trust. Thus, trust is not reified, as it is in some cognitivist branches of the social sciences, but treated as an emergent property of 'social relationships, networks, and identities' (ibid.:282). If the Fukushima disaster is disruptive, it is because it has affected the 'social packages' through which members of the public interpret information (ibid.), forcing political actors to improvise new performances through which they might secure their credibility.

### 1.1.2. *Nuclear Geographies*

This thesis is also positioned within a broad social scientific literature on nuclear technologies. The collective fascination with nuclear matters is easy to understand. Nuclear weapons have dominated geopolitics from 1945 onwards, while the promise of 'atoms for peace', first as a means of producing 'energy too cheap to meter', then as a tool for generating 'green' energy, remains a powerful political motif. Historian of Science, Spencer R. Weart (1988, 2012) argues that our fixation with nuclear technologies owes as much to its symbolism as its realpolitical value. The idea of splitting the atom captured the popular imagination long before it was achieved. Cartoons depicted fleets of ships blown kilometres into the air in the first decade of the 20<sup>th</sup> century<sup>10</sup> (ibid.:11). Visions of a mid-century world war brought to an end by the use of "atomic bombs" would see print the decade after, (H.G. Wells' *The World Set Free*<sup>11</sup> ([1914] 2010) is credited with coining the term,) and tales of nuclear

<sup>10</sup> The image originates with English Radiochemist, Frederick Soddy, who used a fleet of battleships as an example of a weight being lifted into the air by the force generated through fission.

<sup>11</sup> In a poignant example of the conversation between real science and science fiction, Wells dedicated his novel 'To Frederick Soddy's "Interpretation of Radium" This Story, Which Owes Long Passages to the Eleventh Chapter Of That Book, Acknowledges and Inscribes Itself' (2010:6).

power (and associated disasters) would join them by the eve of the Second World War (ibid.:12, 46-47. See: Heinlein 1940). This early anticipation of plausible advances in nuclear technology was accompanied by a popular enthusiasm for all things radiological, which had little to do with radiation's actual properties (Weart 2012: 27). Radium came to be treated as a cure-all, mixed into everything from bath salts to toothpaste amid claims of it being able to cure signs of ageing and enhance sexual vitality, while Hollywood scientists resurrected the dead in radiation chambers on the silver screen (ibid.:25, 30). Radiation then, was imagined as both 'death ray' and 'life force', weapon and panacea: a powerful, quasi-mystical energy that could bring both prosperity and ruin. For Weart, the connection to ideas of alchemy is irresistible. Concern about nuclear technologies, he argues, animated the population because they acted as a proxy for broader concerns about modernity and the figure of the scientist, who was imagined with reference to existing, mythical tropes.

Though Weart's emphasis on mythology is distinctive, an understanding that nuclear controversies are embedded in wider debates surrounding the place of science and expertise in our society is widely understood. Focusing on the 'nuclear energy information campaign' staged by the Austrian Federal Chancellor's Office in the 1970s, (which culminated in a referendum on nuclear power in 1978,) Helga Nowotny emphasises that the debates were, in large part, about 'the role of experts in developing public policy' (Nowotny 1980. See, also: Hirsch and Nowotny 1977). Objections voiced against nuclear power often focused on the terms of public debate, Nowotny notes. Critics frequently addressed their comments to "them up there" (1980:11), underscoring the procedural hierarchy between experts and citizens, and objected to being restricted to submitting 'factual questions in written form' in the early stages of the information campaign – calling instead for more open debate (Hirsch and Nowotny 1977). The 'nuclear issue', Pierre Leroy surmises in an interview with Nowotny, 'was among other things, a battle about modernity, its advantages and inconveniences, its way forward and its governance (if it would ever be governable)' (Nowotny and Leroy 2009). 'The [Austrian] anti-nuclear movement were forerunners,' Nowotny agrees (ibid.); later debates surrounding radiological contamination (Wynne 1992, 1996) and the geological disposal of nuclear waste (Barthe 2009) having been found to focus similarly on reflexive themes of expertise and governance.

Given the role that nuclear technologies have played in both social sciences at large, they play a surprisingly limited role in geographical research. This characterisation is not without controversy. Alexis-Martin and Davies (2017) recently took to the pages of *Geographical Compass* to rebut claims of their being 'limited geographical research' into nuclear matters (Castree, Rogers, and Kitchin 2013); making the case for nuclear technology as an enduring object of geographical concern. To this end, they provide a broad review of geographical engagements with nuclear technology, from the 1950s to the present. The account begins with the optimism of the 1950s, when promises of energy produced cheaply near the point of consumption (Jones 1951), as well as dreams of using nuclear bombs' in geoengineering (Kirsch 2000), led scholars to anticipate new "geographies of nuclear power" (Hoffman 1957 in Alexis-Martin and Davies 2017:2). This optimism gave way to fear during the Cold War, as attention focused on the consequences of a nuclear exchange. Here, cartography played a particularly memorable role: American Geographer William Bunge famously producing the *Nuclear War Atlas* (1988) as a means to explore humanity's likely fate should the Cold War turn hot (see, also: Bunge 1973). Contemporary engagement with nuclear geography, Alexis-Martin and Davies (2017) conclude by arguing, can be organised around three vectors: an interest in 'nuclear zones' established around the sites of disaster (ibid.:3-6); a fascination with nuclear micro-geographies of the body (ibid.:6-7); and nuclear technologies' and events' roles in forming nuclear

communities (ibid.:7-8). In all, the review convincingly makes the case that the absence of nuclear geographies has often been overstated – the mid-century role of geographers as advocates of ‘atoms for peace’ (Jones 1951; Hoffman 1957), as well as critics of Cold War doctrine (Cutter 1993; Wisner 1986), being particularly prone to neglect. Yet it is nevertheless true that nuclear matters occupy a minor place in contemporary human geography. Comparatively few geographers work on nuclear matters, today (notable exceptions include: Kirsch 2000; Feldhoff 2018). Moreover, works on this topic do not enjoy a canonical place in the geographical corpus, as they do in neighbouring disciplines such as STS (e.g. Wynne 1992, 1996; Jasanoff and Kim 2009) and anthropology (e.g. Petryna 2013). Tellingly, many of those that Alexis-Martin and Davies (2017) prominently cite are not geographers, but scholars working at the intersection of STS and other disciplines, such as history (Hecht 2012), anthropology (Stawkowski 2016), and communication studies (Kuchinskaya 2012) – suggesting that much of the work being done on nuclear geographies is happening outside of geography itself. This thesis joins Alexis-Martin and Davies in acting as a corrective; working ‘*toward* nuclear geography’ in geography itself ([emphasis added] 2017).

One branch of scholarship which goes unmentioned in Alexis-Martin and Davies’ review, yet resonates with the core concerns of political geography, is work on the relationship between nuclear power and national identity. Gabrielle Hecht’s *The Radiance of France* (1998) is an influential example of this genre. The French for ‘radiance’ (*rayonnement*) is a homonym for both glory (or grandeur) and radiation. Playing with the serendipity of this term, Hecht traces competing visions of nuclear technology in the 1950s and 60s, demonstrating how rival gas graphite nuclear reactor designs were imbricated in opposed notions of “Frenchness”. The central drama of her account is a conflict between two competing “technopolitical regimes”. The first, notably associated with the Commissariat à l’Énergie Atomique (CEA), ‘viewed French glory primarily in military terms and sought to organize French companies into consortia that would prepare for the development of French nuclear weapons’ (Pace 1999:1396). By contrast, the second was a left-wing vision of state-operated energy, able to underwrite French economic growth, associated with Électricité de France (EDF). The demands of these two visions were incommensurable. The former demanded the production of weapons-grade plutonium (Hecht 1994:663, 665), as well as a design process that did not rely on Communist scientists (ibid.:664). The latter sought ‘optimal’ electricity generation (ibid.:678). Avoiding an internalist account of the reactors’ development, Hecht demonstrates how conflicts over reactors’ technical design and operation reflected competing definitions of France’s ‘public interest’ (ibid.:661).

Closely related to notions of nuclear statehood are the themes of citizenship that Adriana Petryna elaborates in her monograph, *Life Exposed* (2013). Perhaps the most celebrated ethnography of life after Chernobyl,<sup>12</sup> *Life Exposed* examines the tension between the purported universalism of human rights and the bureaucratic realities of welfare provision in a Post-Socialist state. Eschewing the rarefied discourses of the former in favour of examining the ‘mundane office spaces, clinics, wards, and homes’, in which ‘the value of the human’ is calculated in practice, Petryna describes how ‘chances for justice, benevolence, and nonmaleficence routinely disintegrate’ as individuals are ‘transmorgif[ied] into numbers and codes fitting standard categories’ (ibid.:20) Central to this account are struggles to attain, or police, the legal status of a Chernobyl ‘sufferer’ (*potepili*), which carries

<sup>12</sup> *Life Exposed* was the co-winner of the American Ethnological Society’s *Sharon Stephen’s First Book Prize* (2003) and the Society of Medical Anthropology’s *New Millenium Award* (2006). A second edition, published in 2013 with a new foreword which reflects on the connections between Chernobyl and Fukushima (Petryna 2013: xiii–xxi), received the Royal Anthropological Institute’s *Wellcome Medal for Anthropology as Applied to Medical Problems* in 2014.

with it an entitlement to state protections, such as ‘cash subsidies, family allowances, free medical care and education, and pension benefits’ (ibid.:4). In 1990s Ukraine, then undergoing a harsh market transition<sup>13</sup>, learning to navigate the ‘labyrinthine world of protection seeking’, so as to secure these ‘relatively generous’ entitlements became a vital strategy of survival – and the consequences of being ‘pigeonholed’ in categories that actors ‘did not choose (or could not escape)’ was severe (ibid.:xxv). Conversely, providing such protections came to be an important facet of the state’s nation-building project. ‘Sufferers’ account for five percent of Ukraine’s population, and an average of one twentieth of the national budget is spent on costs related to Chernobyl (ibid.:4). Of this outlay, as much as ‘65 percent... was spent on social compensations for sufferers and on maintaining a massive legal-medical, scientific, and welfare apparatus’ (ibid.:4). Castigating the USSR’s management of the crisis, establishing stricter safety guidelines, and offering better social welfare all became important aspects of Ukraine’s ‘politics of national autonomy’ – such efforts gaining the support of new Western allies, who pledged ‘technical assistance, loans, and potential trading partnerships’ (ibid.:5). Petryna coins the term *biological citizenship* to describe the practices through which the affected population seek to gain recognition and protection as legitimate ‘sufferers’; drawing attention to the enrolment of radiological expertise in a politics of inclusion and exclusion.

Approaching the inclusions and exclusions of nuclear technologies from an alternate angle, Hecht’s second monograph, *Being Nuclear* (2012a) asks what it means for a thing – be it a substance, workplace, or state – to be ‘nuclear’ (see, also: Hecht 2012b). ‘Before uranium becomes weapons usable,’ Hecht observes, ‘it must be mined as ore, processed into yellowcake, converted into uranium hexafluoride, enriched and pressed into bomb fuel’ (Hecht 2012b:34). The question is, when does the uranium *become* nuclear? The stakes, Hecht insists, are high. How this question is resolved not only determines how uranium circulates, but how the spaces through which it passes are acted upon. Should the mines in which the ore is produced, for example, be treated as nuclear workplaces, subject to ICRP safety recommendations? (The answer to this question, it transpires, depends on whether one categorises exposure in a mine to be ‘natural’ or ‘artificial’.) If not, then at which point should uranium cease to be treated as a banal commodity, and become an exceptional substance: subject, not only to safety regulations, but also to efforts aimed at preventing proliferation? On a geopolitical level, what makes a state ‘nuclear’? Does the possession of fissile material suffice? How about the staging of a successful nuclear weapons test? The answers are not straightforward. As Hecht observes, ‘500 (non-existent) tons of... yellowcake from Niger made Iraq nuclear. But... yellowcake from Niger did not make Niger itself nuclear’ (ibid.:22-25). Rather than see “nuclearity” as a stable property of things, Hecht instead conceives the status of being nuclear as ‘a property *distributed among things*’:

Nuclearity is a *technopolitical* phenomenon that emerges from political and cultural configurations of technical and scientific things, from the social relations where knowledge is produced. *Nuclearity is not the same everywhere*: it is different in the US and France, in Namibia and Madagascar, in South Africa and Gabon. *Nuclearity is not the same for everyone*: it has different meanings for geologists and physicists, geneticists and epidemiologists, managers and workers, Nigerians and Canadians. Nuclearity is not the same at all moments in time: its materialisation and distribution in the 1940s and the 1990s differed markedly (Hecht 2012a:15)

<sup>13</sup> Ukraine’s GDP per capita almost halved from \$6790 in 1990, (one year before the Ukrainian Parliament proclaimed that the nation would no longer subjugate itself to the laws of the USSR,) to just \$3420 in 1996.

Hecht's work invites us to consider how debates over radiation exposure's (un)acceptability contain within them efforts to assert its exceptional or banal nature. 'Radiation matters', Hecht reminds us, 'but its presence does not suffice to turn mines into nuclear workplaces... as the nuclear industry is quick to point out, people absorb radiation all the time by eating bananas, sunbathing, or flying over the North Pole' (ibid.:24). Efforts to allay public concerns over radiation exposure, made by the Japanese state in the wake of 3.11 (see: Chapters Three and Four), could thus be understood in terms of denying the nuclearity of civilian exposure: framing life in Fukushima as a banal experience, no different from living in Kashmir, or any other region with naturally high levels of environmental exposure. However, the use of 'nuclearity' in a Japanese context is not without its complications. The notion that objects are dichotomously constructed as either 'nuclear' or 'non-nuclear' is central to Hecht's elaboration of the concept. Yet as Hiroaki Koide – former-Assistant Professor of nuclear engineering at Kyoto University and noted nuclear critic – has observed, 'nuclear' issues have a singularity in English which they do not have in Japanese: two separate terms being used to describe peaceful and military applications of nuclear technologies. Broadly, one speaks of 'atomic' energy (*genshi*) and 'nuclear' weapons (*kaku*). Japan's failure to adopt the purportedly '*universal* and *universalising* ontology' of the nuclear is deserving of attention.

## 1.2. Research Questions

My first research question asks, *through which spatial imaginaries has the nuclear disaster been framed?* In posing this question, I forgo the convention of writing a contextual chapter, which places the object of the thesis within a single geography or chronology. Following recent scholarship in both political geography (Campbell 1998; Jeffrey 2012) and STS (Kim and Jasanoff 2009, 2013; Jasanoff and Kim 2015), I instead treat my actors' efforts to frame the nuclear disaster in relation to specific spaces and histories as one of the objects of this thesis in its own right. Central to this corpus of work is the understanding that geography, no less than history is, always political (Melucci 1996). The question of who reads a given event, in relation to which other spaces and historical occurrences, allows us to interrogate how specific futures are made to seem credible, even inevitable. Where conventional wisdom states that one 'cannot build the future from the past', this corpus of work insists that, to the contrary, one always co-produces the two horizons of time. As Jasanoff argues, 'the past is prologue, but it is also a site of memory excavated and reinterpreted in light of a society's understanding of the present and its hopes for what lies ahead' (2015:21).

My second research question asks; *what role do experts play in the dominant imaginations of the disaster; and the exposure situation, more specifically?* In framing this question, I remain attentive to how experts are positioned within the public debate; recognising that far from being passive observers, expert advisors are often enrolled as part of specific policy interventions. I allow in my analysis for the possibility that the experts may stabilised their position by appearing to fulfil multiple, seemingly contradictory roles. From the 1970s onwards, critical scholars have increasingly allowed for paradox to play a productive role in their analyses of social order. Foucault's analysis of prisons remains the example par excellence. Built to reform criminals, rather than punish them, 'the 'marinade' of prison society' instead serves to inculcate criminality (Foucault 1975). Prisons have accordingly been denounced as 'unsound' since they were first conceived, yet have endured, Foucault suggests, because they are actually 'doing what is asked of them' (Foucault 1975:375). Namely, they produce a pretext for forms of policing and state control. The prison can accordingly be read as a co-product of both norms and law. 'If this institution has been able to survive until now,' Bert (2012) tells

us, it is not because it smoothly executes judicial logic, but because it has also ‘been supported by a political system that has aimed to make the accumulation of people both a docile and a useful process’ (ibid.:161-162). This line of argument is common to the two theoretical bodies of scholarship this thesis draws upon. More than 30 years after the French philosopher’s death, Foucauldian thought remains so pervasive in Human Geography that it has been joked that ‘Foucault’s avatars [are] still in (the) Driver’s street’ (Mayhew 2008). Recent analyses of the ‘War on Terror’ as a campaign that has increased the incidence of terrorism, but justified the deployment of new technologies of surveillance and control, are clearly indebted to this theoretical approach. The emphasis on a single role being embedded in multiple, sometimes contradictory, ‘games’ is no less germane to contemporary STS, where scholars have sought to explain how certain ways of knowing achieve the ‘stickiness’ (Law and Lin 2017) necessary to ‘resist trails’ (Latour 1995). In meeting this challenge, scholars have emphasised the embedding of knowledge orders into social orders, and vice versa – creating the possibility of roles stabilised in curiously conflicted manners.

Turning from a macrosocial to the microsocial, my third research question asks; *how do expert bodies improvise their claims to authority in the face of distrust?* My focus here is on the prosaic particulars of expert performances. From headed letter paper to institutional procedure; codes of dress to modes of address. Just as Hilgartner (2000) traced how science-policy organisations craft a credible public persona through their reports, I seek to analyse how claims to authority are fashioned at expert workshops. Workshops are a common but understudied form of political performance. Along with the writing of reports, the organisation of workshops is a core activity for most science-policy organisations. Yet, unlike speeches (Alexander 2011), political conferences (Craggs and Mahony 2014; Shimazu 2014), or parliamentary performances (Rai 2014), workshops have received little critical attention from Political Geographers and STS scholars alike. An ethnography of expert workshops is therefore a desideratum. The commonplace nature of workshops is also a methodological boon, as it allows for greater access and comparison between organisations.

### 1.3. Thesis Structure

Focused on the performance of expert authority in contentious conditions, this thesis is organised around four substantive chapters, which seek to elaborate on: the imagined geographies of the disaster; the dominant plotting of experts within this geography; and the construction of workshops as a space from which authoritative expertise can emerge. Chapter Three examines actors’ competing efforts to ‘set the scene’, focusing on the spatial metaphors dominantly used to frame the nuclear disaster. In advancing this analysis, I posit both place and past as political categories. Divergent imaginations of *where* and *when* a disaster unfolds routinely serve to imbue a single event with a series of radically different meanings; placing the one occurrence in relation to disparate constellations of spaces and happenings, suggestive of distinct trends or cycles. The effort to place the nuclear disaster in a specific spatial (and historical) context is accordingly recognised as a political act; one which powerfully informs the credibility and desirability of specific futures beyond the disaster, as well as lending (or denying) legitimacy to certain voices in their efforts to shape this time to come. Mobilising both primary and secondary sources, I identify three powerful imaginations of the Fukushima disaster, which have circulated in Japan’s political debates since 2011. Namely, the imagination of the nuclear disaster as: a national crisis, simultaneously a threat to the body politic and an opportunity for its Reconstruction (*fukkō*); a regional tragedy, suffered by Japan’s ‘internal colony’ for the benefit of the metropolitan centre; or a symptom of ‘the people’s’ oppression by the so-called

‘nuclear village’ (*genshiryoku mura*): an imagined collective of politicians, bureaucrats, utility representatives, and academics. Each narrative rests on an image of particular spaces, be it Japan as a nation in decline, Tōhoku as a region left behind or the halls of power as a space of cosy collusion between government and nuclear industry. Accordingly, each narrative also embeds the disaster in a particular timeline, inseparable from the imagination of these spaces. Namely, the disaster becomes framed in relation to Japan’s ‘lost decades’ (1990s–present), Japanese modernisation (1860s–present) or the history of the Japanese nuclear industry (1970s–present).

Chapter Four interrogates how the role of experts has been scripted in relation to the epistemic controversies surrounding radiation exposure – addressing a common narration of the national debate as a struggle against the irrational fear of radiation. I echo an established critique of framing public resistance to government standards as a sign of ‘deficient’ rationality or understanding, for experts to ‘correct’ through risk communication efforts (Millar and Wynne 1988). However, this chapter breaks with the extant trend of analysing both the fear of radiation and its stigmatisation as monoliths (Weart 1988, 2013). I suggest that far from being a stable object, ‘radiophobia’ has been constructed in a series of iterations across time and spaces. Advancing a situated analysis, I contend that, in the Japanese context, radiophobia (*hoshano kyofu sho*) can productively be read as a *fortuitous obstacle* to the future offered in visions of Reconstruction (as introduced in the previous chapter). An obstacle, in so far as the fear of radiation is stabilised as a political problem – for experts to address – only where it poses an impediment to the realisation of this future. Concretely, it is problematised as a risk to the health of Fukushima, but also as a threat to the Prefecture’s resettlement and the consumption of its produce. This obstacle is fortuitous, however, in that Fukushima was already a prefecture in decline – rapidly ageing as its young left to the cities – and was searching for the means to attract and retain talent. Concomitant with the production of radiophobia as a political problem is the production of Fukushima as a potential site of expertise, where world-leading specialists on combatting this issue can be nurtured. This nucleus of expertise, Fukushima prefecture hopes, can be leveraged to grow a medical industry. In sum, the paradox of radiophobia is that it is constructed as an obstacle to reconstruction, yet it is the very obduracy of this obstacle which justifies the training and recruitment of radiological experts – experts whose bodily presence advances the realisation of the very future that the fear of radiation is imagined to impede.

The focus of Chapter Five falls on the OECD-NEA’s *Workshop on Food Safety Science*, hosted at CORASSE Fukushima on 8-10 November 2016. Central to the logic of this event is the image of both public and (foreign) policy-makers as deficient in their understanding of radiological standards. If only they knew how safe Fukushima produce is, those who commissioned the workshop reason, they would eagerly consume it and/or allow its importation. Concordantly, the stated goal of the workshop is to produce an authoritative statement on the safety of Fukushima produce, such that it can be communicated. My aim in this chapter is not merely to build on the findings of the previous chapter by presenting a case study of the ‘deficit model’ in action. Instead, the chapter takes the public persona crafted by the workshop as its central object. Drawing on participant observation and interviews, I provide an ethnographic account of how the workshop is constructed as a space from which authoritative advice can emerge. This chapter draws on Hilgartner’s (2000, 2004) insights into how institutions claim credibility, but develops his contribution to the corpus of STS in two ways. First, it focuses upon scientific workshops, rather than scientific reports. The workshop is identified and probed as a site understudied by STS scholars, cultural sociologists, and Political Geographers alike – the latter disciplines having shown greater interest in political conferences (Craggs and Mahony 2014; Shimazu 2014), parliamentary performances (Rai 2014), and political speeches

(Alexander 2011) than in scientific workshops (see also: Apter 2006; Cragg 2014). More substantively, I contend that, in conditions of low public trust, claims to expertise are not just performed but ‘improvised’ (Jeffrey 2012). Hilgartner’s account draws our attention to how authority is produced through routinising and defending an institutional script. In his work, controversy emerges when co-operation between contributors breaks down and actors deviate from procedure. By contrast, the NEA stages a claim to authority in the context of an existing controversy. It understands the audience to which it is communicating as distrustful, and adapts its procedures so as to augment its authority. I argue that this improvisation has a crucially spatial dimension. Organisers actively interpret the discursive space in which they are intervening, and alter the workshop space so as to enhance its claim to credibility.

Finally, Chapter Six examines a contrasting case study, in the form of the ICRP’s *Dialogue Seminars*. Grounded in a belief that what Japanese citizens lack is not knowledge, but a means of asserting ‘control of their daily lives’, the ICRP has sought to engage them as ‘co-experts’ in responding to the Fukushima disaster. Through an ethnography of the seminars, which have been held in Fukushima Prefecture two or three-times a year since 2011, I provide an analysis of this co-expertise process, tracing: how the workshops construct a public to engage in dialogue; what claims to authority emerge from this interaction; and how this public is imagined to benefit from their participation. Central to the workshop space’s construction, I argue, is the imagination of dialogue as therapy. From how participants sit (in a semi-circle) to the rules of the discussion (in which experts avoid offering explicit value-judgements), the workshops are heavily, if not explicitly, modelled on the norms of non-directive therapy. This metaphor of therapy does more than draw our attention to how the seminars are conducted; it casts light on the seminar’s aims. By engaging those local to the disaster, the ICRP forges a claim to understanding (what it calls) the ‘social and ethical aspects’ of radiological protection, thereby strengthening the authority of its recommendations. By contrast, local participants are imagined to be ‘empowered’, not by being given a means to exercise political power, but in a resolutely personal sense. As is common in therapeutic practice, they are imagined to both gain practical advice from their interactions and come to better order their emotions through the cathartic opportunity to express themselves, allowing them to adopt a pro-active stance to their own lives.

The case studies at the heart of Chapters Five and Six have been carefully selected for resonance with core geographical concerns. One of the animating creeds of critical geography for at least the last 30 years has been the problematisation of scale. Geographers have led the way in arguing that the ‘local’, ‘national’, and ‘international’ are not self-evident hooks on which our analysis can be hung; calling for a careful attention to how actors and institutions construct these categories. The selected cases reward such ethnographic attention. It is not simply that they are a lens that allows us to localise the international; it is that these workshops actively mobilise notions of their own scale in crafting their claim to authority. The *Workshop on Food Safety Science* is an ‘international workshop’, organised by the OECD-NEA, but conceived, commissioned, and hosted by the Japanese Cabinet Office in Fukushima Prefecture. It is, I argue, a workshop born of the nation state, which paradoxically performs its credibility with overtures to both its disinterested distance from the subject matter, and its intimate embeddedness in the disaster’s local context. The ICRP Dialogues are a similarly interesting case, in that they involve an international organisation bypassing the nation state to engage directly with residents of Fukushima Prefecture; producing claims to authority based on their intimate familiarity with locals and their struggles.

The two case studies were also selected on the basis of featuring many of the same actors. A number of those who organised (e.g., Edward ‘Ted’ Lazo), chaired (e.g., Mike Boyd, Anne Nisbet, Thierry Schneider), vice-chaired (e.g., Toshimitsu Homma, Michiaki Kai), or spoke (e.g., Astrid Liland, Dietmar Noßke) at the OECD-NEA workshop are also members of the ICRP’s Committees or Task Groups and participants in the ICRP Dialogue seminars. This overlap should also allow the reader to draw comparisons between the two cases. Such comparisons are not just between two contrasting workshops, but between two performances sharing much of the same cast. The overlap also draws our attention to the mobility and relative scarcity of radiation protection specialists. Thus, one woman might play many parts, a single specialist simultaneously responding to the Fukushima disaster on behalf of multiple organisations. Health physicist, Michiaki Kai, for example, has responded to the disaster as a representative of four national bodies (Society for Risk Analysis Japan (SRAJ), Japan Health Physics Society (JHPS), SCJ, and Japan National Radiation Council (JNRC)) as well as a member of ICRP Committee Four.

## Chapter Two

### Methods

---

Almost half a century after Laura Nader's (1972) called for social scientists to 'study up', the number of scholars getting 'up close and personal' with political elites remains comparatively low (Rhodes 2007). The bulk of work produced in Anthropology, Human Geography, and Sociology continues to reflect a 'taste for the marginal and the exotic' (Gusterson 1997) – ethnographers in postcolonial, feminist, queer, mad, and animal studies, among others, place a normative emphasis on studying those whose voices have historically been marginalised. Political Science, on the other hand, remains content to focus its gaze on the powerful, but is reluctant to embrace the spirit of ethnography, with its emphasis on how others interpret and act upon the world. Only a handful of Political Scientists produce work that draws on observation (Fenno 1990; Rhodes 2002, 2005) or show an interest in documenting the unwritten 'rules of the game' which shape bureaucratic life (notable exceptions include: Hecló and Wildavsky 1974; Rhodes 2011). Instead, most continue in the task of positivist model-building. Thus, the practice of elite ethnography has found itself in a double bind: most ethnographers do not wish to study elites and many of those who study elites don't want to do ethnography.

It is no surprise that the emerging corpus of work on 3.11 reflects these broader trends. There are now numerous 'ethnographies of the disaster', which shed light on how ordinary people have come to understand and respond to conditions of great uncertainty. Japanologist Bridgette Steger's (2012, 2013, 2014) account of life in an evacuation shelter in Yamada is perhaps the most striking example of this genre; with its stories of nights rendered sleepless 'by continuous aftershocks, lack of comfortable bedding, cold, dirt and crowds of often noisy strangers' and close reading of cleaning – of both bodies and their temporary abode – as a practice through which evacuees symbolically re-established control of their lives. Others have observed: evacuees who have moved into more permanent host communities; members of Fukushima's farming community (Habu 2013); and consumers elsewhere in Japan, where citizens have been forced to negotiate questions about what is safe to eat (Burch, unpublished; Nicolini 2016). Each of these works can be read as a response to Nobel Laureate Ōe Kenzaburo's (2011) call to 'look at things through the eyes of the victims' – collectively producing a rich and intimate account of the triple-disaster 'from below'.

What remains to be accomplished is an account of the disaster 'from above'. To the best of my knowledge there are no ethnographic accounts of how either state actors (such as the Japanese Atomic Energy Commission (JAEC), Ministry of Education, Culture, Sports,

Science and Technology (MEXT), Ministry of Economy, Trade and Industry (METI) Reconstruction Agency, etc.) or powerful non-state actors involved in radiological protection (e.g., International Atomic Energy Agency (IAEA), Organisation for Economic Co-operation and Development-Nuclear Energy Agency (OECD-NEA), and International Commission on Radiological Protection (ICRP)) have interpreted and responded to the Fukushima disaster. Accounts produced by Science and Technology Studies (STS) scholars with ethnographic sensibilities have focused more on citizen science (Kimura 2016) and ‘counter-expertise’ (Fassert and Hasegawa, forthcoming), than the practices of the powerful. Autobiographical accounts – such as those of former-Prime Minister Naoto Kan’s *My Nuclear Disaster* (2017) or the former Chairman of the Nuclear Safety Commission (NSC) Madarame Haruki’s unconventional comic strips – do provide glimpses of the disaster ‘from above’. Yet these are notably interested accounts, filled with scandal and innuendo, which can be more fruitfully read as exercises in defending personal credibility than as faithful accounts of the rituals of expertise. Their focus, moreover, falls on the drama of the nuclear crisis, not the period of lingering distrust that has followed.

There is an obvious need for an ethnography of the political elites charged with preventing nuclear disasters or managing the disaster when it arrived. The methodological complexities of such an ethnography should not be underestimated, however, and this chapter explores these issues and the strategies that have been followed here, which might prove salutary in future work by political ethnographers. This chapter proceeds in three parts: §2.1 (‘The Glass Ceiling’) reflects on the practical difficulties of studying up and the methodological moves that ethnographers have made in the face of them; §2.2 (‘Methods’) provides an overview of this thesis’ research design; and §2.3 (‘Doing Research: Positionality, note-making, and linguistics’) focuses on the realities of doing research, including reflections on positionality, translation, and transcription.

## 2.1. The Glass Ceiling

One of the factors commonly used to explain the dearth of elite ethnographies is the practical difficulty of access, which has powerfully shaped my research design. To ‘study up’ is to study those with the ‘power to exclude themselves from the realm of the discussable’ (Cooper and Packard in Mosse 2004:12). Faced with such subjects, classical ethnographic techniques can be difficult to envisage, let alone execute: ‘Imagine asking a foreign policy maker for permission to shadow her at work, or picture yourself explaining to a diplomat who specialises in security policy that your study is based on ‘deep hanging out with him’ (Kuus 2013:117). These scenarios are uncomfortable – Kuus contends – because terms such as ‘deep hanging out’ are rooted in a specific methodological tradition, which assumes that the researcher is a privileged subject, whose gaze will be welcomed, or at least tolerated.

Yet the spaces in which elites operate are often deliberately opaque and inaccessible. The ministry building – with its gates, guards, and security devices, as well as its internal systems

of security classification and clearance – is an example par excellence. Taken together, these elements comprise an architecture of information management: designed not just to keep ‘outsiders’ out, but to limit the people, spaces, and information that even its employees have access to. The more efficiently this architecture functions, the less information ‘leaks’ from the ministry. This architecture anticipates the interest of journalists, scholars, and others in its design, so that even when they are welcomed as visitors, they encounter ‘inner lines of defense: public relations departments, “official spokespeople”, and whole levels of management trained in how to represent the company to the outside world’ (Thomas in Gusterson 1997:115). There are, of course, good reasons to be guarded. The data handled by government departments and large companies can be confidential (e.g., customer data) or otherwise sensitive, their procedures proprietary or pertinent to national security. Nevertheless, cultures of caution, in which regulations dictate who can see what, often preclude the possibility of conducting research as a ‘fly on the wall’.

There are of course, notable examples of scholars who have conducted non-participant observation of those who work at the highest levels of science and policy, despite these difficulties. Bruno Latour famously spent 21 months in Nobel Prize-winner, Roger Guillemine’s laboratory at the Salk Institute before co-authoring *Laboratory Life* (Latour and Woolgar 1986). Rod Rhodes’ (2005) accounts of British Ministry life are no less impressive. For the duration of Tony Blair’s second term as Prime Minister (2001–2005), Rhodes observed the daily activities of ‘three middle-ranking domestic service ministries’; complementing his field notes with an analysis of permanent secretaries’ diaries<sup>14</sup> to document the routines of those in the upper echelons of government. If these texts are proof that it is possible to observe even the most elite, their enduring place in the social scientific canon should (at least in part) be understood to underscore the uncommon difficulty of securing such access. Scholars who have secured far more limited access frequently stress that it took years of negotiation (see: Thomas 1995) – an investment of time I could ill-afford in this project.

Others have sought to navigate the difficulties of access by studying organisations for which they have worked. Pat Bentley, for example, was able to conduct participant observation in a software company as a student in Anthropology, because ‘she first took the precaution of becoming a corporate vice president’ in the firm – a strategy that I could not reasonably hope to emulate in the Japanese bureaucracy (Gusterson 1997:115). Other scholars, such as the sociologist Jennifer Pierce, have conducted covert ethnographies by securing entry-level jobs in the organisations that they intend to study – in her case, a paralegal position at a large law firm (ibid.). The ethics of this strategy, however, are dubious at best. A more palatable approach is to work with an organisation in the understanding that one will eventually produce an ethnography. David Mosse’s (2004) *Cultivating Development* is the product of such an arrangement; published after more than a decade as a development ‘insider’. Opportunities to become involved in policy projects can, however, be sporadic, especially for a junior scholar. In my own experience, the chance to contribute to policy on radiation

<sup>14</sup> Each kept by a diary secretary in the corresponding private office.

protection has only begun to emerge in the latter half of my PhD, following several years of networking. Mosse's (2006) experience also demonstrates that this strategy is not without complications. Feeling his conclusions to be 'damning of our work', former colleagues of 13 years' standing sought to impede the publication of Mosse's work – leading to lengthy dispute resolution efforts (ibid.:941-942).

### 2.1.1. *Obstructed Ethnographies*

How then to cast light on the practices of the powerful? One strategy available to the ethnographer is to shift her gaze from the secluded spaces in which elites construct knowledge (e.g., laboratories, ministries, etc.) to the sites in which they perform their authority: public speeches, conferences (Shimazu 2014), parliamentary debates (Johnson 2014; Rai 2014), courtroom hearings (Jeffrey 2012, 2014, 2017), academic papers, and scientific reports (Hilgartner 2000), among others. The novel focus on expert workshops, advanced in the latter chapters of this thesis, falls within this tradition. This is not to claim that the recent interest in political performance has been driven by practical exigencies alone. As my introduction made clear, this attention primarily reflects developments in how performance is theorised, which have led to a recognition of its centrality to politics (Alexander 2003, 2010, 2011). STS scholars, in particular, have been driven to focus on how scientists craft credible personas, not because this is 'easier', but because it is recognised that the growing political authority of science 'cannot be explained by what science "really" is at the bench' (Gieryn 1999:xi). Nonetheless, this theoretical orientation offers an escape from the intractable difficulties of getting 'behind the scenes', and facilitates critical work that draws on observation of public spaces (e.g., speeches) or semi-public ones (e.g., workshops, parliamentary debates).

This conceptual perspective also allows obstructions of access to be rendered a form of data in their own right. This interpretive tactic was pioneered by Stephen Hilgartner (2000), who, as a PhD candidate in the mid-1980s, sought to document how National Academy of Science (NAS) reports are prepared. The young scholar quickly found his progress impeded by institutional practices of opacity (closed meetings, non-disclosure agreements, confidentiality rules, etc.) and set the project aside in frustration (Hilgartner 2004:445-446). More than a decade later, he was inspired to reframe these impediments as features of his study rather than flaws – a 'topic of analysis rather than a constraint on it' (ibid.:446). Following Hilgartner, this thesis deploys Goffman's dramaturgical metaphor to frame institutional impediments to the researcher's gaze as central to their performance of authority. Producing a 'backstage' region – where actors can prepare documents, rehearse arguments, and resolve internal conflicts – is understood as integral to smooth enactments of expert authority. In analysing workshops or other forms of political performance, what is incumbent upon the ethnographer is not to penetrate the 'backstage' and expose what the institution is 'really' up to, but to trace how actors co-operate to maintain a division between the two regions.

Faced with the difficulties of accessing the halls of power, ethnographers have made a

number of methodological ‘moves’, which this study draws upon. The first has been to decouple the ethnographic sensibility from the method of observation. Kuus emphasises that this is an intervention in common practice, rather than principle. ‘In theory’, she argues, ethnography has always ‘refer[ed] to the methodology of endeavoring to make sense of how others make sense of the world’, rather than a mode of data collection (Kuus 2013:117). It is not, therefore, ‘synonymous with participant observation’ (ibid.). One can ‘conduct participant observation informed by positivist methodology’ and ‘study how people make sense of the world’ without recourse to observation (ibid.).

The common denominator in ethnographic accounts is not the specific research technique, but the focus on everyday lived experience (ibid.). It is in keeping with this position that Political Geography has seen a rise in ethnographies based heavily (Jeffrey 2004, 2013), sometimes exclusively (Kuus 2009, 2011, 2014), on interviews. In a society characterised by a ubiquitous familiarity with the interview format, political elites who cannot be shadowed can still be questioned. In this thesis, I do not grant an ethnographic privilege to observation and take the ability of my research informants to narrate their practices seriously. Hence, I adopt a mixed-methods approach, in which observation is complemented with interviews and textual analysis, which offer insight into relevant institutions (e.g., Reconstruction Agency) and settings (e.g., ICRP Headquarters) that I could access directly.

In a parallel move, researchers have increasingly championed a ‘multi-sited’ approach to ethnography. The focus on a single field site has long been part of the dominant ‘research imaginary’ of ethnography (Marcus 1999:10). This imaginary patterned early attempts to ‘study up’, which focused on singular laboratories or offices. Yet, ethnographers have noted that this attention to a bounded space can be limiting when studying groups – such as diplomats or scientific advisers – who are both geographically dispersed and mobile. How can one study experts engaged in the policy of radiological protection by remaining in one place, when they themselves are dispersed across a variety of institutions and are always on the move – travelling to conferences and workshops or attending meetings at various bureaucracies? There is no single ‘centre’ for radiation protection policy, on which all the relevant experts converge. Thresholds on radiation exposure are established by the state, but their formation and implementation are shaped by the circulation of experts “above”, ‘below’ and otherwise outside the state. As I alluded to in Chapter One, the strategic recommendations produced by the ICRP and the topical recommendations produced by United Nations Food and Agriculture Organisation (UNFAO), for example, both powerfully frame Japanese policy. Responses to the exposure situation are shaped also by scientific advisors appointed by Fukushima prefecture itself. And reports produced by actors such as the Science Council of Japan or the Nippon Foundation can carry a quasi-regulatory authority. To study ethnographically how expert authority is contested is to study a sprawling network of circulating actors, documents, and ideas across a number of spaces, which are ‘substantially continuous but spatially non-contiguous’ (Falzon 2009:2).

To engage in a multi-sited ethnography is not just to follow a predefined group of experts

across a number of sites, as even classical anthropologists such as Malinowski or Evans-Pritchard (1940) did with the Trobriand or the Nuer. Rather, it is ‘to pursue the more open-ended and speculative course of constructing subjects by simultaneously constructing the discontinuous contexts in which they act and are acted upon’ (Marcus 1995:98). In the context of my research, this is to conceive of the public controversy itself as the object of study, which encompasses a heterogeneous selection of sites and actors. Its scope includes those experts who congregate to perform their authority through the workshop format. Yet, it also includes those ‘citizen scientists’ who stage competing claims to knowledge in town halls or those demonstrators who angrily perform their denunciation of the experts’ authority through their protests. These geographically disparate sites are here interpreted as interlocutors in a dialogue of performance and counter-performance.

## 2.2. Methods

The difficulty of getting ‘up close and personal’ with elites has led many to suggest that an opportunity-led approach to method is needed. But the shift away from rigid research design is not just a function of practicality. Calls for more organic approaches to method have long been a feature of the social sciences. Gary Thomas’s (1987, 1998) calls for ‘ad hocery’ and ‘methodological anarchy’, for example, have been echoed in Harwood’s (2000) attempts to ‘disturb the habit of making “method” definite’ (in Graham 2005:6). Such calls are especially loud in the STS community, where the popularity of Actor-Network Theory (ANT) has seen a growing emphasis on open-ended ethnographic enquiry – ANT scholars seeking not to impose a research plan, but to ‘follow the actors themselves’ by adopting the role of a ‘myopic, workaholic, trail-sniffing collective traveller’ (Latour 2005:9). In keeping with the spirit of this corpus, I adopted a broadly emic approach to my fieldwork. Rather than pre-plan the content of my activities, I aimed to allow core themes, actors, and spaces to emerge from the field for further enquiry.

These organic aspirations were, however, tempered by practical considerations. Aside from the (previously discussed) difficulties of access, the most notable was the need to deliver this project within the timeframe of a PhD. As Conklin (2005) reminds us, the nature of political controversies is that one never gets to the ‘bottom’ of them. There is no moment in which all the pieces align themselves into a neat and complete pattern, and no further description could be added. It is therefore difficult to know when and how to bring a period of research to a close, and yet clear that continuing to engage in ‘pure study’ indefinitely can ‘amount ... to procrastination’ (ibid.:11). In confronting these concerns, I found it helpful to turn to Latour (2004:62-76), who acknowledges these worries in his ‘(somewhat) Socratic dialogue’ between a professor and a student, yet seems unfazed by them:

S(tudent): But that’s exactly my problem: to stop. I have to complete this PhD; I have just eight more months. You always say, ‘more descriptions’... when do you stop? My actors are all over the place. Where should I go? What is a complete description?

P(rofessor): Now that is a good question because it is a practical one. As I always say: a good thesis is a thesis that is done. But there is another way to stop than by ‘adding an explanation’ or ‘putting it in a frame’.

S: Tell me it then.

P: You stop when you have written your 80,000 words or whatever the format is here, I always forget (ibid.:68).

The professor’s answer seems unhelpful. The student certainly thinks it is: ‘Oh! That’s really great, so helpful, many thanks! I feel so relieved... So, my thesis is finished when it’s finished.’ In the student’s mind the Professor’s answer has nothing to do with method. The 80,000 words is just a ‘textual limit’, he insists. For the professor, however, nothing could be further from the truth:

Writing texts has everything to do with method. You write a text of so many words, in so much time, for so much grant money, based on so many interviews, so many hours of observation, so many documents. That’s all. You do nothing more (ibid.).

In keeping with Latour’s conception of the text as a ‘thick’ material, I have aimed to remain conscious of how my approach to fieldwork has been mediated by the demands of the PhD itself. This is reflected later in the discussion of my positionality. Yet, it should also be noted here as integral to how I crafted my research design, in order to avoid any stylistic suggestion of there being a ‘pure’ research design that is somehow ‘corrupted’ by my positionality.

My research design took on a semi-structured quality. It was necessary to outline concrete ideas of how I would conduct my research on several occasions prior to the beginning of my fieldwork, including my grant proposal, my MPhil thesis (the second half of which is formatted as an extended PhD proposal), and my first-year PhD review. On each of these occasions, some semblance of a plan was helpful in assuring my grant body (Economic and Social Research Council (ESRC)), my first-year review panel (Ash Amin and Philip Howell), my supervisor (Alex Jeffrey), and indeed myself, that I could deliver the proposed project within the ten months of fieldwork that my funding would allow. In preparing these texts, I came to draw upon the work of Hajer (2006) and Dryzek (2005), and conceived of my work as a series of unfolding steps:

a) Textual sources

In the first stage of my analysis, I used textual sources to establish a ‘first chronology and first reading of events’: identifying key narratives, actors, incidents, and spaces in the debate surrounding civilian exposure (Hajer in Hewitt 2009:12). This phase of analysis began prior to my doctoral training. Since 2011, I have followed the coverage of the nuclear disaster in two of Japan’s five daily newspapers – the more liberal *Asahi Shimbun* and more conservative *Mainichi Shimbun*. This longitudinal overview of newspaper coverage began a snowballing process. Each incident identified as pertinent tended to suggest further documents as meriting analysis. It was through this

process that I came to analyze a transcript of Kosako Toshiso’s tearful resignation in protest of the 20mSv/year limit or Professor Shunichi Yamashita’s public statements as Special Advisor to Fukushima Prefecture on Radiation Risk, for example; as well as coding the four influential reports on the causes of the Fukushima disaster compiled by the Japanese government (2011), Tokyo Electric Power Company (TEPCO) (2012), the National Diet’s independent investigation commission (the Nuclear Accident Independent Investigation Committee (NAIIC) 2012), and the Rebuild Japan Initiative Foundation (2014). This is far from a complete list, but it begins to give a sense of the heterogeneous selection of materials chosen for analysis in this phase.

b) Interviews

The next step was to conduct semi-structured interviews with actors who were professionally or publicly engaged in the controversy, including: politicians, bureaucrats (Japanese and international), scientific advisors, Non-Profit Organisation (NPO) members and activists. My sample focused on individuals who had been identified as ‘key actors’ in the previous stage (e.g., Professor Shunichi Yamashita), were associated with key sites (e.g., Reconstruction Agency, Metropolitan Coalition Against Nukes (MCAN)), or were recommended to me by previous interviewees. Interviews were conducted both in person and via Skype (following a face-to-face meeting) and were scheduled to last 45 minutes to an hour. In practice they ranged between 20 minutes and four hours, depending on the availability and temperament of the interviewee. Through these interviews, I began to identify the narratives through which actors interpret the issue of low dosage radiation, paying attention to how they mapped their relationships to other key actors and notable incidents (e.g., the lifting of evacuation bans in four towns in March 2017).

Table 2.1. List of interviews

Name	Affiliation	Venue	Data
<i>Politicians</i>			
Anon. (a)	House of Counsellors (Formerly of the Liberal Democratic Party)	House of Counsellors	Recorded
<i>Japanese Scientific advisors</i>			
Prof. Shunichi Yamashita	Nagasaki University (Formerly Advisor to Fukushima Prefecture on Radiation Risk)	Nippon Foundation	Recorded
<i>Japanese Bureaucrats</i>			
Anon. (b)	Reconstruction Agency	Reconstruction Agency	Recorded
Anon. (c)*	Reconstruction Agency	Reconstruction Agency	Recorded
Anon. (d)*	Reconstruction Agency	Reconstruction Agency	Recorded
<i>International Bureaucrats</i>			
Prof. Jacques Lochar	ICRP, Main Commission	Skype	Recorded
Prof. Jacques Lochar	ICRP, Main Commission	Bus	Notes

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Prof. Jacques Lochard	ICRP, Main Commission	CEPN <sup>15</sup>	Recorded
Dr. Thierry Schneider*	CEPN	CEPN	Recorded
Dr. Anon. (e)*	ICRP, Committee 4		
Prof. Ohtsura Niwa	CEPN	CEPN	Recorded
	Kyoto University		Recorded
	ICRP, Main Commission (retired)		
Prof. Ohtsura Niwa	Kyoto University	Dormitory,	Recorded
	ICRP, Main Commission (retired)		
Edward 'Ted' Lazo	OECD-NEA <sup>16</sup>	Skype	Recorded
Anon. (f)	ICRP, Committee 4	Public hall,	Notes
Anon. (g)	SAGE <sup>17</sup>	Institute of Engineering and Technology	Recorded
Anon. (h)	Defense CBRN <sup>18</sup> Centre	Winterbourne Gunner	Recorded
<i>NPOs</i>			
Aileen Smith	Green Action	Green Action	Recorded
Prof. Ishida Norio	Kyoto University (Retired)	Citizen's Environmental Laboratory	Recorded
	Citizen's Environmental Laboratory		
Dr. Anon. (i)	Kyoto University	Citizen's Environmental Laboratory	Recorded
	Citizen's Environmental Laboratory		
Dr. Sakiyama Hisako	Takagi School	Takagi School	Recorded
	NIRS <sup>19</sup> (Retired)		
Dr. Sakiyama Hisako	Takagi School	Takagi School	Recorded
	NIRS (Retired)		
Ryoko Ando	ETHOS in Fukushima	Café, Iwaki	Recorded
Anon. (j)	Nippon Foundation	Nippon Foundation	Recorded
Anon. (k)*	Nippon Foundation	Nippon Foundation	Recorded
Anon. (l)	Red Cross Japan	Skype	Recorded
Anon. (m)	Anonymised think tank	Skype	Notes
Dean Wilkie	Simplyinfo.org	Skype	Recorded
Nancy Faust*	Simplyinfo.org	Skype	Recorded
<i>Anti-nuclear activists</i>			
Dr. Koide Hiroaki	Kyoto University	Kumatori Research Reactor	Recorded
Dr. Koide Hiroaki	Kyoto University	Private property, Kumamoto	Recorded
Dr. Tetsuji Imanaka	Kyoto University	Kumatori Research Reactor	Recorded
Misao Redwolf	Founder, MCAN	Café, Kasumigaseki (MCAN meeting place)	Recorded
Misao Redwolf	Founder, MCAN	MCAN protest	Notes
Anon. (n)*	MCAN	MCAN protest	Notes

<sup>15</sup> Centre for the Study of Protection Evaluation in the Nuclear domain (*le Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire*).

<sup>16</sup> Organisation for Economic Co-operation and Development-Nuclear Energy Agency.

<sup>17</sup> Scientific Advisory Group for Emergencies.

<sup>18</sup> Chemical Biological Radio-Nuclear.

<sup>19</sup> National Institute of Radiological Science.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Misao Redwolf	Founder, MCAN	Café, Kasumigaseki (MCAN meeting place)	Recorded
Anon. (o)	Mum, Dad, and Me Walk Area of Hope	Café, Hachioji	Recorded
Anon. (p)*	Mum, Dad, and Me Walk Area of Hope	Café, Hachioji	Recorded
Anon. (q)	MCAN	MCAN protest	Notes
Anon. (r)*	MCAN	MCAN protest	Notes
Anon. (s)*	MCAN	MCAN protest	Notes
Anon. (t)	MCAN	MCAN protest	Notes
Anon. (u)*	MCAN	MCAN protest	Notes
Anon. (v)	MCAN	MCAN protest	Notes
Anon. (w)*	MCAN	MCAN protest	Notes
Anon. (x)*	MCAN	MCAN protest	Notes
Anon. (y)*	MCAN	MCAN protest	Notes
Anon. (z)	MCAN	MCAN protest	Notes
Anon. (i)	MCAN	MCAN protest	Notes
<i>Other actors</i>			
Prof. Anon. (ii)	University of Chicago (retired)	Skype	Recorded
Dr. Anon. (iii)	Tokyo University	Tokyo University	Recorded
Dr. Jeffrey Patinson	Physicians for Social Responsibility	Restaurant, Osaka	Notes
Dr. Jeffrey Patinson	Physicians for Social Responsibility	Hotel, Osaka	Recorded

\*Denotes that the individual was interviewed with the person listed above.

c) Observation (Stage 1)

In parallel to my interviews, I proceeded to observe ‘sites of argumentation’, in which an interpretation of radiation risk is enacted and alternative story-lines are challenged. Each of the sites was recommended to me by an interviewee and varied from conferences to workshops (*benkyou-kai*) and protests.

**Table 2.2.** Observed demonstrations

Organisation	Venue
Metropolitan Coalition Against Nukes	Kasumigaseki, Tokyo
Area of Hope ( <i>kibō no eria</i> )	Kasumigaseki, Tokyo
Sayonara Nukes ( <i>sayonara genpatsu</i> )	Kasumigaseki, Tokyo
Sayonara Nukes	Yoyogi Park, Tokyo
Mum, dad and me walk ( <i>mama papa boku walk</i> )	Hachioji, Tokyo
3.11 Action	Fukushima

**Table 2.3.** Observed seminars

Organisation	Venue
Takagi School	Takagi School, Sumiyoshi, Tokyo
Takagi School Café	Shinjuku
Sayonara Genpatsu	Room 2A, Bunkyo Citizen Centre, Tokyo

By virtue of the invitations I received, these sites were overwhelmingly associated with anti-nuclear actors and were well networked to one another. Some sites were

convened by (former) partners. 3.11 Action, for example, co-operated with MCAN to form a candle-lit ‘human chain’ around the National Diet Building on 11 March 2012; while the founders of the ‘Mum, dad and me walk’ (*mama-papa-boku walk*) were formerly core members of MCAN.<sup>20</sup> Geographically distant sites can also be linked by symbolic ties. Like many anti-nuclear groups, 3.11 Action holds its weekly protest outside Fukushima station at 5pm till 7pm on a Friday evening: the same time that MCAN protests outside the Prime Minister’s Official Residence. In other cases, the sites are networked, not at the level of the group, but on the level of individuals. Some of the same actors could be followed from the Takagi School of Citizen Science to the seminars held by the Sayonara Nuclear Power (*sayonara genpatsu*) group, for example.<sup>21</sup> The practice of handing out fliers for related groups at most anti-nuclear events was another practice through which networks could be traced.

Two sites emerged as foci for six months of sustained observation, conducted between May and November 2017: MCAN and Takagi School. Both groups were open to my participant observation and met on a weekly basis – allowing me to build relationships and engage in a process of ‘deep hanging out’ with the participants. Protesting in the heart of Kasumigaseki, a ward whose name is a metonym for the Japanese bureaucracy, MCAN staged the largest demonstrations Japan has seen in half a century. Today, it can no longer mobilise the 200,000 demonstrators it could at the zenith of its power in June 2012. Nonetheless, the movement has demonstrated remarkable longevity. In excess of 500 people attended each of the weekly protests I observed in 2017. Moreover, it remains a site that almost all my interviewees mentioned; either as movement they had taken part in, a phenomenon they were forced to walk past as they left various ministries, or simply as a prime example of public discontent.

The Takagi School was recommended in a rather different capacity. In contrast to MCAN’s carnivalesque demonstrations of resistance, the Takagi school holds sedate study sessions at its premises in Akebonobashi every Thursday morning. These meetings are a small affair. Normally, five or six people attend, (though this is enough to make the office feel crowded). During these sessions, the group discusses matters related to radiation exposure; scrutinising reports published by notable organisations (e.g., SCJ) in meticulous detail and planning presentations for their quarterly ‘Takagi School Café’ – a public event held on the second floor of the Ecogallery in Shinjuku Central Park. Those who recommended the Takagi School to me did so, not on the basis of its political influence, but on the grounds that I would see a ‘decent’ (*matomo*) example of how ‘independent’ or ‘counter’ expertise on the issue of exposure is constructed. The opportunity to hear from Dr Sakiyama Hisako – the

<sup>20</sup> They broke away to form a splinter group, called the ‘Area of Hope’ (*kibō no eria*), which now demonstrates opposite the National Diet Building, across the road from MCAN.

<sup>21</sup> Hisako Sakiyama, a central member of the Takagi School, gave a talk to on behalf of the *Sayonara Genpatsu* movement, for example.

former Chief of the National Institute of Radiological Science (NIRS) and co-author of NAIIC, as well as a central member of the Takagi School – was argued to be particularly valuable by research informants.

Takagi Jinzaburo

The Takagi School of Citizen Science is named after the prominent critic of nuclear power, Takagi Jinzaburo. Graduating from the University of Tokyo in 1961, Takagi began his career in the nuclear industry, returning to his *alma mater* to study for his doctorate in 1965. By all accounts, Takagi was a promising scholar, who won the prestigious Asahi Science Encouragement Award in 1967 and secured a visiting position at the renowned Max Planck Institute for Nuclear Physics in 1972–73. Takagi would advance to the position of Assistant Professor at Tokyo Metropolitan University (TMU).

It was during Takagi’s time at TMU that he began to agitate against nuclear power. In 1965, he resigned his post to found the non-profit Citizens Nuclear Information Centre (CNIC), where he would continue to publish research (as well as award-winning children’s books) as a ‘citizen scientist’. This work was recognised with a Right Livelihood Award in 1997, which Takagi shared with his friend and frequent collaborator, Mycle Schneider. Takagi would use his half of the prize money to establish the Takagi School, which shares its premises with CNIC to this day.

Although Takagi died more than a decade prior to 3.11, his presence continues to be felt in the nuclear debate. His writings are one way in which his influence continues to be felt. His final book – *Why there will be another nuclear disaster* (2000) – was widely read in the wake of the Fukushima disaster. The continued influence of both CNIC and the Takagi School are another means through which his legacy endures, and his name continues to be invoked by anti-nuclear activists as an example of an “independent” scholar.

d) Observation (Stage 2)

Two expert workshops, staged in response to the climate of low public trust, also emerged from the previous stages as appropriate for observation: the OECD-NEA’s workshop on food safety science, staged in Fukushima prefecture at the request of the Japanese Cabinet Office (see: Chapter Five); and the ICRP’s series of participatory seminars. Access to both settings was secured to conduct observation.

e) Analysis

The materials I collected through interviews and observation were coded in an ‘open’ and iterative manner, drawing on the theoretical tradition of grounded theory.

f) Presentations and feedback

In the final stage of my research process, I re-engaged with my informants to confirm that my claims resonated with their experience. The form of these engagements ranged from informal discussions and emails to invited lectures and presentations, delivered at the Takagi School, CEPN (the parent organisation of Jacques Lochard and Thierry Schneider, two central figures in the ICRP Dialogues), and NERIS<sup>22</sup> (a policy conference, whose organising committee and attendees significantly overlaps with the ICRP's membership)

In this context, 'resonance' does not connote complete endorsement. In the study of elite institutions, the act of 'translat[ing] the bits of information' gleaned through interviews and observation into our 'own program' and 'into the code of this profession' is an important move in resisting the co-option of our analysis (Salk in Latour and Woolgar 1986:12). However, it necessarily implies that the terms of said analysis will not match the self-descriptions of our actors. Resonance is instead conceived as a 'mode of cognitive and affective reasoning that collapses distance and transforms the similar into the same' (Messerli 2017:131). What I searched for was not the adoption of my terms by my actors, (though this did happen, on occasion (see: Chapter Six),) but moments of excitement, in which my actors expressed feelings of recognition toward something encrypted in the alien language of the social scientist.

### 2.3. Doing Research: Positionality, note-making, and linguistics

Positionality has become an important concept in the discussions of social scientific method. Central to discussions of positionality is the idea that how research is conducted is intimately related to who is conducting it. No longer is the researcher imagined as a neutral observer, who enters the field to return with observations of pre-given facts. Instead, she is an active agent, who constitutes 'the field' through her research practices. To a greater or lesser extent, her very presence affects every interaction that she observes. It may cause actors under observation to exercise uncommon discretion or act with great bravado in an attempt to impress, for example. The precise effects that the observer has on the situation will be influenced by their 'personal values, view, and location in time and space', as well as markers of their identity, such as gender, race, and class (Sánchez 2010). In recognition of researchers' involvement in the events they seek to document and analyze, Rose (1997), McDowell (1998), and Bourke (2014) among others, have encouraged researchers to (explicitly) write themselves into their accounts. It is in this spirit that I have elected to discuss my methods in relation to my own identity, placing myself into the narrative of how this project was completed.

<sup>22</sup> European Nuclear and Radiological Emergency Management and Rehabilitation Strategies Information Website.

### 2.3.1. *Studying Up: A would-be expert studies expertise*

To ‘study up’ is so often to engage one’s research participants on their own turf, literally and figuratively. In the literal sense, I met my research informants at times and places of their choosing. Given their busy schedules, cancellations and rainchecks, as well as periods of waiting, were commonplace. In a more figurative sense, my informants often had more experience of being interviewed or observed than I had of interviewing or observing. Most policy practitioners are well versed in the art of crafting a professional persona: able to give charming interviews which feed the interviewer facts rather than revealing them (Kuus 2013). And many of the anti-nuclear activists I interviewed were no less polished, having frequently dealt with the press. Their capacity to challenge the direction of an interview or specific interpretations of their behavior was frequently felt.

Of course, the story of my research is not just one of a scholar ‘studying up’, but the ironic tale of a student studying expert authority in the effort to achieve it; scrutinising experts in order to be ennobled as a (junior) one, with the bestowal of the title ‘Dr.’. One implication of this position was that my epistemic authority was limited. Not only were my research informants more politically powerful than me, they could often draw on the same academic credentials that I possessed. Many of my interlocutors possessed master’s degrees. Some had been awarded this degree at Cambridge (a commonality which no doubt helped to build rapport). It was not unusual for informants to possess a doctorate or to have held academic positions, with a few acting as journal editors or holding the rank of Professor. This is to say that they occupied senior positions within the academic hierarchy.

One response to this conundrum has been to reassert the authority of the anthropological gaze. Pierce (1995) suggests that in treating political elites as nothing more than a ‘strange tribe’ of particular habits – as Latour and Woolgar (1986) did – the scholar can level the playing field: mobilising a (somewhat conventional) form of ethnographic authority to match the power of the research subjects (in Gusterson 1997:117). In my own experience, this strategy radically underestimates the theoretical sophistication of political elites, who I found were not just experts in their own domains, but frequently able to discuss and challenge my research on its own terms. On one occasion, for example, a bureaucrat who had read my research proposal engaged me in a debate regarding the relevance of Mary Douglas’ work to the politics of radiation exposure and the relative merits of Spencer R Weart’s (2012) later development of her work. The bureaucrat had, it transpired, received a master’s degree in Anthropology. On another occasion, a veteran bureaucrat revealed to me an extensive knowledge of the German phenomenological tradition, suggesting that Gunther Anders’ (1951, 1956, [1979] 2014) work on the philosophical anthropology of technology might have something to contribute to my thesis. The idea that these bureaucrats would be cowed by my assertion of an ‘ethnographic authority’ seemed unlikely.

It seemed more probable that an attempt to assert my authority would be read as a sign of over-reach and be met with resistance. There is (comic) precedent for such a response in the

work of the anthropologist, Hugh Gusterson, who studied the nuclear weapons' scientists of the Livermore Laboratory. In the following excerpt, he describes the reception his work received when he presented it at the laboratory.

I arrived to find that one of the Laboratory's leading weapons scientists had come to my talk wearing nothing but a loincloth and carrying a cane to which he had nailed an animal skull. He shook this at me and grunted whenever my presentation displeased him – which seemed to be quite often (Gusterson 1997:117).

Gusterson takes from this experience the lesson that 'the objectifying, exoticising language of anthropology is as objectionable at home as abroad, and one is less likely to get away with it' (ibid.:117). This is certainly true – one might add that one is especially unlikely to get away with it when addressing subjects who are familiar with the anthropological canon, as both my own and Gusterson's research subjects are.

A second lesson we might take from this episode is the importance of humour. Gusterson is right to argue that Latour and Woolgar (1986) describe American biologists in 'roughly the same rhetoric Evans-Pritchard used on the Nuer' (Gusterson 1997:117). Yet what Gusterson does not mention is the jocularity with which Latour and Woolgar adopt this position. There is great humour in their attempts to 'bracket' their prior knowledge of science in 'anthropological strangeness' and describe scientists as a 'strange tribe' of 'compulsive and manic writers' (ibid.:40, 44, 48). Nowhere is this clearer than in their speculation that the 'heated debates in front of the blackboard' might be 'part of some gambling contest' clear (ibid.:48-49). This is not an anxious reassertion of anthropological privilege, but a self-aware and ironic form of ethnographic engagement. The disarming levity of this account no doubt helped shield Salk and his colleagues from the 'unbearable' feeling of being reduced to 'a colony of ants or... rats in a maze' (Salk in Latour and Woolgar 1986:12). In keeping with this approach, I wore the traditional metaphors of ethnography lightly when engaging with my informants, drawing attention to the idiosyncrasies of an ethnography of 'moderns' and conducting fieldwork in conference halls.

### 2.3.2. *Conducting Research in Japan as a 'Half'*

To place myself within the frame of my research also requires an attention to my racial identity. As the biracial son of British and Japanese parents, I am what the Japanese call a 'half' (*hāfu*). (Attempts to popularise the term 'double', with its more positive connotation, have not taken root.) In a nation still characterised by the myth of ethnic homogeneity, this 'hybrid identity' continues to mark me as 'other'. I am not a foreigner (*gaijin*). I was born in Japan. Citizenship was a (literal) blood right. Yet, my claim to being Japanese remains contestable. Like many biracial children in Japanese schools, I grew up experiencing acts of racism that centred on denying my Japanese identity. On annual, one-month studentships at Japanese primary and junior-high schools, I inevitably came into contact with peers who would insist on labelling me a foreigner or 'white person' (*hakujin*), despite my protestations.

This was a comparatively mild experience of racism. I was never ostracised and, to the best of my recollection, was never labelled as ‘stupid’ or told to ‘die’ on the basis of my race (in Kamada 2010:1). It should also be noted that my experiences of overt racism have declined with age. No one called me a *gaijin* in the course of this project. Yet, there is good reason to believe that many continue to view *hāfu* as not ‘fully’ Japanese. One need only consider the scandal that erupted in 2015, when Ariana Miyamoto became the first *hāfu* to be crowned Miss Universe Japan, to suggest that the attitudes so many *hāfu* experience in the playground remain relevant. To conduct research as a *hāfu*, I suggest is to conduct research as a liminal subject: constructed as neither entirely Japanese, nor entirely foreign, but something in-between.

It is important to stress that I am not suggesting a hierarchy of positions, in which acceptance by research subjects as ‘one of us’ is necessarily the most desirable position. On the contrary, my experience suggests that the position of a liminal subject can be an advantageous one. In recent years, the image of *hāfus* has become glamorous. Increasingly, Japanese media is populated with *hāfu* actresses and models, (such as Ariana Miyamoto). By some estimates, *hāfus* now account for as many as 30% to 40% of runway models in Japan (Chung and Ogura 2018). The notion that all *hāfus* are models has itself become a stereotype. At times, this sense of glamour touched my research. On meeting one senior member of an anti-nuclear organisation, I was promptly invited to model T-shirts for one of their campaigns: an opportunity to become a (literal) poster-boy for the cause. (Such opportunities are certainly not thrust upon me in Europe.) Though this is an extreme example, discussions of my appearance were a common feature of my interactions with Japanese research informants, and almost entirely absent from my interactions with their non-Japanese counterparts.

In reflecting upon how my positionality as a *hāfu* influenced my research, it may be enough to observe that my (broad) conformity to a racialised aesthetic standard had an impact on my interactions. But I would like to go further and suggest that the glamorisation of *hāfu* bodies evokes the *hāfu* experience more generally. By this, I mean that *hāfu* bodies are considered desirable precisely because of their liminality. They are seen as different but familiar. As the editorial director of Numero Tokyo, Sayumi Gunji explains, in

the Japanese media and market, a foreigner’s flawless looks aren’t as readily accepted – they feel a little distant. But biracial models, who are taller, have bigger eyes, [and] higher noses... are admired because they are dreamy looking but not totally different from Japanese. That’s the key to their popularity (in *ibid.*).

If the liminal body offers both familiar reference points and a touch of novelty, I suggest that my informants frequently engaged with me as a ‘liminal mind’ – alternately commenting on both the ‘Japanese-ness’ and ‘other-ness’ of my perspective in interviews. Although being *hāfu* is a racial status, numerous scholars have noted that there is an attendant assumption of biculturality. It does not seem unreasonable to suggest that the tension between novelty and familiarity helped to build rapport and generate interest which translated into follow-up

interviews.

### 2.3.3. *Shifting Positionalities*

Although my fieldwork was predominantly influenced by the considerations outlined above, it should be noted that my positionality was not static. Over the course of my research, I found myself inhabiting a series of personae, which often mirrored my surroundings. These personas encompassed everything from my grammar and syntax (Japanese has a specific system of honorifics (*keigo*), which are used to convey respect) to the way in which I stood. Perhaps the most obvious element of these personae, however, were my clothes. In elite settings, such as ministries or international workshops, I dressed formally. At the height of summer, this meant a white cotton shirt and pressed navy slacks, worn with leather dress-shoes: a dress-code known as ‘cool biz’ (short for ‘cool business’) and permitted in many work settings – including Japanese ministries – between 1 May and 30 September, annually. In the cooler months, I donned the conservatively-coloured wool suit and silk tie expected of young professionals. This suit was not worn to interviews with activists or to demonstrations. At worst, I feared that the attire, along with the association with the University of Cambridge, could lead me to be perceived as an establishment figure: provoking suspicion or hostility. At best, it would have just looked out of place, creating an obstacle to collegial rapport.

### 2.3.4. *Observation*

This material is supported by insights gleaned through extended periods of time spent in Japan. A total of 14 months of the PhD was spent on Japanese soil. Of these 14 months, three were spent in Osaka refreshing my language skills (April to July 2016), and 11 were spent based in Tokyo, conducting residential fieldwork (October to December 2016 and April to November 2017). During this time, a shared-house in Adachi City, a northern ward of the Tokyo Metropolis, served as a permanent base of operations, providing easy access to the politicians, bureaucrats, Non-Governmental Organisations (NGOs), protestors and public figures who concentrate in the nation’s capital. Tokyo’s centrality also made it a convenient staging post for shorter research trips to other regions. Most frequently, I was travelling to Fukushima itself, just over an hour and a half away from Tokyo Station by bullet train (*shinkansen*). But journeys were also made to Osaka, Kyoto, Sendai, and Matsumoto, in order to conduct interviews, or follow specific research informants, as they travelled to deliver speeches or participate in demonstrations.

It is difficult to gauge the influence that prosaic choices (such as my choice of accommodation) have had upon my research. My choice of abode in Tokyo, for example, put me on a fading shopping street (*shita-machi*), minutes away from the banks of the Arakawa River. Accommodation is relatively affordable here and many of the locals had been born a stone’s throw from their current home. The result is a neighborhood which has maintained an almost rural sense of community, quite at odds with how one might imagine life in the world’s second-largest metropolis. Here, I had the status of a (very minor) local celebrity: the

only *hāfu* in a neighborhood accustomed to ethnic homogeneity. My neighbors knew who I was, what my research involved, and had a sense of my routines. Discussions of my work, therefore, became imbricated in the ebb and flow of my everyday life. On a typical day, I ate breakfast in the sitting room, chatting to my landlady, who had prepared some traditional Japanese fare for her tenants. Over fried fish, tofu, and miso-soup, we might discuss my latest trip to the Reconstruction Agency, her experiences of leasing property in the Tohoku region, or her husband's experiences of selling Fukushima beef in his butcher's shop. My workout at the local Muay Thai gym, Ninepack, might be followed by a discussion of the history of the Tohoku region with my trainer. And my evening meal at Hanabusa Sushi, would often be eaten over a raucous discussion with other regulars about the structural causes of 3.11. In my time in Nishi-Arai, the process of conducting fieldwork became imbricated with the rhythms of daily life.

### 2.3.5. *The Field Journal*

Keeping a field journal was central to my practices of observation. On an average day, I spent between one and two hours committing to its pages nascent theories, reflection, and observations, which varied from the scholarly to the mundane in timbre (e.g., notes on journey times, quality of sleep, and mood). In so doing, I filled no less than nine Moleskine notebooks (of 240 pages each) with notes, handwritten in a small print. The result is a textual source of considerable volume; one that could accurately be described as seven-Moby-Dicks-long or twice the length of *The Lord of the Rings* trilogy.

The contents of my notes are not entirely homogenous, as my practices of note-keeping developed over time. In the early stages of my field research, the act of writing field notes was accompanied by a sense of uncertainty, pertaining to what qualified as a valid 'field observation'. This is not a novel concern. Recent years have seen scholars grow more vocal about the prosaic challenges of conducting fieldwork. Events such as the *Exposed Ethnographer* colloquium,<sup>23</sup> hosted at the Division of Social Anthropology in Cambridge, or the *Methodology Seminars*, held in the University of Cambridge's Department of Geography, are symptomatic of a *confessional turn* in the academy. Central to this collective project is a challenge to the conventional conception of fieldwork as a 'test', to be borne in stoic silence, lest the aspirant young researcher be deemed weak or unworthy (Pollard 2009). The effect of this discourse, it is argued, is to stigmatise any formal admissions of difficulty. Quite aside from the obvious implications this has for the mental health of young researchers, it is felt to have created a silence around the practicalities of research, which tend to be neglected in favour of more theoretical discussions of method. Burr (2002) notes, for example, that research ethics are much discussed in anthropology, but few scholars make explicit the guidelines that they followed in conducting their own research. Similarly, anthropologists have discussed how to write ethnographies at length (see: Clifford and Marcus 1986; Geertz

<sup>23</sup> 'The Exposed Ethnographer: Reflections on risk, difficulty, and vulnerability in the field' was a one-day 'colloquium for early-career ethnographers and other field-based researchers' hosted by the Cambridge University Anthropological Society (CUSAS) in the Division of Social Anthropology on 27 May 2015.

1988), but have had surprisingly little to say about how to write the field notes that these ethnographies are based on. (For notable exceptions, see: Atkinson et al. 2001; Sanjek 1990.) Like many graduate students, I entered the field with little practical guidance on the matter, and no opportunity to read the fieldnotes of an established scholar. But in the knowledge that this was not unusual, I was content to follow Katy Bennett's advice (passed on to me in the prose of a younger Jeffrey) and 'just keep writing' (Bennett and Shurmer-Smith 2001:255 in Jeffrey 2004:23).

Although I have found the confessional turn can be liberating, recognising the ubiquity of certain challenges does not, in itself, offer an antidote to them. Resolving myself to 'just keep writing' did not free me from the reality that we must all make (defensible) choices about how and what we choose to write. For myself, the core challenge was a seemingly inescapable trade-off between the detail of my notes and the richness of my interactions with people in the field.

This tension between participation and exactitude was resolved by broadly organising my field notes into three types of observation. This categorisation did not reflect the essential qualities of the event being observed, so much as it reflected my relation to these events. The first category of field notes was one that I termed 'coincidental observations': notes on events or experiences that I did not plan, which nonetheless informed my study. My conversations with residents of Adachi-ku, mentioned earlier, would be one example of such an event. A promotional event that I happened to stumble across in my local *Ario* supermarket – in which shoppers could take home as many grains of Fukushima-grown rice as they could cup in two hands – would be another. These events were experienced more as a resident of Japan, than as a researcher, having been encountered in the course of my daily living, rather than as part of a structured method. Consequently, it was often not appropriate – and sometimes impossible – to document these events as they unfolded. Notes on these events were therefore written on the same day, but after the fact, either in a café or at home. Where photos were taken, I was often forced to use my phone or tablet, as I would not necessarily be carrying my camera.

The second category of fieldnotes comprises notes I produced as an observant participant. Such notes were made at MCAN and the Takagi School, but also during each of my interviews. As Silverman (2017) reminds us, interviews are inherently 'manufactured' encounters, in which two (or more) actors consciously collaborate to produce 'research data'. Conventional wisdom states that the best results are achieved when the interviewer is an active partner: requesting clarifications, posing additional questions, and otherwise listening 'actively' (e.g., nodding, smiling, etc.), so as to build rapport and solicit further remarks. To embody this role necessarily limits the attention one can give one's notes. Hence, I restricted myself to jotting down quick observations of details I would not be able to recall (e.g., timestamped notes on my interlocutors' body language), while placing an emphasis on engaging with my informants. Over time I finessed an ability to write with only the occasional glance at the page, allowing me to maintain eye contact with research informants.

Additional reflections, written in long hand, were then penned as soon as possible after the interaction had ended. These notes on non-verbal aspects of our engagement complimented and enriched the audio-recordings of our interactions.

The notes made on the non-verbal aspects of the interviews were often no less rich than the verbal exchange itself, as many interviewees carefully ‘staged’ our encounter: offering tours of their place of work (e.g., the Kumatori nuclear reactor), home, or local area. On 6 July 2017, for example, I was offered a tour of Fukushima prefecture by two members of the protest group 3.11 Action, following an interview conducted at a health clinic for the occupationally exposed. I was taken first to one of the 40 plus indoor playgrounds that have been established across the prefecture, in the hope of limiting children’s exposure. We travelled next to Mount Shinobu, the site of numerous shrines and an expansive playground, which famously inspired the theme tune to Studio Ghibli’s ‘My Neighbour Totoro’ (*tonari-no-totoro*).<sup>24</sup> Today, the mountain also serves as a ‘medium-term storage site’ for irradiated waste. Our third destination were those temporary housing sites where evacuees had been forced to live for up to six years. Neat rows of cramped abodes, some fitted with tin roofs, other made of wood, had been decorated in places by local schoolchildren. Yet this act of solidarity did little to dull this depressing sight. My own eyes welling, I turned to one of my guides who commented darkly that familiarity causes one to grow used to such sights. It is only in showing others that one remembers how abnormal the situation is and rediscovers one’s anger. In such interactions, the staging of the encounter is clearly not trivial, but evocative of an intense affective response. Details of the spaces in which the encounter unfolded are therefore essential to understanding what was said.

Also detailed in these notes are the unexpected frictions that my presence as an observer could cause. On arriving at Mount Shinobu, for example, my guides invited me to snap photos of the storage site and its surroundings (fig. 2.1). No sooner did I raise my camera than a shout rang through the air. A bellicose guard approached me, pointing to a (previously unnoticed) sign and angrily insisting that photography was not allowed (fig. 2.2). To this, one of my guides responded by asking on what grounds photography could be banned; noting that we were Japanese citizens, stood on public property, photographing work done both in public and in the public’s name. The heated altercation that followed was brought to an end only by the guard summoning his (more reconciliatory) supervisor, who explained that staff pictured working on these storage sites had met harassment on social media. (At the time of writing, I have not been able to find further evidence of this claim.) He offered to allow further photography but asked the opportunity to call his team offsite. This episode increased my sense of how politicised the presence of an observer can be. For the site workers, I was experienced as threatening by virtue of the Nikon 5100 I was armed with. This realisation made me more careful of who and what I photographed, even when the scene seemed innocuous. Yet, the experience my guides and I had was one of the aggressions that interested citizens, who investigate their surroundings, can be met with. In recognition of the (everyday)

<sup>24</sup> Nakagawa Rieko’s ‘Stroll’ (*arukō*).

difficulties of bearing witness, it seemed important to continue taking photographs throughout my fieldwork, even if this act was met with occasional bouts of hostility.

**Figure 2.1.** Storage of irradiated materials on Mount Shinobu



Source: Author's collection

Figure 2.2. Sign asking onlookers to refrain from photography



Source: Author's collection

The third corpus of fieldnotes was made as a non-participant observer<sup>25</sup> at the ICRP and OECD-NEA's workshops. On these occasions I could afford to take obsessively detailed notes as events unfolded. No active participation was required of me and note-taking was a normal practice. As each workshop was being videotaped and covered by members of the press, who hovered at the fringes of the hall with notebooks and hefty cameras, my furious scribbling ran little risk of affecting the participants. The detail of these notes – enriched after each event, with transcriptions of key speeches and exchanges – is such that we can construct a 'workshop script', which captures how the event unfolded in dramatic terms. Consider, as an example, this sample of the script for 'Act 1 Scene 1' (or, more accurately, the 'Opening Remarks' Session on Day 1) of the OECD-NEA's *Workshop on Food Safety Science*<sup>26</sup>

### Scene 1 (cont.)

IRACANE: ...The NEA is supporting the continued learning and implementing of associated improvements in nuclear safety through the activities of its various committees and international working group and by promoting

<sup>25</sup> The one exception to my 'non-participant' orientation came on the final day of the OECD-NEA.

<sup>26</sup> The 'script' has been formatted in accordance with the Guidelines for Preparing Dialogue provided by Yale University Press in the Yale Drama Series.

suiting international initiatives. I wish you a successful workshop.  
Thank you so much.

ANNOUNCER A's voice is heard over the PA system. *She sits in a small, soundproofed box at the back of the hall.*

ANNOUNCER A: Thank you very much, Dr Iracane.

IRACANE *picks up his papers and leaves the podium to the left.*

BUREAUCRAT *stood to right gestures to IRACANE's seat – torso bowed, arm straight, palm upward – as if offering IRACANE the chair.*

IRACANE *walks to chair (front row, right column, left seat, next to ITŌ). BUREAUCRAT walks parallel to IRACANE, on right side of column.*

IRACANE *smiles at ITŌ, who leans over as he approaches. They shake hands. Bureaucrat squats by ITŌ's chair.*

ANNOUNCER A: Next, on behalf of the organisers, may I invite state minister for Cabinet Office, Mr Tadahiko Itō, to give his greeting.

ITŌ *picks up papers. He stands.*

BUREAUCRAT *stands and scampers to right wall.*

ITŌ *walks to right of his desk and bows toward the congregation. He wears a grey-blue suit (notched lapels), blue tie, and blue shirt (white collar). Like IRACANE he has a red ribbon boutonniere – with red and white ribbon dangling – affixed to his breast pocket. Unlike IRACANE, he also wears a lapel pin: a gold circle within a purple circle. He walks to podium, bows again, and picks up microphone.*

ITŌ: Good morning. I'd like to thank top-level scientists from Japan and abroad, who have come all this way to Fukushima, that is working hard for reconstruction...

As this sample script shows, my notes focused not only on what was said, but also on the dramatic staging of each event. Committed to my Moleskine were details of everything from the 'costumes' worn by the actors (e.g., the boutonniere worn by dignitaries, but not the expert participants) to the furtive actions of the 'stage crew' (e.g., the gesturing bureaucrat, the announcers/translators) as they ran the logistical aspects of the performance. This detail facilitates the close analysis offered in Chapters Five and Six.

### 2.3.6. Linguistics

My research was conducted in both English and Japanese, depending on my interlocutors. I did not require a translator as I am bilingual, though it should be stated at the outset that I am not equally skilled in the two languages. My Japanese is fluent, but not especially

sophisticated. By this, I mean that I am a ‘native’ speaker of Japanese, in the sense that I have spoken the language since early childhood. I was born in Japan and moved to the UK when I was three, shortly after the 1995 Kobe Earthquake. My command of Japanese syntax is instinctual and (much to the surprise and amusement of many of my research informants) my speech is inflected with a regional accent: the melodic Osaka-ben. My written Japanese, meanwhile, has been developed through a combined 11 years of schooling (six years at elementary level, three years at junior-high, and two years of high school) at *The Japanese School in London*: a supplementary school that teaches material specified by the Japanese MEXT, with a focus on Japanese language instruction (*kokugo*). This formal tuition has been augmented by annual trips to Japan, of an average one month in duration, which provided me with the opportunity to learn through immersion; especially at elementary and middle-school age, when I was able to enrol in local schools as a visiting student. These opportunities equipped me to score full marks in the Japanese A-level at 16, placing in the top 10 examinees, and to deliver (paid) public lectures in Tottori prefecture at the age of 20, having received an invitation of the Chizu Regeneration Project. This being said, my command of Japanese remains notably weaker than my command of English. I read more slowly in Japanese than in English and my vocabulary is less broad, especially in specialist areas. Moreover, my language skills were not at their sharpest at the time that I began the PhD. It had been two years since I had last visited the country and five years since I had last had recourse to write a formal essay in Japanese. The ESRC was kind enough to furnish me with the opportunity to rectify this situation through their *Difficult Language Training Fund*. Between April and July 2016, I lived in Osaka, studying first on a course taught at Japanese Language Proficiency Test (JLPT) Level 1 standard, before moving to a more advanced class, catering to those who wished to study in Japanese universities. Though this knocked the proverbial rust off my Japanese, a linguistic gap between my English and Japanese remained. This does not, however, imply that the interviews I conducted in Japanese are of an inferior quality. A degree of linguistic simplicity, combined with my identity as a *hāfu* raised in Britain, allowed me to perform a naiveté toward Japanese politics, which encouraged informants to elaborate on their answers to ensure my comprehension, and yielded further insights into their thoughts.

### 2.3.7. *Transcription*

The time taken to transcribe was inhibitive long, restricting the time available for other activities, such as organising new interviews. I found that it took me at least four hours to transcribe a single hour of English conversation and up to eight hours to transcribe an hour of Japanese conversation. I therefore opted to use professional transcription services, except when the content of the interviews was especially sensitive. English recordings were transcribed by GoTranscript: a service used by several universities (e.g., Brown, University of Chicago, Stanford University) and media outlets (e.g., BBC, The New York Times). Japanese recordings were entrusted to the Kyoto Data Service, which specialises in producing transcripts for academic research. Both services had been recommended by colleagues and selected for their reputation for confidentiality. GoTranscript, for example, prides itself on

augmenting the commonplace procedure of having its professional transcribers sign non-disclosure agreements with a data management protocol that ensures that no individual transcriber has access to more than six minutes of the recording, and cannot download the audio file (fig. 2.3). The completed transcripts could then be corrected as needed, with reference to the original audio file, before analysis. (This was most frequently necessary when Japanese names were mentioned in English-language interviews.)

**Figure 2.3.** Additional steps taken by GoTranscript to enforce confidentiality

---

1. First of all, the audio/video file you provide us with is divided into smaller parts (6 minutes each).
2. No transcriber has access to the entire file.
3. No one outside our team has access to the file pieces or the entire file.
4. The smaller pieces of your file are then listed among other small pieces of other files.
5. The transcribers then play the piece of your file directly from our database, but they cannot download it to their computer. They do their research and they do their best to provide you with best quality transcriptions.
6. No transcriber is allowed to work on more than 1 piece of the same file.
7. We always keep track of your files and of our transcribers' activity.
8. We have a couple of editors who have been with us from the very beginning; they will be the ones who will put the pieces of the transcription together.
9. Once the transcription is done, the file is permanently deleted from our database.

---

Source: GoTranscript

## Chapter Three

### Narratives of radiation exposure: reconstruction, sacrifice, and the nuclear village

It would surprise no one to hear that the assertion, ‘stories are the communal currency of humanity’ (Shah 2007), has long been a credo of the story-teller. One might, however, be surprised by the number of disciplines that have come to share this conviction. In psychology, it has been argued that the ‘narrative mode’ may be ‘the default mode of human cognition’ (Adler in Beck 2013). Similar suggestions have emerged in neurology, following the identification of the neural networks responsible for narration (Jones and McBeth 2010:329). Damage to these areas of the brain, ‘resulting in the loss of narration’, has been found to be ‘more problematic than the loss of other cognitive functions, such as kinaesthetic, mathematical, or linguistic’ (ibid.:329; see also: Young and Saver 2001; Troiani, Ash, Reilly, and Grossman 2006). Where these disciplines have focused on the importance of narrative to the individual, the social sciences have focused on the roles that narratives play in collective life. Certainly, there are tensions between the different disciplines’ epistemologies, most notably between their positivist or post-positivist inclinations (Smith and Larimer 2013). Nevertheless, an interdisciplinary consensus appears to be emerging – one that finds value in attending to narratives.

This chapter explores how different actors have narrated the exposure of citizens to radiation, following the 2011 Fukushima Daiichi nuclear power plant disaster. It is not a conventional history of the exposure situation or of any specific group engaged in the public debate. Instead, it seeks to trace the narrative arcs that have been woven around contact with the caesium, iodine, and other materials released from the stricken plant. This approach is grounded in an understanding of narratives as both a vehicle through which actors make sense of the world, and a tool through which actors seek to consolidate their interests (Hajer 1993, 1995; Fischer and Forester 1992; Roe 1994). In narrating exposure, actors seek to ‘escape blame..., consolidate/strengthen their political capital, and advance/defend policies they stand for’ (Boin, t’Hart, and McConnell 2009). The public controversy that surrounds this issue is therefore read as a struggle, not just to establish the facts of exposure, but to establish what exposure *means*.

The idea that crises generate ‘framing contests’, in which various actors attempt to establish their interpretation of events as *the* interpretation of events, is not new. Nor is its application to 3.11. Numerous scholars have noted that 3.11 has been the epicenter of a discursive struggle. Of these, perhaps the most significant is the noted Japanologist, Richard Samuels’ (2013a), whose timely monograph, *3.11: Disaster and Change in Japan* details the effects that 3.11 had on three areas of policy: national security (ibid.:80-109); energy (ibid.:110-150); and local government (ibid.:151-179). Work in this field is necessarily done on the shoulders of giants, but we need not gaze at the same horizon. In this chapter, I narrow my field of vision, focusing not on 3.11’s impact on Japanese politics in general, but on the radiological exposure situation as a policy issue in its own right.

In so doing, I have identified three main narratives through which meaning is given to radiation exposure. One is the narrative of ‘reconstruction’ (*fukko*), which constructs 3.11 as a national disaster: presenting the reconstruction of Fukushima as an opportunity to spur a national renewal, it calls upon citizens to support Fukushima’s recovery by accepting small doses of radiation as safe. The image of Japan as a nation that must be revived temporally roots this narrative in Japan’s ‘lost decades’: a period of political and economic malaise (1990s-present). Second is the narrative of Fukushima as a ‘sacrifice zones’, which subverts these ideas of national solidarity; rooting the exposure of Fukushima’s populace in Japanese modernity’s uneven geographies of power (1860s-present). Finally, the ‘nuclear village’ frames the issue of civilian radiation exposure in relation to a conflict between ‘the people’ and the nuclear-government-industrial complex (1970s-present), who are imagined to have colonised the halls of power.

Narrative analysis is an inherently interpretive act, but clear cases can be made for the prominence of each of the narratives identified. One heuristic Samuels offers to illustrate the prominence of the ‘reconstruction’ narrative is the Google search. At the time of writing, searching for the terms ‘Fukushima’ and ‘rebirth’ (*saisei*) in Google returned 36.4 million hits, while searching for ‘Fukushima’ and ‘reconstruction’ (*fukko*) returned 22.6 million hits. Similarly, the phrase ‘nuclear village’ (*genshiryoku-mura*) returned 22.3 million results. In comparison, the terms ‘Fukushima’ and ‘sacrifice’ (*gisei*) returned a more modest figures of just 5.68 million hits. This does not necessarily suggest that this narratives is any less prominent or powerful, but it does indicate that it is not indexed to a singular signifier. As this chapter demonstrates, however, this narrative has been adopted by prominent public figures, who lend it significance in Japan’s public debates.

### 3.1. Reconstruction and Rebirth

John F. Kennedy famously claimed that the ‘Chinese use two brushstrokes to write the word ‘crisis’. One brush stroke stands for danger; the other for opportunity’. The inaccuracy of this aphorism has not prevented it from cementing itself in popular discourse (Mair, Mair, and Liqing 2009), or being invoked in the wake of 3.11 (see: Hirayama 2011). In the tragedy of the earthquake, tsunami, and nuclear disaster, many saw an opportunity for renewal: not just of the affected Tohoku region, but of Japan as a whole. Retired defence-official Sasa Atsuyuki suggested that ‘the 3.11 disaster will be seen as a big shock that led a declining Japan to renewal’ (in Samuels 2013b:98). Professor Wada Akira of the Tokyo Institute of Technology would echo this sentiment, suggesting that 3.11 was an opportunity to change ‘our thinking, our civilisation’ (in *ibid.*:98–99). Hiroshima University would go one further, launching a ‘Phoenix Leader Program’ of graduate studies to support the ‘renaissance’ they predicted that the nuclear disaster would bring. Across Japanese society, individuals and institutions extolled the need to ensure that the destruction inflicted by 3.11 was of the ‘creative’ kind promoted by Schumpeter; the kind that would see the nation reborn.

To call for renewal is clearly to implicitly express displeasure with the existing state of affairs. As Kushner (2015) contends, the extent to which Japanese citizens felt dissatisfied with the status quo at the time of 3.11 is most starkly summarised in a 2009 opinion poll conducted by *Asahi Shimbun*, which aimed to compare popular perceptions of the pre-war, post-war (1945–89), and present periods of Japanese history (*Asahi Shimbun Shuppan* 2010: 486 in Kushner 2015:xxii). Unsurprisingly, it is the post-war period that is remembered most fondly. Respondents described the era of Japan’s economic miracle as ‘vibrant’ and ‘progressive’. By contrast, the pre-war period is seen as ‘dark’ and ‘conservative’. It is the descriptions of the present that cause concern. Using terms such as ‘dark’ and ‘stagnant’, respondents describe it more negatively than Japan’s troubled pre-war years. Life today – Kushner (*ibid.*) concludes – is seen as harder than life under the militarist Empire of Japan. Calls for a ‘reconstruction’ of Japan express the hope that a seismic event capable of jolting the Japanese mainland 2.4m east might cause a similarly dramatic shift in Japanese politics.

This dissatisfaction has been understood as a reaction to the anaemic state of the nation. Following more than 40 years of rapid expansion, Japan’s economy began to stagnate in the early 1990s. The period that has followed is popularly known as the ‘lost decades’, and has been characterised by a contraction of the Japanese economy, and a lack of political leadership (Samuels 2013a; Kushner 2015; Kuttner, Tokuo, and Posen 2015). Historically, the nation might have placed its hopes in its bureaucracy; famously praised for ‘ruling while the [Liberal Democratic Party (LDP)] reigned’ by Chalmers Johnson. Yet by 2011, ‘virtually every ministry and agency of the central Japanese

government had been rocked by scandal – including lax regulation that led to infected blood supplies, fifty million lost pension records, and failed economic policies – at one time or another during the previous quarter century’ (Samuels 2013a:3). So deep was the distrust of Japan’s mandarins, that the Democratic Party of Japan successfully ran for office on a platform of returning power from the civil service to the people (Kan 2010).<sup>27</sup> The nation struck by 3.11 was not the ascendant powerhouse described in Ezra Vogel’s (1979) *Japan as Number One*. It was a nation adrift.

Although 3.11 provoked calls for change, there was no consensus as to what ‘change’ might mean. One popular interpretation was that Japan could renew its global standing by reaffirming its liberal values. This was the vision that drove the inception of the Rebuild Japan Initiative Foundation (RJIF), six months after 3.11. Chaired by former editor-in-chief of *Asahi Shimbun*, Yoichi Funabashi, RJIF has focused its activities on ‘rebuilding’ a Japan that can play an active role on the international stage: specifically, acting to promote a ‘liberal international order in Asia Pacific’, so as to achieve ‘peace and prosperity’ in the region (Funabashi 2017). This is an inherently globalising, and future-oriented vision, which would see Japan emphasise its commonality with other nations, and engage vigorously in the international community, both diplomatically and economically. Hence, its publications speak of ‘Reinventing Japan’ (Fackler and Funabashi 2018), so that the nation might ‘step into a new role as a purveyor of models and values better suited to today’s multipolar and diverse world’, at a time when the future of American leadership is in question.

By contrast, figures on the Japanese right interpreted 3.11 as a ‘cultural disaster’ (*bunmeisai*), which spoke to the importance of recovering a Japanese essence (Umehara in Samuels 2013b: 99–100). Governor of Tokyo, Ishihara Shintarō referred to 3.11 as ‘divine retribution’ (*tenbatsu*) brought down upon the nation by its ‘greed’. Speaking of how ‘tainted’ Japan had become, Ishihara exhorted the need to ‘use the tsunami to wipe out egoism, which has attached itself like rust to the mentality of Japanese people over a long period of time’. The politician and award-winning novelist would later apologise for his comments, but this broad sentiment would be echoed by other proponents of ‘Japaneseness’ (*nihonjinron*). Among them was the Tohoku-born philosopher, Umehara Takeshi, who was appointed as a special advisor to the Reconstruction Design Council. For Takeshi, 3.11 showed that it was arrogant (*omoi-agari*) to assume that man could master the atom, and demonstrated the need for Japan to ‘return to coexistence [with nature]’ (*kyozon ni kaero*) (in *ibid.*). In contrast to Ishihara, he did not ascribe cosmological significance to the earthquake and tsunami. These were natural events. It was the nuclear disaster that loomed large in his mind, spurring what Samuels (*ibid.*:100) describes as an anti-Enlightenment mode of thought. ‘Compared to the Western view that

<sup>27</sup> Kan reportedly praised Karel van Wolferen’s *The Enigma of Japanese Power*, noting that ‘eighty percent of the policies in Japan are made by bureaucrats and only twenty percent by elected political leaders.’

humans can conquer nature, we Japanese believe that all animals and plants and minerals are Buddhas' (in *ibid.*:100). 3.11, it was hoped, would return Japan to a path of spiritual purity.

While these conflicting calls for change were loud, they were not ubiquitous. Some cautioned against change, suggesting that a rapid reorientation could risk further damage to Japan's ailing economy. These voices were not in the majority; nor were they especially charismatic. Yet, in the absence of a master plan, their call for a return to the *status quo* achieved a *de facto* victory. Much to the disappointment of many political observers, 'reconstruction' increasingly came to connote 'recovery' rather than 'transformation' in Japan's political debate. One of the most eloquent of these frustrated analysts is Richard Samuels, who responded to 3.11 by shelving his existing work, and 'imagining the rebirth of the Japanese nation' (2013a:xiii). Six months into working on his aforementioned monograph, *3.11: Disaster and Change in Japan*, he grew less certain that 3.11 would deliver the transformation that he had hoped for, and changed his working title from 'Rebirth of a Nation?' to 'The Rhetoric of Crisis' (*ibid.*). Public calls, he noted, were to 'hang in there, Japan' (*ganbare nippon*) rather than to evolve. In his eyes, Japan had defaulted to 'staying the course'.

This 'return to normalcy' can be read as a product of the disaster's short political 'shelf life', in Hoffman and Durlak's (2018) terms. This is to say that, despite the magnitude of the event, it created a relatively brief window of opportunity for policy change. This may seem an incongruous claim, as the disaster so clearly inspired a great sense of solidarity in the Japanese public, hundreds of thousands of whom flocked to Tohoku as volunteers<sup>28</sup> (O'Connell 2012). Though the coordination of volunteer efforts was significantly smoother than in the wake of the 1995 Kobe earthquake, the sheer volume of volunteers could still be overwhelming, especially in the immediate aftermath of the disaster (Kingston 2012:5). In April 2011, *The Japan Times* reported that almost 90 percent of volunteer-staffed disaster relief operation centres in the affected areas were being forced to limit their intake of new volunteers, due to the difficulty of finding them accommodation (Kyodo 2011). The international community was no less forthcoming. More than 163 countries and 43 international organisations offered assistance to the Japanese state in the first six months after the disaster (MOFA 2012). By the first anniversary, more than ¥520 billion had been donated in aid. Given these conspicuous signs of goodwill, one might be forgiven for thinking that 3.11 would create a greater impetus for change.

<sup>28</sup> By the first anniversary of 3.11, some 930,000 people had volunteered to help rebuild the Tohoku region (O'Connell 2012).

Yet, this sense of unity did not reach the halls of power. In Kasumigaseki, hostilities ceased for only a brief moment, before intra- and inter-party conflict was resumed. Conflict within the Democratic Party of Japan (DPJ) focused on Naoto Kan's unpopularity. By the time the crisis began, his public approval rating was already below 20 percent (Brinsley 2011), his party had lost its majority in the House of Councilors, and Kan had only narrowly defeated a leadership challenge mounted by the 'shadow shogun' and powerbroker Ichiro Ozawa (For profiles of Ozawa, see: Onishi 2004). Consequently, concerns about Kan's leadership were voiced from the moment that the crisis began. 'Japan needs leadership, but can Kan deliver?' The Guardian asked on 12 March 2011 (Tisdall 2011). 3.11 is a 'big test for an unpopular leader,' Bloomberg agreed, just five days later (Brinsley 2011). Within months, these doubts were being articulated by members of Kan's own party (including Ozawa and his supporters), and the embattled PM would narrowly survive a vote of 'no confidence' in July. For their part, the opposing (LDP) were largely content to aid the DPJ's implosion. Inspired by the sense that Japan was facing a national crisis, Kan had offered to form a cross-party 'grand coalition' government (Samuels 2013a:17). In spite of public support, this offer was rejected (ibid.). So too was the offer to appoint LDP leader Tanigaki Sadakazu as Minister for Reconstruction (ibid.). Even budgets for reconstruction were held to ransom for policy concessions in other arenas. In the words of the vice-Chair of the Reconstruction Design Council, the LDP was engaged in 'a strategy of destruction, not construction', in the hope of ruling the ruins (ibid.).

This political gridlock eroded public confidence, and made it difficult to act with the rapidity needed to seize the moment. Small supplementary budgets totaling ¥6 trillion were passed in May and July, but it would not be until Kan resigned from office that a larger budget of ¥12.1 trillion could be passed. And although the Reconstruction Design Council, which convened on 11 April 2011, would deliver its recommendations in July 2011, it would not be until February the following year that the Reconstruction Agency was established, to co-ordinate the 10-year project of 'restor[ing] Tohoku's position as a place of innovation'. Certainly, these organs of governance continued to pay lip service to the notion of a national renewal. The Reconstruction Design Council, for example, affirmed that 'it is important for Japan to aspire not to recovering merely but to making creative effort in future-oriented manner' ([sic] 2011); while the Reconstruction Agency insists that the reconstruction of 'the affected areas' should act 'to spur [the] revitalisation of the broader Japanese economy'. Yet, even in its own description of its activities, the Reconstruction Agency makes it clear that its focus lies on decontamination, assisting evacuees in returning to their homes, and restoring Fukushima's traditional economic activities. In short, the focus has come to rest on restoring the pre-Fukushima *status quo*.

### 3.1.1. Status quo ante: *Fukushima as granary*

Northern Japan has long served as a national granary, producing as much 27% of Japan's rice crop, while accounting for just over seven percent of Japan's population (MAFF 2017 in Statistics Japan 2018; Tohoku Bureau of Economy Trade and Industry 2016). Fukushima Prefecture is no exception, and is known for producing a significant share of Japan's staple crop (fourth highest producer of rice by prefecture), as well as other fruits and vegetables, such as peaches (second highest), pears (third), and cucumbers (Ministry of Agriculture, Forests and Fisheries in Kimura and Katano 2014:108). But in 2011, this industry was dealt a severe blow by the earthquake and tsunami, which destroyed many of the region's assets. Significant portions of farmland in Miyagi (11%), Fukushima (4%), and Iwate (1.2%) were drowned or otherwise damaged. Similarly, the fishing industry lost some 20,723 boats, and 319 ports and other fishing facilities. This material blow to the primary industry contributed to a dramatic 60% rise in unemployment in the most severely affected regions (i.e. Miyagi, Fukushima, and Iwate) between March and December 2011 (Samuels 2013a:7–8). The project of rebuilding Tohoku has a rather literal aspect. To restore the region's economy, significant resources have been invested into rebuilding the private and public infrastructure necessary for the region to act as a 'breadbasket', once more.

Hopes of a return to normalcy in the food industry also face a less corporeal challenge, in the form of consumer fears. As 'Fukushima' became a byword for nuclear disaster, consumers quickly developed an aversion to the region's produce, which the systems of monitoring established by the government struggled to dispel (see: Chapters Four and Five, this volume). Demand for the region's beef, for example, declined by 50% despite assurances of safety from the state (Samuels 2013: 7). Numerous states would embargo food from the region, contributing to an 8.3% decline in Japanese food exports in 2011 (Samuels 2013: 7). Seven years later, many consumers continue to avoid Fukushima produce and 37 embargoes remain in place (EFE 2017). Among the nations that continue to impose restrictions are the biggest importers of Fukushima's peaches: Hong Kong and Taiwan (Fukushima Minpo 2018). This 'reputational damage' (*fuhyo higai*) to Fukushima's produce poses an obstacle to the recovery of Fukushima's economy, and consequently, the resettlement of the prefecture.

The Ministry of Agriculture, Forests, and Fisheries (MAFF) has responded to the challenge of reputational damage by encouraging a brand of patriotic consumerism. On bill boards across the nation, its Food Action Nippon (FAN) project asks citizens to 'Support [East Japan] by eating [its produce]' (*Tabete ōuen shiyō*). On such posters, one might see celebrities biting into an assortment of foods produced in the region: the five members of the popular boy-band, TOKIO enjoying a rice-ball, cucumber, apple, glass of milk, and meat skewer, for example; or posing as farmers, with aprons that declare their 'Fukushima pride' (fig. 3.1). On TV, their voices are joined by politicians, who eagerly

munch on food from Tohoku for the cameras. Politicians come and go, (Japan has had three general elections since 3.11,) but this ritual remains unchanged. Be it Cabinet Secretary Yukio Edano of the DPJ eating strawberries from Iwaki in 2011 or Prime Minister Shinzo Abe of the LDP eating peaches from Fukushima in 2015 (see: fig.3.2), their explicit and implicit messages are the same: food from Fukushima is safe; and every citizen has a role to play in supporting Tōhoku, as a consumer of its produce. In this campaign, the state calls upon civil society to act through (and in) the market. The ‘good citizen’ in FAN’s narrative is one who sees the consumption of Fukushima produce as a form of civic duty. When a promotional campaign reaches their town, they eagerly rush to their local store to meet Kibitan: the yellow ‘bird of Fukushima’ and prefectural mascot. Their children pose to have their photo taken with the character, while their parents purchase rice or vegetables from the affected territories. At an Ito-Yokado in suburban Tokyo, the offer of an additional handful of complimentary rice is used to sweeten the deal. In this act of consumption, the idealised citizen enacts their solidarity with the people of Fukushima, affirming their shared status as members of the ‘Japanese people’.

**Figure 3.1.** TOKIO appear in a FAN campaign



Source: MAFF

It is important to distinguish this idea of patriotic consumerism from the notion of ‘consumerism as patriotism’, which critics have identified with the US (Ghosh 2012). In Japan, the rhetorical focus does not fall on a generic celebration of consumers as the ‘backbone of the nation’ or advocacy of indiscriminate spending as a legitimate response to catastrophe. Kan’s call for ‘vigilance’ and ‘calm’ on the eve of 3.11 could hardly contrast more with the words of assurance offered by President George W. Bush on the eve of 9.11: ‘Our financial institutions remain strong, and the American economy will be open for business as well’ (2001; see: Kan 2011). As Bindig and Bosau contend, a core component of Bush’s response to crisis was to encourage Americans to spend: framing indulgence as patriotism (2010:36–37). In so doing, he expanded the repertoire of practices through which US citizens might express their solidarity: from volunteering at the rubble of 285 Fuller Street

or enlisting in the military, to buying plastic flags or ‘get[ting] down to Disney World in Florida... and enjoy[ing] life the way we want it to be enjoyed’ (Bush in Schiller 2012). By contrast, Japan’s narrative of reconstruction does not portray spending as patriotic, in and of itself. Rather, it asks Japanese citizens to engage in a conscientious pattern of consumption. As with fair-trade, the ideal subject supports a specific vision of the nation (and, indeed, particular people) by ‘voting with their money’. They buy Tohoku’s produce, not (just) to enjoy it, but to endorse a vision of Japan’s collective future.

In this sense, FAN’s ideal citizen may have more in common with the idealised US citizen of the 1910s or 1940s than the 2000s. Just as the ‘Eat to Support’ campaign attempts to evoke a link between a particular pattern of personal purchases and the fate of the nation, the War Bond Drives sought to create a sense of connection with a war that existed as nothing more than a series of headlines for most citizens, and convince them that ‘selling US war bonds is just as important as [fighting] at Guadal Canal’ (Puller 2010). One of the most direct means through which this was achieved was to have those who had served on the front lines deliver this message, either in person or in avatar. Hence, war heroes such as Medal of Honour recipient, John Basilone toured the nation, encouraging the public to ‘back the attack’. On posters, their cartoon colleagues beamed messages like: ‘You buy ‘em, We’ll fly ‘em’, as a sea of jets took wing behind them. In a similar vein, Japan’s ‘Eat to Support’ Campaign insists that consumers far from Tohoku itself are central to reconstruction efforts. To convince its audience that ‘[y]our every mouthful will be connected to the revival of the affected areas’, the campaign enrolls the likenesses of ordinary people from the Tohoku region. Just as the dashing fighter pilot recognises that the plane he flies is financed by purchases of war bonds, these ‘everyday’ people recognise that their livelihoods are supported by their customers. ‘The proof of our gratitude is the flavour,’ (*Arigatou no shirushi wa oishisa desu*) grinning farmers and fishermen declare in Food Action Nippon’s 2014 poster series, as they hold their seasonal produce aloft: peaches, eel, lettuce and tomatoes, among other items, in the summer; and oysters, octopus, shiitake mushrooms, carrots, and sake, in the winter. ‘In response to your support, we will deliver tasty goods this year, too.’

Japan’s narrative of reconstruction and the War Bond Drives could also be said to share an aesthetic of pastiche. The War Bond Drives are remembered for being as eclectic as they were colourful and insistent – a coalescence of contrasting images around one punchy message: ‘Back the attack’. The central idea was that the campaign ‘ought to be general enough for a wide variety of particularisations, and yet concrete enough to avoid being an “oblong blur”’ (Odegard in Kimble 2006:25). Hence, children learned of the importance of supporting the war effort from cartoon characters, such as Bugs Bunny and Mickey, while adults engaged with the aforementioned soldiers,

who were joined at public rallies by movie stars such as James Cagney, Fred Astaire, and Greer Garson. At one turn, the messaging is cutesy. Consider, for example, the posters of angelic young girls with golden locks, making a plaintive request: ‘Oh please do! Daddy. Buy me a victory bond.’ At another turn, the message leans heavily upon sex appeal. Consider, for example, the practice of granting to purchasers of War Bonds a ballot, with which they might vote for their favourite War Bond Girl. The messaging was simultaneously kaleidoscopic and focused. No viewer was ever in doubt of what the intent behind the scheme was. Japan’s narrative of Reconstruction has a similarly jarring character. On the news, one sees Prime Minister Abe eating peaches from Fukushima, flanked by two mute young ‘Miss Peaches’, whose title and sashes clearly reference the tradition of beauty pageants (fig. 3.2). In other quarters, the message is more symbolic. Consider, for example, the widely shared stop-motion animation of Kibitan emerging from an egg. Here again, conservative respectability, sex, and cartoons coalesce around a single message.

**Figure 3.2.** Prime Minister Abe eats a peach from Fukushima, flanked by two Miss Peaches



Source: MAFF

Clearly, there are dangers in overdrawing the comparisons between the two contexts, and the two publicity campaigns. As previously noted, the disappointment of 3.11 was that it produced ‘conditions functionally equivalent to war’, but little of the associated unity (Stockwin 2014:510). One consequence of this is that the rhetoric force with which the campaign can be pursued is tempered.

Politicians eating Fukushima produce routinely encourage citizens to join them; they do not suggest that it would be unpatriotic not to. By contrast the narratives woven around the US Liberty Bonds of the First World War were explicitly designed to stigmatise those who did not support the initiative. One poster, promoting the 2<sup>nd</sup> Liberty Loan of 1917, depicted two children, with the caption: 'Our daddy is fighting at the front for You – Back him up – Buy a United States Gov't Bond'. Advisor to the Treasury, Odegard had been insistent that the campaign for the 1940s should not tread the same line; concerned that coercion could induce a backlash. Nevertheless, the Treasury came to play on similar sentiments. 'I GAVE A MAN! Will you give at least 10% of your pay in war bonds?' Asked a poster run in 1944 and 1945. For better or worse, the Japanese government has adhered more strictly to Odegard's vision, focusing on the 'plus symbols' of reconstruction in their official public relations campaigns.

The effects of this public relations campaign remain unclear. Although wholesale prices of Fukushima produce have slowly recovered, this appears to reflect indifference rather than active support. Political Scientist, Naoya Sekiya (2016), found that while 14.3% of Fukushima residents actively purchase Fukushima produce, just 3.2% of the wider Japanese population do so (ibid.:145). In short, they are not 'eating to support' Northern Japan. Most simply do not care to where their food is sourced.<sup>29</sup> In sympathetic eyes, this indifference could itself be read as an achievement. While around a third of respondents (30.4%) claimed to have never been concerned about the safety of Fukushima produce, more than a third (35.3%) reported that their concerns had weakened over time (ibid.:146). Could this be proof that MAFF's public relations campaign worked? The results are unclear. Certainly, an awareness of screening procedures played a major role in allaying the fears of Fukushima residents, but many of those living outside the Prefecture were vague about what had brought about their change of perception: stating that it had happened without their realising (*itsu-no-ma-nika*) (32.9%) or their perception had just changed 'somehow' (*nantonaku*) (15.8%). Others suggested that their own fears had diminished as media coverage of the issue declined. There is little sense, however, that the Japanese public has taken up the Reconstruction Design Council's (2011) vision of 'view[ing] the disaster as affecting our own lives, and... pursu[ing] the reconstruction with a spirit of solidarity and mutual understanding that permeates the entire nation' (ibid.:2).

The reconstruction of Fukushima also necessitates the reclamation of land from the atom. In addition to its efforts to promote Fukushima's agricultural industry, the Japanese state has invested considerable resources in decontaminating the affected territories, seeking to bring ever greater areas under the 20mSv/yr threshold. This has led to a rolling process of lifting evacuation orders, which

<sup>29</sup> 68.7% of respondents from outside Fukushima prefecture stated that they do not purchase food with specific regard to the region in which it was produced (Sekiya 2016:145).

started with areas of Kawauchi, Minamisoma, and Tamura in April 2012 (Arima 2016:42). As time has progressed, however, the willingness of evacuees to return to their homes has declined, especially among those with children. When the evacuation was lifted in Yamakiya village, Kawamata, in March 2017, around one in three of its original 1,000 residents chose to return to the village.<sup>30</sup> Two thirds of this number were over 70 years old, however, creating concerns that this ‘reconstructed’ village could soon die of old age.

Yet, even if all evacuees were to return to the affected territories, this would do little to mitigate the long-term demographic crisis being faced by these areas. Japan is the first ‘super ageing’ society (Muramatsu and Akiyama 2011; Ohara 2014). The nation’s population peaked in 2005 at 127.8 million, but has since been in decline (Murakami, Gilroy, and Atterton 2009:285), and is ageing rapidly: an effect of its low birth rate and long life-expectancy. In 2017, the CIA World Factbook estimated that Japan has both the fourth lowest crude birth rate (7.70 per 1000 per annum), and the second highest life-expectancy (85.3 years) in the world (CIA 2017a; 2017b)<sup>31</sup>. Many developed nations have an ageing population, but the rate at which Japan is ageing is unusual. Japan only crossed the threshold of a 10% over-65 population in 1985; long after ‘Western’ nations such as France (1940), Sweden (1965) or the USA (1975). But by 2015, the percentage of its population classified as ‘old’ (i.e. over-65) had reached 26.6%; greatly exceeding France (19.1%), Sweden (19.9%), and the USA (14.8%). By 2030, one in every three people is predicted to be over-65, and one in every five over-75 (National Institute of Population and Social Security Research in Muramatsu and Akiyama 2011:425, 427). As Murakami, Gilroy, and Atterton (2009) observe, many developed nations have ameliorated the effects of a declining birth rate by encouraging immigration. Yet Japan remains unlikely to adopt such measures, due in large part to its ‘self-image as an ethnically and socially homogeneous country’, and ‘the psychological barriers to foreign infiltration’ (Flüchter 2006:86 in Murakami, Gilroy, and Atterton 2009:285).

Japan’s trend towards an ageing and waning population is especially pronounced in rural areas, such as the region hardest hit by the Fukushima disaster. This geography of ageing is a product of an extended period of urbanisation, that began shortly after the second world war. In 1950, 53% of Japan’s population lived in urban areas (Semuels 2017); by 2010, more than 78% did so (Murakami, Gilroy and Atterton 2009:286). As many of those who relocate to the city are relatively young, an age

<sup>30</sup> Field Notes, 17 November 2017.

<sup>31</sup> Only Andora (7.50 per 1000 per annum), Saint Pierre and Miquelon (7.10 per 1000 per annum), and Monaco (6.60 per 1000 per annum) have lower crude birth rates than Japan (CIA 2017a). In life expectancy, Japan is exceeded only by Monaco (89.4 years) (CIA 2017b). Japan’s Statistics Bureau appears to ignore Monaco in citing Japan as having achieved ‘the highest level [of life expectancy] in the world’ at 87.1 for women and 80.8 for men.

gap between rural and urban areas has developed over time. Many cities are not ageing at all, while the countryside around them ages rapidly. Consequently, the primary industry is staffed with increasingly elderly people. Today, more than 63.5% of Japanese commercial farmers are aged 65 or older (Statistics Bureau 2017), making the elderly farmers of Yamakiya village fairly typical. Another outcome is that many towns are threatened by extinction. In a book entitled *Local Extinctions* (2014), Hiroya Masuda, a former governor of Iwate prefecture, predicts that 896 towns and villages could be erased from the map by 2040. Even those which do not entirely disappear could face a slew of new challenges related to chronic depopulation, ranging from crises in social care (Tanaka and Iwasawa 2010) to crises of local democracy, as villages struggle to find candidates for local elections<sup>32</sup> (Johnson 2015). Concerns about the fate of ‘depopulated towns’ (*kasochiiki*) certainly predates 3.11, and many of the settlements hit hardest by the nuclear power plant disaster. In this regard, reconstruction remains a troubled vision of Japan’s future.

### 3.2. Sacrifice Zones and Japan’s Internal Colony

A second lens through which the issue of civilian exposure has been framed is the discourse of sacrifice. At the moment of crisis, the word carried heroic connotations. The bravery of the ‘Fukushima 50’ – the TEPCO employees who exposed themselves to as much as 180mSv of radiation in their efforts to contain the disaster – was ubiquitously celebrated by the international press (see, for examples: Hogg 2011; ABC 2011; New Zealand Herald 2011). Many chose to stylise them as ‘nuclear samurai’: paragons of an imagined ‘Japanese’ stoicism. Yet, as Japanologist and Historian, Nathan Hopson’s (2013) work reminds us, sacrifice is a Janus-faced concept. To make a sacrifice can be heroic; to be sacrificed is a tragedy. ‘[I]f anything’, Hobson argues, the ‘50’ were not samurai, but ‘kamikaze’, sent on a possible suicide mission for their nation (ibid.:1). He is not alone in drawing the comparison. Among the ‘50’ was nuclear engineer, Yoshizawa Atsufumi. Years later, he would recount how he and his colleagues left the safety of the crisis headquarters, offsite, to return to the dangers of the nuclear power plant (Atsufumi in McNeill 2013). Their path was lined with an honour guard. Soldiers, firefighters, and nuclear officials closed ranks to salute them as they passed, he recalls. ‘The people lined up never said as much, but I could tell by their expressions that they didn’t think we would return’ (ibid.). ‘We felt like members of the *Tokkōtai*<sup>33</sup> [or ‘kamikaze’ units] in that we were prepared to sacrifice everything’ (ibid.).

<sup>32</sup> The Japan Times reports that in the April 2015 local elections, more than 21% of seats went uncontested (Johnson 2015). The proportion of uncontested seats was notably higher in rural areas, such as Yamagata and Kagawa, where the proportion of seats that went uncontested reached 45% and 66%, respectively (ibid.).

<sup>33</sup> Literally, ‘special attack unit’.

The ‘50’ made their sacrifice as professionals. Yet, critics of the Japanese state argue that there is a similitude between the experience of those who formed ‘suicide corps’ at the nuclear power plant and the more prosaic exposure of civilians across Fukushima. They too are being ‘sacrificed’ (*gisei*), prominent nuclear critic, Koide Hiroaki told me during an interview in December 2016. It is an argument he has made for many years (see: Koide 2011). An Assistant Professor at Kyoto University, Koide attained the status of a ‘rock star’ in 2011, owing to his forceful critiques of nuclear power and the government’s decision to raise the threshold for evacuation. Addressing the Government Oversight Committee of the House of Councillors on 23 May 2011, for example, Koide made it clear that he saw no basis for the 20mSv/year threshold in Japanese law – the *1980 Prevention Law* having specified a 1mSv/year threshold.

If we apply the current Japanese law strictly, we would have to abandon an area that would be as large as the whole of Fukushima. The only way to avoid doing this is to raise the radiation dose limits for residents’ (Koide 2011).

Koide’s critique is two-fold. On one level, he notes simply that the 2007 ICRP Recommendations, which suggest differentiation between ‘normal’ (1mSv/year), ‘emergency’ (20mSv/year–100mSv/year), and ‘existing’ (1–20mSv/year) exposure situations in establishing thresholds for exposure had not been reflected in Japanese law. Thus, he argued that there was no grounds on which to justify the threshold. On a second level, Koide is critical of these ICRP Recommendations, in and of themselves. Designating areas in which people will be exposed to 20mSv/yr as a ‘place safe to return to... even for children’ is ‘way beyond common sense’, and can only be understood in terms of political expediency, Koide suggests. ‘In my view, Fukushima should be declared uninhabitable and the government and TEPCO should bear a legal responsibility for the people displaced and disposed by the disaster,’ Koide explains; ‘but if that were to be done, it would likely bankrupt the country’ (Koide 2012). It is to avoid this eventuality that the government has restricted the scope of evacuations, he contends:

They've decided to sacrifice people and get by taking on as little burden as possible. So, they've made the social decision to force people to endure their exposure. In my view, this is a serious crime committed by Japan's ruling elite (ibid.).

On occasion, Koide has referred to the 20mSv/yr threshold as a ‘crime’ (Koide 2012). At other points he has instead spoken of how the state chose to ‘operate *outside the law* in abandoning these people to their fate by saying it’s an extraordinary situation’ ([emphasis added] ibid.) – a turn of phrase that resonates with discussions of changing civilian thresholds are an example of a ‘state of exception’

(*reigai joutai*). At the crux of the state of exception is the idea that modern states function by letting (individual) bodies die so that the body politic might thrive. Continental philosophers have long been at the vanguard of this debate: both as advocates, who insist that the defence of liberal values relies upon their (periodic) negation, and as critics, who warn of the perversity of this paradoxical formulation. German Political Theorist, Carl Schmitt (2013) notably adopted the former position, arguing that as norms cannot govern chaos, Liberalism's survival depends upon a figure empowered to suspend it – namely, the Sovereign. 'Sovereign is he who decides on the state of exception,' Schmitt asserted, making reference to the wisdom of the Roman Republic, with its model of Constitutional Dictatorship. By contrast, it is the work of Italian Philosopher, Giorgio Agamben (1998), that is most often cited when castigating this position. (It is no coincidence that Agamben was tutored in, and devoted to the translation of, German philosophy.)<sup>34</sup> In Agamben's eyes, the 'paradox of sovereignty' is not a solution to the modern state's woes, but a tension the modern state has, from its birth, embraced. For evidence, he gestures toward those instances in which people are placed outside the protection of the law: oath breakers in Ancient Rome; Jews in the Third Reich; and suspected terrorists in contemporary America, among others. In each instance, Agamben notes, the placement of these peoples outside the remit of the law is in itself a legal move. They are, therefore, 'excluded in' and 'included out' of the law (Agamben in Kotsko 2013a). The notion of 'emergency' and 'existing' exposure conditions can accordingly be interpreted as 'states of exception': devices that allow for the suspension of normal protections offered to civilians for a limited period, so as to ease the burden on the state.

If the state of exception draws our attention to the temporality of sacrifice, antinuclear critics have also sought to illuminate the geographies of sacrifice. The people of Fukushima were 'sacrificed' at the very moment that the Fukushima Daiichi plant was chosen; exposed to the risk of a nuclear disaster in the pursuit of the national interest. This line of critique is particularly clear in the thought of Aileen Mioko Smith, founding director of Green Action: a small non-profit organisation, founded in 1991, which is dedicated to the elimination of nuclear power in Japan. Smith makes it clear that at the core of her activism is an understanding of how nuclear power reflects a broader social structure:

[Nuclear power is] an expression of our beliefs and the way we run our society. So, it's kind of an end result... It's like [some people are] expendable. You need the money, you take the money to Tokyo, the total package, there's this negative side and that gets dumped on a certain group of people. So, there's a division between the people who get the benefit and the

<sup>34</sup> Agamben was a student in one of Martin Heidegger's post-war seminars, and the editor of the Italian edition of Walter Benjamin's complete works. For a discussion of how Agamben's thought has been shaped by these German philosophers, see Kotsko's LRB article (2013b) 'How To Read Agamben'. Kotsko himself has translated several of Agamben's works.

people who get the bad stuff. So, that's a concept about society and class or social status, et cetera.<sup>35</sup>

Smith's protests against nuclear power are not a rejection of science or progress *per se*, but a rejection of a specific vision of society, in which there is a division between those who disproportionately enjoy its benefits and those who disproportionately shoulder the associated risks. Hence, exposure to radiation comes to be interpreted as physical expression of political-economic oppression.

Smith's holistic perspective on radiological issues can be read in the context of her personal journey. As a public figure, she rose to prominence, not for her work on nuclear power, but for her role in securing recognition for victims of Minamata disease: a severe neurological condition, caused by mercury poisoning and named for the city of Minamata, in Kumamoto prefecture. Between 1971 and 1973, Aileen lived there with her husband, and renowned Time-Life photographer, Eugene Smith, to work on a photo-essay, documenting the ill-effects that locals were suffering as a consequence of heavy metals being released from the Chisso factory. In so doing, this 20-year old would come face-to-face with the suffering inflicted upon a small fishing community by a single chemical plant. Today, more than 2,200 victims have been recognised by the Japanese government (Ministry of the Environment 2002), but in Eugene Smith's photographs they appear as individuals, couples, and families: bodies twisted, faces inarticulate, and hands contorted into claws. This experience 'had a very significant impact on me,' Aileen relates, 43 years later<sup>36</sup>. In Minamata, she saw both how severe the 'side effects' of modernity can be (Beck 1992), and how perilous bringing these facts to light could prove. In 1972, her husband was badly beaten by six men, while he was waiting to see a union leader at the Chisso Company. The attackers were widely assumed, and reported, to have been hired by the Chisso Company, itself. Eugene was left nearly blind, and in pain so unbearable that he is reported to have begged Aileen to end his life. She refused. So, Smith lived and remained committed to completing his final project. 'Really and truly, a[ll] I want is to get my Minama[ta] book done,' he told the New York times in 1974. He would die the following year, less than a month after the English edition of *Minamata: A warning to the world* (Smith and Smith 1975) was published. Curiously, Aileen's time in Minamata has also inspired in her a sense of hope.

[W]e were freelance journalists, but living in the village, getting very involved with the victims and following their struggle. And that led me to see what happens when victims rise up [with] their supporters – that it does sometimes lead to victory... I was like 22 years old,

<sup>35</sup> Smith, Interviewed November 2016.

<sup>36</sup> Aileen Smith, interviewed November 2016.

when they won this lawsuit, that couldn't have been won without tremendous national uproar that was built up by activism.<sup>37</sup>

Convinced that civil action could make a difference, she began to transition from 'just recording events' as a journalist, and 'started becoming some kind of activist'. Shortly after the publication of *Minamata*, she became involved in facilitating visits between Canadian victims of mercury poisoning and the people of Minamata. In 1979, she would travel to Pennsylvania, to spend a year with those living in the vicinity of the Three Mile Island plant. And in the early 1980s, she would return to Japan as an anti-nuclear protestor – eventually founding Green Action. 'Sorry, this is getting very long.' Aileen apologises as she relates the arc of her transition. 'I am trying to tell this story so you can see where I am coming from.' Yet, as is so often the case, this segue proves remarkably illuminating. For Aileen, the journey from Minamata to Fukushima is formative. She comes to work on nuclear power precisely because she sees it as fundamentally similar to the issue of industrial pollution. Hence, her frequent comparisons between the two. For example, referring to Fukushima as 'an end result – like Minamata'. Or critiquing the role of vested interests in influencing the discussion surrounding the two issues in the same newspaper article (Smith 2012). Though the specifics of the two cases differ, in each Aileen sees the same social dynamic.

Smith is far from alone in making the comparison. The elision of nuclear disaster and industrial pollution is not unusual in the post-Fukushima zeitgeist. Numerous social scientists have joined Smith in advancing a comparative reading (see: Marran 2011; George 2012; Yoneyama 2012; Stolz 2018), while symposium organisers invite the comparison by scheduling Minamata specialists to speak at events that ostensibly aim to address 3.11. In so doing, they plot the Fukushima disaster as part of a painful lineage of events, as old as industry itself. 3.11 is framed as more than just the latest radiological exposure situation: a 21<sup>st</sup>-century-Lucky-Dragon or Japanese-Chernobyl. Instead, it is plotted as part of a broader history of pollution, that stretches back into the 19<sup>th</sup> century. Hence, the events of 2011 are read in the context of the mercury-poisoning incidents at Minamata, and Niigata (commonly referred to as 'Niigata Minamata disease'), as well as 'Yokkaichi Asthma', a condition caused by exposure to sulphur-oxide, which left victims struggling for breath, and 'Itai-itai' (literally 'hurts hurts') disease, a form of cadmium poisoning that left bones so soft and brittle that they were prone to break with the slightest of force (Notehelfer 1975). Behind each of these incidents, it is argued, lies a common structure, which expresses itself with 'repetitive compulsion' (Stolz 2018).

In preparing this manuscript, it has been suggested to me that those who take a comparative approach tend to be environmentalists, not nuclear specialists. The implication is that this framing is self-

<sup>37</sup> Aileen Smith, interviewed November 2016.

serving; allowing activists, and experts with experience of industrial incidents or environmental justice issues more generally, to claim relevance in a nuclear world. This seems both cynical and overly linear, ignoring how Japan's nascent anti-nuclear movement was shaped by the influence of the broader environmental movement. For Koide, Minamata happened at a formative time. It not only prompted him to place the nuclear issue in a broader context of environmental action, but introduced him to one of its dons, in the form of Tanaka Shōzō: often regarded as Japan's first environmentalist.

'I first became aware of Shōzō when I was in the student movement during the 1970s. This was a time when there was close attention paid to Japan's many pollution incidents, such as at Minamata. Personally, I was working on nuclear power, but it was a time when, like it or not, we learned of all the harm that came along with building Japan into a modern nation. What I got from Shōzō was this epiphany that just like the Minamata disease right there before our eyes, these sorts of pollution incidents went way back in Japanese history. With Japan's decision to cast off Asia and follow the West after the Meiji Ishin of 1868 came these sorts of incidents, and the question within that was just how should one live?'

Given the time at which opposition to Japan's nuclear program took shape, Minamata's influence should not be surprising. Nuclear power became a national strategic priority for Japan in 1973, when the OPEC Oil Crisis exposed the nation's over-reliance on imported oil. It is in the context of this push to embrace nuclear power that many of the anti-nuclear figures and organisations active in the debate surrounding 3.11 began to emerge. Consider, for example, the notable anti-nuclear critic, Jinzaburo Takagi. As a young man, Takagi spent a number of years in the nuclear industry, before securing his doctorate, and an associate professorship in nuclear chemistry at Tokyo Metropolitan University. He would resign this post in 1975 – the same year that *Minamata: A warning to the world* was published in English – to form the Citizen's Nuclear Information Centre (CNIC): an anti-nuclear NPO, that remains a key node in the contemporary debates surrounding radiological exposure.

### 3.2.1 *Sacrifice zone*

In seeking a vocabulary with which to describe this structure, Japanese scholars (Hidemichi 2011) and directors (Kamanaka 2018; see also: *ibid.* 2015), alike have reached for the rubric of a national 'sacrifice zone'. Coined by the American environmental justice movement, the term was first used by Valerie Kuletz (1998) to describe how the American outback has been surrendered to supporting the nation's nuclear weapons program; transforming a topography sacred to indigenous peoples into a 'tainted desert' (see also: Endres 2012). Over time, the phrase has come to describe any area that has been poisoned or polluted in pursuit of the national interest, defined in economic or

military terms (Kuletz 1998; Endres 2012). These include areas selected for waste disposal (*ibid.*), and weapons testing (Hooks and Smith 2004), among other uses. What connects these regions, Kuletz and her contemporaries contend, is that they are politically peripheral.

In importing this term to Japan, Hidemichi (2011) has drawn attention to the uneven geographies of (nuclear) energy production and consumption. It is often remarked by critics of nuclear power that nuclear power stations are not sited in the communities that will benefit most from their construction. Fukushima Daiichi's operator, TEPCO, for example, is primarily responsible for servicing the prosperous Kanto region, as well as Yamanashi prefecture, and a section of Shizuoka prefecture. Yet, at the time of the disaster, its nuclear power stations were predominantly sited in the less affluent Tohoku region. A gulf of more than 200km lies between TEPCO's headquarters in Tokyo and its nearest nuclear power station, and more than 600km separate it from its furthest installation.<sup>38</sup> The result of this pattern of nuclear plant siting is that Tohoku hosted more facilities designed to supply other regions than built to meet its own demands. Prior to 3.11, three nuclear power stations, (namely, the Fukushima Daiichi, Fukushima Daiini, and Onagawa nuclear power plants), with a combined 13 reactors, were in operation in the Tohoku region. Just one of those nuclear power plants (Onagawa), accounting for three of the reactors, was operated by Tohoku Electric Power Company. The rest were TEPCO installations. The Tohoku region bore the risk for Kanto's energy consumption. It is this subordination of Tohoku's interests to Kanto's to which Hidemichi (2011) refers when he calls Tohoku 'Japan's nuclear power colony'.

Of course, on a smaller scale, a similar dynamic has been said to operate within Tohoku itself. Tohoku Electric Power Company's Onagawa nuclear power plant is located in the vicinity of a fishing village, with a population of just over 6,000 people, some distance away from Sendai, the region's largest city. For Hiroaki Koide, noticing this geographical disparity was the beginning of a life-time of anti-nuclear agitation. As a young man, Koide was convinced 'that Japan had to take the lead in using the atom for peace' (Koide 2012). By his own account, he was a 'conservative, serious student' who 'wore a student uniform [at university], and wouldn't even miss one hour of class' (*ibid.*). Consequently, he took a dim view of activism. 'I just thought something to the effect of: 'It's disturbing [people who are] studying'.' It was in 1970, when Tohoku Electric Power Company's plans to build the nuclear power plant in rural Onagawa emerged, that Koide's thinking began to change.

<sup>38</sup> Google maps calculates the distance between the TEPCO head office and the Fukushima Daiini nuclear power plant to be 210km, as the crow flies. Fukushima Daiichi is a further 10km away; the Kashiwazaki Kariwa facility, in Niigata prefecture, is some 300km away; and the Higashidori nuclear power station, which TEPCO operates half of, is 630km away.

For... someone who had embraced the dream of nuclear power, this appeared to be something completely incomprehensible. Most of the power produced in Onagawa would be consumed by the city of Sendai and surrounding areas. So, then I became suspicious and asked myself: why don't they build the nuclear power plant in Sendai? (ibid.)

Following a period of reflection, Koide came to a simple conclusion: 'nuclear power is dangerous' (ibid.). More than this, the plants must be *known* to be dangerous. Though the operators insisted that nuclear power plants were safe, it is precisely because they knew that some risk of a disaster was inevitable that they located the plant in Onagawa. Onagawa was being subjected to risk, not for its own benefit, but for the benefit of a far-away metropolis. Like Kuletz, Koide had come to the conclusion that 'those who benefit least from nuclear developments end up paying the highest price for the excesses of our nuclear culture' (Kuletz 1998). 'I came to understand what kind of thing nuclear power really is,' Koide recalls, 'and on October 23<sup>rd</sup> 1970, I joined the protest against the nuclear power plant at Onagawa' (2012).

The translation of the term from an American to a Japanese setting is not without its frictions. In its native, New World context, the sacrifice zone carries racial connotations, which align poorly with Japan's nuclear politics. In the US context, those who inhabit sacrifice zones are not just poor, but often Black, Hispanic, Native American or Alaskan (Kuletz 1998; Hooks and Smith 2004; Bullard 2011). Activists and scholars have therefore insisted that the concentration of ills onto areas populated by these peoples 'cannot be reduced to capitalism' (Hooks and Smith 2004). Rather, it must be read as a pattern of environmental racism – a reading first advanced in the courts in a 1979 lawsuit, *Bean v. Southwestern Waste Management*, and since defended by decades of study, which have found consistent evidence of racial disparities in the experience of pollution, even where income is controlled for (Bullard 2011:346). Indeed, a recent study in *Sociological Perspectives* (Downey and Hawkins 2008) found that 'African American households with incomes between \$50,000 and \$60,000 live in neighbourhoods that are, on average, more polluted than the average white neighbourhood of households with incomes <\$10,000' (in Bullard 2011:346). Japan, by contrast, largely imagines itself as an ethnically homogenous nation. And, while the people of the Tohoku region were once considered to be a distinct people, known as the Emishi, this is a historical identity, with little resonance in contemporary political life. The people of Emishi were brought under the control of kingdom of Yamato (which would become Japan), between the 6<sup>th</sup> and 12<sup>th</sup> centuries. Whether they were ever ethnically distinct from the Japanese has long been disputed (Hanihara 1990). Hidemichi emphasises that by the 19<sup>th</sup> century 'the people of the Northeast were not considered racially 'other'' (2015). Hence, Tohoku's status as (nuclear) sacrifice zone in the 20<sup>th</sup> and 21<sup>st</sup> centuries cannot be understood in racial terms.

Nevertheless, the argument that the sacrifice of Tohoku is not merely economic can be made. At the beginning of the Meiji period, Tohoku was imagined as an ‘uncivilised’, even ‘barbaric’ region, Hidemichi (2015) notes, but it was also a ‘frontier’, rich in opportunity. By the end of the Meiji period, however, the image of Tohoku as merely ‘backward’ was so firmly ingrained, that even writers from the region began to use the word in a pejorative sense. For Hidemichi, this symbolic subjugation is inseparable from the economic subjugation that Tohoku experienced in the same period. As railways began to stitch the nation together, and the state reached for territory overseas, Tohoku came to function as an ‘internal colony’: producing raw materials (rice), and supplying cheap labour to urban centres, whilst also acting as a market for the produce of Japan’s overseas colonies (ibid.:148). As Hopson’s (2013) overview of Meiji, and post-war scholarship by critics from Tohoku illustrates, this terminology is not a latter innovation, but a contemporaneous idiom. From Nitobe Inazo’s (1891) description of the railroad to Tokyo as a ‘giant “straw,” bleeding rural Japan dry to feed the hungry cities’, to Ishimoda Sho’s description of Tohoku as a mere ‘colony of the centre’ (in Hopson 2013), we find ample evidence that Tohoku’s relationship to Tokyo was imagined in colonial terms, long before the introduction of nuclear power. This regional history nonetheless serves as a powerful lens through which to read the civilian exposure situation. Arriving in Fukushima Prefecture in Spring 2011, a radiological expert met a number of those displaced by the disaster. Reaching for words to express their predicament, one told him that it was like ‘being conquered by the centre all over again.’

### 3.3. The Nuclear Village

A third narrative which has framed the nuclear debate is that of the ‘nuclear village’ (*genshiryoku mura*): an imagined collective of collusive elites, bound by their shared interest in promoting nuclear power. Among the residents of this imagined community are members of the government, civil service, electric utilities, academia, and the media. Collectively, they are said to have successfully promoted nuclear power from the 1970s onwards, quickly establishing a powerful influence over national energy policy. The metaphor is not new. Samuels (2013a) traces the label back to the 1990s, naming outspoken nuclear-critic, Iida Tetsunari as its originator, and identifying Koide as an early adopter (ibid.:118). In an interview conducted in 2016, Koide suggested that the phrase was older still – being used as early as the 1970s.<sup>39</sup> Whatever the truth of its origins, use of this metaphor was the preserve of committed anti-nuclear activists until 2011, when it came to be widely adopted in discussions of the Fukushima Daiichi disaster. Newspapers, both inside and outside of Japan, came to

<sup>39</sup> Koide, Interviewed November 2016.

report on the causes, and management, of the disaster with reference to the nuclear village's influence. While official enquiries into the events of March 2011 pointed their finger at the role of a 'tightly knit elite with enormous financial resources' in transforming nuclear power into 'an unstoppable force, immune to scrutiny by civil society' (NAIIC 2012: 9). At times, even those labelled as 'village insiders' proved willing to adopt the phrase – Vice-Chair of the Atomic Energy Commission (AEC), Tatsujirō Suzuki, for example, admitted that 'Yes, I am living in the village hall' (in *ibid.*:118-119).

The nuclear village is an inherently geographical metaphor, memorable for the sense of dissonance it evokes. The size of the community that the word 'village' implies is at odds with the influence ascribed to it. This is a populist narrative, which frames the political struggles over nuclear issues, including civilian radiation exposure, as conflicts between 'the people' and the cosily collusive villagers. I use the word 'populist' advisedly, aware that it is oft deployed to do little more than register the critic's contempt for a given movement. As Baker (2019) has argued, such usage 'obscures more than it illuminates', revealing more about the political preferences of the analyst than the entities she seeks to describe (*ibid.*) – and has understandably given rise to calls to 'do away with the word' (Cohen 2018). Concerted efforts have, however, been made by a small cadre of scholars who seek to develop the analytic utility of the term and save it from its use as a mere pejorative (Mudde 2004). Ernesto Laclau (2005; Butler, Laclau and Žižek 2000) and Chantal Mouffe (Laclau and Mouffe 1985), for example, do not see populism as a 'degraded form of democracy' (Müller 2016:6), but as a discursive style. Its core characteristic, they argue, is the binary construction of politics as a moral conflict between 'us' ('the pure people') and 'them' ('the corrupt elite'). These categories are 'empty signifiers', compatible with a wide range of positions and articulations, depending on the political context (Gidron and Bonikowski 2013:10). Populist movements may accordingly be right-wing or left-wing, organized horizontally or bound by the leadership of a 'strong man'. They are consistent, however, in dividing society into 'two homogenous and antagonistic groups' (Mudde 2004:543). It is in these terms that I argue that Japan's discourse of the 'nuclear village' is populist; resting as it does on an imagination of all nuclear-related debates as conflicts between the 'ordinary people' (*ippan shimin*) and a corrupt and collusive political elite.

### 3.3.1 *The village's structure*

One notable feature of the nuclear village discourse is that it provides a vivid account of how the 'village members' are held together. Consistent in the narration of the village is the image of the 'iron triangle' (*tetsu no sankankukei*) formed by the LDP, bureaucracy, and electric utility companies (Kim and Chung 2018; Kingston 2012). Each of these three entities is imagined to have been bound to the others through a system of *quid pro quos*, since the 1970s onwards. The management of the utility companies, for example, are said to make sizeable donations to the LDP, in order to secure favourable

legislation. This allegation was given teeth in July 2011, when Kyodo News was able to secure data on LDP donors from its fund management body, the People's Political Association. The data revealed that in 2009, 72.5% of all donations made by individuals to the LDP came from executives of Japan's nine power companies (Kyodo 2011c). Donations were similarly high in the preceding years. The same executives accounted for 63.5% of total individual donations in 2007 (¥56.69) and 70.1% of total individual donations in 2008. TEPCO executives alone accounted for ¥14.27 million of individual donations made in 2009 – just under one third of the total (Kyodo 2011c). These donations were remarkable, not only because of their size, but because they were made systematically. 141 of a total 153 executives at the nine electric utilities were found to have made donations to the LDP in 2009 (ibid.). Electric power companies ceased to make corporate campaign donations in 1974, amid public concern that the government and utilities were growing too close. This system of executive donations, however, constitutes a corporate donation in all but name, Kyodo argued (2011c). In so doing, it drew attention to the long history of the practice. As early as 1976, executives of five electric power companies began making sizable donations. Individuals across the five companies were reported to donate 'strikingly similar' amounts – each president donating roughly ¥360,000; each vice-president, ¥240,000; and all others roughly ¥100,000 (ibid.). These numbers rose progressively, over time; executives from the other four utilities making campaign donations from the early 1990s onwards. Kyodo's exposé of the financial links between LDP and the utilities was widely re-reported; helping to cement the notion that campaign donations have been essential in securing the LDP's continued support for nuclear power in the popular imagination. The LDP's historic support for nuclear power – from the 1970s, when it made nuclear power a strategic priority (NAIIC 2012: 9), to 2010, when it decided to support a 40% rise in nuclear electricity generation by 2030 (METI 2010) – has thus come to be interpreted as an interested position.

While the LDP and the utilities are imagined to be tied by money, it is jobs that are imagined to join energy companies to the bureaucracy. The notion of 'descent from heaven' (*amakudari*) will be familiar to any observer of Japanese politics (Blumenthal 1985; Pempel 1992). The phrase describes a revolving door dynamic, in which senior bureaucrats retire from the powerful 'heaven' that is their ministry, into lucrative positions at private and public institutions, which fall under the jurisdiction of said ministry. The former bureaucrat thereby provides the company with personal connections to those shaping policy; who are themselves incentivised not to harm the prospects of such institutions by the possibility of securing similar post-retirement positions for themselves (Pempel 1992). Though it was once speculated that *amakudari* would be a temporary phenomenon, that would 'decrease in importance as labour shortages in Japan increased', the incidence of this practice continued to rise throughout the 1960s and 1970s (Blumenthal 1985: 312-316), at the very moment that Japan's nuclear industry came into being. Despite efforts to curtail the practice being made in the 1990s and 2000s

(Nagata 2009), *amakudari* continued to tie the Ministry of Economy, Trade, and Industry (METI) to the utilities. By the time of the disaster, some 68 former METI officials had retired into positions in electricity suppliers (Kyodo 2011b). Five of them had retired into senior positions at TEPCO (*ibid.*) – among them, the bureaucrat who had drafted the aforementioned 2010 National Energy Plan (Kingston 2012). The bureaucracy’s willingness to promote nuclear energy, and lax enforcement of regulations, have widely been interpreted through the lens of this incentive structure.

### *Academics and the village*

While the core of the village is imagined to be formed by the ‘iron triangle’, the nuclear village narrative encourages suspicion of academia, which it portrays as having been co-opted with a ‘carrot and stick’. The ‘carrot’ offered to researchers comes in the form of opportunities for career advancement. Both METI and the energy industry are significant sources of research funding and offer prestigious advisory roles to senior academics. Scholars are imagined to be more likely to access these opportunities if they align themselves with these institutions’ pro-nuclear agendas. Conversely, speaking out against the nuclear industry is imagined to bar access to such possibilities – not only for oneself, but also for one’s students.<sup>40</sup> Academics can thus be imagined to be ‘dangling (*burasagatteru*) from the iron triangle,’ I was informed by Imanaka Tetsuji,<sup>41</sup> an outspoken critic of nuclear power, and colleague of Koide at Kyoto University. A curious consequence of the nuclear village discourse is that many normal signifiers of credibility find their meanings inverted. The appointment of a scholar to an advisory post, or the award of a large government research grant, can be read, not as a reflection of their deservedness, but as a sign that they have become a *goyōgakusha* – a ‘government patronised scholar’. Or, more crudely, an ‘academic flunkie’ (Smith 2012). By contrast, a conspicuous lack of career advancement can be interpreted as a sign of integrity. An article published by Koide in *The Asia-Pacific Journal*, for example, bears a preface (co-authored by its editors, Satoko Oka Norimatsu and Sakai Yasayuki) which introduces him as a scholar whose ‘cogent critique of the nuclear village earned him an honourable form of honourable purgatory as a permanent assistant professor at Kyoto University’ (in Koide 2011:1). For daring to criticise nuclear power, ‘Koide would pay a price in career terms,’ they argue, forced to ‘continue his painstaking research... at Kyoto University’s Research Reactor Institute (KURRI) in the shadows’ (*ibid.*:1). Far from diminishing Koide’s credibility, his lack of career advancement is interpreted as a source of credibility – proof that the ‘purity’ of his intellect has not been contaminated by the nuclear village’s incentives.

### *Press*

<sup>40</sup> Dr. Anon, Interviewed October 2016.

<sup>41</sup> Imanaka, interviewed October 2016.

This narrative also encourages suspicion of mass media; the nuclear village is imagined to exert control over the press through two complimentary mechanisms. The first is the control of access. Access to the Japanese Prime Minister's office, and other ministries is structured by a system of press clubs (*kisha*), which feed members 'highly privileged' information, and interview opportunities (Swann 2014:492-493). As few reporters are willing to risk losing the benefits of membership, this allegedly disincentives any challenge to government narratives. The result, critics emphatically claim, is a collaborative system in which the media is reduced to a passive mouthpiece for government; 'no different from the wartime propaganda media that kept repeating to the very end that 'Japan is winning the war against America'.' (Uesugi in Norris 2011).

This theory finds its loudest proponent in the freelance journalist, and author of *The Collapse of Journalism*, Uesugi Takashi (2008). Uesugi notes that as the Fukushima crisis developed, the press-club was given its customarily preferential treatment. Chief Cabinet Secretary, Yukio Edano briefed club-members twice-a-day, every day, but addressed freelance journalists just once a week, and left the administrative staff to brief any foreign journalists (Norris 2011). Despite this frequent access, the press-club declined to press Edano for answers, Uesugi alleges. Speaking with *The Asia-Pacific Journal*, Uesugi claimed to have been the first to enquire about the possible leakage of plutonium from the Fukushima Daiichi plant, a full two weeks after the hydrogen explosion in reactor three (Segawa 2011). According to the *Journal*, 'TEPCO stated: 'We do not measure the level of plutonium and do not even have a detector to scale it.' The next day, Chief Cabinet Secretary Edano announced that 'plutonium is detected'.' (ibid.). Two days later, mainstream media reported the release of plutonium. This failure to investigate or hold government spokespeople accountable is symptomatic of a journalistic culture swayed by the fear of losing access privileges, Uesugi alleges.

The second mechanism through which the nuclear village is said to influence the media is more straightforward: finance. Like all Japanese electric utilities, TEPCO has a regional monopoly, and no discernible need to advertise. Despite this, TEPCO spends around ¥20 billion (\$162.48 million) on advertising every year, and the industry collectively invests \$672 million: the majority of which is channelled into traditional media (Sharma 2014; Swann 2014:493). Critics contend that the purpose of this spending is to ensure favourable media-coverage. 'Advertising budgets are one of the most important ways that industries exert pressure on the media in Japan and the electric companies are very much involved in this,' Kristin Surak, an associate-professor of Japanese politics, argues: 'media outlets are very concerned about this source of funding' (in Sharma 2014). In evaluating claims of the nuclear industry's financial leverage over mass media, some sense of proportion is helpful. In 2013, the energy, materials, and machinery industries accounted for just 0.9% of the ¥2784.9 billion spent on advertising in traditional media in Japan. Government organisations accounted for a further 1.1%:

a combined total of 3% (Dentsu 2013:12). This is significant, but less dramatic than the electric utilities' campaign donations to the LDP. The nuclear village's investment is dwarfed by the cosmetic and toiletry (10.1%), foodstuff (9.8%), information and communication (8.8%), beverage and cigarette (7.4%), automobile (6%), and finance and insurance (6%) industries (ibid.:12). Claims of the nuclear village holding the media in a 'stranglehold' may be exaggerated, but the influence that advertising investments allow is nonetheless significant.

### 3.4 Conclusion

This chapter has traced, in empirical detail, three narratives through which the issue of civilian radiation exposure has been narrated: reconstruction; sacrifice; and the nuclear village. Each of these narratives is implicitly geographical. The notion of reconstruction is predicated on the notion that the nuclear disaster is a Japanese, and asks citizens to engage in patriotic modes of consumption to help the stricken prefecture, thereby making the nation whole. By contrast the narrative of a sacrifice zone frames the issue of exposure as a distinctly regional issue; the location of nuclear power plants understood to reflect uneven power relations between the 'core' and its internal colony. Finally, the nuclear village frames the issue of civilian exposure in relation to a conflict between 'ordinary people' and a collusive nuclear-industrial complex, thereby redrawing the geography of the debate as a conflict between all those in 'the halls of power' and all those excluded from them.

## Chapter Four

# Smiling Radiation Away: The role of ‘radiophobia’ in Japan’s public debate

---

‘The effects of radiation don’t come to those who are happy, but to those who are worried’, Professor Shunichi Yamashita (2011a) famously told a hall of concerned citizens on 20 March 2011. His comments came nine days after explosions were first seen at the Fukushima Daiichi nuclear power plant, and less than a day since milk, spinach, and tap water in the prefecture was found to contain levels of radioactive Iodine deemed unsafe by Japanese public health standards (OECD-NEA<sup>42</sup> 2012). Filmed by members of the attentive crowd, who would circulate his advice to new audiences via the internet, the newly-appointed *Scientific Advisor to the Mayor of Fukushima Prefecture* found an instant notoriety. Interpreting his remarks as both trivialising and a sign of bad faith, netizens would dub him ‘the liar’ (*damashita* - ダマシタ) – playing on the phonetic similarity of his name to the past participle of the verb ‘to deceive’ (*damashita* - 騙した), – and calling for his resignation.

Despite this controversy, Yamashita continues to defend his remarks (see: Yamashita 2011b, 2017). In an interview conducted at the Nippon Foundation in November 2017, he offered two explanations of his fateful comments. Inexperience was one. Although he is a seasoned scholar, Yamashita had no training in the art of public relations and gave his talk at short notice.<sup>43</sup> There was ‘probably a shortage in my explanations’, he admitted. His second move was to invoke his motivation for speaking. As ‘too much stress’ is bad for human health, he had hoped to put his audience at ease, he explained. ‘I’m a doctor. A doctor’s stance is very clear. A patient comes. The patient already has troubles. How to explain to the patient? ‘You have a lot of troubles. This is a bad thing’. No – we must try to encourage them. ‘It’s okay. Don’t worry. We will treat it. We will do work together with you...’ Relaxation is important’. Here, Yamashita’s imagination of his own role becomes clear. In addressing the public at a moment of crisis, his primary concern was not to inform his audience, but to calm them.

This chapter addresses a common imagination of Japan’s public debate as a struggle against the irrational fear of radiation. This fear has come to be known by many names. When residents of Fukushima express anxiety about the effects of radiation on their health, they are said to be victims of ‘radiophobia’ (*hōshanō kyōfushō*). When consumers avoid food from the stricken prefecture, they are said to have fallen prey to ‘harmful rumours’ (*fuhyō*), causing ‘reputational damage’ (*fuhyō higai*) to the foodstuff. And when either issue is discussed in a colloquial context, they may be said to be cases

<sup>42</sup> Organisation for Economic Co-operation and Development-Nuclear Energy Agency.

<sup>43</sup> Yamashita was appointed as a scientific advisor to the Mayor of Fukushima on 19 March 2011 and gave his controversial talk on 20 March 2011.

of ‘radiation brain’ (*hōshanō*):<sup>44</sup> a homophonic pun on ‘radiation’ (*hōshanō*).<sup>45</sup> Each of these terms has come to be cemented in Japan’s public discourse. At the time of writing, a Google search for ‘radiophobia’ yields 1.4 million results; ‘harmful rumors’ and ‘reputational damage’ return 7.2 million and 6.8 million, respectively; while ‘radiation brain’ returns some five million hits. Common in the usage of all three terms is the suggestion that the signified behavior is excessive and a threat to public wellbeing, warranting correction.

Calls for radiophobia and reputational damage to be combatted through public communication schemes have been a prominent feature of Japanese politics since 2011. Resisting the inclination to take these calls at face value, critical scholars have argued that the notion of radiophobia is not merely an attempt to describe an external reality but an effort to stabilise a technocratic social order (Hirakawa and Shirabe 2015; Jacobs 2016). Comparatively little, however, has been done to analyse radiophobia’s entanglement with specific visions of Japan or Fukushima’s future. In this chapter, I contend that radiophobia can productively be read as a *fortuitous obstacle* to the future offered in the narrative of ‘Reconstruction’ (*fukkō*): the state-performed imagination of Japan’s future analysed in Chapter Three, which posits that the revitalisation of Fukushima will catalyse a broader national renewal. This is to suggest that the fear of radiation is stabilised as a political problem – for experts to resolve through public communication – only where it poses an impediment to the realisation of this imagined future. Yet, the very insolubility of this obstacle justifies further research into combatting radiophobia, thereby producing Fukushima as a nexus of expertise on how to respond to nuclear disasters, and fostering the growth of Fukushima Prefecture’s scientific and technical sector (see: Reconstruction Design Council 2011). Hence, an apparent obstacle to the desired future is revealed to be germane to its realisation.

Following a review of the relevant literature, I demonstrate first that visions of radiophobia and Reconstruction have been co-produced. Expert institutions have made their efforts to know the physical, mental and social effects of the nuclear disaster under the aegis of Reconstruction; even as the nature of Reconstruction has been shaped by these efforts. Second, I detail how experts and expert institutions have been positioned in the role of correcting the fear of radiation; itself produced as an obstacle to desired patterns of behavior supportive of Reconstruction. Third, I note that the insolubility of this obstacle has justified the continued training and recruitment of experts in Fukushima, itself advancing the effort to reconstruct a declining agricultural prefecture.

#### 4.1. A Brief History of Radiophobia

Is this merely – a fear of radiation?  
Perhaps rather – a fear of wars?  
Perhaps – the dread of betrayal,  
cowardice, stupidity, lawlessness?  
The time has come to sort out  
what is – radiophobia.

Liubuv Sirota (2013), *Radiophobia*

<sup>44</sup> 放射脳

<sup>45</sup> 放射能

Criticism of ‘radiophobia’ is a well-established genre of academic work. Scholars in fields as diverse as Science and Technology Studies (STS) (Hirakawa and Shirabe 2015) and English Literature (Michie 1993) have recognised that a discursive focus on the (real) psychological consequences of nuclear disasters can serve to marginalise discussion of government and/or industrial safety standards; stigmatising any signs of dissent as evidence of ‘hysteria’ or ‘irrationality’. Case studies of this discourse operating in contexts as diverse as Japan (Hirakawa and Shirabe 2015; Jacobs 2016), Belarus (Pilibaitytė 2011) and Ukraine (Philips 2009), as well as America (Falkof 2013), Kazakhstan (Stawkowski 2017), and Lithuania (Pilibaitytė 2011), have led radiophobia to be interpreted as a ‘useful tool’ of the nuclear industry; cynically deployed to blame victims of nuclear events for their own suffering (see, for examples: DiNitto 2018; Jacobs 2016).

This pre-occupation with criticising radiophobia mirrors the discourse’s political prominence. Notions of radiophobia have not only dominated Japan’s national discussion, (as I shall demonstrate,) but have circulated internationally, both in academic journals and in the international press. On 16 January 2013, for example, *Nature* published a three-page news feature entitled ‘Fukushima: Fallout of fear’, in which a senior correspondent argued that Japan has ‘kept people safe from the physical effects of radiation – but not from the psychological impacts’ (Brumfiel 2013). Two months later, *Forbes* marked the second anniversary of the disaster with the headline, ‘Fukushima – Fear is still the killer’ (Conca 2013). The BBC would mark the following anniversary with the headline, ‘Fukushima: Is fear of radiation the real killer?’ (Wingfield-Hayes 2014), returning to the theme in subsequent years (Briggs 2016). While Yamashita is a controversial figure in Japanese politics, much of the international coverage has endorsed him as the leading expert on the effects of the Fukushima Daiichi disaster. In August 2011, for example, *Das Spiegel* published an interview with Yamashita entitled ‘Studying the Fukushima Aftermath: People are suffering from Radiophobia’. (Note the capitalisation of ‘Radiophobia’, suggestive of a proper noun.), while in its 13 May 2017 edition, *New Scientist* ran a feature article penned by Yamashita, under a familiar heading: ‘Fear is a killer: Nuclear expert reveals radiation’s real danger’. Academic debates surrounding radiophobia are no tempest in a teapot, but timely reactions to a powerful discourse.

If the scale of this critical response is cause for celebration, Latour (2004) reminds us that it should also prompt us to check our equipment and confirm that our tools are properly calibrated. In recent years, scholars in the fields of Political Geography and STS have emphasised the situatedness of discourse. As Hajer (1993) reminds us, political arguments typically rest on multiple forms of discourse. A compelling argument about radiation protection will typically draw on scientific discourse (what are the effects of radiation on the human body?), ethical discourse (what protections is society obligated to offer?), economical discourse (what are the costs of offering such protections to society?), and political assumptions (what institutional mechanisms are available?) (ibid.:46-47). Even where a single discourse is found across multiple contexts, it will likely function in concert with different discourses in each. This insight invited us to examine how multiple discourses are brought together contingently, and the role that actors and institutions play in stabilising these relations.

#### 4.1.1. *Historical Contestations of the Term*

A focus on the situated nature of discourse draws our attention to the fact that radiophobia is not a singular object, but is a term deployed in different ways across space and time. Use of the term ‘radiophobia’ can be traced back at least as far as the 1950s, when it appeared alongside terms such as

‘nuclear neurosis’ in the American debate surrounding medical radiation exposure. Here, the fear of radiation was framed as an obstacle to the use of medical x-rays. In a move familiar to STS scholars (Wynne 1991, 1992, 1995), this fear was narrated as a symptom of the public’s deficient understanding and calls to promote greater ‘awareness’ were made. An article in the 17 December 1959 edition of the *Medford Mail Tribune*, for example, notes that a wave of radiophobia had followed the publication of a report by the National Academy of Sciences on the genetic effects of exposure in June 1956. Among the ‘more reasonable’ conclusions of the discussions that have followed, it reported, were that concerns ‘over exposures to reproductive glands are not justified’ and that ‘laymen need to be re-educated to the importance of leaving the question of radiation [exposure] up to their physicians, who alone can be the judge of the need [for a medical x-ray] in any particular case’. The ideal subject of this discourse is the patient who willingly defers to the judgement of her physician. Her deference to expertise is nonetheless restricted to a clinical setting, where the layperson has personal contact with the expert, and the decisions being made pertain to the care of an individual body.

This long history of radiophobia is frequently forgotten, its shifting meanings erased. The origins of the term are commonly traced to the 1980s (Stakowski 2017), when Soviet scientists responding to the Chernobyl disaster began to speak of ‘radiation phobia syndrome’ (Ilyin and Pavlovsky 1987). Credit for coinage is frequently given to Ilyin and Pavlovsky (1987), though Ukrainian Health Minister, Anatoli Romanenko is also cited as an originator (see: DiNitto 2018). There are certainly merits to this shorter history. Contemporary usage of the term more closely reflects its usage in the USSR, than 1950s America. When Japanese scientists speak of radiophobia, they speak of fear not just as an obstacle to possible benefits, but a danger to human health in and of itself, as their Soviet counterparts did. And in studying the effects of the nuclear disaster, Soviet researchers used the language of radiophobia to stress the psychological effects of exposure, suggesting that they exceeded the biological effects, just as it is being used in Japan today. Nonetheless, remaining cognisant of how the fear of radiation has been stabilised as a political problem across varying political contexts reminds us not to naturalise contemporary discursive formations.

An attention to the institutions through which discourses are materialised can also guard against constructing science, and scientific advice, as monoliths. It is important to note that while ‘radiophobia’ may sound like a clinical term, it is not uniformly recognised as one. Indeed, its use has long been met with resistance from within the technical community. One notable criticism can be found in the report of *The International Chernobyl Project* (1991). Having faced ‘opposition and anxiety’ in its efforts to respond to the nuclear disaster, the USSR contacted the International Atomic Energy Agency (IAEA) in October 1989 to request that it ‘organise and co-ordinate an assessment of the guidance given by Soviet authorities to persons living in radiologically contaminated areas and an evaluation of measures to safeguard the health of the population’ (IAEA 1991:3). The resultant report – as well as a successor report published by the IAEA five years later, to coincide with the tenth Anniversary of Chernobyl (IAEA 1996) – have commonly been read as exonerations of the USSR’s position (see: Stakowski 2017). Both estimate the biological effects of exposure to be relatively modest, while emphasising that ‘dismay has been universal and anxiety widespread’ (IAEA 1991:343). While the fear of radiation is understood to be disproportionate and harmful to public health, the report nonetheless finds the label of Radiophobia to be objectionable.

‘If the stressor is a real threat, it is dishonest to pretend otherwise or to imply that an anxious response is in some way abnormal... While it may have suffered in translation, the use of the

term ‘radiophobia’ by scientific experts in the USSR illustrates this problem. In a spirited exchange at the IAEA Scientific Meeting in 1988... it was argued that the use of this diagnostic term, at any rate in western Europe and the USA, implies a fear reaction to a stimulus that is normally regarded as wholly benign. Few would place Chernobyl in this category’ (IAEA 1991:348).

This criticism is not explicitly repeated in *One Decade After Chernobyl: Summing up the Consequences of the Accident* (1996), but the term ‘radiophobia’ is conspicuously absent. The 546-page report speaks instead of fear (in 38 places) and anxiety (in 44 places). One finds no disagreement with the conclusion that ‘psychological stress and anxiety... cause physical symptoms and affect health in a variety of ways’ (IAEA 1991:5). The authors remain at pains, however, to emphasise that anxiety is ‘understandable’ in such circumstances and should not be interpreted as abnormal or irrational (see: IAEA 1996:10, 31, 107).

The IAEA is far from alone in resisting the discourse of radiophobia on technical grounds. Criticisms levelled by The International Chernobyl Project have been echoed by numerous scholars calling for a more cautious use of the terms fear, anxiety, and phobia, as clinical terms (Drottz-Sjoberj and Persson 1993). Pastel (2002) notes that the *Diagnostic and Statistical Manual of Mental Disorders*, fourth edition (DSM-IV) has strict criteria for defining a phobia, including:

‘[a] marked and persistent fear that is excessive or unreasonable, cued by the presence of a specific object or situation’ (criterion A) and ‘the person recognises that the fear is excessive or unreasonable’ (criterion C). Radiation is invisible, so in the absence of physical dosimetry or biodosimetry, exposure can be uncertain. Long-term health effects, especially when doses are in the low range... are also uncertain. Given these uncertainties, it is impossible for someone to know if their fear is excessive or unreasonable’ (ibid.).

Implicit in these resistances is an unwillingness to construct the affected publics as irrational. Though they do not speak of subjectivities, the stakes of the disagreement pertain to questions of how the boundaries of rationality are drawn and on what basis. The heterogeneous nature of the positions adopted on this issue within the technical community prevent the naturalisation of radiophobic discourses as the product of ‘science’, opening the possibility of asking how this discourse has been stabilised in the Japanese political context.

## 4.2. Radiophobia in the Context of Reconstruction (*Fukkō*)

In the discourse of Reconstruction, one finds a vision of a desirable future, made possible by and supportive of, advances in science and technology. As addressed in Chapter Three, this vision of the future has never been particularly vivid. Samuels (2013) rightly observes that for all the rhetoric of crisis as a catalyst for ‘rebirth’ and ‘renewal’, Reconstruction emerged as the dominant discourse in Japanese politics precisely because there was no agreement on how the nation could or should change. Japan can be said to have defaulted to an idea of building back better, Samuels (2013) argues – striving for a return to an (improved) status quo. This is nonetheless an imagination of the future with some specificity. For one, it is a resolutely national imaginary, premised on the idea of a virtuous relationship between the Reconstruction of Fukushima prefecture and the renewal of Japanese society. As the Reconstruction Design Council made clear in its 25 June 2011 report to the Prime Minister, the

project of Reconstruction is to be pursued on the premise that ‘Japan’s economy cannot be restored unless the disaster areas are rebuilt’; while ‘[t]he disaster areas cannot be truly rebuilt unless Japan’s economy is restored’. The goals of ‘reconstruct[ing]... the afflicted areas’ and ‘revitalis[ing]... the nation’ are therefore to be pursued in tandem.

From the opening hours of the crisis, Japan’s academic institutions were animated by the understanding that any hope of recovery would rest on their efforts. The Science Council of Japan (SCJ), for example, responded to the disaster by establishing the *Great East Japan Task Force* on 23 March 2011, following an emergency meeting in which it was agreed that the ‘SCJ would be responsible for providing society with methods of utilising science and technology to create a new Japanese society that can be succeeded to by the next generation without any worries’ (SCJ 2012:21). Central to this mission was a duty to ‘provide advice and co-operate in all efforts made in the restoration/reconstruction from the Great East Japan Earthquake’ (ibid.:21). This vision of the SCJ’s role as one that involves seeing-for-the-state has outlived the Task Force itself. When the 22<sup>nd</sup> Term of the SCJ began in October 2011, one of the first committees to be formed was a successor body: the *Committee on Supporting Reconstruction after the Great East Japan Earthquake*. Note that Reconstruction is now featured in the organisation’s title – an increase in prominence that can be interpreted as both reflective (and supportive) of its position as the hegemonic discourse by late 2011.

Seeing their own interventions as part of a national response, academic institutions’ efforts to support and secure Japan’s future have inevitably been entangled in their imaginations of the nation’s past and their place in it. The Executive Committee of the SCJ’s 18 March 2011 statement on the ‘Disaster in Northeast Japan and Nuclear Energy’ positioned their organisation as the principal academic agent of a nation that had failed to learn ‘the bitter lessons of the Great Hanshin-Awaji Earthquake of sixteen years ago’ (SCJ 2011a:1). It promised to act with the ‘strong intention’ needed to secure recovery; yet also felt moved to ‘humbly admit ... fragility of the current socio-economic systems of Japan, which became obvious by the present disaster’ ([sic] ibid.:1-2). Tacit in this admission of national failing is a deeper admission of the SCJ’s own culpability ‘as the unifying body of academies in Japan’ (ibid.:2). The resolve of the SCJ to prove equal to the present crisis can thus be read as rooted in an imagined history of malaise, ‘lost decades’ and squandered opportunity.

The historical canvas on which Hiroshima University plots its response to the Fukushima disaster is understandably different. Reading 3.11, not in relation to the (natural) events of 1995, but those wrought by the hands of men in 1945, the university mobilises its resources as a ‘national hub for radiation emergency medicine’ built in a city (and country) with a unique experience of recovering from nuclear catastrophe (Hiroshima University, unknown). As the crisis unfolded, Hiroshima University was quick to lend its expertise, sending some 1,300-medical staff to the stricken prefecture to support the relief effort. Yet even as its staff grappled with the current crisis, the university turned its attention to training a new generation of experts, equipped with the skills to support recovery from radiological disasters. It is with this vision that the university established its *Phoenix Leader Program for Renaissance from Radiation Disaster* with the Support of the MEXT, as part of its Leading Graduate Schools programme. A ubiquitous symbol of rebirth, the phoenix alludes both to Fukushima and the university itself. Formed by amalgamating three universities which had been devastated by the dropping of the atomic bomb on 6 August 1945, Hiroshima University adopted a stylised representation of a phoenix tree leaf as its crest in 1956 and planted six specimens of the evergreen species by the gates of its campus as a symbol of renewal. In establishing the programme, the university sought to make an institution rebuilt following one nuclear disaster a space in which

experts equipped to tackle another could be trained. Of course, the sense in which Hiroshima's past serves as a resource for securing Fukushima's future is more than just symbolic. As the University President, Mitsuo Ochi notes, in 'contributing to the recovery of Hiroshima after the atomic bombing' the university 'accumulated the results of research on the impact of radiation on human health and radiation medicine, as well as the results of social scientific research on disaster recovery'; making Hiroshima university a 'national hub for radiation emergency medicine in case of a radiation disaster' (in Hiroshima University, unknown). It is 'on the basis of our experiences and achievements at Hiroshima University in supporting recovery from the atomic bomb' that the Phoenix Leader programme 'establishes 'Radiation Disaster Recovery Studies' as an interdisciplinary and practical academic field' (Hiroshima University 2017).<sup>46</sup>

Although different institutions have mobilised different national histories in their responses to the Fukushima Daiichi disaster, they remain oriented toward a common vision. Efforts to create knowledge about the radiological situation are systematically made in the context of efforts to create knowledge about how to repair Fukushima and Japan's social, economic, and ecological fabric. The *Great East Japan Task Force's* 'Subcommittee on influence on health and protection against radioactivity' worked alongside the 'Subcommittee on Grand Reconstruction Design for the Disaster-Stricken Areas' and the 'Subcommittee on Options with Energy Policies' to produce recommendations on behalf of SCJ. Its successor, the 'Reconstruction Design Council', similarly placed the 'Subcommittee on Counter-Measures for Radiation' in conversation with the 'Sub-Committee on the Promotion of Industry and Employment' and 'Sub-committee on Building Disaster-Resilient Communities'. Doctoral students in Hiroshima University's newly-christened field of 'Radiation Disaster Recovery Studies' are trained with a focus on medicine, ecology, or sociology. All are trained to understand that both the 'proper diagnosis and treatment of pathological conditions affected by radiation' and 'alleviating social anxieties generated by radiation disasters and harmful rumors or misinformation' are essential to 'the reconstruction of communities for affected people' (Hiroshima University 2017:3). Efforts to know how to intervene in the arena of public health are made in service of efforts to secure the prosperity of the region and the nation.

#### 4.2.1. *Fukushima Health Management Survey*

Perhaps the entanglement of efforts to know the radiological situation with visions of Fukushima's future is most clear in the work of Fukushima Medical University (FMU). As one of the central nodes of healthcare provision in Fukushima, FMU announced in the wake of the disaster that it was resolved to 'contribute to the recovery of the community [and] to provide the people in Fukushima with a sense of safety and security' (FMU 2011:2). It is to FMU that Fukushima Prefecture officially entrusted the task of coming to know the effects that radiation (and the fear of it) were having on public health. To fulfil this responsibility, the university established the Fukushima Global Medical Science Centre (FGMSC), with an estimated budget of ¥30 billion (\$268.5 million) to build four new wards, housing five departments and centres. Though each entity has its own distinct role and responsibilities, the realisation of Reconstruction is clearly articulated as their common enterprise. The banner to the FGMSC website's homepage reads 'build back better'; while the report, in which FMU outlines its 'basic concept' for the centre, stresses that 'forg[ing] bonds with all those who are working with us and contibut[ing] as a medical institution to the recovery of Fukushima and to the creation of a revitalised, brighter prefecture' is its founding principle. Diagrammatic descriptions of how each

<sup>46</sup> Website, 19 December 2017.

department is to be organised, which compose the bulk of the report, further relate Reconstruction as the centre's animus, placing the 'prefectural recovery plan' as the point from which all functions – research or otherwise – flow. The University's efforts to know the disaster are underwritten by visions of recovering from it, even as its (promised) fruits underwrite the credibility of this imagined future.

The centre-piece of the FGMSC's efforts to know the effects of the nuclear disaster is the Fukushima Health Management Survey; a name tellingly suggestive of its biopolitical purpose (Foucault 1998, 2003). Here, signs of life are to be quantified so as 'to ensure, sustain, and multiply life, to put this life in order' (Foucault 1998:138), imbuing the goal of *revitalising* Fukushima with a literal quality. Through a battery of five surveys, the Radiation Medical Science Centre (RMSC) aims to: estimate the external radiation exposure of the 2.05 million residents and visitors to Fukushima prefecture at the time of the disaster, so as to predict the likely incidence of disease ('Basic Survey'); monitor, on an ongoing basis, the physical and mental wellbeing of all 210,000 former residents of the evacuated areas ('Comprehensive Health Check' and 'Mental Health and Lifestyle Survey'); and trace, in more granular detail, the health of two high-risk groups: the 360,000 resident children (defined as any person under the age of 18) of Fukushima Prefecture and 16,000 women who were pregnant at the time of the disaster ('Thyroid Ultrasound Examination' and 'Pregnancy and Birth Survey', respectively). Taken together, these surveys produce the health of Fukushima as an object to be managed; thereby producing 'population as a political problem, as a problem that is at once scientific and political, as a biological problem and as power's problem' (Foucault 2003:245). Read thus, the RMSC's declared 'responsibility' to 'protect the health of *all people* in Fukushima' can be understood, not as the protection of each person in Fukushima as an individual, but the population as an aggregate ([emphasis added] FMU 2011).

It is in constituting the population as a 'new... multiple body' that radiophobia is produced as a political problem (Foucault 2003:245). In its efforts to 'make live' the population, FMU does not pledge itself to protecting the populace from radiation, or any other threat a priori (ibid.:247). Rather, it commits itself to intervening at the 'level of generality', so as to optimise mortality, life expectancy, and other indicators of public health (ibid.:246). At this level of abstraction, the Fukushima Health Management Survey reports the radiological exposure of the population to be a minor issue. Inhabitants are understood to have been exposed to 'very low' doses and 'no discernable... evidence of radiation-related health effects' have been either detected or predicted (Kumagai and Tanigawa 2018:31; see also: Ohto et al. 2015). By contrast, the psychosocial effects of the disaster are severe. To live through a nuclear event is to contend with an unfamiliar risk: odorless and invisible. The results of the Mental Health and Lifestyle Survey indicate that as many as 21.6% of evacuees were suffering from Post-Traumatic Stress Disorder (PTSD) 10 months after the accident – a figure comparable to the rate of PTSD suffered by first-responders to the September 11 attacks (Maeda and Oe 2017; Ropeik 2016:314). In the most extreme cases, poor mental health has led to a direct loss of life. To date, more than 80 cases of suicide have been officially certified as related to the disaster (Maeda and Oe 2017). Moreover, evacuees face issues of separation from their homes, community, and employment. This disruption to their lives is associated with other effects on population health, such as a rising incidence of overweight and obese people. This trend – especially pronounced in male evacuees – has engendered concerns regarding the long-term cardiovascular health of the evacuees (Kumagai and Tanigawa 2017). Here, radiophobia emerges as a dual problem; posing both a direct threat to public health and serving as an obstacle to the return of evacuees to Fukushima, in a context in which the social disruption of evacuation is framed as a health risk.

FMU has thus constructed the vitality of Fukushima as an object that can be managed, not only through the provision of healthcare, but also through the re-organisation of the population. FMU's Office of International Cooperation (OIC), for example, describes its 'main mandate' as 'work[ing] with partners around the world to raise awareness of the present-day safety of Fukushima Prefecture, as confirmed in the Fukushima Health Management Survey'; going on to note that the OIC actively 'promotes the return of evacuated and affected populations,' on the understanding that doing so promotes the health of the population. The RMSC similarly notes that it is committed to 'establish[ing] an interdisciplinary health risk communication model' and 'promoting sustainable health management projects' in the name of securing the prefectural future.

### 4.3. Ordering Fear and Ordering Society

In this discursive regime, the dominant imagination of the expert's role is one of 'correcting' public deficits in understanding, so as to encourage them to engage in patterns of behavior that will promote their interests as a population, if not necessarily as individuals. This role is best captured by the widely circulated notion that there is a 'correct' way to fear radiation, which experts can determine, and lay people can cultivate. Calls for citizens to learn how to 'fear correctly' (*tadashiku osoreru*) have been a consistent feature of media coverage, appearing in a column in *News Week Japan* as early as 5 April 2011 (Ikegami 2011). By the summer of 2011, it had gained additional salience, being adopted by science communicators. On 1 July 2011, the SCJ held an emergency meeting on the 'appropriate fear of radiation' (SCJ 2012:58). In the same month, Shunichi Yamashita published a paperback book titled 'Fearing Correctly – Talking About Radiation',<sup>47</sup> which promised to answer 100 doubts about radiation in a Q&A format. The origin of the phrase is an aphorism, excerpted from an essay by the Meiji-era physicist, author, and cultural figure, Teruda Tarahiko.<sup>48</sup> 'It is easy to be too unconcerned or too concerned, but to have a reasonable degree of concern is difficult.' There are, however, a series of corruptions in its contemporary usage. 'Concern' (*kodawaru*) has been substituted by 'fear' (*osoreru*); notions of a 'reasonable' or 'justifiable' response displaced by the idea of a 'correct' one. The phrase has also been contracted. Where Teruda mused on the *difficulty* of managing one's concerns, contemporary discourse emphasises the *necessity* of doing so.

Given that the notion of fearing correctly takes the population as its problem, it is perhaps unsurprising that it is couched in the rhetoric of statistical proportionality. Central to efforts to educate the public is the logic of comparison. In his speech on 20 March 2011, for example, Yamashita pointed out to his audience that many of them choose to engage in habits far more detrimental to their health than staying in the affected territories. 'You smoke, you drink, and worry about radiation? This is wrong' (Yamashita 2011). It has been objected that these risks are not commensurate; the risks associated with recreational activities being chosen, while environmental risks are imposed. Comparisons are, however, also frequently made between environmental factors. Great emphasis is placed on the fact that radiation is naturally occurring and routinely accepted in other arenas of daily life. It is noted that there is little difference between areas of Fukushima where evacuation orders have been lifted and regions of the country with naturally high levels of background radiation. Mean

<sup>47</sup> Yamashita was generous enough to gift me a copy of the text at our interview, which he signed.

<sup>48</sup> Teruda was a student of Natsume Sōseki and is believed to be the model for the character of Kangetsu Mizushima in *I am a Cat*, which remains one of the most famous works in Japanese literature. Dramatised avatars of Teruda also feature in Hiroshi Aratama's (1985) award-winning novel, *Teito Monogatari*, and Makino Nozomi's (1987) award-winning play, *Fuyuhiko and the Good Luck Cat*.

external doses of people in Minamisoma (0.820 mSv/year), for example, are comparable to exposure in Fukuyama (0.793mSv/year) and Nanto (0.806mSv/year) (Tsubokura et al. 2018). Implicit in these comparisons is the position that there is no ‘nuclearity’ to the radiological situation in Fukushima. Coined by Hecht (2012) ‘nuclearity’ connotes the quality of something being distinctly ‘nuclear’ or not. Hecht uses the term to describe how nuclear technologies oscillate between the sublime and the mundane. Nuclear reactors, for example, are alternatively god-like furnaces or glorified kettles. To fear radiation correctly is to accept that there is nothing distinctly ‘nuclear’ about the materials that hemorrhaged from Fukushima Daiichi.

This imagined role of the expert is encapsulated in ‘Nasubi asks questions’ (*Nasubi no gimon*), a series of short videos and comics (*manga*) produced by the Ministry of Environment (MoE) (see: fig.4.1). At the centre of this multi-media series is Tomoaki Hamatsu, a comedian and TV personality born in Fukushima, who is better known as ‘Aubergine’ (*nasubi*): a stage name chosen because Hamatsu’s (30cm long) face is said to resemble the vegetable. Each comic strip follows a broadly similar narrative structure. Acting as an audience surrogate, Nasubi expresses concerns about a topic related to radiation exposure, such as the effects of radiation on human health (MoE 2017a) or the safety of Fukushima food produce (MoE2017b). He proceeds to discuss the topic with academic experts and/or knowledgeable practitioners in cartoon avatar, who – by presenting him with a series of tables and graphs – is able to allay his fears. If this narrative reflects the MoE’s imagination of the public debate, the format and content also provide insight into the imagined shortcoming of existing risk communication efforts. In short, they are not seen as simple enough. Nasubi begins many of the stories, not just filled with anxiety, but facing difficulty in understanding existing resources on the issue. It is only in breaking the complex issue down into simple statements and easily legible visuals (as the MoE has done in producing the comic) that the expert is able to help Nasubi to ‘feel safe’ (*anshin*). It is worth noting that while Japanese *manga* do not share the connotations of childishness that Western cartoons are stigmatised with, the visual style employed here is notably naïve; more reminiscent of children’s fare (*kodomomuke*) than the styles typically employed in series aimed at young adults (*seinen manga* being aimed at men of 18 – 40 and *josei manga* being aimed at women of the same age), or even adolescents (*shōnen* and *shōjo* being aimed at boys and girls of 12 – 18, respectively). The problem of combatting public fears is thus understood as being hinged on communicating clearly enough.

Figure 4.1. Pages from ‘Nasubi asks questions’



Source: Ministry of Environment (2017b)

NB. As the comic has been drawn in Japanese then translated, it is read from right to left.

#### 4.4. The Fortuitous Obstacle

If radiophobia is as an obstacle to Reconstruction, it nonetheless offers the possibility to address challenges to Fukushima prefecture's long-term prosperity. This claim is of course a macrocosm of the claim that the tragedy of 3.11 is also an opportunity, for both Japan and Fukushima – an assertion made from the earliest days of the disaster. Among those who espoused this position was Yamashita, who suggested to the people of Fukushima that the media attention, and association with nuclear issues, was its own opportunity.

The name Fukushima is about to become known throughout the world. Fukushima, Fukushima, Fukushima, everything Fukushima. This is incredible. Hiroshima and Nagasaki have already lost. The name 'Fukushima' will hold a resonance unchallenged throughout the world (*sekai ni kantaru hibiki*). A crisis is a chance. The biggest chance. Without doing anything, Fukushima, you've become famous. There is no move that does not make use of this. Use for what? Reconstruction. (Yamashita 2011a)

To understand this suggestion that the disaster might prove fortuitous for the stricken prefecture, we must remind ourselves of the demographic plight faced by swathes of Japan. As noted in Chapter Three, Japan is a 'super ageing' nation, but is not ageing uniformly (Muramatsu and Akiyama 2011). The documented tendency of the young to move to urban centres for higher education, and subsequent employment, has produced an uneven geography of ageing – Japan's rural areas maturing more rapidly than its metropolises (Murakami, Gilroy and Atterton 2009). Better known for its peaches and cucumbers than its universities, Fukushima Prefecture is neither a centre of learning nor a hub of industry, and has been acutely affected by this dynamic. Tohoku University, in neighboring Miyagi Prefecture, is both nationally and globally ranked,<sup>49</sup> but no institution in Fukushima achieved a listing on the Times Higher Education (THE) or Shanghai Rankings prior to 2017, when THE began to offer a dedicated list of Japanese universities. (Even then, the prefecture's most competitive institute of higher learning, Fukushima University, has not proven able to consistently make the list of Japan's top 100 universities.) This lack of notable higher education opportunities, combined with employment opportunities deemed 'average' by the Japan External Trade Organisation (2018), pose a difficulty for the prefecture in its efforts to attract and retain young talent.

As with many of the other comments made by Yamashita on 20 March 2011, his optimistic presentation of the crisis as an opportunity drew the ire of innumerable critics, who advocated his removal from all positions of responsibility. Yet, in focusing on the man, rather than the vision, this line of criticism has remained blind to the extent to which both the prefecture and the Japanese state have aligned themselves to his imagination of crisis. I noted earlier that the RMSC's homepage bears a banner with the words, 'build back better'. What was not mentioned was the sub-heading: 'from the

<sup>49</sup> In the 2010-2011 academic year, Tohoku university was the fifth most highly ranked university in Japan, according to both the Times Higher Education and Shanghai Rankings. The former placed the university 132<sup>nd</sup> in its global ranking, while the latter placed it in its 101-150<sup>th</sup> range.

world to Fukushima, from Fukushima to the world’(fig. 4.2).<sup>50</sup> Or the accompanying image: a map of the globe, Japan placed in the centre-ground and alone rendered in block color, superimposed over an aerial photograph of the campus. The confidence embodied in this geopolitical image is not without grounds. In establishing the RMSC, the university forged connections to the National Institute of Radiological Science (NIRS) and Hiroshima University, who have both been enrolled as collaborators in the work of the Advanced Clinical Research Centre. A year later, the establishment of the OIC allowed FMU to play a growing role in staging workshops with international partners, such as the IAEA, International Commission on Radiological Protection (ICRP) (for more details, see: Chapter Six), and World Health Organisation (WHO), as well as participating in multinational research projects, such as the European Commission-funded SHAMISEN project. FMU may not be speaking to ‘the world’ per se, (most Japanese citizens – let alone Brits, Indians, or Singaporeans – are probably unaware of its existence,) but it is certainly in conversation with eminent global institutions.

**Figure 4.2.** Banner image of the FGMSC homepage



Source: FGMSC website

The vision of the university is not just to secure eminence in one domain, but to leverage its reputation in service of Reconstruction. By its own account, the founding mission of the FGMSC is not just to provide healthcare (‘1. Attend to the people, protect their health, and provide a long-term sense of safety and security’) or to contribute to global understandings of radiological emergencies (‘3. Contribute to Japan and to the world through expertise and lessons learned from the recovery of Fukushima’); it is also to ‘rebuild and revitalise the community by creating new jobs through development and promotion of the medical industry’ (FMU 2011:2). The training and recruitment of experts is thus revealed to be both means and end. Medical experts are a resource necessary to fulfilling the centre’s goals of ‘provid[ing] the most advanced medical service to the public’ and ‘conduct[ing] research on advanced medical treatment (ibid.:7), and it is clear that FMU hopes to draw people to Fukushima by achieving excellence in these domains. (Note that among the ‘goals’ that FMU lists for the FGMSC is ‘attracting more people from all over Japan who seek advanced, better healthcare’ (ibid.:2)). Yet, it is no less clear that establishing a ‘system to secure talents both

<sup>50</sup> It is difficult not to draw comparisons with a contemporaneous advertising campaign launched by the home of the one of the world’s oldest and most eminent universities: ‘Dear world... Yours, Cambridge’. Though it should be noted that the latter is more light-hearted in tone, having produced gems such as ‘Dear World, I’ve had an idea for a diagram. Think you might like it / love it / both. Yours, John Venn.’

inside and outside Japan' is itself a strategic goal of the FGMSC, understood to advance Reconstruction in and of itself. Fittingly, the Department of Training and Human Resource Development is placed in the centre of the organisational diagram prepared by FMU as part of the 'basic concept' for the FGMSC (fig. 4.3) – the only department on which all others depend and the sole department which can advance the project of Reconstruction independent of any other.

In this light, the promise to 'build back better' is not just a rhetorical flourish. It is an acknowledgement that even if all evacuees were to return to Fukushima and aversions to Fukushima produce were ameliorated, the future of the prefecture would be far from secure. As the confused response to the Great East Japan Earthquake and Tsunami showed, there is a need to build communities more resilient than those that preceded them; capable of weathering the extreme events to which the region could once again be exposed (Reconstruction Design Council 2011:9–11, 27–28, 32–37). No less importantly, a degree of reinvention is necessary if the prefecture's slow demographic decline is to be reversed. It is in acknowledgement of this fact that the Reconstruction Design Council wrote of 'pursuing forms of recovery and reconstruction that tap into the region's latent strengths and lead to technological innovation', as one of the guiding principles of Reconstruction (Reconstruction Design Council 2011:2). FMU's work offers a concrete means of fulfilling this otherwise hazy vision. The execution of the Fukushima Medical Survey and provision of specialist healthcare has drawn to the city a sizeable nucleus of experts, around which the prefecture has sought to grow a 'Medical Industry Cluster'. Through the work of the Medical-Industrial Translation Centre, the FGMSC hopes to 'link the industrial community with the medical community' in Fukushima; thereby 'supporting the development of new medicines, diagnostic agents, test reagents, medical devices, etc.' And in so doing also 'creat[ing] new industries and jobs and attract[ing] industries' to the prefecture (FMU 2011:6).

#### 4.5. Conclusion

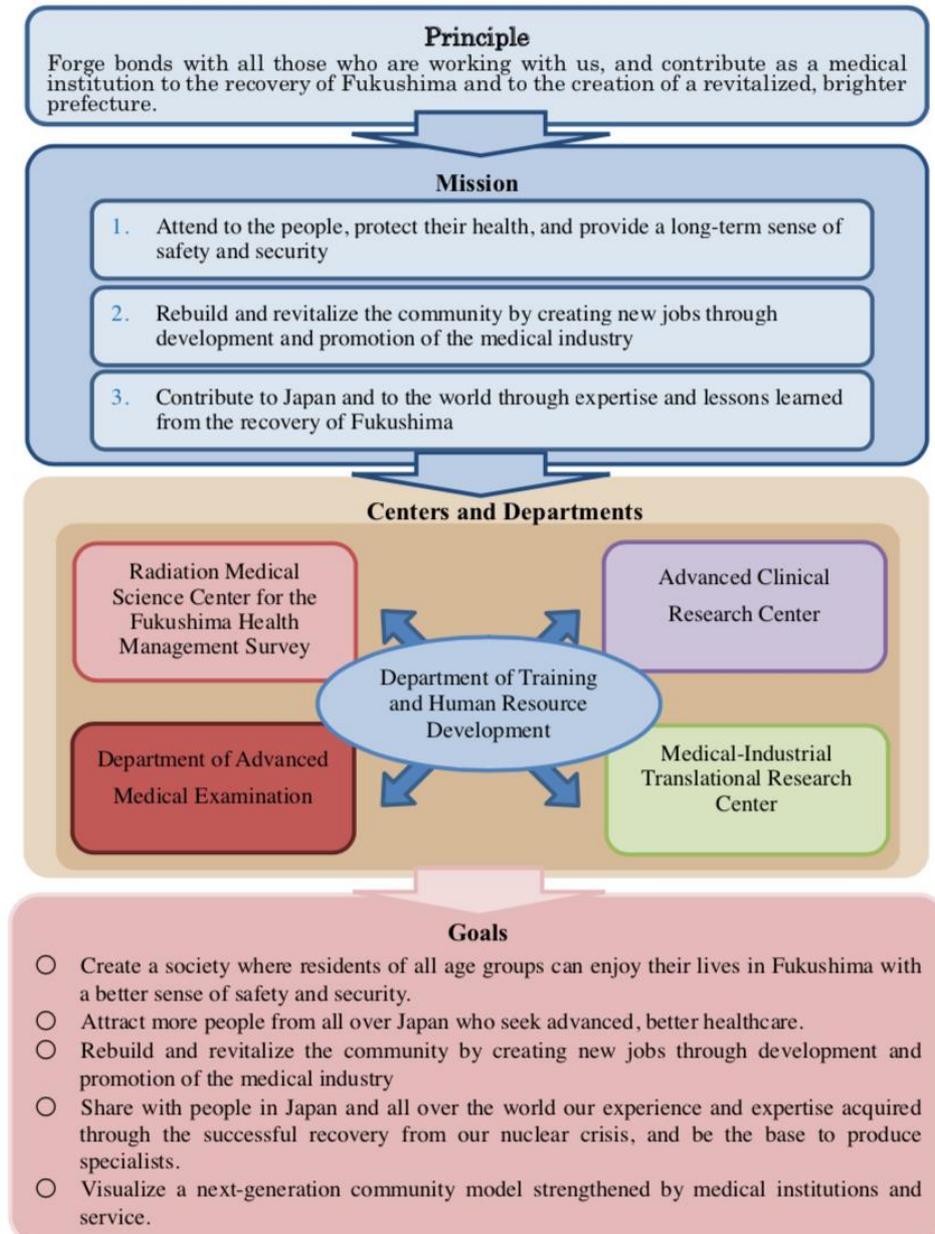
The relationship between radiophobia and Reconstruction is paradoxical, and experts are positioned at the centre of this tension. The fear of radiation is an obstacle to Reconstruction, insofar as it affects the viability of a return to the *status quo ante*. Fukushima cannot be rebuilt if its dispossessed population does not return, and its dispossessed cannot return to the agricultural regions they evacuated if there is no market for Fukushima produce. Thus, radiophobia is an impediment, for experts to analyse and ameliorate, by correcting public fears. Yet, it is the very intractability of this issue which justifies the continued training and recruitment of experts to Fukushima. This nucleus of experts has provided a declining, historically agricultural region with a claim to world-leading expertise in the field of radiological protection and provides a resource with which to build links to the medical industry. In so doing, it has made credible the promise to 'build back better'. Thus, an apparent obstacle to the future promised by Reconstruction nonetheless serves to justify interventions which further its realisation.

Figure 4.3. Organisational diagram of FGMSC

## 1. Principles of Fukushima Global Medical Science Center

We will contribute to the recovery of the community through five centers and departments to provide the people in Fukushima with a sense of safety and security.

- (1) Radiation Medical Science Center for the Fukushima Health Management Survey
- (2) Advanced Clinical Research Center
- (3) Department of Advanced Medical Examination
- (4) Medical-Industrial Translational Research Center
- (5) Department of Training and Human Resource Development



Source: FMU 2012

## Chapter Five

### Staging authority at an OECD Nuclear Energy Agency<sup>51</sup> workshop in Fukushima

---

The water that passed Sonoda Yasuhiro's lips on 31 October 2011 was not meant for human consumption. Taken from the floors of the Fukushima Daiichi nuclear power plant, this puddle-water had been decontaminated for uses such as watering plants, so as to prevent forest fires. How then, had a member of the Japanese House of Representatives come to decant it into a drinking glass? Our story begins days earlier, at another press conference. Addressing the assembled reporters in his capacity as a spokesperson for the Cabinet Office, Sonoda had struggled to dispel concerns regarding the decontamination process' efficacy. Having insisted that the liquid was 'safe enough to put in your mouth', Sonoda was swiftly challenged to put it in *his* mouth, leaving him little choice but to imbibe. 'If that's the best way to prove that the water is safe,' he replied, 'then I would gladly drink it right here, in front of you, any time.' Raising the glass with a concerned gaze and trembling hand, the politician paused – aware, perhaps, that this would become an 'iconic image', shared by news outlets across the globe<sup>52</sup> as a pivotal episode in the 'battle to convince a sceptical world that the Fukushima crisis is under control' (McNeill 2011). With hopes of inspiring confidence in the Cabinet Office's assurances, he threw back his head and drank.

Sonoda insisted that he did not want his actions 'to be seen as some kind of performance' and noted that 'just drinking [the water] doesn't in itself mean safety is confirmed' (in McCurry 2011). The 'best way' to do that is 'to present data to the public,' he insisted (*ibid.*). Yet, his decision to stage this event, under the strobe light cast by the cameras of the press, speaks to the dramaturgy of epistemic controversies. As scholarship in the field of Science and Technology Studies (STS) has emphasised, authority is not a right, automatically granted to those who demand or deserve it. To have their claims accepted as authoritative, those who engage in public debate do more than just 'present [their] data'; they carefully craft personas that convey virtues such as credibility, competence, and integrity (Hilgartner 2000). Many of the practices through which they do so are prosaic. Sonoda's action reminds us, however, that actors also adopt gestures that are less routine: underscoring both the lengths to which those engaged in epistemic contests will go to defend their credibility and the need to deviate from, or embellish, standardised performances to meet the changing demands of the political situation.

<sup>51</sup> Organisation for Economic Co-operation and Development-Nuclear Energy Agency (OECD-NEA).

<sup>52</sup> UK media outlets who reported the story include: the BBC (2011), The Guardian (McCurry 2011), The Telegraph (Demetriou 2011), The Independent (McNeill 2011), and The Daily Mail (Gardener 2011), with many drawing a comparison between Sonoda and John Gummer: the British Minister of Agriculture who ate hamburgers with his four-year-old daughter, Cordelia in 1990, at the time of the BSE scandal (cf. Demetriou 2011, Gardener 2011, McCurry 2011, McNeill 2011).

This paper examines how claims to expert authority are improvised in conditions of low public trust. To this end, it offers an ethnographic account of the OECD-NEA's *Workshop on Post-Accident Food Safety Science*, held in Fukushima from 8 to 10 November 2016, at the request of the Japanese Cabinet Office. It is not intended as an exposé. Far from attempting to reveal what “really” goes on behind the scenes, this article concerns itself with an object of analysis that is, by nature and necessity, a public affair: the *persona* of the NEA workshop. Following Hilgartner (2000), I seek to draw attention to the importance of crafting a credible persona to the exercise of authority; working from the premise that our willingness to accept advice is influenced by our perception of its source. The purpose of this ethnography of experts at work is to document the micro-social processes through which this persona is constructed and maintained. Where Hilgartner used the rubric of institutional ‘scripts’ to foreground the consistency of these processes, I mobilise the idiom of ‘improvisation’, coined in Political Geography (Jeffrey 2013), to draw attention to their contingency. In so doing, I emphasise the ‘performed resourcefulness’ of science advisors, who imbue their actions with credibility, not simply by enacting standardised scripts, but by drawing on a heterogeneous range of symbolic resources to craft a persona that meets the demands of the specific political contexts.

This chapter proceeds in five parts. In Section One (‘Fearing Food from Fukushima’), I provide contextual detail on Japan’s food safety policy, before going on to review the concepts of dramaturgical performance and improvisation as they pertain to expert authority (Section Two: ‘Dramaturgical Performance and Improvisation’) and providing details of the chapter’s empirical corpus (Section Three: ‘Methods’). In Section Four (‘The Workshop’s Architecture of Authority’), I adapt Hilgartner’s (2000) analysis of how the National Academy of Sciences (NAS) stages its reports to identify ‘the script’ of an OECD-NEA workshop. In so doing, I demonstrate that many of the micro-social processes through which the credibility of scientific advice is established on paper can be understood as common to the ‘live’ performance of authority at a workshop. However, in a context of public distrust, the routinized enactment of the NEA’s institutional script is not, I suggest, sufficient to establish the workshop’s credibility. Thus, in Section Five (‘An Improvised Workshop’), I elucidate how the workshop’s organisers sought to augment its credibility by improvising heterodox performative gestures, tailored to the political context of post-Fukushima Japan.

## 5.1. Fearing Food from Fukushima

Following the 2011 Fukushima Daiichi nuclear power plant disaster, food safety standards have become a point of political contention, inseparable from efforts to rebuild the stricken prefecture (*fukkō*). The Tohoku region has long served as a national granary, helping to meet Japan’s demand for grain, fish, fruit and vegetables, as well as hosting numerous nuclear facilities (Hopson 2013). At the time of the disaster, Fukushima alone provided 20.6% of the peaches and 8.7% of the cucumbers consumed nationally, as well as substantial quantities of Japan’s staple crop, rice (Schreiber 2017). Given the heavily agricultural economy of the affected territories, the need to establish food safety standards which inspire consumer confidence has been widely recognised as vital for the rejuvenation of the prefecture.

At the time of the 2011 Fukushima Daiichi nuclear power plant disaster, however, Japan had no legally binding threshold for radiological contamination in food taken to market. The closest the nation had was a general statement of principle in The Food Sanitation Law, which ‘prohibits the sale, use, or supply of foods that are poisonous or harmful for human consumption’ (Umeda 2012). But the

need for a more specific, actionable threshold quickly became clear, amid reports of elevated levels of contaminants in spinach and milk produced in the plant’s vicinity (ibid.). On 17 March 2011, the Department of Food Safety (Ministry of Health, Labour and Welfare (MHLW)) adopted the ‘Indices relating to limits on food and drink ingestion’, published by the Nuclear Safety Commission (NSC) of Japan. This established thresholds for contamination in drinking water (200Bq/kg), milk and other dairy products (200Bq/kg), vegetables (500Bq/kg), grains (500Bq/kg), and ‘meat, fish, eggs, etc.’ (500Bq/kg). Building on a series of assumptions about the average Japanese citizen’s diet, as well as a commonly held position that the health effects of radiation exposure are proportional to doses<sup>53</sup>, the provisional thresholds were designed to ensure that citizens would be exposed to an additional dose of radiation no greater than 5mSv/year. However, many consumers fastidiously avoided foodstuffs from Fukushima, despite them passing these provisional thresholds (Sternsdorff-Cisterna 2015). Thus, the provisional thresholds were superseded by new ones, agreed through the Food Safety Commission in April 2012. These new thresholds were notably stricter and sought to lower exposure through ingestion to just 1mSv/year by limiting the concentration of contaminants to: 10Bq/kg in drinking water, 50Bq/kg in milk, and 100Bq/kg in ‘general foods’, such as meat, vegetables and eggs. Although direct comparison to other frameworks is complicated by the use of different categories (cf. Table 5.1, Table 5.2) and assumptions about the quantities of affected foods that will be consumed, these thresholds can be considered conservative by international standards.

**Table 5.1.** Japanese radiological criteria

Provisional criteria for radioactive caesium  
(17 March 2011)

Category	Regulation Value (Bq/kg)
Drinking water	200
Milk, dairy products	
Vegetables	500
Grains	
Meat, eggs, fish, etc.	

Values entered into force  
(April 2012)

Category	Regulation Value (Bq/kg)
Drinking water	10
Milk	50
General Foods	100
Infant Food	50

**Table 5.2.** International radiological criteria

Codex Alimentarius criteria

Category	Regulation Value (Bq/kg)
Food (except infant food products)	200
Infant food products	500

EU

Category	Regulation Value (Bq/kg)
Drinking water	1000
Dairy products	1000
Infant food products	400
Other food products	1250

Source: adapted from (Monma et al. 2015:223)

<sup>53</sup> Linear Non-Threshold Model (LNT)

Yet widespread aversion to Fukushima produce persists. As Nicolas Sternsdorff-Cisterna (2015:456) reminds us, ‘food safety is both a question of science and of affective networks of trust. Food must be safe (*anzen*) and feel safe (*anshin*)’ (see, also: Fassert and Hasegawa 2019). A confused emergency response and evidence of a culture of cosy collusion between government, regulators, academics, journalists, and industry has made it difficult for political authorities and experts alike to inspire this ‘feeling of safety’ (Kingston 2012. See also: Kitazawa et al. 2012; NAIIC 2012). Quantitative studies report a sharp decline in the public’s faith in the institutions of government, media, and industry (Edelman 2012; Genron 2019), while qualitative analyses indicate that the imagination of nuclear experts as part of a self-interested ‘nuclear village’ (*genshiryoku mura*), whose members share a vested interest in promoting nuclear power, has been elevated from a fringe activists’ discourse to a mainstream political rubric (Samuels 2013). Those who advise on food safety policy today do so aware of the suspicion they face; many of them having walked home past the Friday night protests staged outside the Prime Minister’s Office by the *Metropolitan Coalition Against Nukes*: the largest demonstrations Japan has seen since the 1960s (Oguma 2016). The *Workshop on Post-Accident Food Safety Science* serves as a case study in how the Japanese Cabinet Office and the OECD-NEA have responded to sought to craft a credible persona in the face of these conditions.

## 5.2. Dramaturgical Performance and Improvisation

The dramaturgical metaphor, famously coined by Erving Goffman ([1969] 1990), offers a robust conceptual lens through which to examine the microsocial practices that experts employ in crafting credible ‘personas’ (see also: Turner 1988). For Goffman, unlike his notable predecessor, Kenneth Burke (1969, [1941] 1974), life is not drama as such. Where Burke’s dramatism follows the Bard in positing that ‘All the world’s a stage, And all the men and women merely players’ – thereby suggesting that in life, as in theatre, the exorcism of guilt is a prime animus of action – the lineage of dramaturgical sociology established by Goffman is rooted firmly in the Hughesian ethnographic tradition (Branaman 2013). Life’s similitude to theatre is foregrounded, not to make assertions regarding the nature of being, but to invite the ethnographer to examine how actors present themselves in their daily interactions, much as a theatre critic might dissect the techniques that thespians use to embody particular characters. An observer at the OECD-NEA workshop might accordingly note that among the practices of ‘impression management’ used to embody the role of the international expert are the adoption of a formal register, a tendency toward polite collegiality, and a uniformity of costume: most donning a single-breasted suit cut from conservatively-coloured cloth, worn over a spread-collared shirt of white or pale blue fabrics<sup>54</sup>. By suppressing obvious markers of their individuality, actors seek to embody the role of the expert bureaucrat, presenting themselves as representatives of their respective institutions.

Much of contemporary STS’ interest in Goffman (1990) can be credited to Hilgartner’s *Science on*

<sup>54</sup> They might additionally note that participants ties are plain or striped. Occasionally, they are patterned, but modestly so. He – for they are mostly male – wears little jewellery, save for his wedding ring. No tie-pins or cufflinks. The occasional lapel-pin. Participants adhered to this uniform with such consistency that I resorted to recording minute details (such as lapel shape or type of cloth) in my notes as memory aids. Subtle patterns in modes of self-presentation were noted with interest. For example, peaked lapels were notably more common among Japanese participants; while minor deviations from the unspoken dress-code (e.g., absence of a tie, bold colors) were more common among non-Japanese participants (e.g., Rob Theelan, Kins Leon).

*Stage* (2000), which generated considerable discussion in the pages of this journal (Campbell 2004; Eriksson 2004; Hilgartner 2004; Shrum 2004) following the award of the Rachel Carson Prize and an author-meets-critics session at 4S (Bijker 2002). Applying the dramaturgical metaphor, not to the activities of individual experts, but to the personas of scientific advisory bodies, Hilgartner sought to identify core elements of the United States NAS' 'institutional script' for staging authoritative scientific reports. These elements include: (a) the use of persuasive rhetoric (ibid.:45-48); (b) the establishment of a vouching network (ibid.:50); (c) the forging of a single voice (ibid.:51-52); and (d) the clear delineation of a visible 'frontstage', where conclusions are presented, from a secluded 'backstage', where much of the preparation and deliberation takes place (ibid.:52-85). As I go on to address in this chapter, Hilgartner's singular focus on NAS reports has led critics to question the representativeness of his conclusions, especially regarding the separation of 'front' and 'back' regions (Bijker 2002; Campbell 2004). Such critics rightly note that the NAS is unusual in requiring that committee members sign non-disclosure agreements and unique in exemptions from Freedom of Information Requests. Despite these particularities, I contend that each of the practices identified by Hilgartner can also be found (in some fashion) in the OECD-NEA's performance of authority at its workshops.

### 5.2.1. *Improvisation*

Focusing on strictly regimented NAS committees does, however, lead the contingent elements of many advisory bodies' credible personas to be overlooked. In *Science on Stage*, credibility contests unfold in a linear fashion, as reflected in the book's three-act structure. A committee stages a claim to authority in a report (ibid: 42-85), which comes under attack (ibid: 86-112), prompting the authors, and the scientific advisory body they represent, to mount a defense (ibid: 113-145). Where this 'team' of actors is able to maintain dramaturgical cooperation, and speak with a single voice, they succeed in repelling the attack (for discussion of dramaturgical teams, see: Goffman 1990:83-108). Where they do not, they fail. Good scientific advisors are diligent and co-operative in following the script, while effective critics are those who seek to achieve defeat-in-detail: concentrating their efforts on points of relative weakness (e.g. executive summaries, press statements), or otherwise turning the credibility of the cast against itself by identifying inconsistencies in their claims. The central stake in the epistemic contest is whether the committee succeeds in enacting to a routinized process, or their critics are able to divide and conquer, leading to deviation from said script. Though this narrative is seductive, its linearity surely owes much to the vaunted status of the NAS itself. By Hilgartner's own account, the organisation's 'prestige is unmatched by other advisory bodies in the United States', and its critics resort to the 'rhetorical jiu-jitsu' described precisely because few possess 'the cultural weight to strike a body blow' at this institution (ibid: 112). Thus, the drama rests on a stark asymmetry between the credibility of the science advisory body and its critics. NAS committees' staging of reports is so routinized, in part, because they have no reason to believe that – stumbles that critics can exploit excepted – their advice should not be heeded. But few organisations enjoy such authority. Many rightly suspect that their credibility may be questioned, even if dramaturgical cooperation can be maintained. Some are still young. Others may be recent subjects of scandal or be seen to have vested interests, as the Japanese Cabinet Office does in the arena of food safety. Still others may find themselves in a political situation characterized by the generalised distrust of experts, as all expert bodies in Japan have following Fukushima. Where NAS committees act aware that the failed staging of a report can '*bec[o]me*, more profoundly, [a] battle[ ] over whether the Academy is a trustworthy advisor to government', other bodies stage their claims to credibility aware that their status as 'a responsible guardian of the cultural authority of science' is *already* in question (ibid: 113). Adherence

to routine is not sufficient for such bodies to succeed. Deviations from established institutional scripts may thus express strategic intent, rather than reflect dramaturgical failure; organisations acting pre-emptively, so as to respond to changing political conditions, mobilise alternative sources of cultural capital, or anticipate critics' attacks, rather than adopt a reactive posture.

Such efforts to adapt institutional scripts to the needs of the moment are here analysed as 'improvisation', conceived in Jeffrey's (2013) terms as a form of 'performed resourcefulness'. In using this terminology one must be careful not to import the virtuous connotations that the word carries in the world of stagecraft. Dramatic theorists, such as Keith Johnstone (1981), have long valorised improvisation as a form of 'learnt spontaneity', which consists in unlearning set forms or styles, so that an 'authentic' performance of the self can be realised. Ideas of improvisation have thus become imbricated with notions of expressing 'truths'. Jeffrey stresses that his use of the term does not reflect these ideals. For one, this literature is predicated on the possibility of an authentic moment, in which one breaks free of encultured patterns of expression. Yet as Rorty reminds us, the notion that one might 'step outside of our skins – the traditions, linguistic and other, within which we do our thinking' – and find an 'unadulterated' mode of expression is unconvincing (in Jeffrey 2013:34). Moreover, Johnstone's (1981) emphasis on 'learning' spontaneity would seem to indicate that the development of improvisational capacity is itself a process of enculturation; one in which the student learns to convincingly create the 'impression of an empty head' (Jeffrey 2013: 34). This reading is supported by critical work on musical improvisation, which has emphasised the elite nature of both the historic 'free playing' performer and her audience. Moore's explication of the musical sophistication 'necessary to comprehend both the inventiveness and spontaneity of improvisation and the more general difference between improvised and composed music', for example, underscores the learned quality of both musical improvisation's enactment and reception (in Gooley 2014).

To speak of improvising claims to authority, then, is to speak of improvisation in the sense of an 'improvised solution'. It suggests the creative and intuitive use of available resources to achieve a desired effect, rather than the exposure of an 'authentic' self. As Jeffrey (2013:35-36) acknowledges, the figure of an improvising agent bears some resemblance to Claude Lévi-Strauss' figure of the *bricoleur*: a term that is deemed to have no English equivalent but can be approximated as 'the handyman... who performs his tasks with the materials and tools that are at hand' (Mileaf n.d.). Lévi-Strauss saw the practice of bricolage as a process specific to a certain type of social activity, namely myth-making. He insisted that this practice was the hallmark of 'the savage mind', which he held in opposition to the 'scientific mind', that devises the tools it desires, rather than making do with the 'odds and ends' available to it (Lévi-Strauss 1962:22). 'The scientist creat[es] events (changing the world) by means of structures and the 'bricoleur' creat[es] structures by means of events' (ibid.:22). The notion of describing modern institutions – such as the Bosnian courts (Jeffrey 2013) or scientific advisory bodies – as bricoleurs is alien to the sensibilities of Lévi-Strauss (1962), who used the concept to make a macrosocial distinction between "scientific" and "savage" societies. The language of bricolage is thus eschewed in this chapter, on the grounds that this terminology carries with it the baggage of Lévi-Strauss' structural approach, which risks reproducing colonial imaginaries of civilised and primitive modes of existence (for further discussion, see: Jeffrey 2013:35).

More influential in Jeffrey's (2013) notion of improvisation is the Bourdieuan concept of habitus (Bourdieu 1993, 1996): a 'feel for the game' that operates below the level of consciousness (Painter 2000; Jeffrey 2013). Just as a boxer develops an instinct for pugilism that allows him to initiate an attack effectively (Wacquant 2015), so too do political agents develop a 'feel' for public debate,

which allows them to be creative in their interventions – drawing on heterodox sources of cultural capital in constructing credible personas. Thus, in responding to an unfolding political situation, actors are nevertheless able to confidently ‘conjure up the spirits of the past to their service and borrow from them names, battle cries, and costumes’; presenting even the most radical of ideas in ‘time-honored disguise’ and ‘borrowed language’ (Marx [1852] 1962 in Alexander 2014:33). Applying this framework to the expert workshop, allows us to make evident how the ability to craft credible personas in the face of public hostility hinges upon participants developing a feel for both their political climate and the workshop format, such that the latter might be adapted to serve the former, without said deviation.

### 5.3. Methodology

#### 5.3.1. OECD Nuclear Energy Agency

The empirical focus of this chapter is the *Workshop on Post-Accident Food Safety Science*, organised by the OECD-NEA. The NEA is an appropriate organisation to study, both because it is widely recognised as an authoritative source of scientific advice, and because it is an institution of historical significance, deserving of attention in its own right. Founded in 1958 as the European Nuclear Energy Agency (ENEA), it played an important role in laying the foundations for international cooperation in the nuclear sector during the mid-20<sup>th</sup> century. Changing its name in 1972, it continues to act as a nexus of knowledge in the global circulation of nuclear expertise. Among the NEA’s 33 member states are 21 of the world’s 31 nuclear nations, who collectively account for 354 of the world’s 451 operational nuclear power reactors and 85% of the world’s nuclear energy supply.<sup>55</sup> As these member states act as both customers and donors to the NEA – commissioning its research and staffing its seven technical committees – its activities can be seen as a barometer for the interests and ideas circulating throughout the regulatory community. For this reason, the NEA has a place in any full account of the global ecology of nuclear institutions, alongside organisations such as the International Atomic Energy Agency (IAEA) and the ICRP.

This chapter is primarily interested in the NEA, not as a historical object, but as a recognised source of authoritative scientific advice. Lacking the formal powers of a regulatory body, the NEA exerts influence through the force of its reputation. Hence, its *Mission Statement* focuses on ‘provid[ing] *authoritative* assessments...on key issues’ as the means by which to effect ‘government decisions on nuclear energy policy’ ([emphasis added] NEA 2016:15), and its list of *Organisational Strengths* emphasises the NEA’s reputation for producing work that is rigorous<sup>56</sup> and credible<sup>57</sup>. But, as political pragmatists from the time of Machiavelli onwards have warned, reputation is a delicate thing, and an institution must constantly ‘give signal proofs of [its] worth, whether by words or by deeds’, so as to ‘pass into proverb’ (Machiavelli 1883:523). It seems eminently reasonable to expect that the NEA would strive to perform the virtues of authority and credibility, on which its reputation rests, at any given public-facing event, for the careful ethnographer to document.

<sup>55</sup> Calculated on the basis of data compiled by the IAEA (2016).

<sup>56</sup> ‘NEA scientific and technical work is in the forefront of knowledge and is known for its depth and quality’ (NEA 2016).

<sup>57</sup> ‘The NEA publishes consensus positions on key issues, providing member countries with credible references’ (NEA 2016).

### 5.3.2. *Workshop on Post-Accident Food Safety Science*

Commissioned by the Japanese Cabinet office, the *Workshop on Post-Accident Food Safety Science* was held on 8 to 10 November 2016, at CORASSE Fukushima: a complex located by the West Exit of Fukushima Station, which stocks a variety of locally produced goods in addition to serving as a conference venue. The objective of the workshop was to:

1. ‘present the state of the art scientific aspects of post-accident food safety, including:
  - radionuclide transfer to foodstuffs and dose modeling;
  - agricultural management to reduce food contamination;
  - measurement techniques;
2. present the status of and the remaining challenges related to local, national and international management of post-accident food safety;
3. discuss approaches for addressing remaining challenges’ (OECD 2016).<sup>58</sup>

As a collaboration between two recognisable institutions of governance – the Japanese state and the OECD – the workshop was clearly a political event. It was first proposed by Fukuyama Mamoru, Japanese Vice-Minister of the Cabinet Office and for the Environment, to NEA Director-General, William D. Magwood IV on 5 May 2015, during a visit to the NEA headquarters in Paris. Subsequently funded by the Japanese Cabinet Office, the workshop was attended by no fewer than five Japanese politicians. Three had held ministerial responsibilities: Fukuyama; his immediate successor, Inoue Shinji; and the incumbent Vice-Minister of the Cabinet Office and for the Environment, Tadahiko Itoh. They were joined by Deputy Governor of Fukushima Prefecture, Toshiyuki Hata and Masako Mori of the House of Councillors.

Of course, the workshop can also be said to be political in so far as the production of knowledge is *always* a political act. As De Vries reminds us, no scientist or scientific institution succeeds in Wittgenstein’s aim of producing an account that, in seeking only to describe, ‘leaves everything as it is’ (Wittgenstein, 1958: §124 in De Vries 2016:199-200). Like all expert activities, the workshop does not simply produce knowledge *about* the world. It produces knowledge *in* the world, thereby affecting the existing state of affairs (ibid.:200). In the case of the NEA workshop, the commissioners have expressed an explicit recognition of this ontology; making it clear that they have asked the NEA to review the state of the art in radiological protection (Objective 1), and the status of the situation in Japan (Objective 2) with the aim of eliminating ‘reputational damage’: influentially defined by workshop participant and Session Vice-Chair, Naoya Sekiya, (2003) as ‘economic damage due to...disrupted consumption...as a result of people viewing foods, products, and localities once deemed safe as being dangerous because of widespread media coverage of...a disaster’ (in Monma et al. 2015:222). In his ‘opening remarks’ Inoue emphasised that addressing consumer perceptions of Fukushima produce was always the workshop’s *raison d’être*:

‘Japanese and overseas scientists [are] gather[ed] here in Fukushima to discuss how to put an end to reputational damage caused to local foods... we only sell products that meet very stringent regulatory standards. However, we still see persistent... reputational damage to foodstuffs.... That is why we organised this workshop’ (Inoue 2016).

<sup>58</sup> <https://www.oecd-nea.org/rp/workshops/foodsafety2016/>

Inoue was echoed by Tadahiko Itoh, who expressed his ‘hope that this workshop will lead to [the] eliminat[ion of] reputational damage in food and that it will be a big step toward the future of Fukushima, full of possibilities’ (Itoh 2016). The workshop’s objective can thus be understood as expediting the reconstruction of Fukushima prefecture by establishing ‘the facts’ about its produce, so that they might be communicated to both consumers and other states; correcting their misconceptions and ‘facilitating the accurate perception’ of ‘the hard work undertaken by [Japanese] farmers, distributors, and municipalities’ to ensure that Fukushima products are ‘very safe’ (Inoue 2016).

In contrast to those from the Cabinet Office, the NEA’s representatives expressed some desire to separate the workshop’s review of practice in food safety science from Japan’s political situation. The agency does not seek to ‘command on Japanese regulatory standards of food,’ Iracane (2016) insisted, ‘since they are directly national choices’. Nor does it aim to validate them, NEA Scientific Secretary, Ted Lazo argued, suggesting that to do so ‘would have been far too audacious’:<sup>59</sup>

‘...it was clear to the NEA that the role of the workshop was not to show that Japanese food is safe. The role of the workshop is to show what’s the state of the art in science in producing food that is safe. The Japanese may or may not be doing that. I mean, I fully think that they are. But the workshop is not intended to show that... it’s Japan’s business to do that, not ours.’<sup>60</sup>

Yet, as Lazo’s comments make clear, the NEA agreed to review the state of the art in radiological protection and the situation in Japan with the clear expectation of finding the steps taken to be appropriate. This amounts to tacit support for the Cabinet Office’s agenda. Nowhere is this more apparent than in Iracane’s opening remarks, in which he too suggests that the workshop will play a role in inspiring consumer confidence:

‘[W]hilst the safety [of food produced in Fukushima] is guaranteed by producer and the government, it is clear that there remain local, national, and international barriers to the confidence that existed in all Japanese food, prior to this accident. To shed a scientific light on the situation, the Japanese government asked the NEA to organise a workshop – this workshop – on the state of the art in food safety science.... I believe that the presentation during the workshop will serve as a benchmark for the scientific and practical implementation of food science that is needed to meet very rigorous food safety standards, and *I hope that this will help to improve confidence in governmental, distributor, and farmer’s efforts to guarantee the highest quality food product from Fukushima prefecture* ([emphasis added] Iracane 2016).’

### 5.3.3. Data Collection

This chapter’s analysis of how the OECD-NEA crafts a credible persona is grounded in participant observation of the workshop itself, conducted as part of a four-year project on the politics of civilian radiation exposure which has entailed 11 months of residential fieldwork and interviews with 47 politicians, scientific advisors, bureaucrats, NPO representatives, protestors, and public figures engaged in this epistemic contest. As the workshop is an ephemeral space, lasting only three days, the duration of my observation was necessarily short. However, the very fact that direct observation was

<sup>59</sup> Interview, June 2017.

<sup>60</sup> Interview, June 2017.

possible should be considered a boon. Access to the workings of scientific advisory bodies, such as commissions or report committees, can be difficult to secure. Consequently, many scholars have restricted their analysis to published materials (Hilgartner 2000) or archival documents (Owens 2012), even as they acknowledge that ‘ethnographic observation is without a doubt the method of choice’ (Hilgartner 2004:446). The volume of material produced by the workshop should also not be underestimated. The formal sessions alone account for an estimated 106,000 words<sup>61</sup>: more than six times the length of *Macbeth*. Supplementing detailed ethnographic field notes and video recordings of the proceedings with interviews and textual materials (e.g., workshop program, OECD-NEA website, etc.) produced a robust empirical corpus on which to draw.

## 5.4. The Workshop’s Architecture of Authority

### 5.4.1. *Persuasive Rhetoric*

Hilgartner’s (2000) analysis of how scientific reports are staged identifies four ‘moves’ common to the OECD-NEA’s staging of authoritative workshops. Of these, the use of persuasive rhetoric is arguably the most straight-forward. Representatives of the event engage in a self-narration that serves more to enforce the credibility of the event itself, than it does to accurately describe the workshop or the process by which it produced its conclusions. This is not a feature that is unique to ‘middle-brow’ scientific institutions (Shrum 2004). Nobel Laureate in Physiology or Medicine, Peter Medawar famously made similar claims of ‘high’ science, arguing that ‘the scientific paper is a fraud’ (Medawar 1964). By this, he did not mean that the data presented in scientific journals is falsified or that the conclusions are deliberately erroneous rather, his claim is that the narrative structure of scientific journals, inspired as they are by a brand of naive empiricism, disguise the actual process of scientific discovery (De Vries 2016:37). The standardised format of the ‘methods’ section, in particular, he argued, misrepresents the scientist’s mind as a ‘virgin receptacle, an empty vessel, for information which floods into it’ (Medawar 1964:1). Such representations serve to enhance the researcher’s claims of ‘objectivity’, but do little to advance our understanding of how the paper was produced. The scientific paper is thus argued to be an oratorical document, carefully crafted to sell its conclusions (see also: Ashmore, Meyers and Potter 1995).

The scientific report is no less oratorical than the scientific paper, Hilgartner claims (2000). It too seeks to convince its audience to accept its claims to credibility, and with that its conclusions. This is also a feature of scientific workshops. Just as Hilgartner (2000) suggests that the rhetorical style of a scientific report can be uncovered through examining its front matter, I contend that the oratory of the scientific workshop is clearly observable in its ‘welcoming remarks’. In these pre-prepared statements, dignitaries seek to define the event’s scope and purpose, in a manner that defends against expected criticisms. Following Latour and Hilgartner’s examples, I suggest that this anticipatory dynamic can be illustrated by imagining a dialogue with skeptical audience member; framing excerpts from the welcoming remarks as answers to anticipated questions:

<sup>61</sup> Excluding breaks, the workshop was programmed to last 17 hours 40 minutes, of which a planned 15 hours 10 minutes was to be filmed and made available on Youtube. A conversational pace of speech is commonly considered to be around 120 to 150 words a minute. Given that the NEA workshop was conducted in two working languages (English and Japanese) – using a system of simultaneous translation – we can conservatively estimate the average rate of speech during the workshop to be around 100 words per minute. By this approximation, the presentations and discussions of the formal sessions account for some 106,000 words.

- Skeptic: So, what is the purpose of this workshop?
- Honma: ‘The objective of this workshop’ is to ‘present...state-of-the-art scientific aspects of...post-accident food safety’. If this workshop is successful, ‘scientific light will be shed on Fukushima’s situation and new recommendations and proposals’ will be made (Honma 2016).
- Skeptic: That’s fine and well, but can this workshop really hope to establish the state of the art in three days? I don’t think I’ve even heard of this ‘NEA’...
- Iracane: ‘The NEA is an intergovernmental agency that facilitate[s] cooperation between 31 industrialised countries, both with and without nuclear technology and infrastructure, but which share a focus on the essential nature of nuclear and radiological safety’ (Iracane 2016).
- Skeptic: OK, but what can the NEA say about the situation in Fukushima? Surely, this is a ‘Japanese’ problem, and Japanese actors will have the relevant expertise.
- Iracane: ‘In response to the accident at the TEPCO Fukushima Daiichi nuclear power plant, the NEA – through the activities of its technical committees – has focused extensively on learning relevant lesson[s] from this tragic event and on assisting the Japanese government to address its consequences. Immediately during and since the accident, for all the NEA’s technical committees altered their focus and mobilised their international expertise to address the following safety aspects: nuclear regulation, nuclear safety research, radiological protection and public health, and nuclear legal matters’ (ibid.).
- Skeptic: Hmm... that is an impressive amount of work, but if so, much has been achieved in the last five years, why do we need this workshop?
- Iracane: ‘Although much has been accomplished, during the past five years, by the NEA member countries, in all these areas, some important fields remain under consideration, such as radiological protection and public health, which is clearly the focus of this workshop’ (ibid.).
- Skeptic: Sure, but this isn’t a workshop on public health, in general. Why has the issue of food safety been singled out?
- Iracane: ‘Fukushima prefecture is a heavily agricultural area, renowned for many of its food products, and domestic concern quickly arose concerning food safety. International concern for food imported from Japan also developed, both at government and consumer levels’ (ibid.).
- Skeptic: You seem to be suggesting that the purpose of the workshop is to determine whether Japan’s food safety policies are adequate...
- Iracane: ‘It is not the intention of this workshop to command on Japanese regulatory standards of food, since they are directly national choices’ (ibid.).
- Skeptic: ...but you are suggesting that the workshop could serve to improve confidence in Japanese food stuff, aren’t you?
- Iracane: ‘After discussion with State Minister Itoh, last September, it bec[a]me very clear for me that a tremendous effort has already been undertaken to guarantee that food meets very high standards’ (ibid.). ‘I hope that this will help to improve confidence in governmental, distributor, and farmer’s efforts to guarantee the highest quality food product from Fukushima prefecture’ (ibid.).
- Skeptic: So, your goal is to encourage people to eat Fukushima produce! It is fine and well for you to decide that these foodstuffs are safe. You don’t have to eat them! You’re not

taking the same risk!

Iracane: ‘I am told that we will be eating Fukushima produced food today at this conference, and I am very happy to taste such high quality delicacies’ (ibid.).

#### 5.4.2. *Vouching*

The persona of the workshop is also established through a second mechanism that Shapin (1988) and Hilgartner (2000) refer to as *vouching*. In Hilgartner’s terms, Tokyo University vouches for Naoya Sekiya’s character and competence by appointing him as an Associate Professor (ibid.: 50). And by allowing his name to appear on the workshop materials as a Session Vice-Chair, Sekiya implicitly vouches for the workshop and the validity of its conclusions (ibid.: 50). Although Tokyo University has not officially endorsed the NEA’s position, the workshop has nevertheless ‘constructed a chain of associations’, through its selection of experts, which allows the NEA to draw upon the ‘reputational resources’ of this prestigious institution (ibid.: 50). Multiple vouching-practices can be seen at play in the NEA workshop. The circulation of the Agenda alone – which lists the name of each chair, presenter and rapporteur with a corresponding institution (e.g., ‘Igor Gusev, IAEA’<sup>62</sup>) – links the event to no less than 28 organisations, including: two Japanese ministries; two Japanese state agencies; three eminent international organisations; seven foreign state agencies; and four academic institutions (cf. Table 5.3). This network of associations is systematically reinforced during the floor discussion, by the compulsory practice of stating one’s name and affiliation prior to offering a point. While the practice of providing a short, professional biography of each chair and presenter establishes an even more expansive vouching-network: linking the participant to their past, as well as their present, places of employment. As Hilgartner (2000) surmises, the robustness of this network does not oblige the critic to accept the workshop’s authority. They can, by all means, continue to attack the workshop’s character and the selection of participants. They may, however, find it difficult to persuade an audience of their critique’s validity, especially if they do not share similar credentials (ibid.: 50).

**Table 5.3.** Organisations listed on the Workshop Agenda

Institution type	Institution
<i>International organisations</i>	<ul style="list-style-type: none"> <li>● IAEA</li> <li>● ICRP</li> <li>● OECD-NEA</li> </ul>
<i>Japanese Ministries</i>	<ul style="list-style-type: none"> <li>● Ministry of Agriculture, Forests and Fisheries (MAFF)</li> <li>● MHLW</li> </ul>
<i>Japanese State Agencies</i>	<ul style="list-style-type: none"> <li>● Japanese Atomic Energy Agency (JAEA)</li> <li>● Nuclear Regulation Authority (NRA)</li> </ul>
<i>Local Governments</i>	<ul style="list-style-type: none"> <li>● Fukushima Prefecture</li> </ul>
<i>Prefectural Organisations</i>	<ul style="list-style-type: none"> <li>● Fukushima Agricultural Technology Centre</li> <li>● JA Fukushima Mirai</li> <li>● Fukushima Prefectural Federation of Fisheries Co-operative Associations</li> </ul>
<i>Local associations and co-</i>	<ul style="list-style-type: none"> <li>● Fukushima Beef Promotion Association</li> </ul>

<sup>62</sup> International Atomic Energy Agency.

<i>operatives</i>	<ul style="list-style-type: none"> <li>• Co-op Fukushima</li> </ul>
<i>Foreign State Agencies</i>	<ul style="list-style-type: none"> <li>• Centre for Environmental Fisheries and Aquaculture Science (CEFAS), UK</li> <li>• Environmental Protection Agency (EPA), USA</li> <li>• Institute of Radiological Protection and Nuclear Safety (<i>Institut de radioprotection et de sûreté nucléaire</i>) (IRSN), France</li> <li>• Norwegian Radiation Protection Agency (NRPA), Norway</li> <li>• Public Health England (PHE), UK</li> <li>• Research Institute of Radiology (RIR), Belarus</li> <li>• SCK-CEN, Belgium</li> </ul>
<i>Universities</i>	<ul style="list-style-type: none"> <li>• Fukushima University</li> <li>• Oita University of Nursing and Health</li> <li>• Tokyo University</li> <li>• University of Cumbria</li> </ul>

Source: OECD-NEA Workshop Agenda

#### 5.4.3. *Forging a Single Voice*

A third ‘move’ through which the workshop seeks to assert the credibility of its conclusions is to forge a ‘single voice’, thereby focusing the social capital of its vouching-network onto its findings. The mechanisms through which this is achieved differ markedly from the production of scientific reports. Unlike the textual report, workshops are, by nature, poly-vocal affairs. Attendees alternate in contributing as individuals, not as a collective. To overcome this hurdle, the workshop makes two related moves. One, it tacitly adopts a model of passive consent, broadly consistent with the *Rules of Procedure*, which govern the OECD’s written documents (OECD 2013: §6). The presentations that comprise the bulk of the workshop are interspersed with floor discussions. These are scheduled for the end of each Session and last between 10 and 30 minutes. As these occasions provide an opportunity to object to any point made by another participant – albeit an opportunity limited by time and social convention (more later) – the onus is placed on participants to make any reservations they have known. To say nothing, as the proverb states, is to consent. Hence, the claim of a single participant can, through audience inaction, come to be a workshop conclusion – able to draw on the combined social capital of the participating individuals and institutions. Secondly, the workshop appoints certain individuals with the task of actively constructing a consensus, namely the Session Chairs and Rapporteurs. Chairs are vested with the authority to shape the floor discussions, steering the debate by dictating who is given an opportunity to speak and when. They comment on presentations and themes, framing the debate as a whole. They can also decide which conversations fall beyond the scope of the workshop aims and when discussion can be brought to a close. In short, they are vested with the privileges of an editor of the debate. More obviously, the rapporteurs quite literally speak for the whole – providing a single authoritative interpretation of the workshop discussions.

#### 5.4.4. *Stage Management*

A fourth tactic through which Hilgartner (2000) argues actors construct the credibility of science advice is claimed is through maintaining a division between the ‘frontstage’ – in which the workshop presents its arguments and conclusions to its audience – and the ‘backstage’ – in which preparatory work is conducted and disagreements resolved. Central to Hilgartner’s analysis of how the NAS’ persona is constructed, is an analysis of the techniques through which this scientific advisory body ‘backstages’ disagreement. It is this work that has raised the most questions as to whether Hilgartner’s claims apply to scientific advice generally or are specific to the NAS. Campbell (2004:439), for example, argues that ‘the secretive processes of the NAS...may limit the utility of [Hilgartner’s] analysis for other, more public bodies and even other NAS committees’. This is a legitimate concern, given that the NAS is unique among its peers in its exemption from Freedom of Information requests, and is unusual in its dedication to opacity. Few other scientific bodies systematically ask contributors to sign non-disclosure agreements, for example. By contrast, the OECD has publicly affirmed its commitment to ‘openness and transparency’ as ‘pillars for democracy, trust and progress’ (Gurria 2016); a commitment that the NEA honours by making its workshop presentations available for download on its website. Should a member of the public be curious about how the *Workshop on Post-Accident Food Safety Science* reached its conclusions, they could access all 34 PowerPoint presentations and read all 623 slides, in either English or Japanese.<sup>63</sup> The workshop sessions were also streamed via YouTube, albeit exclusively in English. Language skills permitting, any member of the public with internet access can watch all 19 hours, 17 minutes and nine seconds of the workshop’s presentations, questions and discussion. Where then – we might ask – is the ‘backstage’?

One can offer a partial answer by emphasising that the workshop is itself the product of unseen work. The staging of this three-day workshop rests on 18 months of planning, described by the organisers in only the most general terms. By cross referencing statements made at the event with news items posted on the NEA website, it can be established that the workshop was first proposed by Vice-Minister Fukuyama to NEA Director General, William D. Magwood IV on 5 May 2015, during a visit to the NEA headquarters in Paris (OECD 2015, Fukuyama 2016, Inoue 2016). A year later, Fukuyama’s successor, Shinji Inoue, made a follow-up visit, and was informed that the workshop was to be placed under the supervision of the NEA’s newly-appointed Deputy Director, Daniel Iracane (Inoue 2016; OECD 2016). Beyond this, few details of the planning process can be ascertained. Ted Lazo’s role in organising the logistics of the workshop, in his capacity as Scientific Secretary, goes largely unmentioned. Also absent are: any indication of how the scope of the workshop was agreed; the basis on which participants were chosen; and details of the guidance (if any) given to participants in preparing their presentations. Prosaic though these considerations may seem, their influence on the workshop’s capacity to stabilise a consensus are clear. In determining what is to be discussed by whom, the organisers are able to avoid contentious topics and exclude ‘radical’ or ‘dissident’ voices – such as those of the anti-nuclear movement – who might disrupt proceedings. In so doing, the organisers exercise what Bachrach and Baratz (1962, 1963, 1970) termed ‘the second face of power’; limiting the scope of public discussion to a ‘consideration of only those issues [and opinions] which are comparatively innocuous’ to the convener (Bachrach and Baratz 1970: 7). This is not to suggest a deliberate duplicity. The point is simply that, despite the commitment to transparency, the processes by which the terms of the discussion are set remain systematically un-addressed.

<sup>63</sup> All but six of the presentations are available in Japanese. Of these, four pertained to the workshop conclusions. The remaining two were introductions to Sessions One and Two, delivered by the respective Vice-Chairs. Only one presentation is not available in English – the one delivered by the students of Soma Agricultural High School. The script from which they read is, however, available in both English and Japanese.

One can also locate the ‘backstage’ within the workshops itself, drawing attention to what Philip Crang (1994) terms the event’s ‘geographies of display’. More so that the scientific report, the expert workshop has a straightforwardly theatrical element. The audience, live and digital, is encouraged to direct their attention toward a lectern, from which participants give their presentations, and a projection of their PowerPoint slides. Audience members stand to ask a question – the camera swiveling toward them as a microphone is rushed to them by a member of the cabinet office. The audience politely ignores these ‘stagehands’ as they crouch by the speaker, or retreat to the fringes of the hall. And the presence of translators, who speak into the earpieces worn by every participant, is entirely ‘backstaged’: hidden in a soundproofed box at the rear of the venue, unseen by the camera, so as to encourage the audience to engage with the originator of a given comment, rather those who render this speech intelligible to them. Then, of course, there are the ‘intermissions’. Should a member of the general public choose to spend nine hours watching the first day of workshop proceedings, they would spend more than a fifth of their time staring at a holding slide, depicting nothing more than a crate of fish and the workshop details.<sup>64</sup> This time is allocated to breaks – offering an opportunity for the participants to eat, drink, visit the lavatory, smoke, and converse more informally. No ‘house curtain’ falls across the stage, but both camera and microphones are switched off, and the live audience dissipates. Following the broadcasting convention that ‘all places where the camera is not focused...or all places out of range of ‘live’ microphones’ are off-stage, the entire venue becomes a ‘back region’.

To an observer, this shift between the ‘on stage’ and ‘off stage’ is immediate and obvious. The language is coarser; the statements more direct. One will hear claims dismissed with a colour and vigour unimaginable in the polite formality of a floor discussion: ‘it’s bullshit! Just bullshit!’<sup>65</sup> In Goffman’s terms, this ‘backstage’ region has different ‘requirements of decorum’ to the ‘front’ region, allowing participants to adopt a different ‘manner’ ([1969] 1990:110-111). Rather than interpreting this change of register as indicative of participants’ ‘authentic sel[ves]’ being revealed, as Goffman does (1990:115), I suggest that it marks a transition between performances. In the absence of a collective workshop-audience, myriad new dramaturgical teams are formed, performing as (and to) friends and colleagues.

I suggest that these performances are distinct, but not unrelated. One of the insights of scholarship on institutional micro-geographies has been to call attention to the productive nature of back rooms and corridors (Hurdley 2010), arguing that it is in these informal spaces that collegial compromises are often reached. The corridors of international functions are no exception. As former British Ambassador to the US (1997-2003) and Germany (1997), Sir Christopher Meyer has suggested, the informality of a recess makes it an ideal space for negotiating consensus. ‘Corridors have always had a role in diplomacy,’ he insists; noting that it is quite normal for recesses to be called strategically. ‘I was a diplomat for almost 40 years and a big chunk of that time was spent going to big international conferences’ (in Hurdley 2016). In moments of impasse, ‘the Chairman would normally say, ‘well we’re going to have a break now and we’ll come back in an hour’s time and let’s see if we can reach a deal’ (in *ibid.*). ‘That wasn’t when you went off for a little nap or a snack,’ the Ambassador stresses; ‘It was when you’d look for one of your colleagues and see if an agreement could be struck’ (in *ibid.*). The NEA workshop was notably less transactional than the conferences Meyer refers to, as

<sup>64</sup> The breakdown of time allocation on 8 November 2016 is as follows: 50 minutes of opening remarks and introductions (9%); six hours 25 minutes of presentations (71%); 80 minutes of floors discussion (15%) and two hours of breaks (22%).

<sup>65</sup> Field Journal, 8 November 2016.

individuals are not in attendance to advance the interests of their own nation and no binding agreement is at stake. The discretion of Sessions Chairs in deciding when to call recesses was also more limited, as the timings of intermissions was fixed in the workshop program, at least in principle. (In practice, the tendency to overrun significantly afforded some flexibility in shaping the floor discussions.) Nonetheless, there was evidence to suggest that actors used these intermissions strategically; finding in them an opportunity to broach difficult questions and reconcile disparate views, away from the stares of a live audience and the camera lens. I found my own conversations with chairs and rapporteurs frequently interrupted by other participants, coming to inform my interlocutors of the resolution of some tension, scarcely mentioned in the formal floor discussions: ‘there was some confusion over [a given topic], but I think we managed to clear that up and achieve consensus’.<sup>66</sup> Guided by an unspoken sense of professional courtesy, actors were routinely, if informally, ‘backstaging’ their disagreements, allowing for a smooth performance of consensus through their dramaturgical co-operation.

## 5.5. An Improvised Workshop

If these standardised elements of the workshop’s performance are integral to its credible persona, so too are the improvised ‘moves’ through which the workshop responds to its political situation. The very act of commissioning an international workshop can be read as an act of improvisation. In explaining the rationale behind the event, Fukuyama made no explicit mention of the crisis of epistemic authority in Japan (Fukuyama 2016). His focus fell firmly on the workshop’s international audience, rather than on the domestic population, with its suspicions of knowledge produced by the ‘nuclear village’. The idea that the acceptance of the workshop’s authority rests on it being international, rather than Japanese, was nevertheless a prominent theme in his reasoning:

‘There are certain issues, domestically, here in Japan. There are academic societies in Japan. And there are those technical issues. But if we have some kind of discussion here in Japan, we may not be appreciated in the international arena. So, this OECD-NEA – as an international organisation, we wanted to draw on your support. This international workshop is organised by the OECD-NEA as a result of such requests’ (Fukuyama 2016).

Fukuyama’s comment does not suggest a hierarchy of capability between ‘Japanese’ and ‘international’ experts (in the mode of athletics, for example, where an international champion can readily be assumed to be superior to her national counterpart). To the contrary, his remark suggests that Japan’s domestic expertise is more than sufficient for addressing the issue of food safety. For Fukuyama, it is the strategic value of producing an assessment in an ‘international’ space that matters. As Kuus reminds us, ‘where knowledge is produced and circulates is integral to its effects’ (2011b:276. See also: Kuus 2011a, 2015). Fukuyama’s logic for commissioning an international workshop can thus be read as an expression of his political ‘*know-where*’ (Agnew 2007): his understanding that an assessment of Japan’s food safety measures will permeate the borders of the international community more easily, circulate more freely, and be accepted more readily, should it bear the stamp ‘Made by the OECD’ rather than ‘Made in Japan’.

There were clear indications, however, that the ‘international’ nature of the conference would allow

<sup>66</sup> Field notes, 9 November 2016.

its conclusions to be more readily accepted by its domestic audience too. As Lazo notes, the expert is often imagined as ‘somebody from somewhere else.’<sup>67</sup>

‘... it often helps if they’re not invested in the situation that you’re having them talk about... in the workshops I’ve done here at the NEA since arriving in ’93, foreign experts tend to have more credibility than local experts, even though they might be saying the same thing. So, in that context... the fact that it was international was essential to being anything that anyone would possibly believe.’

In a similar vein, Itoh speaks of how the workshop has brought together scientists from the ‘IAEA and United Nations Food and Agriculture Organisation (UN-FAO) and other world, top-level scientists, from Japan and abroad’ to offer a ‘robust evaluation’ from their ‘neutral perspectives’ (Itoh 2016), for example; while Inoue opines on how the forum aims to allow ‘top-level scientists in the world’ make their assessments of Japanese food safety standards ‘in good faith and based on science’ ([sic] Inoue 2016). Faced with claims of the international expert’s ability to take a ‘purely scientific approach’ to a complex political problem (Itoh 2016), it does not seem unreasonable to suggest that the workshop has been inspired by what Bourdieu (1975:25) called the ‘naive philosophy of objectivity’. A frame of reference which inspires appeals to ‘international experts’ – as if their position as foreign observers were sufficient to shield them from preconceptions and partisanship (ibid.:25).

### 5.5.1. *Performing the International*

If the strategic value of claiming ‘internationalism’ is clear, it must still be asked, ‘in what sense is the workshop an ‘international’ space?’ The workshop may be convened by the OECD-NEA, but it was conceived and commissioned by a Japanese Vice-Minister and hosted by the Japanese Cabinet Office on Japanese soil. Moreover, its selection of experts is predominantly Japanese. Not only were a majority of the 27 invited-speakers Japanese nationals, two of the four substantive sessions (specifically, Sessions One and Two) sported all-Japanese rosters.<sup>68</sup> This may have been unavoidable, as many of the experts on the situation in Fukushima are, unsurprisingly, Japanese. To fulfill the workshop’s aim of ‘presenting the status of the remaining challenges related to local [and] national... management of post-accident food safety’, it is almost certainly necessary to call upon these individuals from the ranks of Japanese government, industry and academia. But this nevertheless poses a performative challenge: one of fashioning a workshop that can make a credible claim to being ‘international’ from predominantly Japanese human and financial resources.

**Table 5.4.** National affiliations of presenters

National affiliation	
Japan	17
UK	3
International	2
Belarus	1
Belgium	1

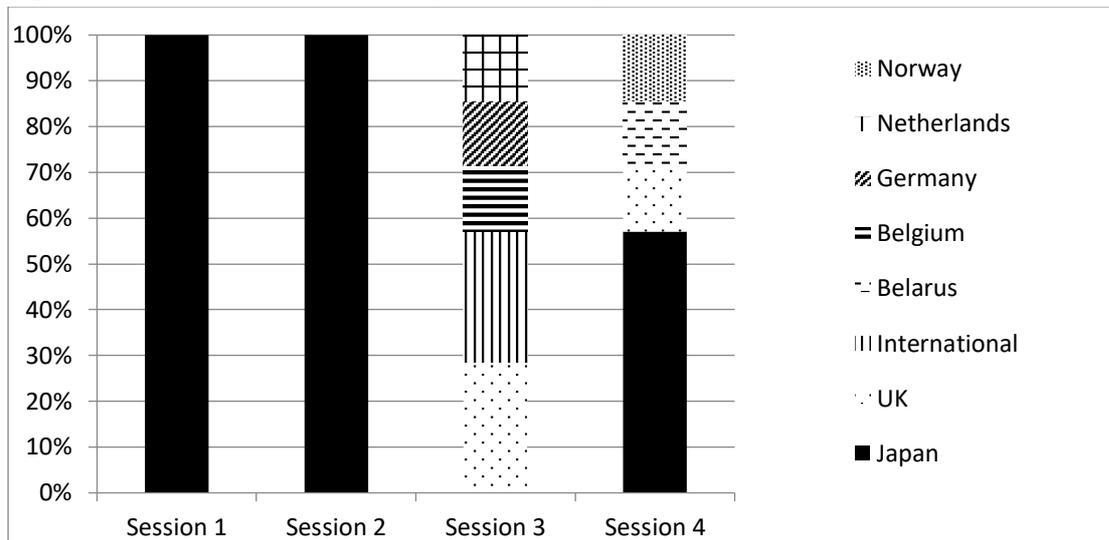
<sup>67</sup> Lazo, Interviewed July 2017

<sup>68</sup> This calculation distinguishes the 27 speakers who delivered substantive presentations in Sessions One to Four, from the four rapporteurs who offered summaries in Session Five and are discussed on the following pages.

Germany	1
Netherlands	1
Norway	1

Notes: National affiliations as listed on the Workshop Programme. Where no nation is given (i.e., for OECD-NEA or IAEA representatives), the individual has been counted as ‘international’.

Figure 5.1. National affiliation of presenters by session



Faced with this challenge, two ‘moves’ involved in forging a credible claim to the ‘international’ nature of the workshop’s conclusions can be clearly identified. The model of assumed assent identified earlier is one. Barring objections, the conclusions of even an all-Japanese panel can claim to be supported by all present, and therefore internationally recognised. A second tactic is to ensure that all discussion is conducted under the auspices of ‘international’ persons. Consider the selection of Chairs, Vice-Chairs, and rapporteurs. All can claim to be ‘international’ experts in a professional sense. Most are explicitly associated with an international organisation. Of the ten Chairs and Vice-Chairs: eight are associated with an international organisation; six are members of an ICRP Task Group; and four are members of ICRP Committee 4 – which focuses on the ‘application of the [ICRP’s] recommended system of protection in all its facets’ and serves as ‘the major point of contact with other international organisations and professional societies’ (ICRP unknown).<sup>69</sup> A further two are associated with the NEA (Daniel Iracane) or the UN-FAO (Rob Theelan). This leaves just two session Vice-Chairs who have no connection to an international organisation (Hirofumi Tsudaka and Naoya Sekiya), one of whom is associated with Japan’s premier university: Tokyo University. The other is associated with Fukushima University, which does not enjoy such an august standing, but whose staff can claim a certain privileged knowledge of the disaster, based on their proximity. In other terms, all but two of the session Chairs and Vice-Chairs have been vouched for by an international organisation. And of these two individuals, one has been vouched for by an institution, which if not “international” *per se*, certainly enjoys an international standing.

If we restrict our view to the Chairs and rapporteurs<sup>70</sup> alone and a different conception of ‘the

<sup>69</sup> [http://www.icrp.org/icrp\\_group.asp?id=10](http://www.icrp.org/icrp_group.asp?id=10)

<sup>70</sup> Rapporteurs offered summaries of the four main sessions on the third day of the workshop in Session Five.

international’ becomes clear. Bearing names like Anne, Daniel and Rob, they hail from France, Germany, the Netherlands, the UK and the USA. In short, they hail from a variety of nations, *except* Japan. Here, the ‘international’ is seemingly performed in its etymological sense. The chairs are *international*, in so far as they are a group from ‘between’ many nations. The quality of being ‘international’ is not an individual trait, but a collective characteristic. Yet, the exclusion of Japan from this vision merits attention, for it lends credence to the notion that it is the quality of ‘being someone from somewhere else’ which is being valued. Indeed, the workshop’s program reveals a nationalised division of labour; in contrast to the Chairs, every Vice-Chair is Japanese. This nationalised division of labour is strictly maintained, despite uneven numbers. Thus, two ‘foreign’ experts (namely, Iracane and Theelan) chaired Session Two together; while Michiaki Kai acted as Vice-Chair on two separate sessions (Sessions Three and Four). Thus, the cast of the workshop may remain largely Japanese, but the most visible roles (Chair and rapporteur) are filled by those who are and can, in two different ways, claim ‘internationalism’.

### 5.5.2. *The Authority of Witnessing*

If objectivity is interpreted as synonymous with distance, why hold the conference in Fukushima? Why embed the production of knowledge in the local context, instead of holding it at the headquarters of the OECD-NEA, at 46 quai Alphonse Le Gallo 92100 Boulogne-Billancourt, Paris? The graphs and tables that form the content of the presentations are, after all, ‘immutable mobiles’ that would read no differently in Paris than in Fukushima (Latour 1987). And to locate the workshop in Fukushima, with the Japanese Cabinet Office acting as hosts, surely risks calling into question the very sense of distance that the organisers sought to cultivate in commissioning an international workshop. Though cost and convenience are certainly plausible factors, the workshop’s organisers noted that the choice of venue also had two performative functions.

One obvious boon offered by the venue was the opportunity to communicate the workshop’s conclusions to one of its intended audiences, directly. ‘From the start, that [staging the workshop in Fukushima] was my suggestion,’ Lazo recalls. ‘The idea was that if an international workshop was going to be of any value in providing information for people, it ought to be where the most people were concerned.’ This would allow local people to hear directly from the experts during the two-hour public session scheduled for the final day of the workshop. It would also provide an ‘opportunity for local journalists to easily participate, listen to what is going on, and report that in a local fashion, so that the local folks – as well as the international community – had the opportunity to understand what is being said’. This strategy bore mixed fruit. Although local newspapers, such as the *Fukushima Minpo*, covered the workshop, fewer than ten local people chose to attend the public session.<sup>71</sup> Whether this was due to the limited advertising of the workshop, or the timing of the public session (13.30 to 15.00 on a Thursday) is unclear, but the public’s apparent disinterest derailed the workshop’s efforts to stage its educational function.

As Vice-Governor Hata noted, conducting the workshop in Fukushima offered a second benefit in that it allowed participants ‘to see the situation [in Fukushima] first hand, particularly in regard to foodstuffs’ (Hata 2016). On 7 November, a day prior to the workshop, attendees were offered a guided tour of four sites involved in the screening and distribution of Fukushima produce: Onahama Fish Market; Fukushima Agricultural Technology Centre; JA Fukushima Mirai, Sugitanouchi

<sup>71</sup> Field notes, 10 November 2016.

Warehouse; and Date Fruits Agricultural Cooperative Association. In visiting the stricken prefecture and seeing these facilities, participants took on the mantle of ‘witnesses’ to the effects of 3.11 and ‘reputational damage’ upon the prefecture, able to make claims to knowledge derived from ‘a confrontation with the real, the ‘true’: the reality of the site’ (Wieviorka 2006:136). ‘I have seen people working so hard, so seriously,’ Itoh announced on the first day of the workshop. ‘As a result of such low-profile and steady efforts, I am convinced that... safe products that have cleared the most stringent standards in the world are being distributed [from Fukushima]’<sup>72</sup> (Itoh 2016). Rooted in personal reportage, such accounts lend moral force to the workshop’s goals, conjuring images of politicians and experts moved by the plight of the honest, hardworking people of Fukushima, whom the workshop seeks to serve. ‘[T]here is still – particularly in overseas countries – reputation[al] damage on food that is deeply rooted – that is *tormenting* [the] people of Fukushima’ ([emphasis added] *ibid.*). In foregrounding the suffering they have borne witness to, the organisers not only lend urgency to the problem of reputational damage, but anticipate any suspicion of their motives. They enter the narrative of the workshop, not as members of the nuclear village, seeking to downplay the consequences of the nuclear disaster, but as witnesses to the human costs of consumer prejudice and allies to its victims.

Though the mantle of witness can be claimed by those observers who make a pilgrimage to Fukushima, Givoni reminds us that it is those who have endured the consequences of disaster that enjoy ‘unparalleled authority as a source of moral and political truth’ in contemporary societies (2013: 123).<sup>73</sup> It is in this capacity that Minister Itoh invited seven students from *Soma Agricultural High School* to address the workshop. While the organisers spoke of what they had seen, the students spoke of that which they had lived; offering testimony, rather than analysis or reportage. Over the course of 20 minutes, the students described how they had been forced from their school in Soso, Minamisoma, and forced to relocate to a satellite campus in neighbouring Soma City. There, they spent two years waiting for the evacuation order to be lifted, returning to their school in 2013, just in time for its 110<sup>th</sup> anniversary. Since then, they told the assembled experts, they have devoted themselves to activities aimed at ‘sharing their energy’ with the community. Clubs dedicated to ritual forms of dance (including, Shinto ‘god performance’ (*kagura*) and ‘rice planting’ (*taue*) dances), and music (such as conch-shell music (*jingai*)) keep local traditions alive, to be enjoyed at an annual festival in October. Meanwhile, the 68-year old Agriculture Club seeks to ‘cultivate loyalty and love’ for a farming region faced with reputational damage, by engaging in both practical research efforts and symbolic projects, such as making the fourth largest piece of ‘seed art’ in a Guinness World Record attempt: winning the 2014 Fan Choice award in the process. Unlike other participants, the seven presented together, taking it in turns to read paragraphs from a prepared statement, like members of a theatrical chorus. Acting in coordinated unison, they spoke not as individuals, but as the Agricultural Club and, by extension, the school body. More than this, in declaring that they strove to ‘embody the hopes of the region’, they sought to speak for Fukushima itself. Itoh echoed this move, emphasising that it was ‘indispensable to have the presence of high-school students’, as they were the ‘backbone of the food industry in Fukushima in the future’ (Itoh 2016). Again, the seven embody the embattled region’s

<sup>72</sup> The sentence structure has been altered here in an attempt to promote clarity. The original, simultaneous translation reads: ‘I have seen people working so hard, so seriously. As a result of such low-profile and steady efforts, I am convinced that from Fukushima safe products that have cleared the most stringent standards in the world are distributed.’

<sup>73</sup> In keeping with Annette Wieviorka seminal work, *The Age of the Witness* ([1998] 2006), I conceive of the social figure of the ‘survivor’ in broad terms. The children are ‘survivors’ of the nuclear disaster in the sense that they lived with, and through, the consequences of the disaster.

hopes and aspirations – ‘superimposing on a phantom a dimension of reality’ through their corporeal presence (Hausner in Wieviorka 2006:79).

This witness testimony became central to the workshop’s public persona, despite the students’ participation being remarkably brief. They arrived for 14:00 on 8 November, delivered their speech, and left. No questions were directed toward them, and they had no opportunity to engage in floor discussion. Yet the choreography of the workshop continually stressed their presence. They would be mentioned repeatedly in the opening remarks, conclusion, and press session and featured prominently in the local media’s reportage – a photo of the students being the only image that accompanied the *Fukushima Minpo*’s (2016)<sup>74</sup> coverage of the event. Even the seating plan reflected their symbolic centrality; chairs having been reserved for the students in the middle of the hall, in rows six and seven of nine.<sup>75</sup> (No other participants had seats allocated to them, save for those involved in chairing, who were seated at the front of the hall.<sup>76</sup>) Subsequently, the students would become the focal point in how the workshop is remembered. On 3 May 2018, Minister Itoh visited the NEA’s headquarters to discuss the possibility of a follow-up to the workshop and to express his gratitude for the NEA’s work in Fukushima. ‘In particular,’ the NEA tells us, ‘the Minister expressed his thanks for the NEA’s support of the Soma Agricultural High School Students who took part in the workshop’ (OECD-NEA 2018). The value of witness testimony in rendering the somewhat abstract problem of reputational damage ‘concrete enough to be apprehended’ is underscored by this continued emphasis on the children’s participation – and by extension, the workshop’s embeddedness – as central to its public persona (Hausner in Wieviorka 2006:69).

### 5.5.3. *The Expert’s Bodies as Evidence*

The notion that ‘actions speak louder than words’ is an enduring article of folk wisdom and a common theme in popular works on authority and power, which urge readers to ‘win through your actions, never through argument’ (Greene 1998). In deference to this principle, the experts expressed their confidence in Fukushima’s food safety standards, not just in their presentations, but in acts of gastronomy. This performance instrumentalised a prosaic ritual – the workshop dinner – by serving food and drink from Fukushima prefecture. Among the delicacies consumed were raw cuts of flounder (*hirame sashimi*), soba noodles and local wines (*Fukushima Minpo* 2016). Unlike Sonoda, the NEA did not invite journalists to photograph them eating and drinking. However, they did make numerous public references to their eating arrangements, ensuring that details of their meals reached local newspapers (see: *ibid.*). In delivering his opening remarks, Daniel Iracane linked his own willingness to eat food ‘made in Fukushima’ to an awareness of the Japan’s management efforts:

Much research, practical implementation and monitoring has been done by the Japanese government, by food distributors, by farmers – to assure that any food produced from the Fukushima prefecture that reached the Japanese domestic market, or the international markets, or is locally consumed by those who grow it, meets rigorous governmental safety standards. *I am told that we will be eating Fukushima produced food today at this conference, and I am very happy to taste such high-quality delicacies* ([emphasis added] Iracane 2016).

<sup>74</sup> [http://www.minpo.jp/pub/topics/jishin2011/2016/11/post\\_14411.html](http://www.minpo.jp/pub/topics/jishin2011/2016/11/post_14411.html)

<sup>75</sup> Field notes, 8 November 2016

<sup>76</sup> Field notes, 8 November 2016

Mike Boyd of the US EPA echoed this sentiment in announcing that those who made site visits on 6 November had felt sufficiently confident to eat Fukushima produce:

Many of us had the opportunity yesterday to taste the delicious food products from Fukushima prefecture, and we applaud the tremendous efforts that have been made to assure the world that these highly esteemed food products are safe and available (Boyd 2016).

In eating Fukushima produce, the experts offer their own bodies as proof, not of the safety of the food per se, but of their sincerity in claiming to believe that it is so. The experts put their ‘skin in the game’ by performing the role of (literal) consumers to align their interests with those of their audience, much like the manager who buys stocks in her own company so as to align her interests with those of their shareholders (Taleb 2017). ‘Science is supposed to be cold, straight, and detached’ (Latour 2003:208). Yet here, the credibility of expertise is rooted in its intimacy and self-interest. As the gesture ties the actors’ health to the accuracy of their pronouncements, it is tacitly assumed that their advice can be more readily trusted. Borrowing the rubric of the ‘agency dilemma’ from political science and economics, one can say that through the act of consuming Fukushima produce, the agent (i.e., representatives of the OECD-NEA) aligns their interests with those of their principles (i.e., citizens of OECD nations and possible consumers of Fukushima produce), on whose behalf they offer recommendations. Of course, the risk shouldered by agent and principle remains uneven. Consuming a product once is not equivalent to eating it with regularity – an objection that Boyd appears to anticipate in assuring his audience that ‘we of the CRPPH look forward to enjoying these high quality products [from Fukushima] in our own countries’ (Boyd 2016). At a time in which trust in experts is low, however, this gesture nevertheless offers the workshop participants to make a claim to credibility based on their willingness to follow Sonoda in putting Fukushima produce ‘where their mouth is’ (McNeill 2011).

## 5.6. Conclusion

This chapter has examined how the OECD-NEA performed its authority at the *Workshop on Post-Accident Food Safety Science*. Commissioned by the Japanese Cabinet Office in the hope of producing a credible consensus statement on the safety of Fukushima’s produce, this event is part of the Japanese state’s broader effort to combat ‘harmful rumours’ and redress ‘reputational damage’, thereby advancing the project of reconstructing Fukushima. In examining how a credible public persona is crafted at this event, this chapter builds upon Hilgartner’s (2000) work on the dramaturgy of scientific advice. Adapting his insights into the staging of scientific reports to the workshop setting, I argued that an organisational ‘script’ can be discerned; one which sees actors engage in persuasive oratory, establish vouching networks, and co-operate with each other to maintain a division between the ‘frontstage’ (made visible to the workshop’s intended audience) and ‘backstage’ (hidden from the audience’s view). The chapter does not, however, suggest that the actors it examined slavishly adhere to an institutional template. To the contrary, it draws attention to their resourcefulness in interpreting the political situation they find themselves in and calibrating the staging of the workshop accordingly. Three examples of the organisers’ ‘performed resourcefulness’ are identified. The decision made by the Japanese Cabinet Office to commission the workshop, as well as the OECD’s careful management of its predominantly Japanese cast, reflect the organisers’ understanding of the cache that an ‘international’ assessment will hold with the intended audience. Similarly, the decision to embed this ‘international’ expert event in the local, and grant schoolchildren a starring role, reflects an

understanding of the limits of epistemic authority in this political situation, and allows the workshop to mobilise the moral authority of ‘witnesses’ to the effects of harmful rumours. It is in a similar vein that workshop participants constructed their own bodies as sites of evidence; joining Sonoda in consuming that which they declared to be safe, thereby symbolically aligning their own interests with that of their audience and making a claim to credibility based on self-interest. Each of these gestures responds to the political situation in which the workshop is embedded; marking a deviation from the routinized workshop script that serves to enhance its authority, rather than endanger it, and pre-empts its critics rather than passively responding to them. It is in these terms that I characterise it as an ‘improvised’ workshop.

## Chapter Six

### Co-Expertise as Therapy: The ICRP's<sup>77</sup> participatory dialogues in Fukushima (2011–2018)

---

**Figure 6.3.** ICRP Dialogue Participants visit Hachioji Shrine



Source: Author's own

Few, when asked to picture the 'leading scientists and policy makers in the field of radiological protection' (ICRP 2018), imagine them: sat, cross-legged on a farmer's living room floor; visiting remote shrines; or striking a Japanese drum (*taiko*). Yet, all are activities that members of the ICRP have engaged in, as part of the commission's work in areas affected by the 2011 Fukushima Daiichi nuclear power plant disaster. Amid mass evacuations and exposure to elevated levels of radiation, concerns about how (and whether to) live in the affected areas grew strong. Rather than attempt to 'correct' public concerns through risk communication, the ICRP resolved to engage local citizens as 'co-experts' in producing a 'practical radiological protection culture'. To this end, it organised two

<sup>77</sup> International Commission on Radiological Protection.

series of participatory seminars: the *ICRP Dialogues in Fukushima* (2011–2015) and the *Fukushima Dialogues* (2016–2018), which will collectively be discussed here as ‘the Dialogues’.

This chapter examines what it means for the ICRP to engage local people as co-experts, in practice. It sees the ICRP as deserving of study as both a historic institution<sup>78</sup> and an authoritative source of expertise. Although the ICRP possesses no formal mandate under international law, its system of recommendations is ‘used world-wide as the common basis for radiological protection standards, legislation, guidelines, programmes, and practice’ (ICRP 2018). A recognised authority in its field, the ICRP makes recommendations that could aptly be described as ‘more than advice and less than a command, an advice which one may not safely ignore’ (Mommsen in Arendt 1954:18). Given the commission’s ‘quasi-regulatory’ power (Hilgartner 2000:3), its decision to engage in participatory practices of knowledge production marks an important moment in the history of radiological protection, deserving of scrutiny. This chapter asks: who is involved in the process of co-expertise? On what terms do they participate? And to what ends?

In addressing these questions, this chapter finds that although the Dialogues do involve lay-participation, they do not enact the participatory ideals espoused in the work of Political Scientists (which core actors in the ICRP had not read). Indeed, the means and ends of the Dialogues more closely resemble group therapy than the political fora advocated by scholars such as Habermas or Jasanoff (in Callon, Lascoumes and Barthe 2009:4-5). To use the metaphor of therapy draws our attention to the format of the Dialogues, in which (conventionally defined) experts lead a ‘non-directive’ discussion with lay-participants, in which they fastidiously avoid telling them what to do. Instead, the emphasis is placed on giving participants the room to express themselves. The aims of the Dialogues are also akin to therapy. The benefit to participants is imagined as processual rather than instrumental. The Dialogues do not ‘result in some political decisions’, as Jasanoff (in Callon, Lascoumes and Barthe 2009:5) and others insist that participatory fora should. Rather, the participants are imagined to benefit from the act of being heard, as well as the opportunity to meet other individuals facing similar challenges. On the other hand, the Dialogues serve to enhance the ICRP’s claims to authority, providing experience of working with affected populations and data, on the basis of which it can revise its recommendations.

While the Dialogues are an established object of study (see, for example: Ando 2016a; Lazo 2016; Lochard 2017a, 2017b; Kimura 2018), this paper offers the first ethnographic account of the seminars. In re-describing the Dialogues as therapy, I engage with the work of Aya Kimura (2018), who draws our attention to the affective work done by the Dialogues in her article, *Fukushima ETHOS*. While the broad notion of attending to affect is welcomed as useful, this chapter does identify some core factual and interpretive errors, which it aims to address. These errors, I suggest, are useful as a foil for methodological reflection: an example that cautions against the temptations of sweeping theory, and calls us ‘back to the rough ground’ (Wittgenstein [1953] 1986) to engage in the ‘blind, myopic, workaholic, trail-sniffing, and collective’ practice of description (Latour 2005:9). This chapter takes a mixed methods approach to describing the Dialogues, drawing on: observation of the seminars (both directly and through video-recordings); textual analysis of seminar materials (e.g., programmes, summary documents); and nine interviews with actors involved in the Dialogues’ organisation.

<sup>78</sup> Founded in 1923, the ICRP has its own archives and Official Historian.

## 6.1. Justification

### 6.1.1. *The International Commission on Radiological Protection*

The *Dialogue Seminars* have been selected as an object of analysis on the grounds that the ICRP is both an understudied organisation, rich in history, and an authoritative source of expert advice. The mission statement of the ICRP is to ‘advance, for the public benefit, the science of radiological protection, in particular by providing recommendations and guidance on all aspects of protection against ionizing radiation’. And as the allusions made to the ICRP throughout this thesis indicate, its recommendations carry great weight. So much so, that it confidently calls the collective corpus of its strategic recommendations *The System of Radiological Protection*: the use of the definite article reflecting the ubiquity with which these recommendations are recognised. Unlike the International Atomic Energy Agency (IAEA) or the Organisation for Economic Co-operation and Development-Nuclear Energy Agency (OECD-NEA), however, the ICRP is not an intergovernmental body, but a charity registered in the UK. Its resources are comparatively modest. It has no legal mandate and only three full-time paid staff – one Scientific Secretary (since 1962), one Executive Assistant (since 2009), and one Development and Communications Manager (since 2016) – who are supported in their work by interns and Assistant Scientific Secretaries, seconded to the organisation for a limited duration. All others who participate in the ICRP’s work do so as volunteers, chosen by the commission. Despite the lack of financial incentive, the ICRP is able to mobilise a network of over 100 experts from more than 20 nations,<sup>79</sup> who staff its Main Commission, four permanent Committees, and numerous Task Groups. Each of these experts donates their labour as an individual, rather than as an appointee of their home nation.<sup>80</sup>

Despite its influence, the history, organisation, and operations of the ICRP have received little social scientific attention (notable exceptions include: Kimura 2018). The few extant accounts of the ICRP’s evolution are mostly penned by its own members (Clarke and Valentin 2005; Cousins 2013; Kang 2016). As they make clear, concern about the effects of radiation on human health emerged within a year of the x-ray’s discovery. By the outbreak of the First World War, proposals to limit professional exposure to x-rays were being mooted in several nations (Clarke and Valentin 2005: 717). These

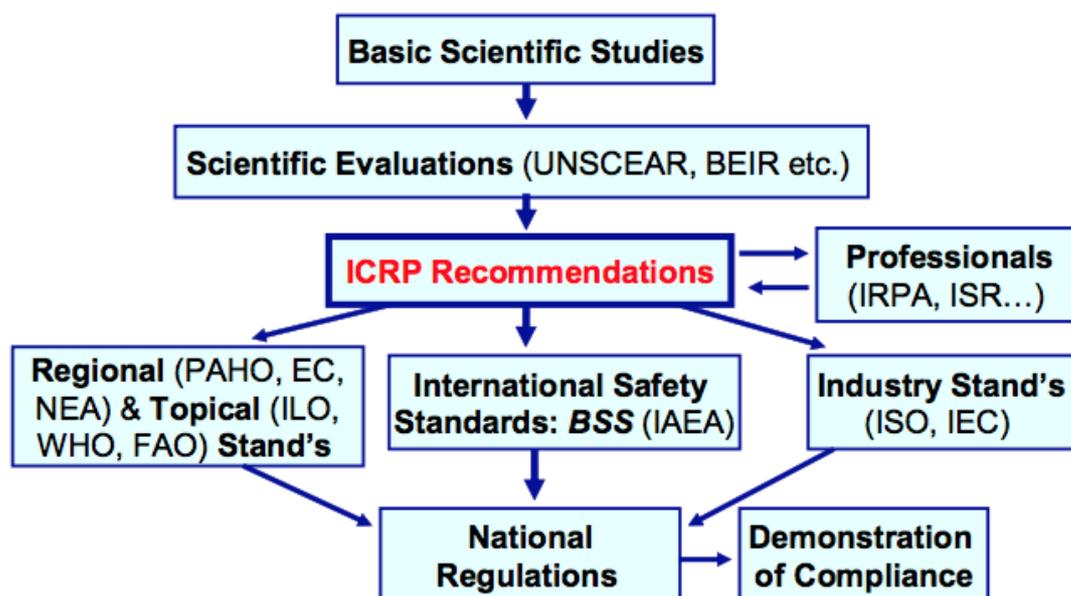
<sup>79</sup> At the time of writing, the 79 experts who staff the Main Commission and four Committees alone hail from 20 nations. Namely: USA (15), UK (ten), France (eight), Germany (eight), Japan (seven), China (five), Russian Federation (five), Canada (three), Korea (three), Spain (three), Austria (three), Australia (three), Sweden (two), Argentina (one), Belgium (one), Finland (one), Italy (one), Switzerland (one), UEA (one), Ukraine (one). The Main Commission draws its 14 members from ten nations, namely: UK (three), France (two), USA (two), Australia (one), Canada (one), China (one), Germany (one), Japan (one), Korea (one), and Russian Federation (one). Committee One draws its 15 members from 11 nations: USA (three) Germany (two), Japan (two), Austria (one), China (one), Sweden (one), Finland (one), France (one), Sweden (one), Russian Federation (one), UK (one). Committee Two draws its 16 members from ten nations: Germany (three), USA (three), France (two), UK (two), Austria (one), China (one), Japan (one), Korea (one), Spain (one), and Ukraine (one). Committee Three draws its 15 experts from 12 nations: USA (three), Germany (two), UK (two), Belgium (one), Canada (one), China (one), France (one), Italy (one), Japan (one), Korea (one), Spain (one), UAE (one). Committee Four draws its 18 experts from 12 nations: USA (four), France (two), Japan (two), UK (two), Argentina (one), Australia (one), Canada (one), China (one), Russian Federation (one), Spain (one), Sweden (one), Switzerland (one).

<sup>80</sup> The roots of the ICRP asserting its discretion to appoint its own members has been traced back to 1934, when the commission ‘faced undue pressures’ from two nation states (Clarke and Valentin 2005:78. See also: Lindell 1996). As that year’s host of the quadrennial meeting, Switzerland ‘insisted on four Swiss participants (out of a total of 11) and the German authorities replaced the Jewish German member with another person’ (ibid.:78).

discussions would be resumed following the war's end, leading to calls for an organisation that could provide recommendations on radiological protection being made at the first International Congress of Radiology in 1925 (ibid.:717-718). The 'International X-Ray and Radium Protection Committee' (IXRPC) would be established to fulfil this role three years later – changing its name to the ICRP in 1951.

As a product of the inter-war period, the ICRP predates both the nuclear industry and the cadre of institutions that stand at the centre of global governance, today. Decades older than the United Nations (UN) and associated agencies (United Nations Food and Agricultural Organisation (UN-FAO), World Health Organisation (WHO), United Nations Scientific Committee on the Effects of Atomic Radiation (UN-SCEAR), and IAEA), the European Commission (EC) and the OECD-NEA, the ICRP adopted a recognisable form in the 1950s: changing its name, undergoing significant reorganisation, and establishing ties with many of the aforementioned bodies.<sup>81</sup> In so doing, the ICRP positioned itself as a 'boundary organisation' in the global governance of radiation risks (Guston 1999). For more than half a century, international (e.g., IAEA), regional (e.g., OECD-NEA), and topical (e.g., WHO) agencies have trusted the ICRP to produce credible recommendations on radiological protection, based on the scientific evaluations of UN-SCEAR and others (cf. fig. 6.2). Although the ICRP has no legislative powers, this position at the interface of science and policy has allowed it to achieve considerable influence.

**Figure 6.4.** The basis for and use of ICRP recommendations



Source: ICRP Publication 109.

<sup>81</sup> Formal relations were established with the IAEA in 1959, for example; just two years after the UN agency's founding.

### 6.1.2. *The ICRP Dialogues and Fukushima Dialogues*

The Dialogue seminars mark the first occasion on which the ICRP has engaged in participatory modes of knowledge production. They therefore mark an important chapter in the history of the ICRP, and by extension, represent a shift in the hegemonic practice of radiological protection. 20 workshops have been organised to date. Each lasts two days and is structured around a specific place or issue (see: table 6.1). These topics of discussion are typically suggested to the organisers by local participants. Of the 20 events to date, 12 were hosted under the banner of ‘ICRP Dialogues’ (2011–2015). These workshop seminars were organised by the ICRP, with the support of the OECD Nuclear Energy Agency (NEA), French Nuclear Safety Authority (ASN), French Institute for Radiological Protection and Nuclear Safety (IRSN), and the Norwegian Radiological Protection Authority (NRPA). A second series of seminars was held under the official title of ‘Continuing the Dialogue in Cooperation with the ICRP’ with the support of the Nippon Foundation (2016–2018). These workshop seminars are organised by committees of ICRP members (e.g. Jacques Lochard, Christopher Clement, Ogino Harayuki), scholars from Fukushima Medical University (e.g. Kuroda Yujiro), and local people (e.g. Ando Ryoko). When distinguishing between the two seminar series’, participants frequently referred to the latter as the ‘Fukushima Dialogues’: a shorthand adopted in this chapter. In practice, however, actors more frequently referred to both series’ collectively as ‘the Dialogues’ – stressing continuity, rather than change. Notably, both the ICRP website and the programmes distributed at the Dialogues number the seminars one to 20.

**Table 6.2.** Topics addressed by the Dialogue seminars

Dialogue	Date	Topic
<i>ICRP Dialogues</i>		
1	November 2011	Lessons from Chernobyl and ICRP Recommendations
2	February 2012	What has been accomplished in Date City
3	July 2012	Contaminated foodstuffs
4	November 2012	Education and protection of children
5	February 2013	‘Returning or not, staying or not’
6	July 2013	Challenges facing the citizens of Iitate
7	May 2014	Self-help actions in Iwaki and Hamadori
8	May 2014	Situation and challenges in the city of Minamisoma
9	August 2014	Raising children in Fukushima Prefecture after the accident
10	December 2014	Tradition and culture in Fukushima after the nuclear accident
11	May 2015	The role of measurement in regaining control of the situation
12	September 2015	Experience we have gained together
International workshop on the Fukushima Daiichi Initiative	December 2015	Rehabilitation of living conditions after the nuclear accident
<i>Fukushima Dialogues</i>		
13	March 2016	The situation of Miyakoji today
14	July 2016	Sharing Experiences in Iitate Village Today
15	October 2016	The rehabilitation of living conditions in the Futaba region
16	March 2017	Situation of locals near the intermediate storage facilities in Futaba and Ohkuma Towns
17	July 2017	What do we need for our future?
18	November 2017	Current situation in Yamakiya

19	February 2018	Current situation and future of the Odaka area, Minami-soma City
20	December 2018	After Fukushima Nuclear Accident: preserve memory, share experience, and go toward the future

---

## 6.2. Literature Review

Existing accounts of the Dialogues can broadly be divided into two camps. On the one hand, one finds accounts of actors who have been involved in the Dialogues. Published as contributions to a special issue of *Annals of the ICRP*, these accounts generally fulfil one or two aims. The author tells the story of their own involvement in the Dialogues and/or reflects on the lessons they have learned. The ICRP's Vice-Chair, Jacques Lochard's editorial, *The genesis of the ICRP Dialogues* (2017a), is focused on the former objective (see also: Ando 2016a; Hanzawa 2016). This is a personal, arguably autobiographical, account, in which the author recalls and reports events from memory, (rather than diary entries or interviews with his peers, for example). The focus is on establishing a chronology, and acknowledging the contributions of his peers (see: Lochard 2017:13). No abstract arguments are made and only a single work is cited. By contrast, the research article submitted by Lochard (2017) to the same issue is more typical of those pieces focused on the latter objective (see: Lazo 2016; Liland 2016; Rollinger, Lochard and Schneider 2016). Here, the third person voice is in use and the text does not tell a story, so much as it reflects on the implications of the Dialogues for the organisations that the author is affiliated with.

### 6.2.1. Critiques of the Dialogues and its Predecessors

On the other hand, one finds critiques of the Dialogues, advanced by social scientists. In a call to face the 'dark side' of the participatory turn in governance, Kimura positions herself as an ally to the French social scientist, Sezin Topçu. Topçu's (2013) *Chernobyl empowerment?* paints a dim portrait of ETHOS, a participatory project conducted between 1996 and 2001, in which experts worked with citizens living in the contaminated territories of Belarus. Far from empowering citizens, ideas of 'co-expertise' served to shift the burden of radiological protection off the state and onto ordinary people, Topçu suggests in the Foucauldian language of neoliberal governmentality. Kimura (2018) notes that although ETHOS was not an ICRP programme, it can be understood as a precursor to the Dialogues. Connecting the two programmes are a number of key actors – including Lochard – who have acted as vectors for participatory ideals. Consequently, the Dialogues are read as part of the same process of individualising risk, in which individual citizens are made responsible for their own affective management in the wake of a national disaster.

In characterising Topçu's (2013) account of the original ETHOS project and Kimura's (2018) account of the Dialogue as 'critical' analyses, I draw upon the work of literary theorist, Rita Felski (2015). Felski contends that the hallmark of contemporary critique is a 'hermeneutics of suspicion' (ibid.). All critics treat texts as duplicitous objects. The text is always assumed to disguise hidden meanings, which the critic alone can identify. In so doing, they reveal that the common-sense interpretation of the text is naive and unsophisticated, and the text is really complicit with dominant power structures. Hence, the act of critique comes to be dramatised as a moment of forced exposure, imagined in different permutations depending on the school of critique. In the Psychoanalytic and Marxist

traditions, critics ‘dig down’ to uncover, excavate and unearth meanings that the text sought to suppress or hide. By contrast, Post-structuralists ‘step back’, distancing themselves from the text to see what others are too close to perceive (ibid.:55). Though spatial relationships implied by these metaphors are mirror opposites – one implies proximity, the other separation – in each case the aim is to denaturalise, demystify, or destabilise the accepted interpretation.

Both Topçu’s account of the original ETHOS project and Kimura’s account of the ICRP Dialogues are clear examples of this critical genre. In their eyes, the state and industry engage in forms of ‘preten[ce]’ (Topçu 2013:2) and appearances are ‘deceptive’ (Kimura 2018:102). Participatory workshops may seem to empower, but *really* they reduce empowerment to a ‘vague, even *powerless* notion’ ([emphasis original] Topçu 2013:1). The Dialogues may appear to be ‘a way to build solidarity among ordinary people affected by tragedies’, but they are, in fact, ‘a tentacle of the global nuclear establishment’ (Kimura 2018:113). Suspicion is both mood and method. It is precisely because ulteriority is assumed that it becomes meaningful to ‘probe’ the statements of international agencies (Kimura 2018:100), resist their attempts to ‘normalise’ certain attitudes (Topçu 2013), and interpret the ‘*presumed* openness’ of participatory seminars as – in itself – ‘meriting critical analysis’ ([emphasis added] Kimura 2018:99). These accounts engage us by promising an unmasking. Like Arthur Conan Doyle’s Dr Watson, we are assured that we ‘see, but... do not observe’ (Doyle 2002). Our curiosity compels us to watch as the dots are joined, their significance is explained, and alibis are dismantled.

### 6.2.2. Critical Errors

Although critical accounts have done much to advance the discussion of the Dialogues, no account is entirely free of errors. Notably, Kimura (2018) confuses the ICRP Dialogues with ETHOS in Fukushima: a grass-roots Non-Governmental Organisation (NGO), which has participated in the Dialogues since 2012. This is surely an honest error, made by an established scholar, who has made important contributions to both Science and Technology Studies (STS) and the study of Fukushima (see, for examples: Kimura 2015, 2016, 2017). It is also easily understood. The name, *ETHOS in Fukushima* does suggest a connection to the original ETHOS Project. However, the nature of that connection is not institutional. As the published correspondence between ICRP’s Lochard and ETHOS in Fukushima founder, Ando Ryoko makes clear, the name is an homage, chosen without Lochard or the ICRP’s knowledge, by citizens who had heard a presentation on the original ETHOS project.

This error is easily understood, but it is not easily dismissed as it causes systematic errors relating to source selection. Consider, for example, the question of who participates in the Dialogues. Believing *ETHOS in Fukushima* to be an ICRP project, Kimura treats the NGO’s blog as an authoritative record of events and provides a quantitative analysis on this basis (see: Kimura 2018:107). In so doing, she calls the openness of the Dialogues into question by suggesting that just 35% of those scheduled to speak at the Dialogues are ‘non-experts’ (ibid.:106). Leaving aside the thorny question of how to parse ‘experts’ from ‘non-experts’, it is clear that Kimura consistently misreports the number of speakers at each event (see table 6.2). The issue is with her source. The *ETHOS in Fukushima* blog is a rich resource, which offers correspondence between key actors (penned as private emails and subsequently made public), videos of all sessions from 2012 onwards, summaries of workshops, and recommendations made by participants. However, it is neither an official record of events, nor an entirely accurate one. ICRP Scientific Secretary, Christopher Clement noted that he could no more

endorse the blog, than read it, as he does not speak Japanese.<sup>82</sup> Given these errors, there is a clear merit in carefully re-analysing the Dialogues.

**Table 6.2.** Comparison of the number of participants reported by the ICRP and Kimura

Dialogue	No. of presenters and panelists	No. of roundtable participants	Total no. of scheduled participants	No. of speakers reported by Kimura
1	21	n/a	21	10
2	27	n/a	27	15
3	16	27	35	21
4	14	22	25	11
5	16	29	33	23
6	16	23	24	20
7	19	22	26	19
8	23	27	35	26
9	20	24	27	22
10	17	25	30	23
11	25	30	32	32
12	26	30	30	32

Source: ICRP, Kimura (2018).

### 6.2.3. *Description and the Limits of Critique*

It should be emphasised that the purpose of this paper is not to amend errors, so as to extend a governmental critique. Although critique has become the normal mode of social scientific study, Felski (2015) emphasises that it is not the only possible mode. Calls to ‘take stock of our conceptual equipment to ensure that it does what we *think* it does and *want* it to do’ have grown increasingly loud, amid concerns that theoretical sophistication is being pursued at the expense of more grounded studies (Bell and Green 2016:239). The fear that sophisticated theories might seduce us into losing our grasp on Things is not new. It was with this concern that Wittgenstein called us ‘back to the rough ground!’ more than half a century ago. If we hope to walk, he argued, we must ground ourselves in the messiness and the ‘friction’ of empirical detail (§107). This credo is being vociferously voiced today, in work that reflects critically on critique (cf. Latour 2004, 2005. See, also: Felski 2015). Bruno Latour’s claim that ‘critique has run out of steam’ is perhaps the most provocative example of this genre. But Latour is not alone in worrying that grand concepts are frequently invoked to:

‘jump straight ahead to connect vast arrays of life and history, to mobilise gigantic forces, to detect dramatic patterns emerging out of confusing interactions, to see everywhere in the cases at hand yet more examples of well-known types, to reveal behind the scenes some dark powers pulling the strings’ (Latour 2005:22).

The editors of *Critical Public Health*, for example, worry that ‘neoliberalism’, like ‘society’ before it, is increasingly used as an explanatory category, rather than as an object to be described (Bell and Green 2016). This chapter aims to embody the descriptivist ambitions of these critiques of critique. In *Politics of Nature*, Latour emphasised that he had:

<sup>82</sup> Interviewed, September 2018.

‘no utopia to propose, no critical denunciation to proffer, no revolution to hope for... Far from designing a world to come, [he has] only made up for lost time by putting words to alliances, congregations, synergies that already exist everywhere and that only the ancient prejudices kept us from seeing’ (in De Vries 2016:147).

Reflecting this approach, I do not seek, nor do I expect, to sell the ICRP on a new vision of its mission in Fukushima. Nor do I aim to reveal ‘social forces’ lurking behind the actors. My aim is more modest: I seek only to document what the Dialogues have *been doing all along*. That is to say, I aim to provide a richer description of *what* the Dialogues are doing, so that we might better appreciate (if and) why they are important.

However, this does not suggest that I aim to embody Wittgenstein’s ambitions of producing a work that, in seeking only to describe, ‘leaves everything as it is’ (Wittgenstein [1953] 1986: §124). As De Vries reminds us, the production of knowledge is always a move made *in* the world (2016:199-200). To produce new descriptions is, inevitably, to affect the existing state of affairs. The metaphor of therapy will be no exception. Every attempt will be made to subject this account to the ‘warm, interested, controversial... presence of many objectors’ (ibid.:124), circulating the completed chapter to the Dialogues’ participants and critics alike, giving them the opportunity to cry, ‘no! This is not what I meant!’ Or to shout, fist raised, foot stamping, ‘you fool! You have missed the point!’ More optimistically, the same actors might exclaim, ‘quite so!’ And take up the metaphor for themselves. ICRP members might use this text to assert that the Dialogues did have an effect, even in the absence of a decision-making function. While those committed to reading suspiciously might retort that this is precisely the problem. (It is not difficult to imagine a renewal of governmental critique, involving a reading of the metaphor of therapy through *The Birth of the Clinic* or later Foucauldian works on mental health care.) If this account achieves the status of ‘objectivity’, it will do so in a strictly Latourian sense – not by claiming to be the product of a ‘cold, disinterested’ research process, but by proving its capacity to resist objections (ibid.:124).

### 6.3. Methods

As with the thesis more broadly, this chapter employs qualitative methods to collect and analyse data from observation, interviews, and textual analyses. Two Dialogues were observed directly<sup>1</sup> (namely, the seminars held in Date on 8 and 9 July 2017 and Yamakiya on 25 and 26 November 2017, respectively), and video recordings of a further 15 Dialogues were observed online. Interviews were also conducted with nine ‘core actors’: defined, for the purpose of my research, as any individual involved in organising the Dialogues and/or who had participated in more than half of the seminars. Interviews were conducted in person or over Skype and lasted up to three hours. Observation notes and interviews were complemented by textual materials made available by both the ICRP and ETHOS in Fukushima, through their respective websites. Official materials published by the ICRP include: programmes (in English and Japanese), conclusions and recommendations from the meeting (Dialogues One to Nine), and summaries (Dialogues 10 to 12, 15 to 19). Unofficial materials published by ETHOS in Fukushima include: correspondence between core actors (penned as private emails and subsequently made publicly available); unofficial summaries; and letters of suggestion penned by participants. Additionally, IRSN created an unofficial web platform called KOTOBA – Japanese for ‘words’ – to tell ‘the story of four years of Dialogue for the rehabilitation of living

conditions in the areas contaminated by the Fukushima accident'. The collected data was analysed thematically, in a three-pass coding process (open, axial, selective).

#### 6.4. Co-Expertise: An improvised and improvisational concept

The notion of 'co-expertise', which animates the Dialogues, is not easily defined.<sup>83</sup> When asked to explain its nature, Lochard began to narrate its history. In her critique of the concept, Topçu (2013) also begins by placing it in its historical context. Both champions (i.e., Lochard) and critics (i.e., Topcu 2013) of the concept agree that the origins of co-expertise can be traced to October 1989, when the IAEA received an invitation from the USSR to conduct an independent assessment of the guidance it offered to people living in the affected territories. As noted in Chapter Four, the resulting *International Chernobyl Project* (IAEA 1991), brought together more than 200 scientists from 25 countries, among them, Lochard and Thierry Schneider of the Nuclear Protection Evaluation Centre (*le Centre d'étude sur l'Evaluation de la Protection dans le domaine Nucléaire* (CEPN)). Topcu (2013) accurately describes the project as concluding that, while the effects of the population's exposure to radiation were more modest than initially feared, the psychological impact of the disaster was severe. In calling for a 'campaign of therapeutic advice on stress management', the report marked the beginning of an era in which the '*management of emotions*' came to be internationally accepted as an integral component of radiological protection ([emphasis original] IAEA 1991: 348). 'Co-expertise' emerged as an improvised set of practices through which these experts from CEPN, and their colleagues, have sought to achieve this 'management of emotions' (ibid.:348).

The term 'co-expertise' would not be coined until 1996. Following the conclusion of the *International Chernobyl Project*, Lochard went on to be involved in *The Commission Program for the Evaluation of the Consequences of the Chernobyl Accident* (1991–1995) – overseeing research concerned with the 'economical, sociological, and psychological impacts of the accident'.<sup>84</sup> Presenting its results at an EC conference held in Minsk on 18 to 22 March 1996 – ahead of the 10<sup>th</sup> anniversary of the Chernobyl disaster (26 April 1996) – the project concluded that the psychological health of those living in the affected areas had continued to deteriorate. Citizens were reported to have 'lost control over their own lives' and grown distrustful of those experts who they 'saw from time to time, doing measurements'.<sup>85</sup> Lochard and his colleagues believed that if the 'vicious cycle... [in which] the gap between the authorities and people is enlarging' were to be bridged, an alternative to the top-down efforts to educate the public, preferred by the states responding to Chernobyl, was needed.<sup>86</sup> The question put to them by their sponsors was what this alternative might look like. 'What are you proposing?', an EC representative is said to have asked the team, one evening.<sup>87</sup> 'There was one

<sup>83</sup> On 17 June 2019, ICRP Task Group 93 released a draft report of its *Update to Publications 109 and 111* for public consultation. I was made aware of this report shortly after my PhD submission and have taken part in the aforementioned consultation (Takahashi and Rueß 2019). The report contains an effort to define co-expertise (4.3.2.1) as a process which: begins with stakeholder dialogue (§207); leading to a 'joint characterisation of the radiological situation' (§208); which allows actors to 'defin[e] and implement[ ] protection strategies' (§209); and 'implement[ ] local projects' (§210). The finalised version of the text has not been released at the time of my final submission. The tendency to describe co-expertise in relation to its development remains interesting.

<sup>84</sup> Lochard, interviewed August 2017.

<sup>85</sup> Lochard, interviewed August 2017.

<sup>86</sup> Lochard, interviewed August 2017 [sic].

<sup>87</sup> Lochard, interviewed August 2017.

French expert,' Lochard relates, 'one friend of mine, who said 'Okay, if people have lost control of their daily li[ves], we should try to work with them to see if it is possible to regain some control.''' ETHOS was the product of this suggestion. A pilot project funded by the EC, ETHOS saw a team of predominantly French experts<sup>88</sup> conduct a series of 12 ten-day visits to Olmany, a Belarusian village located 250km from the Chernobyl nuclear power plant; aiming to engage local people as 'co-experts' in developing a 'practical radiation protection culture' (Topçu 2013). In 2002, this strategy would receive an endorsement from the United Nations Development Programme-United Nations International Children's Emergency Fund (UNDP-UNICEF), establishing it as a case study of stakeholder engagement within the radiological protection community (Topcu 2013:14).<sup>89</sup> When Tada Junichiro, 'a radiation protection expert who moved to Fukushima to volunteer his time and experience', expressed his concerns regarding the 'growing gap and tensions between stakeholders' to Lochard and fellow-ICRP Main Commission member, Ohtsura Niwa in Autumn 2011, Lochard suggested organising a stakeholder discussion, akin to those organised by ETHOS – 'sitting all of the parties involved around a table to listen to each other until the unspoken is exposed, releasing tension and facilitating mutual understanding' (KOTOBA 2016).

What light does this history shed on the practice of co-expertise? I suggest that it offers four insights. Firstly, it offers an insight into the tension that exists between the discourses of radiophobia and co-expertise. As with efforts to teach the population to 'fear correctly' (Chapter Four), co-expertise is explicitly engaged in the governance of public affect. Both strategies emerge in the context of calls for 'therapeutic' intervention and share an interest in 'imparting knowledge' as part of a process through which anxiety and stress can be alleviated (IAEA 1991:348). On the other hand, this genealogy of projects has defined itself against the rhetoric of radiophobia from its inception. In her précis of the *International Chernobyl Project* (1991), Topçu (2013) neglects to mention its criticism of 'radiophobia' as a concept (1991:348-349). Yet, as noted in Chapter Four, the report expresses grave concern over the ethics of characterising the fear of radiation as irrational. 'If the stressor is a real threat,' the authors warn, 'it is dishonest to pretend otherwise or to imply that an anxious response to it is in some way abnormal' (ibid.:348). The document goes on to note that those who visited Korosten, a town where "'radiophobia' was supposed to be prevalent', reported that people 'were concerned about radiation... but did not demonstrate phobic behaviour' (ibid.:349). This critique of efforts to pathologize and correct concern has powerfully influenced practices of co-expertise. Clement stresses that the aim of the Dialogues is not to correct 'deficiencies' in knowledge, so as to persuade.

'We're not trying to convince people that it's ok to live with radiation. We're trying to help people share their experiences and give some information so they can decide. If they decide

<sup>88</sup> The team included experts from CEPN, Mutadis, the Institute of Agronomy of Paris-Grignon, and the University of Compiègne, who work in 'partnership with local authorities, particularly with the Belarusian Ministry for Emergencies and the Belarusian Chernobyl Committee' (Topçu 2013: 8).

<sup>89</sup> Topcu (2013:14) also reports that the World Bank was supportive of the approach adopted by ETHOS, even if it did not explicitly endorse the program, as the UNDP-UNICEF did. To this end, she cites a 2002 report which urges the Belarusian 'Government to shift from programmes that create a victim and dependency mentality to those that support opportunity, promote local initiatives, involve the people and spur their confidence in shaping their destiny' (World Bank 2002:48 in Topçu 2013: 14). Topçu is right to suggest that there is an apparent resonance with the ideals of the ETHOS program, though one research informant expressed surprise at the implicit suggestion that ETHOS was endorsed by the World Bank, noting that the organisation declined to support the CORE Program. At the time of writing, I can offer no insight into how the World Bank understood its relationship to the programme.

they never want to go back to Fukushima that's fine... I think for people who are actually there and listening they understand that. [But] It's easy to try and use this in some other way to drive some other agenda or just to misunderstand.'<sup>90</sup>

Lochard is no less emphatic in stating that the Dialogues were not intended to persuade:

'For me, what we are doing is for the people who wish to stay. Those who have made the decision to leave, I don't know... They've made the choice, that is respectful. I respect this choice. If they don't come back there are probably good reasons not to go back. 'Even if there is a tiny risk, I don't want to take this tiny risk.' For me, this is not really an issue. I don't put any judgement on them. Those who have left, have made the decision to leave, they just have to be supported in one way or another. This is not the business of the ICRP... We work for those who have decided to stay... Personally, I never try to convince someone to come back. Never. Never.'

Secondly, this historical narrative reveals co-expertise to be both improvised and improvisational. Genealogy is often deployed as a tool of unmasking. Tracing the origins of a term allows the critic to show that what appears to be unitary and necessary is actually a heterodox assemblage of elements, brought together only contingently. But Lochard wears the contingency of co-expertise on his sleeve – stressing that the concept was not conceived, so much as it was improvised through a process of 'trial and error'.<sup>91</sup> Moreover, he emphasises that the concept does not provide a template for action – rebutting a passing reference I made to the 'co-expertise model', gently but firmly:

'You are using the term model, and I can understand that. I never considered ETHOS as one – or my colleagues. We consider it more as a spirit – a way of looking at the situation and a way to interact with the people.'<sup>92</sup>

Far from providing a rigid framework, co-expertise encourages actors to engage with post-accident situations flexibly; guided not by rules, but by a triad of mantras. The first is that 'we don't work *for* the people, we work *with* the people,' Lochard tells me; casting both experts and lay-people as fellow-travelers in their efforts to develop a 'practical radiological protection culture'.<sup>93</sup> Second, co-expertise aims to create fora that function as a 'suitcase without a handle', 'belong[ing]' only 'to those who are involved'.<sup>94</sup> Institutional attempts to 'put a handle' on the process and 'transform it into a programme' are to be fiercely resisted, allowing the seminars to develop their own, organic path.<sup>95</sup> Hence, two programmes operating on the same principle (e.g., ETHOS and the ICRP Dialogues) could look notably different in practice. This idealised openness of structure is reflected in the third and final maxim: 'the past is built as you walk, by walking'. Accordingly, the focus of this chapter is not on co-expertise in general, but on the path taken in the Dialogues', specifically.

<sup>90</sup> Clement, interviewed September 2018.

<sup>91</sup> Lochard, interviewed August 2017.

<sup>92</sup> Lochard, interviewed August 2017.

<sup>93</sup> Lochard, interviewed August 2017.

<sup>94</sup> Lochard, interviewed August 2017.

<sup>95</sup> Lochard, interviewed August 2017.

Thirdly, the use of this history as an origin story, told to explain co-expertise to its audiences, casts light on the actors' relationship to the corpus of academic work on participatory governance (Dryzek 2008; Fischer 2012; Joss 1995). As a story of 'trial and error', this historical narrative roots the credibility of the ICRP's approach in the experience of its members. Hence, stakeholder engagement is qualified as a 'field-proven approach' (KOTOBA 2016), not one supported by social scientific literature. Lochard readily admits that, although he and his colleagues on the ETHOS project kept abreast of discussions on stakeholder engagement within the policy community, (taking part in the Villigen workshops organised by the NEA between 1998 and 2003, for example,) they were 'fully ignorant' of more theoretical literatures on stakeholder participation, adding that he 'discovered Habermas a few years ago':

'Only a few years ago... I discovered finally the debates in German philosophy about the social and the role of dialogue.... We were never touching that [in the ETHOS project]. It was very empirical... It was trying things and analysing what was not working well, adapting things, and so on. It was just a process like this. There was no theory behind that. Nothing.'

Claims of being 'untouched' by theory should invariably be treated with skepticism. As Keynes reminds us, 'practical men, who believe themselves quite exempt from any intellectual influences, are usually the slaves of some... academic scribbler from a few years back' (Keynes 2003:241). The emergence of co-expertise coincides neatly with a broader participatory turn in governance and actors explain the practice of co-expertise in rhetoric typical of this broader trend. Clement notes, for example, that he 'doesn't like to use the word expert' as lay-participants are also 'a type of expert'. His point is not so much that lay-people are capable of absorbing technical details, (learning how to operate dosimeters from the professionals, for example,) but that their lived experiences have much to teach the professionals. Like many advocates of participatory fora, he questions the hierarchy implied by the terms 'expert' and 'layperson', and call for a two-way transmission of knowledge. This similitude seems unlikely to be mere coincidence. Co-expertise has almost certainly been shaped by the circulation of popularised forms of participatory discourse. The absence of direct engagement is nevertheless informative. Clearly, the case made by ICRP members for participatory practices does not rest on the authority of the social sciences, and few attempts are made to recruit social scientists as 'allies' through citational practices. Moreover, as there is no explicit adoption of the ideas of participatory scholars, one should not assume that the ICRP has adopted their epistemic or normative positions.

Similarly, I suggest that while co-expertise has not been consciously modelled on therapy, the ETHOS team included a psychologist (Philippe Girard) and its practices have been influenced by notions of therapeutic practice. One does not need to be familiar with Carl Rogers' (1964) pioneering work on 'non-directional' styles of psychotherapy in order to recognise traces of his thought in the practice of co-expertise. The 'non-directional' (or 'client-centred') therapist has long been a stock character in popular culture. Sat behind a reclining client, she offers prompts (e.g., 'do go on...') and observations (e.g., 'you sound concerned'), which demonstrate engagement and empathy, but no firm opinions on the client's actions. A direct question might be answered with another question; 'What does it mean, doc?' 'What do *you* think it means?' Like Clement, this character does not see it as her 'role to tell people what to do'. Instead, her task is to offer warm 'unconditional positive regard' toward 'clients' (the term 'patient' is eschewed for its negative connotations, just as the Dialogues eschew the language of 'victims'). In so doing, the therapist encourages the client to express

themselves and to gain confidence in their status as an ‘expert on themselves’ (Rogers 1964). As I go on to demonstrate in the following sections, there is a resonance between the practice

Having observed a seminar for the first time on 7 and 8 July 2017, Chairperson of IRSN, Dominique le Guludec remarked that the proceedings reminded her of her own time in medical practice:

‘I used to be a doctor. I used to work in a hospital. I know that half the cure is the communication between patient and doctor. Why is it so important? Because, for the patient, expressing his pain – his difficulties – is very helpful, but also because you learn about his decisions... it helps doing a therapy plan... it helps, taking decisions together: the patient and the doctor’ (le Guludec 2017).

A physician by training, le Guludec’s point of comparison may be to the hospital bed, not the psychiatrist’s couch. Yet, her formulation of expression-as-cure, as well as her emphasis on the patient’s agency, are features of the popular image of therapy. Reflecting on le Guludec’s comments during an interview in August 2017, I suggested to Lochard that this idiom of therapy could draw attention to the Dialogues’ affective aspirations:

‘What is important is to put words to what they [the participants] are feeling, what they are living. I think this is a process. I like your term, therapy. Somehow, it’s like psychoanalysis. You don’t give advice to people. You organise a mechanism where, in fact, people just speak and the psychoanalyst is just listening. Don’t speak anything, just listening. You have a mechanism. You lay out the bed and okay. I think in a way, I think there is something a bit like this in the Dialogue. The purpose is not to say, ‘you should do this. You should do that. This is what the ICRP is thinking. These are the recommendations.’ We are listening.’<sup>96</sup>

## 6.5. Co-Expertise: Who participates and on what terms?

Having provided an overview of co-expertise’ historical development, let us turn to an analysis of how the principle was practiced at the Dialogues. By the ICRP’s estimate, around 1000 people attended the 2011–2015 ICRP Dialogue seminars (Clement 2016:5). ‘Many were local citizens, but many others were from elsewhere in Japan and the rest of the world’ (ibid.). Excluding the welcoming remarks and summaries, (offered by members of the ICRP and other dignitaries,) the 12 seminars offered participants 639 scheduled opportunities to speak across 62 sessions, which were filled by 228 people. This original series of seminars broadly consisted of two types of session. As Kimura’s (2018) analysis reflects, one form of session focused on straightforward PowerPoint presentations, which have been a feature of every seminar. In 40 sessions,<sup>97</sup> participants were given a short slot to speak on a given topic, either as an individual or as part of a small panel. Such sessions offered a combined 244 opportunities to be heard, which were filled by 183 people, including: local people; experts on

<sup>96</sup> Lochard, Interviewed August 2017

<sup>97</sup> Dialogue One, Sessions One, Two, Four; Dialogue Two, Sessions One, Two, Three, Four, Five; Dialogue Three, Sessions One, Three; Dialogue Four, Sessions One, Two, Three, Five; Dialogue Five, Sessions One, Two, Four; Dialogue Six, Sessions One, Two, Four; Dialogue Seven, Sessions One, Two, Four, Five; Dialogue Eight, Sessions One, Two, Four, and Five; Dialogue Nine, Sessions One, Three; Dialogue 10, Sessions One, Two, Four; Dialogue 11, Sessions One, Three, Four; Dialogue 12, Sessions One, Two, Four, Five.

radiological protection; and guests from Norway and Belarus, who drew on their experiences of the Chernobyl disaster.

Absent from Kimura's (2018) account, however, is the second form of session – the 20 semi-literal roundtable discussions, referred to by participants as 'structured dialogues'. Originally suggested by Lochard, these have been a fixture of the seminars since Dialogue Three. Participants are seated in a wide semi-circle and each is given a short amount of time (typically, eight minutes) to express their opinion, uninterrupted, before yielding the floor to the person on their right. By circling around the room twice, the structured dialogue format encourages participants to respond to their peers in an organic manner, which has been contrasted to the rigidity of a pre-prepared PowerPoint presentation. As Tokyo resident and Dialogue participant, Tazuko Sato notes, presentations are delivered as individuals, but the structured dialogue is based on 'interaction' oriented toward 'deeper [mutual] understanding' (Sato 2012). The 12 seminars offered 394 opportunities to participate in these structured dialogues, taken up by 172 people – all of whom were Japanese.

Quantitative analysis of the Fukushima Dialogues (2016 – 2018) is more difficult to achieve, due to the paucity of data. The workshop programmes are not as detailed, and do not consistently provide information on individual speakers. The overall format of the workshop seminars remained largely unchanged, however, with the notable addition of a third type of session: the site visit. On these occasions participants left the workshop hall to be guided around places of significance to local participants – ranging from their homes, to places of work, to places of worship.

### 6.5.1. *Etic and Emic Analyses of the Dialogue Sessions*

One approach to analysing who the 228 people who were scheduled to speak are is to impose an etic typology, as Kimura (2018) has done. She decides who is, or is not, an expert 'from outside' the system, rather than studying how the category is constructed 'from inside' it (Pike 1967:37). Her binary division of participants into 'experts' and 'non-experts' reflects her own 'rather strict' conception of who qualifies as an 'authentic' lay-participant, and bears no relation to the identities claimed on the ground (Kimura 2018:106). By contrast, the focus of this work is to understand how expert status is negotiated in practice. Consequently, a broadly emic approach is taken. This is not to suggest that etic perspectives are without their own advantages. Their value in facilitating comparison and the construction of broader, cross-cultural concepts is well documented (Harris 1964). Kimura is also right to suggest that there is always a risk of co-option when adopting institutional categories (Kimura 2018:106). Yet, as Fetterman (2008) notes, '[a]n external view without an emic or external foundation is unusual and uncharacteristic of qualitative work'. Etic approaches are 'typically adopted after multiple, often conflicting, emic or insider views are collected' (ibid.). Callon reminds us that 'science and technology are dramatic 'stories' in which the identity of the actors is one of the issues at hand' (1986:187). '[T]he positions of the protagonists is never clearly defined', he argues, for 'the definition of these positions is what is at issue' (ibid.)

One alternative is to trace the process through which actors became participants, noting that participation is both invited and voluntary. Those who speak at the Dialogues were not randomly sampled from a population, but 'handpicked' by the organising committee, on the basis of personal acquaintance or reputation.<sup>98</sup> Consequently, the selection of local lay people was conducted by

<sup>98</sup> Clement, Interviewed September 2019.

committee members who lived in Fukushima prefecture. Throughout the 2011–2015 series of seminars, this role was filled by Ohtsura Niwa, an Emeritus Professor of Kyoto University and member of the ICRP Main Commission, who chose to relocate to Fukushima prefecture in the wake of 3.11. Niwa returned to Hiroshima in 2015 as Chairman of the Radiation Effects Research Foundation (RERF) and retired from the Main Commission in 2017, at which point this function was assumed by Ando Ryoko, who has long been a resident of Iwaki City. Interviewees agreed that one of the core criteria in choosing speakers was a willingness to publicly share their experiences. The difficulty of soliciting public expressions of opinion on controversial topics is a recognised problem in the Japanese context (Yamamoto and Yamakawa 2017). Only those who feel a ‘need’ for the opportunity to talk and ‘work with’ the other participants were likely to attend, Niwa argued.<sup>99</sup> Participants are not just selected, then, but self-selecting. Niwa’s comments seemed to imply that participants were not only coming to be heard, or to hear useful information, but to join a community. This community aspect of the workshops is reflected in the high number of repeat participants. 51 participants spoke at more than one seminar. 20 spoke at more than a quarter of the events (table 6.2). Eight people spoke at more than half of the ICRP Dialogues. And these numbers do not reflect the many participants who did not wish to take up a formal opportunity to speak, but nevertheless continued to attend the seminars.

**Table 6.3.** Frequent Participants in the ICRP Dialogues

Name.	Affiliation	No. of seminars spoken at
Kikuchi Katsuhiko	Fukushima Minyu	12
Hayakawa Masaya	Fukushima Minpo	11
Ando Ryoko	ETHOS in Fukushima (NPO)	9
Ohmori Makoto	Television Fukushima	9
Katsumi Satsuki	Formerly of Tominari Primary School	9
Miyazaki Makoto	Fukushima Medical University	8
Endo Shinya	Suestsugi, Our Home Town (NPO)	6
Hayano Ryugo	Tokyo University	6
Nonaka Shunkichi	COOP Fukushima	5
Lavrans Skuterud	NRPA	4
Yoshida Hiroko	Tohoku University	4
Astrid Liland	NRPA	3
Ban Nobuhiko	Tokyo Healthcare University	3
Kanno Kuni	Farmer, Iitate Village	3
Kanno Motoichi	Farmer, Iitate Village	3
Kanno Muneo	Farmer, Iitate Village	3
Kanno Yoshiki	Resident, Iitate Village	3
Sato Osamu	COOP Fukushima and Fukushima College	3
Tadano Kensuke	City council, Minamisoma	3
Theirry Schneider	CEPN	3

Not all members of this community play the same role – a notable distinction existing between ICRP members and all other participants. This is not to suggest that relationships between the two are not warm. At the Dialogue in July 2017, I saw local participants greet ICRP members like old friends – laughing, clasping hands, and even embracing.<sup>100</sup> It is simply to suggest that there is more than one mode of participation. ICRP members participate as ‘facilitators’.<sup>101</sup> Many are present at each

<sup>99</sup> Niwa, Interviewed November 2017.

<sup>100</sup> Field notes, 7 July 2017.

<sup>101</sup> Clement, Interviewed September 2018.

Dialogue, but few appear on the programme. Those who do predominantly occupy framing roles, such as offering welcoming and closing remarks (Lochard), chairing sessions (Lochard), or acting as rapporteurs (e.g., Lazo, Jean François Lecomte, Deborah Oughton, Schneider). In short, they are not scheduled to offer much input. They rarely present<sup>102</sup> and never take part in the structured dialogues. Instead, they aim to let those who have dealt with disaster on a daily basis drive the discussion.

This role of ‘facilitator’ recalls popular notions of therapy. Just as the ICRP allows participants to steer the discussion on the grounds that when experts ‘mak[e] up the questions we think people want us to answer... it doesn’t really work because we usually don’t get it right’, non-directive therapists have defended the practice of allowing clients to steer their interactions on the basis that ‘it is the client who knows what hurts, what directions to go, what problems are crucial’ (Rogers 1961:11-12). Both profess to treat their interlocutors as experts on their own lives. Moreover, both encourage their interlocutors to perform this role confidently by placing restrictions on their own conduct. The idea that a therapist should offer their client ‘unconditional positive regard’ – that is, refrain from judgement – is a vivid aspect of how they are popularly imagined. In the context of the Dialogues, ICRP members place a similar restriction upon themselves. They contribute to floor discussions, and answer factual questions directed toward them, but fastidiously pass certain topics over in silence. ‘We really try not to tell people what to do even when we’re asked, ‘is it safe for me to do this and that?’’ Clement told me. ‘We don’t answer ‘yes’ or ‘no’... because it’s not our role to tell people what to do.’<sup>103</sup> To act as a facilitator is therefore to eschew the role of a normative interlocutor; forgoing the right held by participants to express moral judgments.

### 6.5.2. *Structured Dialogues’ Categorisation of Participants*

Every ICRP Dialogue seminar is accompanied by a programme, prepared by the ICRP’s Scientific Secretariat. On no less than six occasions, the ICRP’s programmes group the dialogue (i.e., roundtable) participants into three to five categories (Dialogues Four, Five, Six, Seven, eight and 12). In broad terms, these categories relate to variations on six identities, namely: (i) professionals (from universities or government agencies); (ii) NPO representatives;(iii) persons involved in education (both professionally and as Parents and Teachers Association (PTA) members); (iv) local people; (v) medical professionals; (vi) and members of the press. Far from enforcing a Manichean division of participants into ‘experts’ and ‘lay people’, the ICRP’s efforts to delineate participants indicates that they recognise a plurality of perspectives as relevant.

**Table 6.4.** The categories used to order participants in the structured Dialogues

Dialogue	Categories
4	University, NPO, JA [Japanese Agriculture Association], School education , Mass-media
5	University, Local NPO and inhabitants, School teachers and PTA, Medical professionals, Mass-media

<sup>102</sup> Notable exceptions to this rule can be found in Dialogue One (November 2011) and Dialogue Two (February 2012), when the format of the seminars was still in flux. Following the adoption of a format based on presentations and structured dialogues in Dialogue Three, presentations by ICRP members become rare. Deborah Oughton’s presentation on the effects of Chernobyl on Norway in Dialogue Seven, Session Five is a notable exception.

<sup>103</sup> Clement, Interviewed September 2018.

6	Professionals and NPOs, Iitate village, Health care and medicare, press
7	Professionals and NPOs, Local inhabitants, Press
8	Expert and authority, Citizen, Medical professionals, Media
12	Expert and government, Local People, Health care, Media

---

It should be emphasised that this classificatory work stops short of offering a consistent typology of stakeholders. The categories used vary from event to event. Some of this variance is merely a semantic artefact of translation. Clement explained that the English and Japanese versions of seminars documents were prepared in parallel; Japanese members of the Scientific Secretariat doing the work of translation (Clement, interviewed 09/2018). No one version of the programme can therefore be considered the original. However, some of the variance in the English documents seems to be an artefact of inconsistent translation. For example, the Japanese word *houdou* is variously rendered as ‘mass-media’ (Dialogues Three, Five), ‘media’ (Dialogues Eight, 12), and ‘press’ (Dialogue Seven). The term is even translated in two different ways in a single document (cf. Dialogue Six, Sessions Three and Five). This variance does not appear to convey any nuance in meaning. In each case, the term is applied to three or more of the same four individuals: Hayakawa Masaya of *Fukushima Minpo*; Kikuchi Katsuhiko of *Fukushima Minyu*; Ohmori Makoto of *Televiue Fukushima*; and Yabuchi Junya of Nippon Housou Kyokai (NHK). The work performed by the category is therefore entirely consistent, regardless of translation. It serves to designate employees of media companies, while excluding freelance journalists – such as Egawa Shoko – and photographers – such as Takai Jun. This variation can, therefore, be safely ignored.

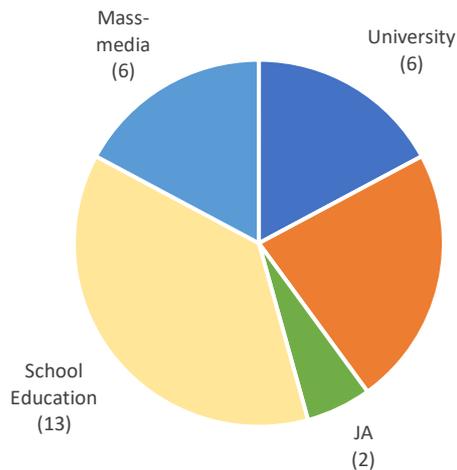
In other instances, however, the shifts in categorisation serve to group and regroup those who take part, so that some frequent participants appear under a series of different labels. Consider, for example, the case of Takai Jun, a Tokyo-based photographer, who has produced a series of intimate portraits of life in Suetsugi, Iwaki (the home city of Endo, of NPOs ‘ETHOS in Fukushima’ and ‘Suetsugi, Our home town’). In a discussion of ‘self-help actions in Iwaki and Hamadori’ (Dialogue Seven), Takai was classified as a ‘professional or NPO’ representative (*senmonka*, NPO). He – like Ando – was grouped with academics, such as Hayano Ryugo of Tokyo University. By contrast, in a broader discussion of ‘the experience we [Dialogue participants] have gained together’ (Dialogue 12), both he and Ando were listed as ‘local people’. Identity, it would seem, is conceived by the Dialogue organisers as a relational property. More specifically, the identities used appear to relate to the question under discussion.

### 6.5.3. *Local People*

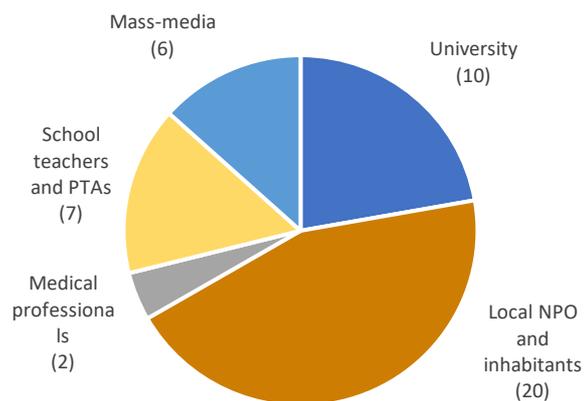
These shifts in categorisation make trends in participation difficult to observe. However, one obvious trend is that the participation of local people is given more and more weight as the Dialogues ensue. In Dialogue Four, no one is invited to participate as ‘a local’. The locals who do take part do so as members of NPOs or as individuals who have some connection to school education. The schema of labels thus emphasises institutional affiliation. From Dialogue Five onwards, however, people are increasingly invited to participate as individuals, not identified with a specific form of organisation. In the English documents, they appear variously as: ‘inhabitants’ (Dialogue Five), the people of ‘Iitate Village’ (Dialogue Six), ‘local inhabitants’ (Dialogue Seven), ‘citizens’ (Dialogue Eight), and ‘local people’ (Dialogue 12). Hence the Dialogues acknowledge the figure of the local, who has a right to

speak – not because they represent a citizens group or have knowledge of a particular sector – but simply because they live in an affected area. Moreover, this category of local people accounts for a progressively greater share of roundtable participants. This growth reflects a shift in who was invited, but also how they were categorised. Participants labelled as representing NPOs (e.g., Ando) or educational bodies (e.g., PTA members) in earlier Dialogues are increasingly constructed as ‘local people’ in later Dialogues. Hence, the arc of the Dialogues appears to tend toward emphasising the value of local people’s perspectives.

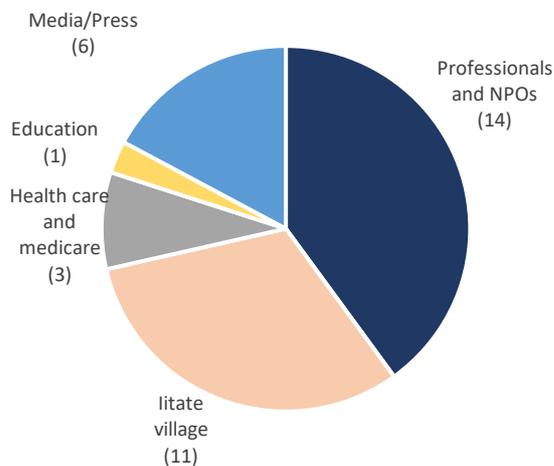
**Figure 6.3. Seminar Four**



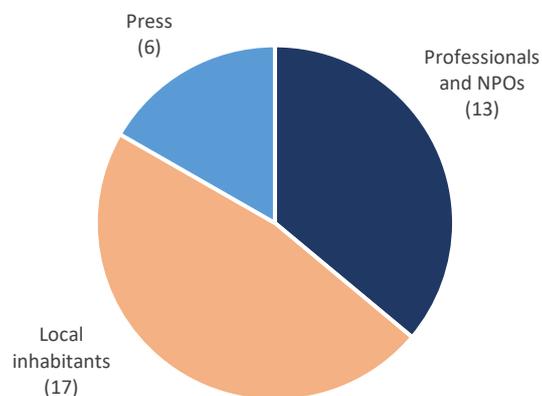
**Figure 6.4. Seminar Five**



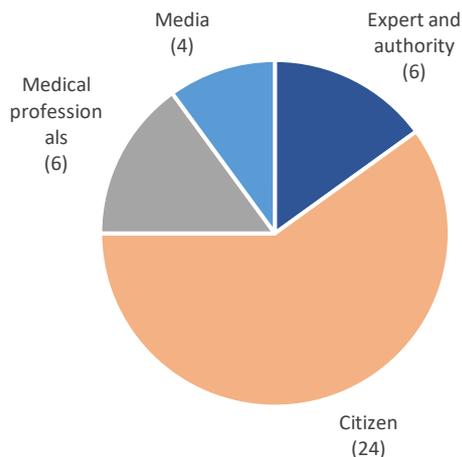
**Figure 6.5. Seminar Six**



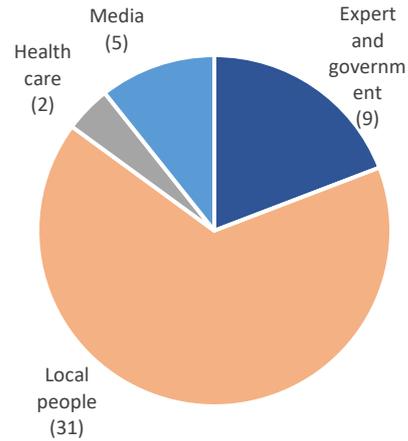
**Figure 6.6. Seminar Seven**



**Figure 6.7. Seminar Eight**



**Figure 6.8. Seminar Twelve**



Source: ICRP Dialogue programmes.

Note: the colouration and labels on the diagrams attempts to reflect inconsistencies in translation. ‘Expert and authority’ (Dialogue 8) and ‘expert and government’ (Dialogue 12), for example, are both translations of *senmonka / gyōsei*. Thus, they are coloured the same shade of blue. Likewise, ‘Medical professionals’ and ‘health care and medicare’ [sic] are both translations of *iryō / hoken*. ‘School teachers and PTAs’ (Dialogue 5) and ‘education’ (Dialogue 6) are both translations of ‘education’ (*kyōiku*), but Dialogue 4 specifies ‘primary education’ (*shōgaku kyōiku*), so is rendered in a separate shade. ‘Local resident’ (*chiiki jūmin*) and ‘resident’ (*jūmin*) have been rendered in the same shade, as residents no change in nuance is implied: residents are implicitly local.

In light of this trend, it is tempting to regard the semantic shift from the label of ‘inhabitant’ to ‘citizen’ or ‘local people’ as meaningful in its own right. To be an ‘inhabitant’ or ‘resident’ is a status defined by a claim to property – either as its owner, or as a tenant. It is an identity defined by a financial claim to a particular space. By contrast, ‘citizenship’ and ‘personhood’ are terms that drip with broader ethical and political connotations, implying an agent endowed with rights and obligations by the state or their very being. The philosophical tradition is replete with discussion of the ‘citizen’, from Aurelius to Rawls (Isen 2002). Not so, the ‘inhabitant’. The temptation is to read this terminological adaptation as further evidence of the Dialogues’ evolution. Not only do ‘ordinary people’ begin to participate, in greater and greater numbers – we could be tempted to assume – but the Dialogues begin to recognise them as fully political beings.

However, no such shift in perception is implied in the Japanese documents. As Kariya (2015) has observed, ‘‘citizen’ is a word that is difficult to translate into Japanese in a way that preserves its original meaning in English’ (2015:120). One of the central difficulties is the use of two different terms for citizenship: *shimin* and *koumin*. As Parmenter et al. (2008:205) explain:

‘*Shimin* means ‘a sovereign of the nation’ or ‘private citizen’ in Japanese. According to Horio (1987), this term is based on the concept of ‘education for individual freedom’ and was not apparent in Japan until after democratisation in 1945. *Koumin* means both ‘citizenship based on natural law’ and ‘citizenship based on the Imperial Family-State’, and is dated back to 1868 or 1920, depending on opinion’ (in Davies, Mizuyama and Thomson 2010:172).

Astute readers will notice, however, that the term translated as ‘citizen’ by the ICRP is neither *shimin* nor *koumin*, but *jūmin* (see: Dialogue Eight): a term ordinarily translated as either ‘inhabitant’ or

‘resident’ and lacking the overtones of liberal cosmopolitanism or nationalism associated with these other terms. This same term is more accurately rendered as ‘local people’ by the ICRP on a separate occasion (Dialogue 12); though it is worth emphasising that *jumin* are ‘local people’ more than ‘local people’. Hence, the conceptual shift suggested by the English documents appears to be little more than an artefact of inconsistent translation. The Japanese texts consistently define lay-participants as either ‘ordinary people’ (Dialogue Five) or ‘residents’ (Dialogues Eight, 12) of a region (Dialogue Seven) or village (Dialogue Six). The people that this label designates are defined, not by their status as a member of a sovereign collective or their capacity for political action, but by their geography. They are ‘local’ to the nuclear accident.

## 6.6. The Purpose of Dialogue: To learn and to empower

### 6.6.1. *Institutional Learning*

For the ICRP, the boon of listening to local participants is the opportunity to learn. ‘If you want to understand what is the post-accident situation,’ Lochard told me, ‘there is no other way than going there and talking with people who have been through the process. Nothing else.’<sup>104</sup> Fukushima Daiichi was only the second nuclear disaster of this scale. And the first in which the geopolitical situation allowed for engagement with the affected population in the immediate aftermath of the disaster. ‘Institutionally, we saw it as an opportunity to learn very deeply what the issues really were in Fukushima so that we could make our recommendations better,’ Clement explained.<sup>105</sup> The Dialogues, therefore represented an opportunity for institution learning, through which the ICRP has enhanced its claims to authority. By the organisation’s own account, the authority of *The System of Radiological Protection* rests on a triad of factors: the Commission’s scientific knowledge, its commitment to ethical values; and the experience of its members. In the wake of 3.11, the ICRP identified an opportunity to enhance its claims to all three. The opportunity to spend time in Fukushima, engaging with local people, offered all members of the ICRP the opportunity to gain first-hand experience of the post-disaster situation, and deepen their knowledge of radiological protection. And the very act of convening a conversation between experts and lay people performs a commitment to ‘the ethical’; demonstrating a recognition of safety and danger as the more-than-scientific categories, and a commitment to the principle of inclusivity. Moreover, the content of these exchanges has provided a foil for the ICRP’s attempts to identify an (erstwhile implicit) system of values to guide its recommendations. It is with this task in mind that members of Task Group 94 attended the Dialogues, while preparing ICRP Publication 138 ‘Ethical Foundations of the System of Radiological Protection’ (ICRP 2018) – the first extended statement of normative values in the organisation’s history.

### 6.6.2. *Empowering Participants*

ICRP members were keen to stress, however, that the Dialogues were not primarily convened for the organisation’s benefit. ‘First we’re human beings and wanted to help in some way,’ Clement told me. ‘We knew we had some expertise or knowledge or experience that might help. That was key, on a

<sup>104</sup> Lochard, Interviewed August 2017.

<sup>105</sup> Clement, Interviewed September 2018.

personal or human level.’<sup>106</sup> The co-expertise process, Lochard agreed, is driven ‘first’ (and implicitly, foremost) by a quotidian desire to ‘empower’ local participants, helping them ‘regain control of their daily lives’.<sup>107</sup> It is clear, however, that ‘empowerment’ is not conceived in instrumental terms. That is to say that the Dialogues do not aspire to act as a policy lever through which participants might affect their own situation. A number of local Dialogue participants were invited to engage with the ICRP in its efforts to revise *The System of Radiological Protection* in 2015, meeting with Task Group 93 on four occasions. However, the periodicity on which ICRP recommendations shape policy is not suited to providing immediate relief: each ICRP Publication takes years to produce, and many more years to be reflected in legislation. At the time of the 2011 Fukushima Daiichi nuclear power plant disaster, Japan’s national legislation had not yet been revised to reflect suggestions made by the ICRP four years earlier in Publication 103; instead operating on a system informed by recommendations made in 1990. Participants implicitly recognised this ‘policy lag’ in suggesting that the beneficiaries of any amendments made to ICRP recommendations would not be the victims of Fukushima Daiichi, but the victims of the *next* nuclear disaster. At Dialogue 17, for example, le Guludec told local participants that the attendant experts were there to ‘learn from you and to transfer your testimony to the rest of the world’ (le Guludec 2017); ‘This crisis can become in all of the world. In France, we have a lot of nuclear power plants. It can happen tomorrow... nobody can say.’ This message was echoed by Ted Lazo during the subsequent floor discussion:

First of all, there was a question earlier about... what’s come out of these Dialogues for the rest of the world. I’d like to say that I represent the OECD Nuclear Energy Agency, which is made up of 32...soon to be 33 countries, some of which have nuclear power, some of which don’t, and a major output is exactly what was just recognised. Your experience – your tragic experience – and extracting lessons that can be used in the rest of the world and passing that on to members of the Committee on the Protection of Radiological Health, so that, in case something happens somewhere else, we’re better prepared. Thank you very much for that.

### 6.6.3. *Empowerment as Feeling Able to Make Choices*

The goal of re-establishing ‘control of daily life’ is therefore framed in a resolutely personal manner. The Dialogues recognise that the advent of the nuclear disaster has forced residents to make ‘wrenching decisions’ (KOTOBA 2016), which are both technical and normative in nature. In the face of such decisions, inaction and ‘heartbreak’ are framed as understandable responses (ibid). As in therapy, the Dialogues aim to ‘empower’ participants, in the sense of making them *feel* able to face these decisions. This focus is reflected in the choice of epigraph to each of the nine ‘Conclusions and Recommendations’ documents produced after seminars between 2011 and 2014 – a quote from ICRP Publication 111:

‘Isn’t it true that what most people really want is to continue living their lives, and that they are willing and able (sometimes with a little guidance) to make that happen?’

The promise of the Dialogues is imagined as this ‘little guidance’. On one level, this is ‘about practical information,’ Clement explains. The role of the ICRP at the Dialogues is to listen to local

<sup>106</sup> Clement, Interviewed September 2018.

<sup>107</sup> Lochard, Interviewed August 2017.

people and ‘to respect their decisions’, but it is also ‘to help people get the information they need to make the decisions best for them.’<sup>108</sup> The threshold constructed for success, however, is not a state of knowledge, but an affective state. That is to say that the Dialogues seek to inform local participants with the aim of affecting them, augmenting their confidence in their decisions. In explaining the desired effects of the Dialogues, Lochard emphasised that whether the actions that local participants ultimately chose to take are ‘in line, or not’ with his own appraisal of the situation is ‘not the issue’:

‘What is important is that they regain some confidence and that they start to move and to say, to think, ‘This is not something that is out of my understanding. I can understand.’’<sup>109</sup>

Lochard’s call for action over inaction, decision over indecision, active choices over passive ones, is coupled with an ambivalence toward the content of these decisions. It is the paralysis of confusion, not reticence about living in Fukushima, that he constructs as a problem to be overcome. To become ‘empowered’, in this context, is to pass from one state of experience to another (Massumi 2013). As one frequent participant noted, the societal norm when facing a technical problem is to have ‘productive discussions’ based on ‘what can be seen and what can be heard’ (Ban 2016:81). Yet, ‘the ICRP focused on what is unseen and unheard’ – on ‘people’s feelings and determination’ – on the understanding that ‘[i]t is the ‘unseen’ that inspires people to action’ (ibid.:). Such work does not diminish the challenges of evacuating or living with radiation. Participants remain forced to make ‘wrenching decisions’ in conditions that are not of their choosing. But it is hoped that participants will be able to orient themselves to these challenges differently – moving from states of doubt and disaffection to a trust in their own feeling and judgment.

This imagination of ‘co-expertise’ as a process that augments the capacities of its participants, by aiding their passage from one affective state to another, invites the observation that the Dialogues rest on a hierarchy of affects. That is to say that the ICRP implicitly privileges emotional states, such as hope, optimism, and future-orientation, as desirable. Kimura convincingly documents this affective privilege with reference to a series of public letters between Ando and Lochard, published on the website of *Asahi Shimbun* (Japan’s second largest newspaper, by circulation) under the title *Sur la barque des passeurs* (‘on a ferry boat’). Here, the displacement of negative emotions by positive ones is presented as a core function of co-expertise. Ando tells of how she was ‘filled with dark emotions such as irritation, anger, and sorrow’ prior to her encounter with the ICRP and its work (in Kimura 2018). ‘I was looking for some light. ICRP 111 was the first light I discovered’ (in ibid.). Yukiko Ban – a frequent participant from Dialogue Five onwards – has echoed Ando’s luminary metaphor; writing of how the seminars have taken her from ‘awareness and shock’ (ibid.:79), through ‘helplessness and doubt’ (ibid.:80), to the discernment of a ‘feeble light ahead’ (ibid.). Ban’s account is notably more reserved. The light ahead is ‘feeble’, the journey to it longer. For Ando, the work of the ICRP *is* light itself. Her first contact with the co-expertise principle *is* the dawn. For Ban, the seminars are more akin to Lochard’s ‘road that is made by walking’, functioning as part of a process that can eventually lead to light. Paths do not have to be linear. After an initial period of high hopes for the seminars in 2013, Ban notes that by 2014 her ‘expectations were crumbling’, leading to a ‘feeling of stagnation and hopelessness’, coupled with ‘doubts towards the ICRP seminars themselves’ (ibid.).

<sup>108</sup> Clement, interviewed September 2018.

<sup>109</sup> Lochard, interviewed August 2017.

To claim that positive affects (e.g., hope) are privileged over negative affects (e.g., anger) is not, however, to claim that the Dialogues seek to repress expressions of dissatisfaction. Comments on the mood of the early seminars feature prominently in accounts of the Dialogues. In *The Genesis of the ICRP Dialogue*, for example, Lochard notes that ‘although the exchanges took place in a rather warm atmosphere with an attentive audience, a high level of tension was perceptible among the Japanese participants’ (2017a:10). KOTOBA similarly portrays a terse atmosphere, prone to emotional outbursts:

‘The atmosphere at the first seminar was tense and heavy. Anger and tears often erupted around the room during the two-day Dialogue held on November 26<sup>th</sup> and 27<sup>th</sup>, 2011. Then, suddenly, eight months of restrained fear and frustration were released.’ (KOTOBA 2016)

The ubiquity with which mood and affects are commented upon indicates that anger, fear, and frustration are not the ‘shunned emotions’ that Kimura suggests (2018:113). Far from seeking to ‘police’ or ‘silenc[e] anger and anxiety’ (ibid.), participants describe the seminars as a space in which ‘no voices... den[y] or criticise[ ] the opinions of others’, allowing such sentiments can be expressed safely’ (Ban 2016:81). That they value this opportunity implies that they, like Kimura (2018) and other critical theorists, believe that ‘post Fukushima Japan [has] limited the range of appropriate emotions’ (Kimura 2018).

There is no paradox in embracing the expression of emotions that are not themselves valued. On the contrary, the Dialogues welcome expressions of anger and frustration, *precisely because* these affects are tacitly understood to be undesirable. In the act of expression, actors are imagined to ‘release’ their ‘restrained fear and frustration’, KOTOBA reports ([emphasis added] 2016). ‘[E]xpressing pain’ – le Guludec agrees – is ‘half the cure’ (2017). Both frame co-expertise as a cathartic experience, in which negative emotions are expressed in a ‘neutral territory’<sup>110</sup>, so as to purge or purify them (Pottle 1950). Catharsis remains a contested concept in the fields of Philosophy and Psychiatry (Warne 1980). Debates continue to rage over the subject, matter, and nature of the experience. The unsettled nature of these academic debates has not, however, prevented the widespread adoption of cathartic practices in therapy. A focus on facilitating the cathartic expression of ‘repressed’ emotions have been a prominent feature of therapeutic practice from Freud onwards, not least in the non-directive tradition. ‘We have known for centuries that catharsis and emotional release were helpful,’ Rogers (1964) argued; insisting that psychiatry had developed ‘many new methods... to bring about this release, but the principle is not new (ibid.). The benefits of cathartic have also long since established themselves in the popular imagination. In discussing the Dialogues’ therapeutic function, Clement emphasised that he was not qualified in psychology or psychiatry: ‘I’m not a therapist. I’m not a medical doctor. I don’t know these things.’<sup>111</sup> Nonetheless, he affirmed that ‘letting people say their piece is really important... That is huge for many people and that is therapy.’<sup>112</sup> Ban went further in asserting the value of cathartic expression, suggesting that ‘at times, th[e] process [of dialogue]... uncovered people’s emotions that had been buried intentionally and rationally to move forwards’ (2016:81). In celebrating the exposure of ‘intentionally’ repressed emotions as a boon – rather than portraying this as a potentially traumatic experience – Ban tacitly ascribes to the coexpertise process the function of exorcising negative affects through open expression. In short, he depicts it as a therapeutic process.

<sup>110</sup> Clement, interviewed September 2018.

<sup>111</sup> Clement, interviewed September 2018.

<sup>112</sup> Clement, interviewed September 2018.

## 6.7. Conclusion

In examining the Dialogue seminars organised in Fukushima by the ICRP, this chapter has found that the driving notion of co-expertise can be understood through the metaphor of therapy. This metaphor serves to draw attention to pattern of interaction at the seminars, which encourages local participants to express themselves as experts on their own condition. ICRP members act as ‘facilitators’ of discussion, whose primary function is to listen and summarise. To this end, ICRP members have eschewed the role of active interlocutors; absenting themselves from the seminar programmes almost entirely, except to take on the framing roles of Chair and rapporteur. Where ICRP members do engage seminar participants directly – in floor discussions – they do so under a code of conduct that would be familiar to any non-directive therapist; careful to avoid offering value-judgements on specific courses of action. The goals of the seminar are also notably akin to that of therapy, in so far as they aim to ‘empower’ participants to feel able to take ‘control of their own lives’. No member of the ICRP has been more involved in shaping the idea of co-expertise than its Vice-Chair, Jacques Lochard. Equally, no individual has been more intimately involved in coordinating the logistics of the Dialogues than ICRP Scientific Secretary, Christopher Clement. Both agree that the metaphor of therapy is apt.

Still to be achieved is a full examination of the politics of catharsis. Such a project might ask, what the implications of international organisations engaging in the ‘management of emotions’ might be. Kimura rightly suggests that, ‘[a]nger and anxiety are not intrinsically worse than hope of happiness, among other things they might inspire social movements to demand accountability for injustice’. Yet the politics of exposure cannot be reduced to an affective binary, in which ‘hope’ and ‘future-orientation’ are read as inherently conformist, while ‘anger’ and ‘anxiety’ are privileged for their subversive potential. It is true that dissatisfaction acts as an animus for political action, anti-nuclear or otherwise. But these challenges to the status quo are no less hopeful or future-oriented than the attempts to resettle a disaster-stricken Fukushima prefecture. Social activism is inherently a ‘struggle for tomorrow’ (Ting 2017), driven by the audacity to hope<sup>113</sup> that it might be better than today. Indeed, the embrace of a prefigurative politics - involving attempts to establish ‘alternative or utopian social relations in the present’ as a template for future modes of collective being (Yates 2014:1. See also: Reinecke 2018, Rohgalf 2013) - is one of the conspicuous trends of contemporary activism. Further enquiry into this topic might ask, under what conditions should ‘hope’ be privileged in the response to nuclear disasters, and under what conditions should the call to be hopeful be treated with suspicion.

<sup>113</sup> To play on Obama’s (2006) famed phrase, ‘the audacity of hope’.

## Chapter Seven

### Conclusion

---

‘How much exposure to radiation should Japanese citizens accept?’ Of the plethora of policy problems posed by the 2011 Fukushima Daiichi nuclear power plant disaster, it is permutations of this question that have proven the most intractable. Touching on where is habitable and what is edible, the issue of demarcating an ‘acceptable’ level of exposure has quite literally brought the disaster into the homes of the nation. ‘Like it or not, we have all been pressured to make decisions,’ Muto Ruiko (2011), a mild-mannered café owner displaced by the nuclear disaster, told the crowds gathered in Hibiya Park on 19 September 2011. ‘To go or stay, to eat or avoid, to hang our laundry outside or inside, to make our child wear a mask or not... Anguished decisions’ (ibid.:2). The radiation released from the plant has not just penetrated the bodies of Japanese people, she seemed to argue, but the very fabric of the nation – transforming every prosaic decision into a confrontation with an unfamiliar risk. Even those who live far from the stricken plant are routinely found questioning the adequacy of the government’s safety standards; finding cause to engage with this issue, not just on TV, but on their plates. ‘This is about how we live,’ Muto concluded. To negotiate this controversy is an exhausting experience, she acknowledged – one that could cause even the most stalwart to ‘sigh deeply from heartbreak and fatigue’ (ibid.). Yet more than 60,000 people joined Muto in protest on that cloudy Monday; fellow ‘ogres of the northeast’, and allies from further afield, ‘quietly burning the flames of [their] wrath’ (ibid.). And though the number of protestors would rise and fall over the coming years, Muto’s conviction that the response to the disaster had proven that ‘truths are covered up’ and that ‘the government does not protect its citizens’ remain shared by many (ibid.) – leaving questions of civilian radiation exposure subject to public controversy.

As with all public knowledge controversies, the debates surrounding government thresholds for civilian radiation exposure have not just centred on contestations of fact, but on questions pertaining to the credibility and interests of experts (Shapin and Schaffer 1985), as well as the veracity of their techniques and instruments (Collins 1985 in Barry 2012:326). The terms on which answers to such questions are reached in public debates are notably different to the terms on which scientific controversies are settled within specialist communities (Jasanoff 1996; Wynne 1982, 1987). Ideas, institutions, and people who command automatic authority within a technical community may not be recognised by the lay public (Barry 2012:326). Conversely, voices dismissed in the technical community may gain popular support and be imbued with fresh force. Expert actors are consequently forced to re-stake claims to credibility, and do the boundary work of distinguishing their performances of authority from those of their competitors, anew (Gieryn 1983, 1999).

As the Fukushima Daiichi disaster significantly eroded trust in both the Japanese government and academic experts – putting the nation’s civic epistemology under significant strain – the epistemic struggles pertaining to civilian radiation exposure are particularly fierce, and therefore worthy of attention. This thesis has analysed, in ethnographic and theoretical detail, how claims to expert authority are made in these conditions of low public trust, using the idiom of improvisation to

examine the resourceful manner in which actors interpret their political situation and adapt their performances accordingly – fashioning personas and practices appropriate to the times.

## 7.1. Thesis Summary

In the first of four substantive chapters, Chapter Three examined the imagined geographies of the nuclear disaster. In its analysis of the positions espoused by politicians, scientific advisors, activists, and public intellectuals, it identified three popular imaginations of the disaster, which frame the issue of civilian radiation exposure in relation to specific spaces. The notion of Reconstruction, for example, posits the disaster as a national crisis; one which demands that ‘all of us [the Japanese people]... view the disaster as affecting our own lives, and... pursue Reconstruction with a spirit of solidarity and mutual understanding that permeates the entire nation’ (Reconstruction Design Council 2011:2). By contrast, the counter-narrative of Fukushima as a national ‘sacrifice zone’ imagines radiation exposure as a distinctly regional experience; interpreting the placement of nuclear power plants as part of an uneven geography of risks and benefits, which encumbers rural areas with the cost of supporting urban modes of life. In this case, housing an ill-fated nuclear facility built to supply electricity to the Tokyo metropolis. A third, related narrative posits the disaster as a consequence of ordinary people’s exclusion from the halls of power. Central to this narrative is the ‘nuclear village’: an imagined collective of politicians, bureaucrats, energy utilities, academics, and media outlets, united by a shared interest in the promotion of nuclear power. I argued that each of the three narratives frames the experience of exposure differently. Reconstruction asks its citizens to accept government mandated limits as promoting the good of the nation, while both the narrative of a ‘sacrifice zone’ and the ‘nuclear village’ frame radiation exposure as a physical embodiment of structural marginalisation.

Having traced the broad spatial narratives through which the disaster and radiation exposure are framed, I proceeded to focus more explicitly on the positioning of experts and science advisors within these imagined geographies. Chapter Four (‘Smiling Radiation Away’) unpacked how common calls for experts to teach the public to ‘fear radiation correctly’ are entangled in the dominant narrative of Reconstruction. I argued that while concern over radiation exposure can, and does, pose a threat to mental health, the stabilisation of ‘radiophobia’ and ‘harmful rumours’ as policy problems reflects their construction as obstacles to Reconstruction. At its core, Reconstruction offers a vision of the future for both Fukushima and Japan – one that cannot be realised if the displaced people of Fukushima fear to return home, nor if the people of Japan avoid its produce. Fear, then, is a danger, not just to individual bodies, but to an imagined future of the body politic. And yet, this fear is also an opportunity. Its very insolubility justifies continued investment in medical research and science communication, producing Fukushima as a centre of expertise on radiological issues. By leveraging this knowledge capital, Fukushima has been able to promote the development of its medical industry; breathing new life into the economy of an ageing prefecture, famed for its agricultural products, but struggling to retain its young. I therefore interpreted radiophobia as a *fortuitous obstacle* to Reconstruction: the fear of radiation being an impediment to the collectively imagined future, but one that justifies the recruitment of experts who help to rejuvenate Fukushima through their very presence.

Having detailed how experts are discursively positioned in this macrosocial struggle against radiophobia, the thesis then proceeded to provide microsocial examinations of how authoritative expert bodies improvise claims to authority in these challenging conditions. The idiom of

improvisation is borrowed from critical analyses of the state (Jeffrey 2013), and used to illuminate the ‘performed resourcefulness’ of actors who continually interpret their political situation and adapt their performances of expert authority accordingly. Chapter Five (‘An Improvised Workshop’) examined the Organisation for Economic Co-operation and Development-Nuclear Energy Agency’s (OECD-NEA) workshop on food safety science, specifically; drawing on participant observation, interviews, and textual analyses of workshop materials. I argued that the standardised elements of the workshop ‘script’ can be understood as part of its architecture of authority, just as the procedures through which scientific reports are drafted have been documented to be (Hilgartner 2000). Yet, its deliberate deviations from normal procedure are no less significant than the workshop ‘script’ in understanding how the OECD-NEA forges a credible public persona. Conceived and commissioned by the Japanese Cabinet Office, with explicit recognition of people’s distrust of the Japanese state, the workshop paradoxically performs both a placeless internationalism and an embeddedness in the local context of the disaster; making claims to both the disinterested objectivity of distance, and the intimate moral authority of a witness. I documented how the mantle of witness, in particular, is claimed through a series of moves uncharacteristic of scientific advice, including: the enrollment of school children as participants in the workshop; and the offering of experts’ bodies as a site of evidence, through the publicised act of consuming Fukushima produce.

Chapter Six (‘Dialogue as Therapy’) provided a contrasting case-study, focusing on a series of participatory workshops held in Fukushima by the International Commission on Radiological Protection (ICRP). Many of the actors involved in the OECD-NEA workshop are also participants in these ‘Dialogue Seminars’ but comport themselves differently. The declared aim of the ICRP’s workshops is not to communicate a scientific assessment to the public, top-down, but to engage local people as equals in a ‘co-expertise’ process, aimed at producing a ‘practical radiation protection culture’. I argued that this approach is itself an improvisation – developed through ‘trial and error’ by actors who had tried more conventional science-communication approaches, and found that they did little to allay public concerns over exposure. Moreover, it is a mode of interaction which has tacitly drawn on popular imaginations of group therapy, in both its procedures and ends. From the geography of the seminars (which typically seat participants in a semi-circle) to the sanction on ICRP members advocating certain courses of action to lay participants (which recalls the role of a ‘non-directive’ therapist), there is a notable resemblance to therapeutic practice. In providing local people with the opportunity to express themselves, the Dialogues assume the role of offering a cathartic experience, and seek to ‘empower’ participants to ‘regain control of their daily lives’. The ICRP, on the other, enhances its claim to authority: revisions made to its International System of Radiological Protection are now underwritten by the experience of its members, who can be said to have engaged with affected peoples over the course of many years.

## 7.2. Key Findings and Developments

With an overarching focus on the improvisation of expert authority in conditions of low public trust, this thesis addressed three more specific research questions. My first research question asked, *through which spatial imaginaries has the nuclear disaster been framed?* A focus on how ideas of space circulate within society has long been a hallmark of human geography (Soja 1989) – other disciplines, such as history and sociology, only ‘turning’ to space in the 1990s (Cosgrove 1984, 2003, 2004; Rosenwein 1999). As Edward Soja (2008) argues, scholarship in both the humanities and social sciences has long been captive to an ‘ontological and epistemological bias that privileged time over

space' (ibid.:12). Chapter Three contributed to ongoing efforts to redress this bias by elucidating how 'space matters' (Massey 2005) in this public controversy; privileging space in its account of how actors frame the nuclear disaster and consequent radiation exposure. This focus on the imagined geographies of the disaster is not blind to the historical dimensions of the narratives woven by my actors. To the contrary, I note that each imagined space is imbricated in a temporal frame. The understanding of Fukushima as an opportunity for national 'Reconstruction' cannot be parsed from the notion that Japan is mired in a period of malaise, commonly referred to as the 'lost decades' (1990s to present). Similarly, the portrayal of exposure as a form of abandonment, reflective of the Tohoku region's status as an 'internal colony' or 'sacrifice zone', is embedded in a history of Japanese modernity and its uneven regional effects (1860s to present). The populist narrative of the disaster as a consequence of the people's exclusion from the halls of power, meanwhile, is a story of the 'nuclear village's' ascendancy (1970s to present). In focusing on the imagined geographies of the disaster as both product, and productive, of actors' practices, Chapter Three contributes to the collective reframing of space as a process rather than a passive container of actors' actions.

This conception of space is particularly germane to recent work in Science and Technology Studies (STS). STS has long been interested in what we might call the geographies of knowledge production. From the 1970s onwards, the discipline has examined, in empirical and theoretical detail, the spaces in which knowledge is produced (Knorr Cetina 1981; Latour and Woolgar 1986), performed (Hilgartner 2000), and deployed (Jasanoff 1998a, 1998b, 2007); remaining attentive to both how the practices of knowledge-making vary across the scientific community (Knorr Cetina 1981), and how styles of public reason vary across nations (Jasanoff 2005). It is only in recent years, however, that the STS community has begun to explore how collectively held visions of particular spaces both animate, and are made plausible by, advances in science and technology. Central to this new current of research is the scholarship of Sheila Jasanoff (2015; Jasanoff and Kim 2009, 2015), who acknowledges that the 'problem' of space is one 'especially familiar to critical geographers'; calling for STS scholars to join geographers in giving more attention to how 'space and social order are coproduced... through the spread of ideas and practices... across times and territories' (Jasanoff 2015:32). This emphasis on the spatial dimensions of science and technology began with an explicit focus on their entanglement in visions of the nation (Jasanoff and Kim 2009); being broadened to encompass visions of spaces above and below the nation only in the time since I started researching this thesis (Jasanoff 2015). Chapter Three's focus on multiple competing imaginaries of different scales makes a timely contribution to this developing corpus.

My second research question asked, *what role do experts play in the dominant imaginations of the disaster, and the exposure situation, more specifically?* Chapter Four responded to this question in detailing the common imagination of Japan's public debate as a battle against the irrational fear of radiation. Tacit in this framing is the call for experts to calm the public by educating them on how to 'fear correctly' (Yamashita 2011c). I note that this narrative of radiophobia has already been subjected to much critique. Scholars working in nations as diverse as America (Falkof 2013), Khazakstan (Stawkowski 2017), and Lithuania (Pilibaitytė 2011) have questioned the assumption that how publics feel about radiation is a product of what they know, and called attention to the modalities of technocratic governance legitimated by this narrative (see, also: Hirakawa and Shirabe 2015; Jacobs 2016; and Pilibaitytė 2011). In this chapter, however, I sought to go beyond a broad critique of the deficit model (Wynne 1993) to examine the entanglement of this narrative in a vision of Japan's future – namely, that offered in the discourse of Reconstruction. Far from there being a unitary mode of 'nuclear fear' (Weart 2012), I suggest that the stabilisation of fear as a policy problem is context

dependent. Only in relation to collectively established vision of a desirable life are certain attitudes constructed as threatening to this desired social order and deemed, not only irrational, but demanding correction. The notion of an appropriate way of knowing radiation is thus embedded in notions of appropriate ways of living.

Second, this chapter sought to contribute to the literature on public deficits of knowledge and understanding, more generally. Going back as far as Wynne's *Misunderstood Misunderstanding* (1992), STS scholars have treated efforts to characterise epistemic controversies as products of knowledge deficits as 'self-defeatingly scientific' (ibid.: 281): noting that 'this formulation of the problem only encourages more public alienation, hence justifying and consolidating' scientific institutions' 'neuroses' about their own credibility (ibid.: 281). The durability of the deficit model in the face of sustained critique has thus become a source of collective confusion. In a recent paper published in *Public Understanding of Science*, (the self-same journal in which Wynne's (1992, 1993) canonical papers appeared,) Simis et al. (2016) offer a series of explanatory factors for the deficit model's intractability, ranging from scientists' own deficits in their knowledge of social scientific research to the ease with which this model can be sold to policy audiences. This thesis takes an opposing approach in seeking to understand the deficit model in productive terms. By focusing on the sites of expertise that have been fostered by the narrative of radiophobia, Chapter Four details how efforts to teach the public to 'fear correctly' have supported the training of experts in radiological protection at both Fukushima Medical University and Hiroshima University. Crucially, the cluster of experts at the former institute further Fukushima's envisioned rebirth through their very presence; serving as a nucleus of human capital around which the institution aims to grow a medical industry. Thus, far from being 'self-defeating', efforts to correct a public deficit are both a product and tool of Fukushima's reconstruction.

My third research question asked, *how do expert bodies stage claims to authority?* Chapters Five and Six responded to this question by providing ethnographic accounts of workshops staged by the OECD-NEA and the ICRP. Both are case studies in improvisation – the OECD-NEA seeking to forge a credible public persona in the face of public distrust, on behalf of the Japanese Cabinet Office, and the ICRP improvising a new mode of engaging the affected public. In both cases, the construction of space is central to my analysis. The two chapters stress how efforts to claim forms of authority are made through efforts to define the workshop as a particular type of space – be that a space corresponding to a particular scale (e.g., local, international, or both), associated with certain characteristics (e.g., intimate knowledge or dispassionate objectivity), or imbued with a certain character through its internal geography (e.g., the therapeutic association of each person in a circle having the opportunity to share). Crucially, the idiom of improvisation as *performed resourcefulness* draws our attention to the fact that these stagings do not occur in a vacuum (Jeffrey 2013:5). They are dynamic responses to public controversy, which mobilise existing imaginaries in response to actors' interpretations of the political situation, and in so doing reshape or re-inscribe the contours of the controversy. In this emphasis on the interaction between the micropolitics of the workshop and the macropolitics of the controversy, these chapters respond to charges of internalism (Campbell 2004), historically levelled at microsocial studies of how science advice achieves credibility (Hilgartner 2000). Campbell's (2004) claim that the boundaries of dramaturgical analysis are drawn too close to the action for the wider controversy to register within the scope of the analysis, is here resisted in the presentation of these cases.

The two case studies are also crafted to address an empirical lacuna. Given the interest in nuclear disasters in general, and issues relating to civilian exposure in particular, the expert bodies whose recommendations shape state radiological protection efforts remain notably understudied. To the best of my knowledge, Chapter Five offers the first analytical account of how an OECD-NEA committee produces its claims to knowledge. Chapter Six's analysis of the ICRP's performance of authority enters a somewhat more crowded field. Accounts of the ICRP's activities in Fukushima (Ando 2016a; Kimura 2018; Lochard 2017a, 2017b;), as well as accounts of ETHOS (Topçu 2013) and CORE (Kuchinskaya 2014:130-133) – precursor projects run in Belarus by an ICRP member, but outside the aegis of this expert body – do already exist. However, many of these works are not research articles published in social scientific journals, but first-hand reflections published by participants in the ICRP's own journal – *Annals of the ICRP* (Lazo 2016; Liland 2016; Rollinger et al. 2016) – or as commentaries in other radiological protection journals (Ando 2016b). The one extant social scientific account of the ICRP Dialogues, authored by Kimura (2018), draws exclusively on secondary materials. Thus, despite the volume of publications on this case, Chapter Six can claim to be the first ethnographic account of the ICRP's response to Fukushima – and quite possibly the first ethnographic account of the ICRP. As the chapter also identified fundamental interpretive errors in Kimura's analysis, which undermine significant portions of her empirical work, Chapter Six is also a corrective to errors in the existing literature. The chapter thus contributes to a more robust picture of the practices of two organisations which occupy influential roles in the global radiological protection regime.

Taken together, my thesis' efforts to answer these specific questions address a more fundamental concern: the question of whether the Fukushima Daiichi disaster was an epochal moment for Japan. Is the climate of distrust temporary? Or will the disaster be remembered as a 'constitutional moment': a political window in which the 'basic rules of political practice are rewritten, whether explicitly or implicitly, thus fundamentally altering the relations between citizens and the state' (Jasanoff 2011: 623)? There are two reasons to be cautious in rendering judgement. The first is that the dust is yet to settle. At the time of writing, Fukushima remains an active policy issue: efforts to decommission the plant continue at ever-mounting cost; cases against TEPCO continue to be tried; decontamination efforts are in full swing; and evacuation orders are still being lifted, area by area. This state of affairs will continue for years to come. However, there are signs of dwindling political interest. Numerous interviewees noted that they had 'done all they could', or had begun to focus more on other issues. One senses that, as with Chernobyl, the 10-year anniversary will be a moment of closure, at which point grass roots bodies and international organisations alike will deliver their 'last word' on the matter. The political legacy of the nuclear disaster will be clearer at this point. (This is little succour for those whose lives continue to be affected by the consequences of 3.11, who will increasingly find the infrastructures that have provided them with care and visibility are dismantled.) The second reason to be reserved in our judgement is that the scope of this thesis is relatively narrow. Having focused exclusively on the nuclear domain, it is difficult to say whether the perturbations it has documented in Japan's knowledge order are endemic to the nuclear, or reflect a broader shift in 'the relationship between experts, who underwrite almost all contemporary state action, and citizens, who are collectively subject to the decisions of states' (Jasanoff 2011). As ever, 'the question of how far one can move up the evidentiary chain from specific case to general conclusion can only be answered collectively' (Hilgartner 2004: 444).

Despite these caveats, it is clear that the Fukushima Daiichi disaster has fundamentally altered Japan's relationship with nuclear power. The shift in Japanese energy policy has been significant, albeit less

dramatic than many assumed it would be in 2011. Unlike Germany, which declared a moratorium on nuclear power by 2022, Japan has begun to bring many of its reactors back online under the premiership of Shinzo Abe. However, the fleet has been winnowed by new safety regulations – only 30 are scheduled to be restarted by 2030 and the state is unlikely to meet this target amid local opposition. Pre-2011 visions of expanding Japan’s nuclear fleet, so that it might provide 40% of the nation’s base load, are now a distant memory. More fundamentally, the Fukushima Daiichi disaster was an epochal moment in that it brought nuclear power to the forefront of public consciousness. As Sato (2017) has noted, pre-2011 Japan was characterised by an ‘indifference’ to nuclear power. Protests against nuclear power tended to be highly localised, with opposition to nuclear power on a national level considered the territory of ‘unrealistic dreamer[s]’ (Murakami in Sato 2017: 197-198). Public opinion polls now indicate that a consistent majority of Japanese citizens favour a nuclear phase out and mainstream political figures – from former Prime Ministers to active Ministers – now openly oppose nuclear power.

Japan’s new awareness of nuclear power goes hand in hand with an altered perception of experts, who are increasingly viewed as *interested* actors. Trust in bureaucratic impartiality, implied by Japan’s pre-2011 regulatory architecture, for example, has been decimated, if not extirpated. No longer can nuclear safety be credibly entrusted to the ministry responsible for promoting nuclear power, as it was under both the 1978 revisions to the Nuclear Reactors Regulation Law and Japan’s 2001 Central Government Reform (*Chūō Sōchō Saihen*)<sup>114</sup>. The amalgamation of responsibilities into the Nuclear Regulatory Authority (NRA) under the Minister for Environment reflects a new emphasis on demonstrating autonomy. In the wake of 3.11, the performances of expert committees have reflected a similar emphasis on independence. Both the National Diet’s National Accident Independent Investigation Commission (NAIIC 2012) and the Rebuild Japan Initiative Foundation’s (RJIF) *Investigation on the Fukushima Daiichi Nuclear Accident* stake their claim to credibility on being ‘truly independent, unfettered by concerns for existing organisations and frameworks’ (Funabashi 2012), and therefore able to provide ‘full, honest and transparent answer[s]’ (Kurokawa in NAIIC:7). The ICRP’s emphasis on ensuring that the Dialogues remain a ‘suitcase without a handle’, unconnected to the state or nuclear industry, reflects a similar equation of autonomy with credibility. Thus, one can observe a broad shift in Japan’s style of public reasoning about science-policy issues: an increased emphasis on resolving conflicts of interest organisationally reflecting a declining belief in both scientific and policy experts’ ability to suppress their own interests in making professional judgments. In places, change has been more performative than structural. The Cabinet Office’s emphasis on commissioning ‘international’ workshops, for example, makes manifest the caché of appearing impartial, but does little to address the Japanese state’s role as a client for such assessments. The effort to cultivate an aesthetic of distance nevertheless marks a shift in how authority is secured.

Beyond its immediate effects, it is clear that the Fukushima Daiichi disaster has now entered the collective memory. One of the themes of this thesis is that Japan’s experience of nuclear disaster has been influenced by the memory of events long passed, from Hiroshima to Bikini Atoll, Ashio to Minamata. Hiroshima and Nagasaki may not have ‘lost’ to Fukushima, as Yamashita (2011a) famously claimed, but Fukushima ‘has become famous’ (ibid): the disaster, and attendant notions of the nuclear village and national sacrifice zones, now firmly embedded within the national consciousness. Yoko Tawada (2018) takes this inescapable unconscious presence as a central theme of

<sup>114</sup> The 1978 revisions to the Regulation of Nuclear Source Material, Nuclear Fuel Materials and Reactors (the Nuclear Reactors Regulation Law) placed responsibility for the regulation of commercial nuclear reactors with the Minister of International Trade and Industry (MITI). (For further discussion, see: Shiroyama 2014.)

her award-winning novel, *The Last Children of Tokyo* (published in America as *The Emissary*), which follows the ‘aged-elderly’ Yoshiro’s efforts to care for his grandson, Mumei in the wake of a man-made disaster. The nature of this event is left unspecified, but its role as a literary allegory for Japan’s nuclear disaster is clear: sections of Japan now lie abandoned, its natural environment is transformed, and its children are sickly. Avoiding overt exposition, Tawada instead conveys the disaster’s pervasiveness through its intrusions into daily life. The disaster, we learn, has not only polluted Japan, but contaminated its very language – old words suddenly transformed with new associations. Early in the novel, Yoshiro ponders how dandelions had grown to erstwhile improbable proportions, now sporting petals ‘at least four inches long’ (ibid.: 8). One such ‘jumbo’ dandelion is submitted ‘to the annual Chrysanthemum show at the Civic Centre’, giving rise to a controversy regarding its proper classification. “‘Oversized dandelions are not chrysanthemums – merely mutations,” asserted one faction’ (ibid.: 8). To this, another faction counters that ‘mutation’ is ‘a pejorative term’ (ibid.: 9). Indeed, Yoshiro reflects, it ‘was rarely used anymore’ (ibid.: 9). A later scene finds Yoshiro explaining to the dentist that his grandson’s milk teeth had fallen out too easily, ‘like pomegranate pulp’ (ibid.: 15). Suddenly, he becomes ‘flustered, hoping the dentist didn’t think he’s said *fallout*’ (ibid.: 16-17). Such self-censorship is common in Tawada’s novel, her characters’ avoidance of words associated with nuclear matters or ill health causing difficulty even in describing the routine check-ups all children are now subjected to:

‘As *physical* sounded too much like *phythical*, a word associated with asthma, tuberculosis, and death, the phrase *physical examination* had fallen out of use, with many doctors preferring to call it the *monthly look-over*’ (ibid.: 19).

Tawada’s novel artfully evokes a disaster which has not only touched the most intimate facets of Japanese life but the very idea of Japan: Chrysanthemums, after all, are a symbol of the Imperial household. What remains to be seen is the role that the collective memories of 3.11 will play in future epistemic controversies.

In authoring this thesis, I posit the Fukushima Daiichi disaster as an object of geographical interest, but I also call for critical geographies of Japan, more generally. Japan has long fallen outside the scope of British geographers’ dominant interests. As John Sargent details, Marxist scholarship generated a considerable enthusiasm for achieving an ‘understanding of space under capitalism’ within Human Geography from the 1970s onwards (Smith 1981 in Sargent 1993). However, the spaces of interest tended to be the ‘First’ and ‘Third’ worlds. Work on the global geographies of inequality fostered a sizeable body of work focused on issues of development; while the “‘capitalism” that... preoccupied many geographers in Britain often turns out to be either American or European capitalism, or indeed capitalism of the mind: one that has no national peculiarities at all’ (ibid:115.). Japan fits into neither sphere of interest. British Geography’s latter interest in postcolonial theory, established in the 1990s, has similarly focused on (implicitly white) ‘imperial legacies and colonial pasts and presents’ (Sidaway 2017). Again, Japan does not fit comfortably into either camp. This neglect appears to stem, in part, from the liminal space that Japan occupies in the Anglo-American imagination, understood neither entirely as part of “the West” nor as part of “the rest”: a nation that is neither European nor North American, but is economically developed, (indeed, a nation with an economy larger than any European counterparts); a nation that is not white, but has a recent history of empire; and a democracy in institutional form, though also a nation whose democratic history is dominated by a single party. Japan is not just another case that has been neglected, but a case that might allow British Geographers to interrogate their own categories of thought.

If I urge Anglophone geographers to produce critical geographies of Japan, then I would also encourage them to do so with Japanese geographers. Critical geography does not enjoy a great deal of influence in Japan today. Reflecting on Japanese geography's 'tortured trajectory' in a recent review in *Environment and Planning D*, Mizuoka et al. (2005) note that 'the general orientation of geographers in Japan has become much more conservative and lost the intellectual power to come to terms with the growing critical trend among international geographers' (ibid.: 453). A similarly bleak position is expressed by Mizuuchi in an essay entitled *Why are Japan's Geographers so Uncritical?* In which the author notes that, among other factors, Human Geography has fallen foul of an East-West divide within Japan. Under MEXT's organisation of national universities, Geography falls under the purview of the Department of Sciences in the East and the Department of Literature in the West (ibid.). Consequently, there is a longitudinal disparity in the dominance of physical and human geography, which favours the former overall: Tokyo University, famously influential within Japanese politics, being located in the East. Questions regarding translation also play a significant role – the works of scholars such as David Harvey and Doreen Massey, central to the Anglo-American scholarship in the 1980s, becoming available in Japanese only in the 1990s. Despite these difficulties, there exists a cluster of Japanese scholars who are working to rejuvenate Japan's critical tradition and return it to the standing it enjoyed until the 1970s. Collaborating with this community in working towards critical geographies of Japan promises to benefit both parties, offering opportunities for mutual support, both intellectually and institutionally.

### 7.3. Epilogue: Writing in a time of 'post-truth' politics

At the time of writing, this thesis' focus on expert authority in conditions of low public trust has a resonance that I could not have anticipated when I started my PhD in 2015, let alone when I first penned a funding proposal in late 2013. Brexit and the rise of Donald Trump, among other events, have led many to ask what role experts can play in public policy at a time when leading political figures express an open disregard for their input. US Counsellor to the President, Kellyanne Conway's claim to possess 'alternative facts', Trump's assertion that the 'experts are terrible', and UK Cabinet Minister, Michael Gove's insistence that Britain 'has had enough of experts' now frame much of the discussion of experts, both inside and outside the academy.

The rise of so-called 'post-truth' politics is not a theme of this thesis, but my focus on conditions of low public trust has led many to ask me how this thesis might relate to our own current political situation. This epilogue responds to this line of questioning, using it as a foil to reflect on the specificity of Japan's epistemic struggles. It is worth acknowledging that Brexit and Trump did periodically appear within the frame of my empirical research. I conducted my fieldwork in 2016 and 2017, at a time when Brexit and Donald Trump were topics of political discussion in Japan, as indeed they were across the globe. I conducted my immersive language training (April to July 2016) as Britain's referendum on its EU membership was being held, and my first period of residential fieldwork (October to December 2016) as the 2016 US presidential electoral race reached its climax. Indeed, my ethnography of the OECD-NEA's *Workshop on Food Safety Science* (Chapter Five) coincided with the date of the US election (8 November 2016). On the second day of the workshop, an informal ritual developed. As we came to the end of each session, scores of hands reached into pockets, pulling out mobile phones to check the latest results – several participants cursing loudly when the outcome became apparent. My second period of residential fieldwork (April to November

2017), began in the same month that Twitter launched a new advertising campaign on Japan Rail (JR), which positioned President Trump as the literal poster-boy of the platform; its new posters simply featuring the president and the text, ‘#trump administration’ (fig. 7.1). And in the final month of my fieldwork, I would be invited by anti-nuclear group, 3.11 Action to observe a communist rally being staged at the Hibiya Open Air Concert Hall, Hibiya Park: just across the road from the Imperial Hotel, where the President was staying at the time. I noted that access to the demonstration was made more intimidating by the enhanced security in the area. In short, I conducted my fieldwork at a time when British and American politics intruded into Japanese public life with unusual frequency.

Figure 7.1. Japanese Twitter campaign (Ōtemachi Station, April 2017)



Source: @gmeline Twitter

Although the intrusion of ‘post-truth’ politics into my fieldwork was frequent, its impact on Japan’s public debate generally – and my topic of study, more specifically – was difficult to ascertain. Few of my research informants mentioned Brexit or Trump in interviews. Those that did typically did so to ask me how I, as an Anglophone scholar, understood these political developments; conveying curiosity, but little indication that they saw a connection between the contestations of expert authority in Britain and America, and the debates they were situated within in Japan. On no occasion did any research informant use the terminology of ‘post-truth’ to frame their own political situation. Other commentators have echoed the observation that while Brexit and Trump appear in Japanese political discourse regularly, the extent to which they have exerted a meaningful influence on Japan’s public debate is questionable. As *The Japan Times* reported, even Trump’s visit to the nation failed to make a lasting mark. ‘Trump came, dominated a news cycle, left and Japan moved on,’ the paper noted (St.

Michel 2017). Far from shaping Japan's debate, Japan's transient interest in Trump was a 'reminder that... [the nation] has its own issues to blow a gasket over – they certainly don't need Trump for that' (ibid.).

Arguably, 'post-truth' politics has had a more notable effect on the textual audience of my PhD thesis than on my research informants. On one hand, lived experience has made Anglophone audiences more willing to accept the premise of a rapid shift in Japan's modes of public reason. Early iterations of this project (including a presentation to the *States, Markets, and Society Research Group* in the Department of Geography and my First Year Report) had to work harder to overcome images of Japanese technocracy, not to mention stereotypes of placidity and stability, in order to convince my audience that Fukushima had produced mass resistance to expert authority.

On the other hand, I have noticed that the regularity with which I am asked to defend the politics of my PhD thesis has also risen since November 2016. The impulse to question the political commitments of my work seems rooted, less in a response to the specifics of my findings, than in a reaction to my constructivist epistemology. 'Should we be drawing attention to the constructed-ness of expert authority in the time of Trump?' One colleague asked me in early 2017. Or is Briggles (2016) right to suggest that it is time to correct course and 'start re-assembling some of the structure we had earlier pulled apart' (ibid.)? At the heart of such questions is the proposition that 'post-truth' politics is a child of social constructivism. In monographs (Fuller 2018) and editorials, published in academic (Briggles 2016; Collins, Evans, and Weinel 2017; Fuller 2016a, 2017) and non-academic outlets (Fuller 2016b) alike, STS scholars have characterised the Anglophone world's contemporary hostility to expertise, seen in support for both Britain's 'Leave' campaign and Trump's Presidency, as an effect of the discipline's scepticism toward technocracy reaching the mainstream. In short, STS is said to have popularised a 'hermeneutics of suspicion' (Felski 2015); its efforts to prise open the 'black box' of science are understood to have opened a Pandora's box and popularised a scepticism of experts.

If one reaction to this is 'seller's remorse' (Briggles 2016), another has been to claim these political developments with pride. 'Science has always been a bit 'post-truth'', Fuller (2016) argues, and the programmes of History and Philosophy of Science (HPS), Sociology of Scientific Knowledge (SSK), and later STS, have long worked to demonstrate the contingency of scientific facts. From the time of Kuhn onwards, Fuller notes, the notion of science as a social institution, imbued with its own norms and mythologies, has been a mainstay of science studies. Kuhn ([1962] 1970) himself spoke of the Orwellian nature of scientific paradigms; using the British author's image of the Ministry of Truth – a bureaucratic organ of the state, which uses its power to establish and defend a singular historical narrative (Orwell [1949] 2016:4-7, 28-30, 41-45, 241-246) – to evoke an image of the 'member of a mature scientific community as... the victim of a history rewritten by the powers that be' (Kuhn 1970:167). Kuhn acknowledged that this comparison goes too far in implying that 'in the sciences might makes right', but was nonetheless insistent that the suggestion that power plays an important role in science 'is not altogether inappropriate' (ibid.). Despite the internal heterogeneity of science studies, the notion that facts are not external entities that can be appealed to, so as to settle scientific disputes, but rather the effects of a debate's closure, has remained a core tenet of the corpus to this day. For Fuller, this reading of 'knowledge as power game' is the key insight of science studies; the rise of 'post-truth' politics, a product of its popularisation (Fuller 2018). If science studies are to prove it is not all talk, they must embrace the knowledge pluralism of 'post-truth' politics, he suggests (Fuller 2017).

The charge that STS bears responsibility for the rise of ‘post-truth’ politics is one that can only be answered collectively. Sceptical voices have already been raised. Sismondo (2017), for example, has argued that the ‘conditional possibility that... ‘it could be otherwise’ (or, in an historical study, ‘it could have been otherwise’)... does not amount to the declaration of an ‘alternative fact’, that ‘it was otherwise’” (in Lynch 2017: 596). Nor do arguments in favour of epistemic democracy or knowledge pluralism amount to a relativistic embrace of all possible claims to knowledge as equally valid. And even if, as Collins, Evans, and Weinel (2017) claim, the link between STS and ‘post-truth’ politics is less direct than Fuller (2016) suggests – that in ‘open[ing] up the cognitive terrain... to enhance the impact of democratic politics on science but, in so doing, it opened that terrain for all forms of politics, including populism and that of the radical right wing’ – it is not certain that STS scholars could, or should, cease to ask questions of expertise, and to probe its constructed-ness.

The demands of our current political moment might, however, serve as a prompt to reflect on how research conducted in the immediate aftermath of the disaster interpreted Japan’s epistemic struggles in relation to a different global political moment. Drawing on interviews conducted in 2012, Oguma’s (2017) influential analysis of Japan’s anti-nuclear movement, for example, emphasised that it should be alongside contemporaneous protests in Egypt (Tahrir Square, 2011), New York (Occupy Wall Street), Spain (Podemos), Hong Kong (Occupy Central and the Umbrella Movement), and Taiwan (the Sunflower Student Movement), among others. ‘This is not a topic specific to Japan, but one that is universal’, Oguma argued; preceding under the assumption that, while the ‘universal will find different expression[s] depending on place and era’, there is a common thread that connects the seemingly disparate movements. In that moment, ‘populism’ had a more positive connotation; its invocations of ‘the 99%’ seen by scholars such as Oguma as marking the end of identity politics (ibid.). That these bold predictions would prove so wrong, so fast, should remind us of the dangers of presentism and the values of slow, meticulous analysis.

## Bibliography

### A

- Agamben, G., 1998. *Homo Sacer: Sovereign Power and Bare Life*. Stanford: Stanford University Press.
- Agnew, J., 2007. Know-Where: Geographies of Knowledge of World Politics. *International Political Sociology*, 1(2): 138–148.
- Alexander, J., 2006. Cultural Pragmatics: Social Performance Between Ritual and Strategy. In: Alexander, J.C., Giesen, B., and Mast, J. (eds.). *Social Performance: Symbolic Action, Cultural Pragmatics and Ritual*. Cambridge: Cambridge University Press, 29–90.
- (2010). *The Performance of Politics: Obama's Victory and The Democratic Struggle for Power*. Oxford: Oxford University Press.
- (2011). *Performance and Power*. Cambridge: John Wiley and Sons.
- Alexis-Martin, B., and Davies, T., 2017. Towards Nuclear Geography: Zones, Bodies, and Communities. *Geography Compass*, 11(9): e12325.
- Anders, G., 2014. *The Obsolescence of Man, Volume II: On the Destruction of Life in the Epoch of the Third Industrial Revolution*. Available at: <https://libcom.org/files/ObsolescenceofManVol%20IIIGunther%20Anders.pdf> [Accessed: 27/09/2017].
- Anderson, B., 2014. *Encountering Affect: Capacities, Apparatuses, Conditions*. London and New York: Routledge.
- Anderson, W., 2009. From Subjugated Knowledge to Conjugated Subjects: Science and Globalisation, Or Post-Colonial Studies of Science? *Postcolonial Studies*, 12: 389–400.
- 2015. Postcolonial Science Studies. In: Wright, J. D. (ed.). *International Encyclopedia of the Social & Behavioural Sciences*. Amsterdam: Elsevier, 652–657.
- Ando, R. 2016(a). Ethos in Fukushima and the ICRP Dialogue Seminars. *Annals of the ICRP*, 45(2): 135–140.
- 2016(b). Reclaiming Our Lives in the Wake of a Nuclear Accident. *Clinical Oncology* 28:
- Arendt, H., 1954. *What is Authority?* Available at: <https://www.pevpat-ugent.be/wp-content/uploads/2016/09/H-Arendt-what-is-authority.pdf> [Accessed: 14/06/2018].
- 1961. *Between Past and Future: Six Exercises in Political Thought*. New York: The Viking Press.
- Arima, N., 2016. Lifting of Evacuation Orders and Subsequent Efforts in Japan. *Annals of the ICRP*, 45(2): 41–47.
- Asia Pacific Initiative, 2017. Mission statement. *Asia-Pacific Initiative*. Available at: <https://apinitiative.org/en/about-us/> [Accessed: 23/07/2018].
- Atkinson, P., Coffey, A., Delamont, S., Lofland, J., and Lofland, L., 2001. *Handbook of Ethnography*. London: SAGE Publications.
- Austin, J.L., [1962] 2018. *How to do Things with Words*. Cambridge, MA: Harvard University Press.

**B**

- Bachrach, P., and Baratz, M.S., 1962. Two Faces of Power. *American Political Science Review*, 56(4): 947–952.
- 1963. Decisions and Nondecisions: An Analytical Framework. *American Political Science Review*, 57(3): 632–642.
- 1970. *Power and Poverty: Theory and Practice*. New York; London: Oxford University Press.
- Baker, P.C., 2019. ‘We the People’: The Battle to Define Populism. *The Guardian*, 10/01/2019. Available at: <https://www.theguardian.com/news/2019/jan/10/we-the-people-the-battle-to-define-populism>. [Accessed: 11/01/2019].
- Balsdon, J.P.V.D., 1960. Auctoritas, dignitas, otium. *The Classical Quarterly*, 10(1-2): 43–50.
- Ban, N. 2016. Japanese Experience in Stakeholder Involvement: ICRP Dialogue Meetings. *Radioprotection*, 51(1): S51–S53.
- Barry, A., 2012. Political Situations: Knowledge Controversies in Transnational Governance. *Critical Policy Studies*, 6(3): 324–336.
- Beck, U., 1992. *Risk Society: Towards a New Modernity*. London: SAGE Publications.
- (2013). *World at Risk*. Cambridge: Polity.
- Bell, K., and Green, J., 2016. On the Perils of Invoking Neoliberalism in Public Health Critique. *Critical Public Health*, 26(3): 239–243.
- Benedict, K., 2014. The Myth of Absolute Safety. *Bulletin of Atomic Scientists*. Available at: <https://thebulletin.org/2014/03/the-myth-of-absolute-safety/> [Accessed: 08/09/2015].
- Bernstein, A., and Mertz, E., 2011. Bureaucracy: Ethnography of the State in Everyday Life. *PoLAR*, 34(1): 6–10.
- Bijker, W., 2002. Comments on Science on Stage, 07/11/2002. Author-meets-critics session on *Science on Stage*, Society for the Social Studies of Science annual meeting, Milwaukee, Wisconsin.
- , Bal, R., and Hendriks, R., 2009. *The Paradox of Scientific Authority: The Role of Scientific Advice in Democracies*. Cambridge, MA: MIT Press.
- Bindig, L., and Bosau, M., 2010. Branding America: Patriotic Products and Consumerism After September 11<sup>th</sup>. In: Quay, S., and Damico, A. (eds.). *September 11 in Popular Culture*. Westport, CT: Greenwood Publishing, 36–38.
- Blumenthal, T., 1985. The Practice of Amakudari Within the Japanese Employment System. *Asian Survey*, 25(3): 310–321.
- Boin, A., t’Hart, P., and McConnell, A., 2009. Crisis Exploitation: Political and Policy Impacts of Framing Contests. *Journal of European Public Policy*, 16(1): 81–106.
- Boseley, S., 2018. How Disgraced Anti-Vaxxer Andrew Wakefield was Embraced by Trump’s America. *The Guardian*, 18/07/2018. Available at: <https://www.theguardian.com/society/2018/jul/18/how-disgraced-anti-vaxxer-andrew-wakefield-was-embraced-by-trumps-america> [Accessed: 18/05/2019].

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

- Bourdieu, P., 1975. The Specificity of the Scientific Field and the Social Conditions for the Progress of Reason. *Social Science Information*, 14(6): 19–47.
- 1993. *The Field of Cultural Production: Essays on Art and Literature*. New York City, NY: Columbia University Press.
- 1996. *The Rules of Art: Genesis and Structure of the Literary Field*. Translated by Susan Emanuel. Stanford, CA: Stanford University Press.
- Bourke, B. 2012. Positionality: Reflecting on research process. *The Qualitative Report* 19(18): 1-9.
- Boyd, M., 2016. Workshop Overview and Objectives. Presentation delivered at OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).
- Branaman, A., 2013. Drama as Life: The Seminal Contributions of Kenneth Burke. In: Edgley, C. (ed.). *The Drama of Social Life: A Dramaturgical Handbook*. London: Routledge, 15–26.
- Briggle, A., 2016. Post-Truth Blues? *Social Epistemology Review and Reply Collective*, 22/12/2016. Available at: <https://social-epistemology.com/2016/12/22/post-truth-blues-adam-briggle/> [Accessed: 20/05/2019].
- Briggs, H., 2016. Are We Too Scared of Radiation? *BBC News*, 11/07/2016. Available at: <https://www.bbc.com/news/world-asia-36735687> [Accessed: 15/03/2019].
- Brinsley, J., 2011. Naoto Kan: Big Test for an Unpopular Premier. *Bloomberg Businessweek*, 17/03/2011. Available at: <https://www.bloomberg.com/news/articles/2011-03-17/naoto-kan-big-test-for-an-unpopular-premier> [Accessed: 24/07/2011].
- Brown, A., et al., 2016. Safecast: Successful Citizen Science for Radiation Measurement and Communication After Fukushima. *Journal of Radiological Protection*, 36: S82-S101.
- Brumfiel, G., 2013. Fukushima: Fallout of Fear. *Nature*, 493 (7432): 290–293.
- Bullard, R. D., 2011. Review: *Sacrifice Zones: The Front Lines of Toxic Chemical Exposure in the United States*, by Steve Lerner. *Environmental Health Perspectives*, 119(6): A266.
- Bunge, W., 1973. The Geography of Human Survival. *Annals of the Association of American Geographers*, 63(3): 275–295.
- 1989. *Nuclear War Atlas*. Oxford: Blackwell.
- Burke, K., 1969. *A Rhetoric of Motives*. Berkley, LA: University of California Press.
- 1974. *The Philosophy of Literary Form: Studies in Symbolic Action*. Third edition. Berkeley, LA: University of California Press.
- Burr, R., 2002. Shaming of the Anthropologist: Ethical Dilemmas During and in the Aftermath of the Fieldwork Process. *Anthropology Matters*, 4(1). Available at: [https://www.anthropologymatters.com/index.php/anth\\_matters/rt/printerFriendly/133/260](https://www.anthropologymatters.com/index.php/anth_matters/rt/printerFriendly/133/260) [Accessed: 05/06/2017].
- Bush, G.W., 2001. Statement by President George W. Bush in His Address to the Nation, September 11<sup>th</sup>, 2001. Available at: <https://www.911memorial.org/sites/default/files/inline-files/2011%20sept.11%20Statement%20by%20President%20Bush%20in%20His%20Address%20to%20the%20Nation.pdf>. [Accessed: 17/03/2017].

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster (2011–2018)

Butler, J., Laclau, E., and Žižek, S., 2000. *Contingency, Hegemony and Universality: Contemporary Dialogues on the Left*. London: Verso.

Butler, J., [1990, 1999] 2006. *Gender Trouble*. New York: Routledge.

## C

Callon, M., 1986. The Sociology of an Actor-Network: The Case of the Electric Vehicle. In: Callon, M., Rip, A., and Law, J. (eds.). *Mapping the Dynamics of Science and Technology: Sociology of Science in the Real World*. Palgrave Macmillan, London, 19–34.

— 1998. An Essay on Framing and Overflowing: Economic Externalities Revisited by Sociology. *The Sociological Review*, 46(1): 244–269.

—, Lascoumes, P., and Barthe, Y., 2009. *Acting in an Uncertain World. An Essay on Technological Democracy*. Cambridge, MA: MIT Press.

Campbell, D., 1998. *National Deconstruction: Violence, Identity, and Justice in Bosnia*. Minneapolis, Minnesota: University of Minnesota Press.

Campbell, N.D., 2004. Credible Performances: The Performativity of Science Studies. *Social Studies of Science*, 34(4): 433–442.

Central Intelligence Agency, 2017(a). Country Comparison: Birth Rate. *The World Factbook, CIA*. Available at: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2054rank.html> [Accessed: 18/07/2018].

— 2017(b). Country Comparison: Life Expectancy at Birth. *The World Factbook, CIA*. Available at: <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2102rank.html> [Accessed: 18/07/2018].

Chilvers, J., 2008. Environmental Risk, Uncertainty, and Participation: Mapping an Emergent Epistemic Community. *Environment and Planning A*, 40(12): 2990–3008.

Chung, S., and Ogura, J., 2018. What it Means to be a Mixed-Race Model in Japan. *CNN*, 25/10/2018. Available at: <https://edition.cnn.com/style/article/rina-fukushi-japanese-hafu-models/index.html> [Accessed: 23/12/2018].

Clarke, R.H., and Valentin, J., 2005. A History of the International Commission on Radiological Protection. *Health Physics* 88(6): 717–32.

— 2009. The History of ICRP and the Evolution of its Policies: Invited by the Commission in October 2008. *Annals of the ICRP*, 39(1): 75–110.

Clarkson, C., 2014. *Drawing the Line: Toward an Aesthetics of Transitional Justice*. New York: Fordham University Press.

Clement, C., 2016. ICRP 2015 – The Third International Symposium on the System of Radiological Protection. *Annals of the ICRP*, 45(1): 1–4.

Clenfield, J., 2011. Japan Disaster Caps Decades of Faked Reports, Accidents. *Bloomberg Businessweek*, 18/03/2011. Available at: <https://www.bloomberg.com/news/articles/2011-03-17/japan-s-nuclear-disaster-caps-decades-of-faked-safety-reports-accidents> [Accessed: 08/09/2017].

- Cohen, R., 2018. It's Time to Depopularize 'Populist'. *The New York Times*, 13/07/2018. Available at: <https://www.nytimes.com/2018/07/13/opinion/populism-language-meaning.html> [Accessed: 15/07/2018].
- Collier, J., 2018. Social Epistemology for the One and the Many: An Essay Review. *Social Epistemology Review and Reply Collective*, 7(8): 15–40.
- Collins, H.M., Evans, R., and Weinel, M. 2017. STS as science or politics? *Social Studies of Science* 47 (4): 580-586.
- Conca, J. 2013. Fukushima – Fear is still the killer. *Forbes*, 18 March 2013. Available at: <https://www.forbes.com/sites/jamesconca/2013/03/18/fukushima-fear-is-still-the-killer/> [Accessed: 13/07/2015]
- Conklin, J., 2006. *Wicked Problems & Social Complexity*. San Francisco, CA: CogNexus Institute.
- Corea, G., 1985. *The Mother Machine: Reproductive Technologies from Artificial Insemination to Artificial Wombs*. New York: Harper & Row.
- , et al., 1985. *Man-Made Women: How New Reproductive Technologies Affect Women*. London: Hutchinson.
- Cosgrove, D.E., 1984. *Social Formation and Symbolic Landscape*. London: Croom Helm.
- 2003. Globalism and Tolerance in Early Modern Geography. *Annals of the Association of American Geographers* 93(4): 852-870.
- 2004. Landscape and Landschaft. *Bulletin of the GHI*, 35: 57–71.
- Cousins, C. 2016. The Future of ICRP: Towards a Centenary and Beyond. *Annals of the ICRP*, 45(1): 5–8.
- Cowan, R.S., 1976. The 'Industrial Revolution' in the House: Household Technology and Social Change in the Twentieth Century. *Technology and Culture*, 17(1): 1–23.
- 1979. From Virginia Dare to Virginia Slims: Women and Technology in American Life. *Technology and Culture*, 20(1): 51–63.
- 1983. *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave*. New York: Basic Books.
- Craggs, R., and Mahony, M., 2014. The Geographies of the Conference: Knowledge, Performance and Protest. *Geography Compass*, 8(6): 414–430.
- Crang, P., 1994. It's Showtime: On the Workplace Geographies of Display in A Restaurant in Southeast England. *Environment and Planning D: Society and Space*, 12(6): 675–704.
- Cutter, S.L., 1993. *Living with Risk: The Geography of Technological Hazards*. London: E. Arnold.
- D**
- Davies, I., Mizuyama, M., and Thompson, G.H., 2010. Citizenship Education in Japan. *Citizenship, Social and Economics Education*, 9(3): 170–178.
- Demetriou, D., 2011. Japan MP Drinks Water from Fukushima Radioactive Puddle. *The Telegraph*, 01/11/2011. Available at: <https://www.telegraph.co.uk/news/worldnews/asia/japan/8861757/Japan-MP-drinks-water-from-Fukushima-radioactive-puddle.html> [Accessed: 18/07/2018].

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Dentsu Annual Report, 2013. Available at: <https://assets-eu-01.kc-usercontent.com/27bd3334-62dd-01a3-d049-720ae980f906/ea4462cc-3016-42de-aa2a-cc61051fcde7/Integrated%20Annual%20Dentsu%20Report%202013.pdf>. [Accessed: 10/11/2016].

De Vries, G., 2016. *Bruno Latour*. Cambridge: Polity Press.

DiNitto, R., 2018. The Fukushima Fiction Film: Gender and the Discourse of Radiation Containment. *Asia-Pacific Journal: Japan Focus*, 16(1): 1–13.

Dittmer, J., 2013. Political Geography. In: *Oxford Bibliographies*. Oxford University Press. Available at: <https://www.oxfordbibliographies.com/view/document/obo-9780199874002/obo-9780199874002-0022.xml> [Accessed: 27/05/2019].

Downey, L., and Hawkins, B., 2008. Race, Income, and Environmental Inequality in the United States. *Sociological Perspectives*, 51(4): 759–781.

Doyle, A.C. (2002) *The Adventures of Sherlock Holmes*. Chapel Hill, NC: Project Gutenberg. Available at: <https://www.gutenberg.org/files/1661/1661-h/1661-h.htm> [Accessed: 24/09/2018]

Driver, F., 1985. Power, Space, and the Body: A Critical Assessment of Foucault's 'Discipline and Punish'. *Environment and Planning D: Society and Space*, 3: 425–446.

Dryzek, J.S., 2005. *The Politics of the Earth: Environmental Discourses*. Second Edition. Oxford: Oxford University Press.  
—2008. Two Paths to Global Democracy. *Ethical Perspectives*, 15(4): 469–486.

## E

Edelman, 2012. *Edelman Trust Barometer 2012: Executive Summary*. Edelman.  
— 2013. *Edelman Trust Barometer 2013: Executive Summary*. Edelman.  
— 2014. *Edelman Trust Barometer 2014: Executive Summary*. Edelman.  
— 2015. *Edelman Trust Barometer 2015: Executive Summary*. Edelman.  
— 2016. *Edelman Trust Barometer 2016: Executive Summary*. Edelman.  
— 2017. *Edelman Trust Barometer 2017: Executive Summary*. Edelman.  
— 2018. *Edelman Trust Barometer 2018: Executive Summary*. Edelman.

Emerson, R.M., Fretz, I.R., and Shaw L.L., 2011. *Writing Ethnographic Fieldnotes*. Second Edition. Chicago, IL; London: University of Chicago Press.

Endres, D., 2012. Sacred Land or National Sacrifice Zone: The Role of Values in the Yucca Mountain Participation Process. *Environmental Communications*, 6(3): 328–345.

Epstein, S., 1995. The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials. *Science, Technology, & Human Values*, 20(4): 408–437.

## F

Fackler, M., 2016. The Asahi Shimbun's Foiled Foray into Watchdog Journalism. *The Asia-Pacific Journal: Japan Focus*, 14 (24)2: 1–10.  
—, and Funabashi, Y. (eds.), 2018. *Reinventing Japan: New Directions in Global Leadership*. California: Praeger. ABC-CLIO.

- Falkof, N., 2013. Heroes with a Half-Life: Teenage Mutant Ninja Turtles and America's Repression of Radiophobia After Chernobyl. *Journal of Popular Culture*, 46(5): 931–949.
- Fassert, C., and Hasegawa, R., 2019. *Shinrai Research Project: The 3/11 Accident and its Consequences: Case Studies from Fukushima Prefecture*. Report no. IRSN/2019/00178. Paris: IRSN.
- Feldhoff, T., 2018. Visual Representations of Radiation Risk and the Question of Public (Mis)Trust in Post-Fukushima Japan. *Societies*, 8(32): 1–20.
- Felski, R. 2015. *The Limits of Critique*. Chicago, IL: University of Chicago Press.
- Felt, U., 2013. *Keeping Technologies Out: Sociotechnical Imaginaries and the Formation of a National Technopolitical Identity*. Pre-print. Vienna: University of Vienna.
- 2015. Keeping Technologies Out: Sociotechnical Imaginaries and the Formation of Austria's Technopolitical Identity. In: Jasanoff, S., and Kim, S. (eds.). *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago, IL: Chicago University Press.
- Fenno, R.F., 1990. *Watching Politicians: Essays on Participant Observation*. Berkley: University of California, Institute of Governmental Studies.
- Fetterman, D.M., 2008. Emic/Etic Distinction. In: Given, L.M. (ed.). *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, CA: SAGE Publications, I: 249.
- Fischer, F., and Forester, J. (eds), 1993. *The Argumentative Turn in Policy Analysis and Planning*. Durham, NC: Duke University Press.
- Fischer, F., 2012. Participatory Governance: From Theory to Practice. In: Levi-Faur, D. (ed.). *The Oxford Handbook of Governance*. Oxford; New York: Oxford University Press, 457–471.
- Foucault, M., 1998. *The History of Sexuality, vol. 1: The Will to Knowledge*. Translated by Hurley, R. London: Penguin.
- 2003. *Society Must Be Defended: Lectures at the College de France, 1975–76*. Translated by Macey, D. New York: Picadore.
- Fox, M. F., 1995. Women and Scientific Careers. In: Jasanoff, S., Markle, G.E., Peterson, J.C., and Pinch, T. (eds.). *Handbook of Science and Technology Studies*. Thousand Oaks, CA: SAGE Publications, 205–223.
- Freidman, V., 2011. Dressing in a Crisis. *Financial Times*, 22/04/2011. Available at: <https://www.ft.com/content/aedff0c6-6b9e-11e0-93f8-00144feab49a> [Accessed: 27/04/2016].
- Fukushima Medical University, 2011. *Fukushima Global Medical Science Centre: Basic Concept*. Fukushima: Fukushima Medical University.
- Fukushima Minpo, 2016. Shinai no shyokuhin anzen taisaku hokoku – Fukushima de kokusai waakushopu 10ka made [県内の食品安全対策報告 福島で国際ワークショップ 10日間で]. *Fukushima Minyu*, 09/11/2016. Available at: [https://www.minpo.jp/pub/topics/jishin2011/2016/11/post\\_14411.html](https://www.minpo.jp/pub/topics/jishin2011/2016/11/post_14411.html) [Accessed: 03/02/2017].
- Fukuyama, M., 2016. *Opening Remarks*. Remarks delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

- Fuller, S., 2016a. Embrace the inner fox: Post-truth as the STS symmetry principle universalized. *Social Epistemology Review and Reply Collective*. Available at: <https://social-epistemology.com/2016/12/25/embrace-the-inner-fox-post-truth-as-the-sts-symmetry-principle-universalized-steve-fuller/#comments> [Accessed: 11/04/2018]
- 2016b. Science Has Always Been a Bit ‘Post-Truth’. *The Guardian*, 15/12/2016. Available at: <https://www.theguardian.com/science/political-science/2016/dec/15/science-has-always-been-a-bit-post-truth> [Accessed: 19/05/2019].
- 2017. Is STS All Talk and No Walk? *EASST Review*, 36(1). Available at: <https://easst.net/article/is-sts-all-talk-and-no-walk/> [Accessed: 20/05/2019].
- 2018. *Post-Truth: Knowledge as a power game*. London: Anthem.
- Funabashi, Y., 2012. *Investigation on the Fukushima Daiichi Nuclear Accident: Handout for the News Conference at the Foreign Correspondents’ Club of Japan*. Rebuild Japan Initiative Foundation. Available at: <https://ratical.org/radiation/Fukushima/IotFDNArpt.html> [Accessed: 03/01/2020].
- , and Kitazawa, K., 2015. Fukushima in Review: A Complex Disaster, Disastrous Response. *Bulletin of the Atomic Scientists*, 68(2): 9–21.
- 2017. Greetings from Chairman Yoichi Funabashi. *Asia-Pacific Initiative*. Available at: <https://apinitiative.org/en/greeting/> [Accessed: 23/07/2018].
- Furedi, F., 2013. *Authority: A Sociological History*. Cambridge: Cambridge University Press.
- G**
- Geertz, C., and Marcus, G.E., 1986. *Writing Culture: The Poetics and Politics of Ethnography*. Berkeley: University of California Press.
- Geertz, C., 1998. Deep Hanging Out. *The New York Review of Books*, 45(16): 69.
- George, T.S., 2012. Fukushima in Light of Minamata. *The Asia-Pacific Journal: Japan Focus*, 10(11): 1–8.
- Gettier, E.L., 1963. Is Justified True Belief Knowledge? *Analysis*, 23(6): 121–123.
- Gidron, N., and Bonikowski, B., 2013. Varieties of Populism: Literature Review and Research Agenda. *Weatherhead Working Paper Series*, Weatherhead Centre for International Affairs, Harvard University, 13(4). Available at: <https://ssrn.com/abstract=2459387> or <http://dx.doi.org/10.2139/ssrn.2459387> [Accessed: 11/04/2015].
- Gieryn, T., 1983. Boundary Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. *American Sociological Review*, 48(6): 781–795.
- 1999. *Cultural Boundaries of Science: Credibility on the Line*. Chicago, IL: University of Chicago Press.
- Gilmour, S., Shoji, M., Kasuga, F., and Shibuya, K., 2016. Current Measures on Radioactive Contamination in Japan: A Policy Situation Analysis. *PLoS ONE*, 11(3).
- Givoni, M., 2013. The Ethics of Witnessing and the Politics of the Governed. *Theory, Culture and Society*, 31(1): 123–142.
- Glick, T.F., and Quinlan, D.M., 1975. Félix de Azara: The Myth of the Isolated Genius in Spanish Science. *Journal of the History of Biology*, 8(1): 66–83.

- Goffman, E., [1959] 1990. *The Presentation of Self in Everyday Life*. New York: Anchor Books.
- Goldman, A.I., 1976. Discrimination and Perceptual Knowledge. *The Journal of Philosophy*, 73(20): 771–791.
- 1979. What is Justified Belief? In: Pappas, G.S. (ed.). *Justification and Knowledge*. Dordrecht: Springer, 1–23).
- 2001. Experts: Which Ones Should You Trust? *Philosophy and Phenomenological Research*, 63 (1): 85–110.
- Gooley, D.A., 2014. Liszt, Improvisation and the Idea of Italy. In: Deaville, J., and Saffle, M. (eds.), *Liszt Legacies*. Stuyvesant: Pendragon Press, 3–16.
- Grant, M., 1949. The Augustan ‘Constitution’. *Greece & Rome*, 18(54): 97–112.
- Greene, G., 2011. Science with a Skew: The Nuclear Power Industry After Chernobyl and Fukushima. *The Asia-Pacific Journal: Japan Focus*, 10(1): 1–17.
- Greene, R., 1998. *48 Laws of Power*. London: Profile Books.
- 2008. *The 33 Strategies of War*. London: Profile Books.
- Griffin, S., 1978. *Women and Nature: The Roaring Inside Her*. New York: Harper & Row.
- Le Guludec, D., 2017. *Comments*. ICRP Dialogue. Date City Silk Hall, Date City, Fukushima Prefecture, 9 July 2017.
- Gurria, A., 2016. Openness and Transparency – Pillars for Democracy, Trust and Progress. Available at: <https://www.oecd.org/unitedstates/opennessandtransparency-pillarsfordemocracytrustandprogress.htm> [Accessed: 17/01/2017].
- Gusterson, A., 1997. Studying Up Revisited. *Political and Legal Anthropology Review* 20(1): 114–119.
- Guston, D.H., 1999. Stabilizing the Boundary Between US Politics and Science: The Role of the Office of Technology Transfer as a Boundary Organization. *Social Studies of Science*, 29(1): 87–111.

## H

- Haberman, C., 2012. The Bull Tied to Occupy Wall Street. *The New York Times*, 17/09/2012. Available at: <https://cityroom.blogs.nytimes.com/2012/09/17/the-bull-tied-to-occupy-wall-street/> [Accessed: 23/05/2018].
- Hajer, M., 1993. Discourse Coalitions and the Institutionalisation of Practice: The Case of Acid Rain in Britain. In: Fischer, F., and Forester, J. (eds.), *The Argumentative Turn in Policy Analysis and Planning*. Durham, NC: Duke University Press, 43–76.
- 1995. *The Politics of Environmental Discourse: Ecological Modernisation and the Policy Process*. Oxford: Oxford University Press.
- 2003. Policy Without Polity? Policy Analysis and the Institutional Void. *Policy Sciences*, 36(2): 175–195.
- 2006. Doing Discourse Analysis: Coalitions, Practices, Meaning. In: van den Brink, M., and Metze, T. (eds.), *Words Matter in Policy and Planning: Discourse Theory and Method in the Social Sciences*. Utrecht: KNAG, 65–75.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

— 2009. *Authoritative Governance: Policy-Making In an Age of Mediatization*. Oxford: Oxford University Press.

Hanzawa, T. 2016. Considerations and Challenges in the ICRP Dialogues. *Annals of the ICRP*, 45(2): 119–122.

Harris, M. 1976. History and Significance of the Emic/Etic Distinction. *Annual Review of Anthropology*, 5(1): 329–350.

Harris, J.A. 2019. *Tamazgha in France: Indigeneity and Citizenship in the diasporic Amazigh movement*. PhD thesis, Department of Geography, University of Cambridge.

Hata, T., 2016. Remarks delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

Hecht, G., 1998. *The Radiance of France: Nuclear Power and National Identity After World War II*. Cambridge, MA: MIT Press.

— 2012(a). *Being Nuclear: Africans and the Global Uranium Trade*. Cambridge, MA: MIT Press.

— 2012(b). An Elemental Force: Uranium Production in Africa, and What it Meant to be Nuclear. *Bulletin of the Atomic Scientists*, 68(2): 22–33.

Heinlein, R.A., 1973. *Enough Time for Love*. New York: Berkley.

Hewitt, S., 2009. Discourse Analysis and Public Policy Research. *Centre for Rural Economy Discussion Paper Series*, 24. Newcastle: Newcastle University.

Hidemichi, K., 2011. *Tōhoku o yomu*. Mumyosōha Shuppan, Akita.

— 2015. *Tōhoku: Japan's Constructed Outland*. Leiden: Brill.

Hilgartner, S., 2000. *Science on Stage: Expert Advice as Public Drama*. Stanford: Stanford University Press.

— 2004. Reply: The Credibility of Science on Stage. *Social Studies in Science*, 34(3): 443–452.

Hinchliffe, S., 2001. Indeterminacy In-Decisions: Science, Policy, and Politics in the BSE (Bovine Spongiform Encephalopathy) Crisis. *Transactions of the British Institute of Geographers*, 26(2): 182–204.

Hirakawa, H., and Shirabe, M., 2015. Rhetorical Marginalisation of Science and Democracy: Politics in Risk Discourse on Radioactive Risks in Japan. In: Fujigaki, Y. (ed.), *Lessons from Fukushima*. Berlin: Springer, 57–89.

Hiroshima University (2017) Phoenix Leader Education Program (Hiroshima Initiative) for Renaissance from Nuclear Disaster. Hiroshima: Hiroshima University. Available at: <http://phoenixprogramlp.hiroshima-u.ac.jp/wp/wp-content/uploads/2017/01/9d20b90383e93fe42a282614b95b666ac.pdf> [Accessed: 01/02/2019]

Hirsch, H. and Nowotny, H. (1977). Europe's Nuclear Debate (1): Austria: A case study. *Nature* 266: 107-108.

Hoffman, G.W., 1957. The Role of Nuclear Power in Europe's Future Energy Balance. *Annals of the American Association of Geographers*, 47(1): 15–40.

Hoffman, S.G., and Durlak, P., 2018. The Shelf Life of a Disaster: Post-Fukushima Policy and Change in the United States and Germany. *Sociological Forum*, 33(2): 378–402.

Hogg, C., 2011. Japan Hails the Heroic ‘Fukushima 50’. *BBC News*, 17/03/2011. Available at: <https://www.bbc.co.uk/news/world-asia-pacific-12779510>. [Accessed: 15/07/2019].

Honma, T., 2016. *Workshop Overview and Objectives*. Presentation delivered at OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

Hooks, G., and Smith, C.L., 2004. The Treadmill of Destruction: National Sacrifice Areas and Native Americans. *American Sociological Review*, 69(4): 558–575.

Hopson, N., 2013. Systems of Irresponsibility and Japan’s Internal Colony. *Asia-Pacific Journal: Japan Focus* (3): 505–509.

Hurdley, R., 2010. The Power of Corridors: Connecting Doors, Mobilising Materials, Plotting Openness. *Sociological Review*, 58(1): 45–64.

— 2016. Home, Materiality, Memory and Belonging: Keeping Culture. *Visual Studies*, 31(4): 373–374.

## I

Ikegami, S., 2011. ‘Tadashiku Osoreru’ Koto No Muzukashisa. *Newsweek Japan*, 05/04/2011. Available at: <https://www.newsweekjapan.jp/column/ikegami/2011/04/post-307.php> [Accessed: 08/03/2019]. (Japanese)

Ilyin, L.A. and Pavlovsky, O. 1987. Radiological Consequences of the Chernobyl Accident in the Soviet Union and Measures Taken to Mitigate Their Impact. *IAEA Bulletin* 29:1-7-24.

Imawano, K. 1988. Covers. RC Succession. Kitty Films. (Japanese)

Inoue, S., 2016. *Opening Remarks*. Remarks Delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

International Atomic Energy Agency, 1991. *The International Chernobyl Project*. Vienna: IAEA.

International Commission on Radiological Protection, 2007. The 2007 Recommendations of the International Commission on Radiological Protection. ICRP Publication 103. *Annals of the ICRP* 37(2–4).

— 2018. Ethical Foundations of the System of Radiological Protection. ICRP Publication 138. *Annals of the ICRP*, 47(1): 1–65.

Iracane, D., 2016. *Opening Remarks*. Remarks delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

Itoh, T., 2016. *Opening Remarks*. Remarks delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (08/11/2016).

## J

Jacobs, R., 2016. On Forgetting Fukushima. *The Asia-Pacific Journal: Japan Focus*, 14(5): 1–5.

- Japan External Trade Organisation. 2018. *Regional Information: Fukushima*. Japan External Trade Organisation (JETRO). Available at: <https://www.jetro.go.jp/en/invest/region/fukushima/> [Accessed: 27/01/2019]
- Jasanoff, S., 1998(a). Expert Games in Silicone Gel Breast Implant Litigation. In: Freeman, M., and Reece, H. (eds.). *Science in Court*. London: Dartmouth, 87–107.
- 1998(b). The Eye of Everyman: Witnessing DNA in the Simpson Trial. *Social Studies of Science*, 28(5-6): 713–740.
- 2004. Ordering Knowledge, Ordering Society. In: Jasanoff, S. (ed.). *States of Knowledge: The Co-Production of Science and the Social Order*. Abingdon: Routledge, 13–45.
- 2007. Making Order: Law and Science in Action. In: Hackett, E. et al. (eds.). *Handbook of Science and Technology Studies*. Third Edition. Cambridge, MA: MIT Press, 761–786.
- , and Kim, S., 2009. Containing the Atom: Sociotechnical Imaginaries and Nuclear Power in the United States and North Korea. *Minerva*, 47(2): 119–146.
- 2011. Constitutional Moments in Governing Science and Technology. *Science, Engineering and Ethics*, 17(4): 621–638.
- 2015. Future Imperfect: Science, Technology, and Imaginations of Modernity. In: Jasanoff, S., and Kim, S. (eds.). *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago, IL: Chicago University Press, 1–33.
- , and Kim, S., 2015 (eds.). *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*. Chicago, IL: Chicago University Press.
- Jeffrey, A. 2013. *The Improvised State: Sovereignty, Performance, and Agency*. Oxford: Wiley-Blackwell.
- 2017. Legal Geography 1: Court Materiality. *Progress in Human Geography*. Available at: [10.1177/0309132517747746](https://doi.org/10.1177/0309132517747746). [Accessed: 13/02/2019].
- , McConnell, F., and Wilson, A., 2015. Understanding Legitimacy: Perspectives from Anomalous Spaces. *Geoforum*, 66: 177–183.
- Johnson, R.E. et al., 2014. Introducing Democracy in Practice: Ceremony and Ritual in Practice. In: Rai, S., and Johnson, R. E. (eds.). *Democracy in Practice: Ceremony and Ritual in Parliament*. Basingstoke: Palgrave MacMillan, 1–17.
- Johnson, E., 2015. Is Japan Becoming Extinct? *The Japan Times*, 16/05/2015. Available online at: <https://www.japantimes.co.jp/news/2015/05/16/national/social-issues/japan-becoming-extinct/#.W1BXzNhKjEZ> [Accessed: 19/07/2018].
- Johnstone, K., 1981. *Impro: Improvisation and the Theatre*. London: Eyre Methuen.
- Jones, M.D., and McBeth, M.K., 2010. A Narrative Policy Framework: Clear Enough to be Wrong? *Policy Studies Journal*, 38(2): 329–353.
- Jones, S.B., 1951. The Economic Geography of Atomic Energy: A Review Article. *Economic Geography*, 27(3): 268–274.
- Joss, S., 1995. Evaluating Consensus Conferences: Necessity or Luxury? In: Joss, S., and Durant, J. (eds.). *Public Participation in Science: The Role of Consensus Conferences in Europe*. London: Science Museum.
- K**
- Kamada, L.D., 2009. *Hybrid Identities and Adolescent Girls: Being 'Half' in Japan*. Bristol: Multilingual Matters.

- Kamanaka, H., 2015. *Little Voices from Fukushima*. BunBun Films. (Japanese)
- Kan, N., 2010. Policy Speech by Prime Minister Naoto Kan at the 174<sup>th</sup> Session of the Diet. Available at: [https://japan.kantei.go.jp/kan/statement/201006/11syosin\\_e.html](https://japan.kantei.go.jp/kan/statement/201006/11syosin_e.html) [Accessed: 28/06/2015].  
— 2011. Message from the Prime Minister, 13/03/2010. Prime Minister’s Office, Tokyo.
- Kang, K.W., 2016. History and Organizations for Radiological Protection. *Journal of Korean Medical Science*, 31(1): S4–S5.
- Kariya, T., 2012. Is Everyone Capable of Becoming a ‘Good Citizen’ in Japanese Society? Inequality and the Realization of the ‘Good Citizen’ Education. *Multicultural Education Review*, 4(1): 119–146.
- Keller, E. F., 1995. The Origin, History, and Politics of the Subject Called ‘Gender and Science’: A First-Person Account. In: Jasanoff, S., Markle, G. E., Peterson, J. C., and Pinch, T. (eds.). *Handbook of Science and Technology Studies*. Thousand Oaks, CA: SAGE Publications, 80–94.
- Keynes, J.M. 2003. *The General Theory of Employment, Interest, and Money*. The University of Adelaide Library.
- Kim, S.C., and Chung, Y., 2018. Dynamics of Nuclear Power Policy in the Post-Fukushima Era: Interest Structure and Politicization in Japan, Taiwan, and Korea. *Asian Studies Review*, 42(1): 107–124.
- Kimble, J.J., 2006. *Mobilizing the Home Front: War Bonds and Domestic Propaganda*. College Station: Texas A&M University Press.
- Kimura, A.H., and Katano, Y., 2014. Farming After the Fukushima Accident: A Feminist Political Ecology Analysis of Organic Agriculture. *Journal of Rural Studies*, 34: 108–116.
- Kimura, A.H., 2015. Understanding Fukushima: Nuclear Impacts, Risk Perceptions and Organic Farming in a Feminist Political Ecology Perspective. In: Bryant, R.L. (ed.). *The International Handbook of Political Ecology*. Edward Elgar Publishing.  
—2016. *Radiation Brain Moms and Citizen Scientists: The Gender Politics of Food Contamination After Fukushima*. Durham and London: Duke University Press.  
—2018. Fukushima ETHOS: Post-Disaster Risk Communication, Affect, and Shifting Risks. *Science as Culture*, 27(1): 98–117.
- Kingston, J., 2012. Japan’s Nuclear Village. *The Asia-Pacific Journal: Japan Focus*, 10 (37) 1: 1–23.  
— 2014. Japan’s Nuclear Village: Power and Resilience. In: Kingston, J. (ed.). *Critical Issues in Contemporary Japan*. London; New York: Routledge, 107–119.
- Kirsch, S., 2000. Peaceful Nuclear Explosions and the Geography of Scientific Authority. *The Professional Geographer*, 52(2): 179–192.
- Kitazawa, K. et al., 2012. *The Fukushima Daiichi Nuclear Power Station Disaster: Investigating the Myth and Reality*. The Independent Investigation Commission on the Fukushima Nuclear Accident. Tokyo: Rebuild Japan Initiative Foundation.
- Knorr Cetina, K., 1981. *The Manufacture of Knowledge: An Essay on the Constructivist and Contextual Nature of Science*. Oxford: Pergamon Press.

- Koh, Y., 2011. Tireless Edano Earns Twitter Respect. *The Wall Street Journal*, 14/03/2011. Available at: <https://blogs.wsj.com/japanrealtime/2011/03/14/tireless-edano-earns-twitter-respect/> [Accessed: 01/02/2020].
- Koide, H., 2011. The Truth About Nuclear Power: Japanese Nuclear Engineer Calls for Abolition. *The Asia Pacific Journal: Japan Focus*, 31(5): 1–8.  
— 2012. Japan’s Nightmare Fight Against Radiation in the Wake of the 3.11 Meltdown. *The Asia Pacific Journal: Japan Focus*, 54(106): 1–8.
- KOTOBA 2016. KOTOBA: Dialogues in Fukushima: The story of four years of dialogue for the rehabilitation of living conditions in the areas contaminated by the Fukushima accident. Available at: <http://www.fukushima-dialogues.com/> [Accessed: 11/04/2017]
- Kotsko, A., 2013(a). Genealogy and Political Theology: On Method in Agamben’s *The Kingdom and the Glory*. *Political Theology*, 14(1): 107–114.  
— 2013(b). How to Read Agamben. *LA Review of Books*, 4.
- Kripke, S.A., 2011. Nozick on Knowledge. In: Kripke, S.A. (ed.). *Philosophical Troubles. Collected Papers*. Oxford; New York: Oxford University Press, I, 162–224.
- Kuchinskaya, O., 2012. Twice Invisible: Formal Representations of Radiation Danger. *Social Studies of Science*, 43(1): 78–96.  
— 2014. *The Politics of Invisibility: Public Knowledge About Radiation Health Effects After Chernobyl*. Cambridge, MA: MIT Press.  
— 2019. Citizen Science and the Politics of Environmental Data. *Science, Technology and Human Values*, 44(5): 871–880.
- Kuhn, T., 1970 *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.
- Kuletz, V., 1998. *The Tainted Desert: Environmental and Social Ruin in the American West*. New York; London: Routledge.
- Kumagai, A., and Tanigawa, K., 2018. Current Status of the Fukushima Health Management Survey. *Radiation Protection Dosimetry*, 182(1): 31–39.
- Kuus, M., 2009. Policy and Geopolitics: Bounding Europe in EUrope. *Annals of the Association of American Geographers*, 101(5): 1140–1155.  
— 2011(a). Bureaucracy and Place: Expertise in the European Quarter. *Global Networks*, 11(4): 421–439.  
— 2011(b). Whose Regional Expertise? Political Geographies of Knowledge in the European Union. *European Urban and Regional Studies*, 18(3): 275–288.  
— 2013(a). Foreign Policy and Ethnography: A Sceptical Intervention. *Annals of the Association of American Geographers*, 18(1): 115–131.  
— 2013(b). *Geopolitics and Expertise: Knowledge and Authority in European Diplomacy*. Hoboken, NJ: Wiley-Blackwell.
- Kushner, B., and Funabashi, Y. (eds), 2015. *Examining Japan’s Lost Decades*. Oxford; New York: Routledge.
- Kuttner, K., Tokuo, I., and Posen, A., 2015. Monetary and Fiscal Policies During the Lost Decades. In: B. Kushner, and Y. Funabashi (eds). *Examining Japan’s Lost Decades*. Oxford; London: Routledge, 17–36.

- Kyodo, 2011(a). Too Many Volunteers to Put Up. *The Japan Times*, 27/04/2011. Available at: <https://www.japantimes.co.jp/news/2011/04/27/national/too-many-volunteers-to-put-up/#.W1jHh9hKjEY> [Accessed: 25/07/2018].
- 2011(b). Utilities Got 68 Ex-Bureaucrats Via ‘Amakudari’. *The Japan Times*, 05/05/2011. Available at: <https://www.japantimes.co.jp/news/2011/05/04/national/utilities-got-68-ex-bureaucrats-via-amakudari/#.XSSuGZNKhsM> [Accessed: 01/07/2019].
- 2011(c). Utility Execs are Major LDP Donors. *The Japan Times*, 24/07/2011. Available at: <https://www.japantimes.co.jp/news/2011/07/24/national/utility-execs-are-major-ldp-donors/#.XSR6QpNKhsM> [Accessed: 01/07/2019].

## L

Laclau, E., and Mouffe, C., 1985. *Hegemony and Socialism: Towards a Radical Democratic Politics*. London: Verso.

Latour, B., 1987. *Science in Action: How to Follow Scientists and Engineers Through Society*. Cambridge, MA: Harvard University Press.

— 2003. From the World of Science to the World of Research? *Science*, 280(5361): 208–209.

— 2004(a). *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford: Oxford University Press.

— 2004(b). Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern. *Critical Inquiry*, 30(1): 225–248.

—, and Weibel, P., 2005. *Making Things Public: Atmospheres of Democracy*. ZKM: Karlsruhe.

—, and Woolgar, S., 1986. *Laboratory Life: The Social Construction of Scientific Facts*. Princeton: Princeton University Press.

Law, J., and Lin, W.Y., 2017. Provincializing STS: Postcoloniality, Symmetry, and Method. *East Asian Science, Technology and Society*, 11(2): 211–227.

Lazo, E., 2016. Involving Stakeholders in Radiological Protection Decision Making: Recovery History and Lessons from the People of Fukushima. *Annals of the ICRP*, 45(2): 105–109.

— 2017. *NEA Framework for the Management of Post-Accident Contaminated Food*. Paper delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (09/11/2016).

Leong, C., 2017. Hajer’s Institutional Void and Legitimacy Without Polity. *Policy Sciences*, 50(4): 573–583.

Leonard, K., 2016. *Best-Practice Management of Measurements of Radionuclides in Fishery Products*. Paper delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (09/11/2016).

Lepore J., 2018. The Strange and Twisted Life of ‘Frankenstein’. *The New Yorker*, 12/02/2018.

Available at: <https://www.newyorker.com/magazine/2018/02/12/the-strange-and-twisted-life-of-frankenstein> [Accessed: 02/03/2019].

Lewis, D.K., 1973. *Counterfactuals*. Cambridge, MA: Harvard University Press.

Lévi-Strauss, C., 1962. *Le pensée sauvage*. Paris: Plon. (French)

Liland, A. 2016. ICRP Fukushima Dialogue Seminars: Joint Learning at Many Levels. *Annals of the ICRP*, 45(2): 92–98.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Lindell, B. 1996. The History of Radiation Protection. *Radiation Protection Dosimetry*, 68(1-2): 83–95.

Lochard, J. 2017(a). The Genesis of the ICRP Dialogue Initiative. *Annals of the ICRP*, 45(2): 7–13.  
— 2017(b). The Recommendations of ICRP Publication 111 in light of the ICRP Dialogue in Fukushima. *Annals of the ICRP* 45(2): 110-118.

Lochbaum, D., Lyman, E., and Stranahan, S.Q., 2014. *Fukushima: The Story of a Nuclear Disaster*. New York: The New Press.

Lord, J., 2010. Dr Andrew Wakefield Being Crucified by Big Pharma. *Vaccine Resistance Movement*. Available at: <https://vaccineresistancemovement.org/?p=329> [Accessed: 16/02/2019].

Lowry, D., 2000. Jinzaburo Takagi. *The Guardian*, 19/20/2000. Available at: <https://www.theguardian.com/news/2000/dec/20/guardianobituaries1> [Accessed: 04/02/2019].

Lukner, K., and Sakaki, A., 2013. Lessons from Fukushima: An Assessment of the Investigations of the Nuclear Disaster. *The Asia-Pacific Journal: Japan Focus*, 11(19)2: 1–29.

Lynch, M., 2017. STS, Symmetry and Post-Truth. *Social Studies of Science*, 47(4): 593–599.

Lyotard, J., 1986. *The Postmodern Condition: A Report on Knowledge*. Manchester: Manchester University Press.

Lynch, M., 2017. STS, symmetry, and post-truth. *Social Studies of Science* 47(4): 593-599.

## M

Machiavelli, N., [1883] 1970. *The Prince*. Translated and with an introduction by George Bull. London: Folio Society.

Maeda, M., and Oe, M., 2017. Mental Health Consequences and Social Issues After the Disaster. *Asia-Pacific Journal of Public Health*, 29(2): 36–46.

Mair, V. H., Mair, D., and Liqing, Z., 2009. Danger + Opportunity ≠ Crisis: How A Misunderstanding About Chinese Characters Has Led Many Astray. *Pīnyīn.info*. Available at: <http://www.pinyin.info/chinese/crisis.html> [Accessed: 24/07/2018].

Manabe, N., 2016. *The Revolution Will Not Be Televised: Protest Music After Fukushima*. New York: Oxford University Press.

Marran, C., 2011. Contamination: From Minamata to Fukushima. *The Asia-Pacific Journal: Japan Focus*, 9(19)1: 1–8.

Marsden, M., Ibañez-Tirado, D., and Henig, D., 2016. Everyday Diplomacy. *The Cambridge Journal of Anthropology*, 34(2): 2–22.

Masuda, H., 2014. *Chiho shoumetsu*. Tokyo: Chuokoron-shinsha. (Japanese).

Massumi, B. 2015. *Politics of Affect*. Cambridge: Polity.

Mayhew, R. J., 2008. Historical Geography 2007–2008: Foucault’s Avatars – Still in (the) Driver’s Seat. *Progress in Human Geography*, 33(3): 387–397.

- McAvoy, W. (2012). 5/1. *The Newsroom*. Season 1, Episode 7. Sorkin, A. (writer), Handelman, D. (ed.), Marston, J. (director). HBO. (05/08/2012).
- McConnell, F., 2010. Governments in Exile: Statehood, Statelessness and the Reconfiguration of Territory and Sovereignty. *Geography Compass*, 3(5): 1902–1909.
- 2016. *Rehearsing the State: The Political Practices of the Tibetan Government-In-Exile*. Chichester: Wiley & Sons.
- , Moreau, T., and Dittmer, J., 2012. Mimicking State Diplomacy: The Legitimising Strategies of Unofficial Diplomacies. *Geoforum*, 43(4): 810–814.
- McCurry, J., 2011(a). Japanese MP Drinks Fukushima Water Under Pressure from Journalists. *The Guardian*, 01/11/2011. Available at: <https://www.theguardian.com/world/2011/nov/01/japanese-mp-drinks-water-fukushima> [Accessed: 18/07/2018].
- 2011(b). Japan: The Aftermath. *The Lancet*, 377(9771): 1061–1062.
- McDowell, L., 1998. Elites in the City: Methodological Considerations. *Environmental Planning*, 30(12): 2133–2146.
- McNeil, M., 1987. *Gender and Expertise*. In: Williams, R., Faulkner, W., and Fleck, J. (eds.). *Exploring Expertise: Issues and Perspectives*. London: MacMillan Press Ltd., 55–80.
- McNeill, D., 2011. Trembling Minister Puts His Fukushima Nuclear Water Where His Mouth Is. *The Independent*, 02/11/2011. Available at: <https://www.independent.co.uk/news/world/asia/trembling-minister-puts-his-fukushima-nuclear-water-where-his-mouth-is-6255809.html> [Accessed: 18/07/2019].
- 2013. I Am One of the Fukushima Fifty. *The Independent*, 02/03/2013: 32–33.
- Medawar, P., 1964. Is the Scientific Paper a Fraud? Available at: <http://www.weizmann.ac.il/mcb/UriAlon/sites/mcb.UriAlon/files/uploads/medawar.pdf> [Accessed: 27/03/2017].
- Melucci, A., 1996. *Challenging Codes: Collective Action in the Information Age*. Cambridge: Cambridge University Press.
- Messeri, L., 2017. Resonant Worlds: Cultivating Proximal Encounters in Planetary Science. *American Ethnologist*, 44(1): 131–142.
- Michie, H., 1993. Jane Austin and the Body. *Literature and Medicine*, 12 (2): 273–276.
- Mileaf, J., Janine Mileaf on Levi-Strauss, *Science of the Concrete*. Available at: <https://www.sas.upenn.edu/~jenglish/Courses/mileaf.html> [Accessed: 20/10/2017].
- Milgram, S., 1963. Behavioral Study of Obedience. *Journal of Abnormal and Social Psychology*, 67: 371–378.
- 1965. Some Conditions of Obedience and Disobedience to Authority. *Human Relations*, 18: 57–76.
- Millar, R. and Wynne, B., 1988. Public Understanding of Science: From Contents to Processes. *International Journal of Science Education*, 10(4): 388–398.
- Miller, C., 2005. New Civic Epistemologies of Quantification: Making Sense of Indicators of Local and Global Sustainability. *Science, Technology & Human Values*, 30: 403–432.

- 2008. Civic Epistemologies: Constituting Knowledge and Order in Political Communities. *Sociology Compass*, 2(6): 1896–1919.
- Ministry of Environment, 2017(a). *Nasubi no Gimon: Kankyo eikyo*. Tokyo: Ministry of Environment. (Japanese)
- 2017(b). *Nasubi Asks Questions: Food Edition*. Tokyo: Ministry of Environment.
- Ministry of Foreign Affairs, 2012. List of Relief Supplies and Donations from Overseas. Ministry of Foreign Affairs. Available at: [https://www.mofa.go.jp/j\\_info/visit/incidents/pdfs/r\\_goods.pdf](https://www.mofa.go.jp/j_info/visit/incidents/pdfs/r_goods.pdf) [Accessed: 25/07/2018].
- Mizuoka, F. et al., 2005. The Critical Heritage of Japanese Geography: Its Tortured Trajectory for Eight Decades. *Environment and Planning D: Society and Space*, 23(3): 453–473.
- Mizuuchi, T., 2003. Why are Japanese Geographers so Uncritical? Recent Trend of Critical Human Geography in Japan [sic]. Available at: [http://www.lit.osaka-cu.ac.jp/geo/mizuuchi/english/e\\_material/earcag\\_HK.htm](http://www.lit.osaka-cu.ac.jp/geo/mizuuchi/english/e_material/earcag_HK.htm) [Accessed: 02/02/2020].
- Mommsen, T., 1888. *Romishes Staatsrecht*. Leipzig: S. Hirzel.
- Monma, T., Goto, I., Hayashi, T., Tachiya H., and Ohsawa, K., 2015. *Agricultural and Forestry Reconstruction After the Great East Japan Earthquake: Tsunami, Radioactive, and Reputational Damages*. Cham: Springer.
- Mosse, D., 2004. *Cultivating Development: An Ethnography of Aid Policy*. London: Pluto Press.
- Mountz, 2007. Smoke and Mirrors: An Ethnography of the State. In: Tickell, A., Sheppard, E., Peck, J., and Barnes, T. (eds.). *Politics and Practice in Economic Geography*. Newcastle: SAGE Publications, 38–48.
- Mudde, C., 2004. The Populist Zeitgeist. *Government and Opposition*, 39(4): 541–563.
- Müller, J-W., 2016. *What is Populism?* Philadelphia: University of Pennsylvania Press.
- Murakami, K., Gilroy, R., and Atterton, J., 2009. Planning for the Ageing Countryside in Japan: The Potential Impact of Multi-Habitation. *Planning Practice and Research*, 24(3): 285–299.
- Muramatsu, N., and Akiyama, H., 2011. Japan: Super-Ageing Society Preparing for the Future. *The Gerontologist*, 51(4): 425–432.
- Muto, R., 2011. *This is About How We Live...* 19<sup>th</sup> September 2011, Hibiya Park, Tokyo. Available at: [http://www.bank-einbruch.de/linked/110919\\_Ruiko\\_MUTO\\_Speech\\_Tokio.pdf](http://www.bank-einbruch.de/linked/110919_Ruiko_MUTO_Speech_Tokio.pdf) [Accessed: 08/06/2019].
- Myers, G., Ashmore, M., and Potter, J., 1995. Discourse, Rhetoric, Reflexivity: Seven Days in the Library. In: Jasanoff, S., Markle, G.E., Petersen, J.C., and Pinch, T. (eds.), *Handbook of Science and Technology Studies*. London: SAGE Publications, 320–342.
- N**
- Nader, L., 1972. Up the Anthropologist: Perspectives Gained from Studying Up. In: Hymes, D. (ed.). *Reinventing Anthropology*. Ann Arbor, MI: University of Michigan Press, 284–311.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Nagata, K., 2009. The Uphill Battle Against ‘Descent from Heaven’. *The Japan Times*, 10/02/2009. Available at: <https://www.japantimes.co.jp/news/2009/02/10/national/the-uphill-battle-against-descent-from-heaven/#.XSSszZNKhsM> [Accessed 01/07/2019].

NAIIC, 2012. *The Official Report of the National Accident Independent Investigation Commission*. Tokyo: The National Diet of Japan.

Nicolini, G., 2016. Safe to Eat? Dealing with Food Safety After the Fukushima Disaster. *Reinvention: An International Journal of Undergraduate Research*, 9(2): 4.

Nitobe, I., 1891. *The Intercourse Between the United States and Japan: An Historical Sketch*. Baltimore: John Hopkins Press.

Noggerath, J., Geller, R.J., and Gusiokov, V., 2011. Fukushima: The Myth of Safety, the Reality of Geoscience. *Bulletin of the Atomic Scientists* 67(5): 37–46.

Norris, V., 2011. Deadly Silence on Fukushima. *The Huffington Post*, 05/09/2011. Available at: [http://www.huffingtonpost.com/vivian-norris-de-montaigu/deadly-silence-on-fukushi\\_b\\_859241.html](http://www.huffingtonpost.com/vivian-norris-de-montaigu/deadly-silence-on-fukushi_b_859241.html). [Accessed: 12/07/2015].

Notehelfer, F.G., 1975. Japan’s First Pollution Incident. *Journal of Japanese Studies*, 1(2): 351–383.

Novikau, A., 2016. What is ‘Chernobyl Syndrome?’ The Use of Radiophobia in Nuclear Communications. *Environmental Communication*, 11(6): 800–809.

Nowotny, H., 1980. The Role of Experts in Developing Public Policy: An Austrian Debate on Nuclear Power. *Science, Technology and Human Values*, 5(3): 10–18.

—, and Leroy, P., 2009. Helga Nowotny: An Itinerary Between Sociology of Knowledge and Public Knowledge. *Natures Sciences Sociétés*, 1(17): 57–64.

Nozick, R., 1981. *Philosophical Explanations*. Cambridge, MA: Harvard University Press.

Nuclear Emergency Response Headquarters, 2011. *Report of the Japanese Government to the IAEA Ministerial Conference on Nuclear Safety: The Accident at TEPCO’s Fukushima Nuclear Power Stations*. Japanese Government: Tokyo.

Nurwisah, R., 2011. Twitter Urges Japanese Government Spokesman Edano to Sleep. *The National Post*, 15/03/2011. Available at: <https://nationalpost.com/news/twitter-urges-japanese-government-spokesman-edano-to-sleep> [Accessed: 01/02/2020].

## O

Obama, B. 2006. *The Audacity of Hope*. New York: Three Rivers Press.

O’Connell, H., 2012. A Year On, €5bn Donated but Lack of A ‘Master Plan’ to Rebuild Japan Criticised. *TheJournal.ie*, 11/03/2012. Available at: <http://www.thejournal.ie/nearly-e5bn-donated-but-lack-of-master-plan-to-rebuild-japan-criticised-377630-Mar2012/> [Accessed: 25/07/2018].

Oe, K., 2011. History Repeats. *The New Yorker*, 28/03/2011. Available at: <https://www.newyorker.com/magazine/2011/03/28/history-repeats> [Accessed: 04/06/2015].

OECD-NEA, 2013. Rules of Procedure. Available at: <https://www.oecd.org/legal/Rules%20of%20Procedure%20OECD%20Oct%202013.pdf>

- [Accessed: 01/12/2016].
- 2015. Co-ordinating Body Rules of Procedure. Available at: <https://www.oecd.org/ctp/exchange-of-tax-information/co-ordinating-body-rules-of-procedure.pdf> [Accessed: 01/12/2016].
- 2016(a). New Senior Appointment: Daniel Iracane, New NEA Deputy Director and Chief Nuclear Officer. Available at: <https://www.oecd-nea.org/general/contacts/CVs/diracane.html> [Accessed: 02/11/2016].
- 2016(b). Food Safety Workshop, 2016. Available at: <https://www.oecd-nea.org/rp/workshops/foodsafety2016/> [Accessed: 02/12/2016].
- 2018. Highlights. Available at: <https://www.oecd-nea.org/news/#2018> [Accessed: 09/10/2018].
- Oguma, E., 2015. *Shushō Kantei no mae de*. Documentary film. Tokyo: UPLINK Co. (Japanese)
- 2017. *Shushō Kantei no mae de*. Tokyo: Shūeisha International. (Japanese)
- Ohto, H., Maeda, M., Yabe, H., Yasumura, S., and Bromet, E.E. 2015. Suicide Rates in the Aftermath of the 2011 Earthquake in Japan. *Lancet* 385:1727.
- Onishi, N., 2004. For Japan's Insider-Turned-Rebel, Decade-Old Revolution is Still a Work in Progress. *The New York Times*, 18/01/2004. Available at: <https://www.nytimes.com/2004/01/18/world/for-japan-s-insider-turned-rebel-decade-old-revolution-still-work-progress.html> [Accessed: 18/01/2004].
- Oreskes, N., 2004. The Scientific Consensus on Climate Change. *Science*, 306(5702): 1686.
- Orwell, G. (2002) *1984*. Planet Ebook. Available at: <https://www.planetebook.com/free-ebooks/1984.pdf> [Accessed: 04/05/2019]
- Owens, S., 2012. Experts and the Environment: The UK Royal Commission on Environmental Pollution, 1970–2011. *Journal of Environmental Law*, 24(1): 1–22.
- 2015. *Knowledge, Policy and Expertise: The UK Royal Commission on Environmental Pollution, 1970–2011*. Oxford: Oxford University Press.
- P**
- Pace, D., 1999. Review: *The Radiance of France: Nuclear Power and National Identity after World War II*, by G. Hecht. *American Historical Review*, 104(4): 1395–1396.
- Painter, J., 2000. Pierre Bourdieu. In: Crang, M., and Thrift, N. (eds.). *Thinking Space*. London; New York: Routledge, 239–259.
- Parmenter, L., Mizuyama, M., and Taniguchi, K., 2008. Citizenship Education in Japan. In: Arthur, J., Davies, I., and Hahn, C. (eds.). *The Sage Handbook of Education for Citizenship and Democracy*. Thousand Oaks, CA: SAGE Publications, 205–214.
- Payne, H., 2015. Global Warming: Follow the Money. *National Review*, 25/02/2015. Available at: <https://www.nationalreview.com/2015/02/global-warming-follow-money-henry-payne/> [Accessed: 18/05/2019].
- Pempel, T.J., 1992. Bureaucracy in Japan. *Political Science and Politics*, 25(1): 19–24.
- Petryna, A., 2013. *Life Exposed: Biological Citizenship After Chernobyl*. Princeton, NJ: Princeton University Press.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

- Philo, C., 1992. Foucault's Geography. *Environment and Planning D: Society and Space*, 10: 137–161.
- Philips, S.D., 2002. Half-Lives and Healthy Bodies: Discourses on Contaminated Food and Healing in Post-Chernobyl Ukraine. *Food and Foodways*, 10(1–2): 27–53.
- Pike, K.L., 1967. Etic and Emic Standpoints for the Description of Behavior. In: Pike, K.L. (ed.). *Language in Relation to a Unified Theory of the Structure of Human Behavior*. Mouton & Co., 37–72.
- Pilibaitytė, V. 2011. Nuclear energy discourses in Lithuania and Belarus. *Media Transformations* 5 (9): 66–87.
- Pini, P., Cordiez, M., Fyfe, J., Defard, C., Dégremont, M., Bouillet, J., and Takahashi, M., 2017. *Anglo-French Collaboration in the Nuclear Sector: Nuclear Energy, Ethics, and the Social Sciences*. Paris: Société Française d'Énergie Nucléaire.
- Pollard, A., 2009. Field of Screams: Difficulty and Ethnographic Fieldwork. *Anthropology Matters*, 11(2): 1–24.
- Pottle, F.A., 1950. Catharsis. *Yale review*, 40(4): 621–641.
- R**
- Rai, S.M., 2014. Political Performance: A Framework for Analysing Democratic Politics. *Political Studies*, 63(5): 1179–1197.
- Reconstruction Design Council, 2011. *Towards Reconstruction: Hope Beyond the Disaster*. Tokyo: Reconstruction Design Council.
- Reinecke, J., 2018. Social Movements and Prefigurative Organizing: Confronting Entrenched Inequalities in Occupy London. *Organization Studies* 39(9): 1299–1321.
- Rhodes, R.A.W., 2000. Introduction: The ESRC Whitehall Programme: A Guide to Institutional Change. In: Rhodes, R.A.W. (ed.). *Transforming British Government: Changing Institutions*. London: Macmillan, 1–22.
- 2002. Putting the People Back into Networks. *Australian Journal of Political Science*, 37(3): 399–415.
- 2005. Everyday Life in a Ministry: Public Administration as Anthropology. *The American Review of Public Administration*, 35(1): 3–25.
- 2011. *Everyday Life in British Government*. Oxford: Oxford University Press.
- RJIF, 2014. *The Fukushima Daiichi Nuclear Power Plant Station Disaster: Investigating the Myth and Reality*. Abingdon: Routledge.
- Roe, E., 1994. *Narrative Policy Analysis: Theory and Practice*. Durham; London: Duke University Press.
- Rogers, A., Castree, N., and Kitchen, R. (eds.), 2013. *A Dictionary of Human Geography*. Oxford: Oxford University Press.
- Rogers, C.R., 1961. *On Becoming a Person: A Therapist's View of Psychotherapy*. Constable.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster (2011–2018)

— 1964. Remarks on the Future of Client-Centered Therapy. Presented at a Symposium on the Future of Client-Centered Therapy, American Psychological Association. In: Wexler, D., and Rice, L.N. (eds.). *Innovations in Client-Centered Therapy*. New York: John Wiley & Sons, 7–13.

Rohgalf, J., 2013. Democracy of the Many? Occupy Wall Street and the Dead End of Prefiguration. *Distinktion: Scandinavian Journal of Social Theory*, 14(2): 151–167.

Rollinger, F., Lochard, J., and Schneider, T., 2016. Lessons Learnt by IRSN About the Involvement of Experts Towards the Population in Contaminated Areas in Fukushima Prefecture. *Annals of the ICRP*, 45(2): 99–104.

Ropeik, D., 2016. The Dangers of Radiophobia. *Bulletin of the Atomic Scientists*, 72(5): 311–317.

Rose, G., 1997. Situating Knowledge: Positionality, Reflexivities and Other Tactics. *Progress in Human Geography*, 21(3): 305–320.

Rosenwein, B.H. (1999) *Negotiating Space: Power, restraint, and privileges of immunity in early medieval Europe*. Ithaca, NY: Cornell University Press.

Rossiter, M.W., 1982. *Women Scientists in America: Struggles and Strategies to 1940*. Baltimore; London: John Hopkins University Press.

Ruiko, M. (2011) *This is About How We Live...* Hibiya Park, Tokyo. 19 September 2011. Available at: [http://www.bank-einbruch.de/linked/110919\\_Ruiko\\_MUTO\\_Speech\\_Tokio.pdf](http://www.bank-einbruch.de/linked/110919_Ruiko_MUTO_Speech_Tokio.pdf) [Accessed: 15/05/2017]

## S

Samuels, R.J., 2013(a) *3.11: Disaster and Change in Japan*. Ithaca, NY: Cornell University Press.

— 2013(b). Japan's Rhetoric of Crisis: Prospects for Change After 3.11. *The Journal of Japanese Studies*, 39(1): 97–120.

— 2017. When Leadership Failed. In: Horowitz, I.L. (ed.). *Civil Society and Class Politics: Essays on the Political Sociology of Seymour Martin Lipset*. New York: Routledge, 57–76.

Sánchez, L., 2010. Positionality. In: Wharf, B. (ed.). *Encyclopaedia of Geography*. Thousand Oaks, CA: SAGE Publications. Available at: <https://sk.sagepub.com/reference/geography/n913.xml> [Accessed: 24/07/2018].

Sargent, J. 1993. The Place of Japanese Studies in British Geography. In Sargent, J. and Wiltshire, R. eds. *Geographical Studies and Japan*.

Sato, K., 2017. Japan's Nuclear Imaginaries Before and After Fukushima: Visions of Science, Technology, and Society. In: Ahn, J., Guarnieri, F., and Furuta, K. (eds.). *Resilience: A New Paradigm of Nuclear Safety*. Springer: Berlin, 195–206.

Sato, T., 2012. *The Presentation of Ms. Tazuko Sato*. ETHOS in Fukushima. Available at: <https://ethos-fukushima.blogspot.com/2012/07/presentation-of-ms-tazuko-sato.html> [Accessed: 03/07/2017]. (Japanese)

Schiller, R.J., 2012. Spend, Spend, Spend. It's the American Way. *The New York Times*, 15/01/2012. Available at: <https://www.nytimes.com/2012/01/15/business/consumer-spending-as-an-american-virtue.html>. [Accessed: 03/02/2018].

- Schmitt, C., [1934] 2005. *Political Theology: Four Chapters on the Concept of Sovereignty*. Translated by G. Schwab. Chicago, IL: University of Chicago Press.
- Schreiber, M., 2011. Japan's Food Crisis Goes Beyond Recent Panic Buying. *The Japan Times*, 17/04/2011. Available at: <https://web.archive.org/web/20110420001603/http://search.japantimes.co.jp/cgi-bin/fd20110417bj.html> [Accessed: 03/09/2019].
- Science Council of Japan, 2011(a). *Statement of the Executive Committee of Science Council of Japan: Disaster in north east Japan and nuclear emergency*. Tokyo: Science Council of Japan.
- 2011(b). *Emergency Meeting of the Science Council of Japan: Emergency Report on 'What Can We Do Now?'* Tokyo: Science Council of Japan.
- 2012. *Recommendations from Science Council of Japan: With Confident Steps Towards Reconstruction*. Tokyo: Science Council of Japan.
- Segawa, M., 2011. Fukushima Residents Seek Answers Amid Mixed Signals from Media, TEPCO and Government. Report from the Radiation Exclusion Zone. *The Asia-Pacific Journal: Japan Focus*, 9(16)2: 1–8.
- Sekiya, N., 2003. The Social Psychology of Reputation-Based Damage: The Actual and Mechanism of Reputation-Based Damage. *Japan Disaster Information Studies*, 1: 78–79.
- 2016. Tokyo denryoku fukushima daiichi genshiryoku hatsudensho jiko go no houshasei bushitsu ni kan suru shōhisha shinri no chōsa kenkyū. [Research Survey of Consumer Psychology about Radioactive Contamination after the Accident at TEPCO's Fukushima Daiichi Nuclear Power Stations.] *Journal of Social Safety Science* 29: 143-153. (Japanese). Available at: [https://www.jstage.jst.go.jp/article/jisss/29/0/29\\_143/\\_article/-char/ja/](https://www.jstage.jst.go.jp/article/jisss/29/0/29_143/_article/-char/ja/) [Accessed: 23/11/2017]
- Samuels, A., 2017. Can Anything Stop Rural Decline? *The Atlantic*, 23/08/2017. Available at: <https://www.theatlantic.com/business/archive/2017/08/japan-rural-decline/537375/> [Accessed: 26/08/2017].
- Shah, T., 2007. *In Arabian Nights: A Caravan of Moroccan Dreams*. Bantam.
- Shapin, S., 1988. The House of Experiment in Seventeenth-Century England. *Isis*, 79(3): 373–404.
- , and Schaffer, S., 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press.
- Shimazu, N., 2014. Diplomacy as Theatre: Staging the Bandung Conference of 1955. *Modern Asian Studies*, 48(1): 225–252.
- Shiroyama, H., 2014. Nuclear Safety Regulation in Japan and Impacts of the Fukushima Daiichi Accident. In: Ahn, J., et al. (eds.). *Reflections on the Fukushima Daiichi Nuclear Accident*. Berlin: Springer, 283–296. Available at: [https://link.springer.com/chapter/10.1007/978-3-319-12090-4\\_14#citeas](https://link.springer.com/chapter/10.1007/978-3-319-12090-4_14#citeas) [Accessed: 01/02/2020].
- Shrum, W., 2004. Symposium Review: Science and the Committee Process: The Presentation of the Scientific Self. *Social Studies of Science*, 34(3): 427–432.
- Sidaway, J., 2017. Postcolonial Geographies. In: Richardson, D. et al. (eds.). *International Encyclopedia of Geography: People, the Earth, Environment and Technology*. Hoboken, NJ: Wiley Online Library. Available at: <https://onlinelibrary.wiley.com/doi/pdf/10.1002/9781118786352.wbieg1100> [Accessed: 01/02/2020].

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster (2011–2018)

- Silverman, D., 2017. How Was It for You? The Interview Society and the Irresistible Rise of the (Poorly Analysed) Interview. *Qualitative Research*, 17(2): 144–158.
- Simis, M.J. et al. (2016) The Lure of Rationality: Why does the deficit model persist in science communication? *Public Understanding of Science* 25(4): 400-414.
- Sismondo, S., 2017. Post-Truth? *Social Studies of Science*, 47(1): 3–6.
- Smith, K.B., and Larimer, C.W., 2013. *The Public Policy Theory Primer*. Boulder, Colorado: Westview Press.
- Smith, A.M., 2012. Post-Fukushima Realities and Japan's Energy Future. *The Asia-Pacific Journal: Japan Focus*, 10(33)2: 1–8.
- Smith, W.E., and Smith, A.M., 1975. *Minamata: A Warning to the World*. London: Chatto & Windus Ltd., 180–7.
- Soja, E.W., 1989. *Postmodern Geographies: The Reassertion of Space in Critical Social Theory*. London: Verso.
- 2008 Taking Space Personally. In Arias, S. and Warf, B. eds. *The Spatial Turn: Interdisciplinary perspectives*. London: Taylor and Francis. Pp. 11-35.
- Sosa, E., 1999. How Must Knowledge be Modally Related to What is Known? *Philosophical Topics*, 26(1/2): 373–384.
- Statistics Bureau, 2017. Statistical Handbook of Japan 2017. Statistics Bureau, Ministry of Internal Affairs and Communications. Available at: <http://www.stat.go.jp/english/data/handbook/c0117.html> [Accessed: 18/07/2018].
- Stawkowski, M.E., 2016. 'I am a Radioactive Mutant': Emergent Biological Subjectivities at Kazakhstan's Semipalatinsk Nuclear Test Site. *American Ethnologist*, 43(1): 144–157.
- 2017. Radiophobia Had to Be Reinvented. *Culture, Theory and Critique*, 58(4): 357–374.
- Steger, B., 2012. 'We Were All in This Together' – Challenges to and Practices of Cleanliness in Tsunami Evacuation Shelters in Yamada, Iwate Prefecture, 2011. *The Asia-Pacific Journal: Japan Focus*, 10(38): 1–27.
- 2013. Solidarity and Distinction Through Practices of Cleanliness in Tsunami Evacuation Shelters in Yamada, Iwate Prefecture. In: Gill, T., Steger, B., and Slater, D.H. (eds.). *Japan Copes with Calamity: Ethnographies of the Earthquake, Tsunami and Nuclear Disasters of March 2011*. Bern: Peter Lang, 53–76.
- Sternsdorff-Cisterna, N., 2015. Food After Fukushima: Risk and Scientific Citizenship in Japan. *American Anthropologist*, 117(3): 455–467.
- Stockwin, J.A.A., 2014. Review: 3.11: *Disaster and Change in Japan* by Richard J. Samuels. *The Journal of Japanese Studies*, 40(2): 509–514.
- Stolz, R., 2018. Money and Mercury: Environmental Pollution and the Limits of Japanese Postwar Democracy. *Positions*, 26(2): 243–264.
- St. Michel, P. (2017) Donald Trump's Visit Dominates Japan's Conversation Online – until he leaves. *The Japan Times*, 18 November 2017. Available at: <https://www.japantimes.co.jp/news/2017/11/18/national/media-national/donald-trumps-visit-dominates-japans-conversation-online-leaves/#.XtvVBmpKit8> [Accessed: 02/12/2017]

T

- Takahashi, M. 2017. Politics, Populism and Radiation Risk: Learning from Japan's Anti-Nuclear Movement. In: *Proceedings of the 3rd NERIS Workshop*. Paris: NERIS.
- Takashi, U., 2008. *Jyānarizumu Hōkai [The Collapse of Journalism.]* Tokyo: Gentosha. (Japanese)
- Taleb, N. N., 2017. *Skin in the Game: Hidden Asymmetries in Daily Life*. London: Allen Lane.
- Tanaka, K. and Iwasawa, M., 2010. Ageing in Rural Japan: Limitations in the Current Social Care Policy. *Journal of Ageing and Social Policy*, (4): 394–406.
- Tawada, Y. (2018). *The Last Children of Tokyo*. Margaret Mitsutani, trans. Portobello Books: London.
- Theelan, R., 2016. *Codex Alimentarius: Criteria for the Import of Food from Contaminated Agricultural Land*. Paper delivered at the OECD-NEA Workshop on Post Accident Food Safety Science, CORASSE Fukushima, Fukushima (09/11/2016).
- The Telegraph, 2011. Japan Earthquake: Yukio Edano, the 'Jack Bauer' of the Crisis. *The Telegraph*, 15/03/2011. Available at: <https://www.telegraph.co.uk/news/worldnews/asia/japan/8383430/Japan-earthquake-Yukio-Edano-the-Jack-Bauer-of-the-crisis.html> [Accessed: 01/02/2020].
- Thomas, G.F., 1983. Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists. *American Sociological Review*, 48(6): 781–795.  
— 1998. *Cultural Boundaries of Science: Credibility on the Line*. Chicago, IL: University of Chicago Press.
- Ting, T. 2017. Struggling for Tomorrow: The future orientations of youth activism in a democratic crisis. *Contemporary Social Science* 12(3-4): 242-257.
- Tisdall, S., 2011. Japan Needs Leadership, But Can Naoto Kan Deliver? *The Guardian*, 12/03/2011. Available at: <https://www.theguardian.com/commentisfree/2011/mar/12/japan-earthquake-naoto-kan-tsunami> [Accessed: 25/07/2011].
- Tokyo Electric Power Company, 2012. *Fukushima Nuclear Accident Analysis Report*. Tokyo: TEPCO.
- Topçu, S., 2013. Chernobyl Empowerment? Exporting Participatory Governance to Contaminated Territories. In: Boudia, S., and Jas, N. (eds.). *Toxicants, Health and Regulation Since 1945*. Pickering & Chatto Publishers, 135–158.
- Tsubokura, M., et al., 2018. Comparison of External Doses Between Radio-Contaminated Areas and Areas with High Natural Terrestrial Background Using the Individual Dosimeter 'D-Shuttle' 75 Months After the Fukushima Daiichi Nuclear Power Plant Accident. *Journal of Radiological Protection*, 38(1): 273–285.
- Troiani, V., Ash, S., Reilly, J., and Grossman, M., 2006. The Neural Correlates of Narrative Discourse: An Investigation Using Arterial Spin-Labeling. *Brain and Language*, 1(99), 204–205.
- Turner, V.W., 1969. *The Ritual Process: Structure and Anti-Structure*. London: Routledge & Kegan Paul.  
— 1982. *From Ritual to Theatre: The Human Seriousness of Play*. New York: PAJ Publications.

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

— 1988. *On the Edge of the Bush: Anthropology as Experience*. Tuscon, AZ: University of Arizona.

## U

Umeda, S., 2012. Japan: New Permissible Levels of Radioactivity in Food. *Global Legal Monitor*, Library of Congress. Available at: <http://www.loc.gov/law/foreign-news/article/japan-new-permissible-levels-of-radioactivity-in-foods/> [Accessed: 05/12/2016].

## V

Vetter, B.M., 1981. Women Scientists and Engineers: Trends in Participation. *Science*, 214(4527): 1313–1321.

Visoka, G., 2018. *Acting Like a State: Kosovo and the Everyday Making of Statehood*. London: Routledge.

Vogel, E.F., 1981. *Japan as Number One: Lessons for America*. Cambridge, MA: Harvard University Press.

## W

Wacquant, L., 2004. *Body and Soul: Notebooks of An Apprentice Boxer*. New York: Oxford University Press.

— 2015. For a Sociology of Flesh and Blood. *Qualitative Sociology*, 38(1): 1–11.

Wajcman, J., 1995. Feminist Theories of Technology. In: Jasanoff, S., Markle, G. E., Peterson, J. C., and Pinch, T. (eds.). *Handbook of Science and Technology Studies*. Thousand Oaks, CA: SAGE Publications, 189–204.

Warne, G., 1980. Emotion as Personal Creation: A Psychoanalytic and Psychological Perspective. *The American Journal of Psychiatry*, 137(4): 456–459.

Weart, S.R., 2012. *The Rise of Nuclear Fear*. Cambridge, MA: Harvard University Press.

Wells, H.G., 2010. *The World Set Free*. Munster: Lits.

Whatmore, S., 2002. *Hybrid Geographies: Natures, Cultures, Spaces*. Newbury Park, CA: SAGE Publications.

— 2009. Mapping Knowledge Controversies: Science, Democracy, and the Redistribution of Expertise. *Progress in Human Geography*, 33(5): 587–598.

Wieviorka, A., 2006. *The Era of the Witness*. Ithaca: Cornell University Press.

Williams, L.D.A., and Moore, S., 2019. Guest Editorial: Conceptualising Justice and Counter-Expertise. *Science as Culture*, 28(3): 251–276.

Wingfield-Hayes, R., 2014. Fukushima: Is Fear of Radiation the Real Killer? *BBC News*, 11/03/2014. Available at: <https://www.bbc.com/news/world-asia-26483945> [Accessed: 27/02/2019].

Winner, L., 1993. Upon Opening the Black Box and Finding it Empty: Social Constructivism and the Philosophy of Technology. *Science, Technology, and Human Values*, 18(3): 362–378.

Wisner, B., 1986. Geography: War or Peace Studies? *Antipode*, 18(2): 212–217.

Wittgenstein, L., [1953] 1986. *Philosophical Investigations*. Oxford: Basil Blackwell, Ltd.

van Wolferen, K., 1989. *The Enigma of Japanese Power: People and Politics in a Stateless Nation*. New York: A.A. Knopf.

Wynne, B., 1982. *Rationality and Ritual: The Windscale nuclear enquiry and nuclear decisions in Britain*. Chalfont St Giles, Bucks: British Society for the History of Science.

— 1987. *Risk Management and Hazardous Waste: Implementation and the dialectics of credibility*. Berlin: Springer.

— 1991. Knowledges in Context. *Science, Technology and Human Values*, 16(1): 111–121.

— 1992(a). Public Understanding of Science Research: New Horizons or Hall of Mirrors? *Public Understandings of Science*, 1(1): 37–43.

— 1992(b). Misunderstood Misunderstanding: Social Identities and Public Uptake of Science. *Public Understanding of Science*, 1(3): 281–304

— 1993. Public Uptake of Science: A case for institutional reflexivity. *Public Understanding of Science* 2(4): 321–337.

— 1995. Public Understanding of Science. In: Jasanoff, S., Markle, G., Petersen, J., and Pinch, T. (eds.). *Handbook of Science and Technology Studies*. Thousand Oaks, CA: SAGE Publications, 361–387.

— 1996. May the Sheep Safely Graze? A Reflexive View of the Expert Lay Knowledge Divide. In: Lash, S., Szerszynski, B., and Wynne, B. (eds.). *Risk, Environment and Modernity: Towards a New Ecology*. Thousand Oaks, CA: SAGE Publishers, 44–83.

## Y

Yamamoto, D., And Yamakawa, M., 2017. Beyond Developmental Reconstruction in Post-Fukushima Japan. In: Yamakawa, M., And Yamamoto, D. (eds.). *Rebuilding Fukushima*. London; New York: Routledge, 164–181.

Yamashita, S., 2011(a). Public Address, 20/03/2011. Fukushima Prefecture.

— 2011(b). People Are Suffering from Radiophobia. An Interview with Cordula Meyer. *Spiegel Online*, 19/08/2011. Available at: <http://www.spiegel.de/international/world/studying-the-fukushima-aftermath-people-are-suffering-from-radiophobia-a-780810.html> [Accessed: 01/03/2019].

— 2011(c). *Tadashiku Kowagaru Hōshanō no Hanashi*. Nagasaki: Nagasaki Bunkensha.

— 2017. Fear is a Killer: Nuclear Expert Reveals Radiation’s Real Danger. *New Scientist*, 13/05/2017. Available at: <https://www.newscientist.com/article/mg23431250-600-fear-is-the-killer-nuclear-expert-reveals-radiations-real-danger/> [Accessed: 17/05/2018].

Yates, L., 2015. Rethinking Prefiguration: Alternatives, Micropolitics and Goals in Social Movements. *Social Movement Studies*, 14(1):1–21.

Yoneyama, S., 2013. ‘Life-World’: Beyond Fukushima and Minamata. *Asian Perspective*, 37(4), *Special Issue: After Fukushima: The Right to Know*: 567–592.

Young, K., and Saver, J.L., 2001. The Neurology of Narrative. *SubStance*, 30(1): 72–84.

## Z

The Improvised Expert: Performing expert authority after the Fukushima Daiichi nuclear power plant disaster  
(2011–2018)

Zuckerman, H., 1987. Marriage, Motherhood and Research Performance in Science. *Scientific America*, 256(2): 119–125.