



THE FISH IS IN THE WATER AND THE WATER IS IN THE FISH: Symbiosis in a Nuclear Whale Fall

PETRA TJITSKE KALSHOVEN
The University of Manchester

 <https://orcid.org/0000-0002-6011-9236>

In February 2020, I attended a public meeting of the West Cumbria Sites Stakeholder Group (WCSSG) taking place, as usual, in the rustic civic hall of the former mining town of Cleator Moor in North West England. The Sellafield nuclear site, whose operations during its eventful history had included plutonium production, power generation, and the reprocessing of spent nuclear fuel, was preparing to move into full decommissioning. This was expected to give rise to a transformation in Sellafield's business, its working arrangements, and its relationship with the West Cumbrian context in which the nuclear industry operated—a matter that required serious discussion with the WCSSG.

According to its website, “the WCSSG is an independent body whose role is to provide public scrutiny of the nuclear industry in West Cumbria.”¹ The WCSSG was set up in 2005 by the Nuclear Decommissioning Authority (NDA) as one of a number of similar groups in the United Kingdom in areas where nuclear decommissioning occurs. The NDA is a U.K. government body that owns and oversees seventeen nuclear decommissioning sites in the country, one of which, a subsidiary since 2016, is Sellafield Limited (SL). The Sellafield site was previously managed by a private American-led consortium, Nuclear Management Partners, under a contract with the NDA. Government dissatisfaction with progress in waste retrievals

and remediation at Sellafield led to the decision to bring the company back under direct governmental control, considered a suitable move given the site's complex technological challenges and the hazards and uncertainties associated with its nuclear inventory.

The WCSSG, then, is tasked with scrutinizing a state-owned company whose business is the cleanup of the Sellafield site. The stakeholder group's expert knowledge in matters nuclear is acknowledged by the nuclear industry. It is generally highly supportive of SL, with many members (formerly) active as nuclear professionals themselves. During meetings, any critical note uttered tends to be preceded by an outpouring of appreciation for the industry. Meetings are attended by a membership including primarily elected local councillors, representatives of community groups, and regulators (representatives of the U.K.'s Environment Agency and Office for Nuclear Regulation), mostly middle-aged men and a handful of women.

An NDA representative responsible for socioeconomics presented the NDA's new Local Economic and Social Impact Strategy to the stakeholder group. He mentioned "dependency" on the nuclear industry as a problematic issue in West Cumbria, yet was pleased to announce an increase in NDA allocations to areas of decommissioning for socioeconomic projects, including £11.5m to West Cumbria. Of this amount, £10m would be sent to SL and £1.5m to the local Community Fund.² During the Q & A session, I asked whether the issue of dependency he had noted would not be exacerbated by the channeling of public moneys through SL. "A smashing question," he reacted, "you have a point"—and he went on to clarify that, in SL's care, the allocation would allow the company to tap into community needs such as moving people off site to alleviate traffic in the area.

It was *not* a smashing question—it was an obvious one, suggested to me earlier in conversation with a friend who worked for the National Nuclear Laboratory, also located in West Cumbria. It also seemed rather obvious that channeling moneys through SL would perpetuate a certain local ethos exemplified by a combination of the company's benign patronage and the region's welcoming of it, a phenomenon that had struck me during fieldwork.³

In this article, I discuss West Cumbria's close relationship with the nuclear industry and ask to what extent *dependency* makes for a useful concept in discussing its regional dynamics.⁴ I will make use of a metaphor, the whale fall, in thinking through the concept of dependency, which resonates with the "organic metaphor" that has a long tradition in anthropology. The whale fall means to stimulate grappling with the phenomenon of alleged dependency in the particular setting of

West Cumbria and to contribute to a more nuanced understanding of what the term *dependency* may afford or obscure. As the nuclear industry's main discussion partner in this period of transformation, the WCSSG, which convenes a plenary meeting twice a year and has separate working groups, will play an important role in my ethnographic evidence.

THE NUCLEAR INDUSTRY IN WEST CUMBRIA

Since September 2017 I have lived in the coastal “Georgian Gem Town” of Whitehaven,⁵ home to many SL workers, to conduct ethnographic fieldwork at and around the nuclear facilities at Sellafield ten miles further south, located between the Irish Sea and the Lake District, a World Heritage site, in North West England. These facilities, run by SL, the so-called site licence company, are entering a stage of full decommissioning after having played a pivotal role in British nuclear history. The nuclear has been a presence in West Cumbria for decades, replacing earlier industries ranging from transatlantic trade and fisheries to mining and steel.⁶ It was here, when the site was called Windscale, that scientists produced weapons-grade plutonium in a bid to keep up with the United States during the Cold War. It was here that the first commercial nuclear power plant operated, Calder Hall, which opened in 1956 to produce plutonium, with nuclear energy as a by-product, and stopped generating power in 2003. It was here that in 1957 an incident happened, the Windscale Fire, that could have become a major nuclear disaster but got nipped in the bud—involving “a certain amount of luck and uncertainty,” in the words of [Jonathan Hogg \(2016, 91\)](#); for an extensive analysis, see [Arnold 1992](#)). Yet the Sellafield site is perhaps best known for its commercial reprocessing of spent nuclear fuel, which is planned to come to an end in 2022, and for its copious amounts of plutonium and high-hazard so-called legacy wastes from historical operations, whose storage in old ponds and silos officially harbors “intolerable risks.”⁷ As it stands, SL is *the* major employer in West Cumbria, and a handsomely paying one, with about 11,000 employees on the payroll and a similar number of people working in its local supply chain ([Oxford Economics 2017](#)).⁸ Several other nuclear-affiliated facilities dot the West Cumbrian landscape, including Britain's Low Level Waste Repository some seven miles south of Sellafield, another NDA subsidiary included in WCSSG's scrutiny. As of 2022, SL will be fully focused on nuclear waste management and environmental remediation, or as SL's former CEO Paul Foster put it at the WCSSG meeting of May 7, 2019: the company is focused on keeping the genie in the bottle—“and there's a lot of genies”—and ultimately on getting rid of the genie. Taking care of nuclear waste (retrieving contaminated



Figure 1. Sellafield site seen from the north across the bay at the village of St Bees, four miles south of Whitehaven, 2018. Photo by Petra Tjitske Kalshoven.

objects and radioactive materials from legacy buildings and making and storing waste packages) has become SL's core business.

My ethnography in West Cumbria follows the transformation taking place both at SL and in West Cumbria, as the region begins to prepare for a future in which SL will probably no longer play its current role as a major employer. The

decommissioning of the Sellafield site, however, will make for a long process of slow change, currently expected to stretch to 2125. Once completed, the area's connection with the nuclear industry may disappear altogether, although part of the transformation (a term used by SL) includes initiatives aimed at capitalizing on West Cumbria's nuclear expertise by presenting the area as the place par excellence for new nuclear ventures to flourish.

In the four years I have spent in the area, I have been struck by the intricate ways in which West Cumbria is entangled with the nuclear industry, not only socioeconomically but also culturally and affectively.⁹ The industry's broad range of in-house skills and expertise constitutes a considerable resource for surrounding communities. For example, a local business owner in Whitehaven told me about a major power outage she had had to deal with—within 1.5 hours, SL's main electricity man had come to the rescue. In another example, the founder of a homeless shelter told me the facility could not have existed without SL, as she would not have been able to set it up without the advice on legal and safety issues SL had offered her. More generally, SL employees are visible and influential in prominent positions as school governors, councillors, or on charity boards, and they maintain a strong social presence in retirement.¹⁰

In conversation, such entanglements are often couched in terms of a parent-child relationship, with the region cast in the role of a child looking to its parent, SL, for nourishment and guidance. With employee numbers at SL expected to diminish as decommissioning progresses, the company has launched a social impact strategy (Sellafield Ltd 2018) aimed at empowering West Cumbrians and diversifying the supply chain, which means weaning off “the child” while complying with corporate responsibilities toward host communities that, for many years, have been generally supportive of the nuclear industry. In fact, the nuclear industry depends on its child's goodwill and skills, and as we will see, the child is quite aware of and savvy about this situation. Complicating the company's efforts to empower the region beyond its own existence is the inverted *longue durée* of decommissioning as it stretches out into a relatively deep future—not only because of the uncertainties associated with the decommissioning timeframe but also because local people (including SL employees and aspiring employees) do not seem quite convinced that preparatory action is really called for, *now*, with SL still having plenty of work and career opportunities on offer.

SELLAFIELD SITE AS A WHALE CARCASS—WEST CUMBRIA AS A WHALE FALL

The NDA presentation at the 2020 WCSSG meeting highlighting dependency reminded me of a metaphor that a University of Manchester PhD researcher invoked to refer to Sellafield as we trialed a board game about the nuclear industry.¹¹ The Sellafield site resembled a “whale carcass,” he said, a concept he was familiar with through scuba diving (Aaron Daubney, personal communication at the University of Manchester’s Dalton Cumbrian Facility near Whitehaven, 2019). When a dead whale sinks to the bottom of the ocean, he explained, a habitat forms in which an onlooker can find all kinds of different things in different states. Species feeding on the whale carcass give rise to new habitats and ecologies—an exciting environment for scuba diving.

Highlighting Sellafield’s economic and cultural impact on West Cumbria, the researcher used the whale carcass analogy to refer to the Sellafield site proper, which is often compared to a small town, with its own local dynamics and services. Intrigued by his idea of a whale carcass, I found that, in marine ecology literature, whale carcasses sinking to the sea bottom give rise to a so-called whale fall that remains a “food bonanza” for a considerable time, attracting different communities of species. A whale fall extends outward beyond the carcass to include these foraging creatures. As the carcass degrades, the whale fall becomes “a unique habitat with some of the highest local species richness known from deep-sea hard substrates” (Treude et al. 2009, 2). The phenomenon of the whale fall offers an inspiring metaphor to explore social dynamics in the habitat of West Cumbria, where the Sellafield site has provided sustenance for many years, at several times in its history drawing in considerable numbers of workers benefiting temporarily from its succor, and throughout providing local jobs both on the Sellafield payroll and in its supply chain.¹² When I tested it out on a key discussion partner, retired from Sellafield, he reacted enthusiastically and reminded me that not only he himself but his friends and extended family benefited from nuclear ties, pensions, and job opportunities. “And so do you,” he teased me—my five-year research project being funded by an endowment from British Nuclear Fuels Limited, the defunct company that preceded SL.¹³

THE ORGANIC METAPHOR IN ANTHROPOLOGICAL THEORIZING

Analogies between society and living organisms have proven a fertile ground for pattern finding in social theorizing, with roots going back to antiquity (Westra

and Robinson 1997). The “organic metaphor” has emerged as a problematic trope because of its associations with nineteenth-century evolutionary thinking tainted by hierarchical and racist politics. Prominent in the evolutionary approach was the English philosopher, social scientist, and polymath Herbert Spencer (1820–1903), who situated the objective for social science in identifying, as it were, social organs and tracing their growth. Drawing on ideas expressed by Plato and Thomas Hobbes about the human body as an analogy for society, Spencer outlined parallels between biological organisms and societies, suggesting that increasing complexity in living bodies whose different parts depended on one another paralleled societal development. He applied this analogy to his analysis of social dynamics driving the Industrial Revolution in northern England (Spencer 2000, 11–13).

A less deterministic and more sustainable model for the use of the organic metaphor with which I feel affinity can be found in anthropologist and biologist Gregory Bateson’s interest in cybernetics: drawing analogies between complex regulatory systems and finding inspiration in patterning recognizable in a variety of life forms and morphologies (cf. Kalshoven 2018, 2019), Bateson (1972) used organic metaphors to inquire more broadly into what it means to be alive.

Far from aspiring to a grandiose and universal theory, and strongly rejecting essentialist and evolutionary assumptions in nineteenth-century thinking, I here consider the organic analogy with a whale fall not as a tale of increasing complexity (which would fall flat in the case of a whale fall) but for its dynamics of symbiosis and resilience, as well as for the critique it affords of the notion of *dependency*. Use of an organic metaphor also allows us to consider the Sellafield site, with its legacy of radioactive waste stretching far into the future, from a longer-term ecosystem perspective. Vincent Ialenti’s (2020) ethnography of Finnish scientists working on a geological disposal facility for nuclear waste provides a stimulating clue: the scientists use a forest analogy as a method to train their own long-term thinking by focusing holistically on the entire ecosystem (the forest) rather than on details only (the trees), while adopting multiscale perspectives. Ialenti suggests everyone should learn from this approach to counter the vicissitudes of the Anthropocene.¹⁴ The scientists worked to “forecast the interacting geological, hydrological, and ecological conditions that might surround the repository over the coming tens of thousands, hundreds of thousands, or even millions of years” (Ialenti 2020, 4), emphasizing ecosystemic change. With the whale fall, I wish to make an analogy with an ecosystemic entity to think through a *societal* web of relations over time.

Unlike the whale in the whale fall, SL is not dead yet. My analogy does not hinge, however, on a comparison between entities that are either alive or dead.

As I have argued elsewhere (Kalshoven 2019), the boundaries between life and death are permeable, with dead and living organisms closely associated precisely because they both function in the realm of the organic. The similarity highlighted in the whale fall analogy resides rather in the slow disappearance of an organic, nurturing presence. Like a whale carcass that lands on the ocean bed, SL happened on an unsuspecting habitat (see Arnold 1992, chapter 2, on the siting of the first Windscale reactors) and changed it through its nurturing presence. Like the whale carcass, SL is expected to share out and thus diminish over a long period of time. Before returning to the analogy of the whale fall toward the end of my account, where I draw out how the organic metaphor can be put to work, I will elaborate on SL and its West Cumbrian habitat, teeming with feeding organisms.

BETWEEN RADIOACTIVE RISK AND NUCLEAR WELL-BEING

An organic metaphor makes an appearance in the anthropologist Joseph Masco's analysis of the changing nature of U.S. weapons scientists' work. He draws a compelling analogy between aging nuclear weapons, which require careful maintenance, and fragile old bodies, describing how the United States clings doggedly to its post-Cold War nuclear arsenal (Masco 2004). In *Nuclear Borderlands* (Masco 2020), he broadens the scope by exploring the ambivalent relationship between, on the one hand, the U.S. military's Los Alamos National Laboratory (LANL) and, on the other, Pueblo and Nuevomexicano communities caught up since the 1940s in the "plutonium economy" of nuclear weapons production. In northern New Mexico, local concerns over the environment and sacred landscapes have gone hand in hand with views of LANL as a key socioeconomic asset and even a source of survival for Pueblo and Nuevomexicano cultures. Masco describes how an emphasis on distinct identities and critical perspectives within northern New Mexico extends into the LANL workforce.

In West Cumbria, by contrast, local outlooks appear much less diversified and more united in their loyalty to and identification with the nuclear industry. This stance transpires also from the general lack of a local discourse on radioactive hazards. The latter appears all the more remarkable as most social science research in the United Kingdom has approached the nuclear from a perspective of "risk" (e.g., Parkhill et al. 2009, 2010, 2011; Henwood 2019; for an overview, see Solomon, André, and Strandberg 2010). "Risk researchers" derive their evidence primarily from "risk subjects" in focus groups, which means that the ethnographic evidence remains rather limited. Despite risk researchers' insistence on a holistic approach, the focus on risk skews their materials toward an emphasis on risk subjects' per-

ceived anxieties, which at times smacks of patronizing and fails to do justice to the complexities on the ground. Instead, the anthropologist [Malcolm Chapman \(1997\)](#), writing on the tension between West Cumbria and the Lake District, argued that locals considered risk an outsiders' view, which resonates with my findings more than twenty-five years later. Similar dynamics are apparent in an article focusing on mono-industrial towns in Scandinavia and former Soviet states between the 1930s and 1980s, in which [Anna Storm and Tatiana Kasperski \(2017\)](#) sketch a taxonomy of different social contracts. Associating the nuclear industry with what they call the “accountability social contract,” often including state involvement, they characterize nuclear power plants as “much appreciated workplaces” with a high level of trust, where “the plant and the town [unite] against the nuclear critics” ([Storm and Kasperski](#), 39–40). “What might be at stake is actually not only income or an appreciated lifestyle, but a whole worldview of what is meaningful and true” ([Storm and Kasperski](#), 44).

This does not mean that everyone feels at ease with the nuclear presence: real misgivings about nuclear impacts on humans and the environment exist among small groups of anti-nuclear activists who are, however, primarily located elsewhere in Cumbria.¹⁵ Misgivings about nuclear impacts do get voiced in West Cumbria, but, I suggest, for rather different, strategic reasons. In a 2020 PhD thesis on the siting of a geological disposal facility in Eurajoki, Finland, Mika Kari contrasts two useful explanatory frames to discuss dynamics of acceptance among the local, generally nuclear-friendly community.¹⁶ The “nuclear oasis” frame ([Blowers, Lowry, and Solomon 1991](#)) is associated with a power imbalance between the industry and local residents. It foregrounds marginality, peripherality, and acceptance of things nuclear, including the burden of risk, through economic dependency.¹⁷ The contrasting frame is that of “industry awareness,” a term coined by the Nuclear Energy Agency in 2007 ([Kari 2020](#), 32). This frame emphasizes local agency, conceiving of nuclear communities as well-informed, with the nuclear a recognized part of their cultural identity, pride, and well-being. Kari finds that both frames apply to a certain extent, but neither suffices to fully explain Eurajoki dynamics. Rather, the frames work in tandem: well-being, associated with the nuclear presence, emerges from Kari's questionnaires as a primary consideration, but it tends to go hand in hand with an appreciation of economic benefits. In West Cumbria, I found that elements from both frames come into play as the WCSSG spars with the industry over its role in the region's prosperity: councillors strategically instrumentalize the sacrifices involved in bearing the burdens of waste and risk, invoking the nuclear-oasis frame—while holding high hopes for the area's

continuation as a center of nuclear activity and expertise, sentiments that chime more closely with industry awareness.¹⁸

WEST CUMBRIA'S CLOSE RELATIONSHIP WITH SL: SL's Social Impact Strategy

Mindful of a future in which the company's presence will diminish, SL actively seeks to reduce the region's socioeconomic reliance on its assets. In 2018, the company launched a Social Impact Strategy (Sellafield Ltd 2018), grounded in a report by Oxford Economics (2017) that showed the extent of West Cumbria's boroughs Copeland and Allerdale's reliance on SL jobs. In this strategy, SL promised to "improve access to sustainable incomes, *beyond Sellafield Ltd*, by increasing skills, knowledge, aspirations and access to opportunities" (Sellafield Ltd 2018, 9; emphasis added). The company wrote that it supported "sustainable activities that create self-reliance and independence" (Sellafield Ltd 2018, 7). In the latter statement, an implicit reference may be read to SL's sponsoring of local charities, festivals, or the Rugby League that I was told would always run into financial trouble. According to SL discussion partners, SL sought to move toward a more "sustainable" model of sponsorship that enabled beneficiaries to build on investments rather than receive "handouts."¹⁹



Figure 2. Dog show at the Egremont Crab Fair, September 2018. The nuclear facilities operated by sponsor Sellafield Limited are visible on the horizon. Photo by Petra Tjitske Kalshoven.

In the Oxford Economics report, the active verbs *sustain*, *support*, and *generate* associated with SL contrasted with West Cumbria's "reliance" and "dependence" on the former, as in: "Sellafield Ltd is extremely important to employment in Copeland *sustaining* an estimated 58.7 percent of local jobs in that district alone.

Allerdale has the next largest *reliance* on Sellafield Ltd with 4.4 percent of total economy jobs *dependent* on Sellafield Ltd activity” (Oxford Economics 2017, 21; emphasis added). And: “Overall, Sellafield Ltd *supported* 43,800 FTE jobs in 2016/17. We estimate 22,800 were generated from the activity that Sellafield Ltd *supported* in its U.K. supply chain. Finally, as its staff and employees within its supply chain spend their wages, a further 10,000 jobs were *generated* in the wider economy” (Oxford Economics 2017, 18; emphasis added).

In November 2017, SL’s Social Impact Strategy, then still a draft, was introduced at a plenary WCSSG meeting by SL’s head of corporate affairs, Jamie Reed, a proud West Cumbrian and former Labour Member of Parliament for Copeland.²⁰ The strategy, he explained, aimed at strengthening the supply chain, thus promoting entrepreneurialism and diversification. Importantly, the supply chain needed to be encouraged to find clients outside of the nuclear industry. The goal was to arrive at a smaller SL and a larger supply chain that would prove less dependent on the nuclear industry. Reed challenged WCSSG members to help SL put flesh on the bones of his proposals. The next fifty years, Reed added, were all about eliminating reliance on SL. “So what does the community intend to do?” he urged. WCSSG leaders retorted: “The difficulty is precisely how to energize the supply chain. Because it is *you* paying them at the moment. Diversifying is a challenge, also given the high wages paid at SL; it is not attractive to workers to go work in the supply chain.”

While SL sought to disentangle the ties, WCSSG members highlighted the parties’ interrelatedness. The statement about high wages resonated with my interview data: several SL discussion partners had told me that money was their prime motivation for joining and staying with SL, even if they did not enjoy their jobs, citing “golden hand cuffs.” Health, educational, and tourism services were said to struggle with intake and retention because of the draw of the nuclear industry. The manager at Muncaster Castle (a tourist attraction ten miles south of Sellafield) told me that their chef had traded his quirky job in lovely surroundings for a place in the mail room at Sellafield. Players in the nuclear consultancy supply chain, on the other hand, told me they were quite able to offer competitive salaries—as long as these could be covered by consultancy work for SL.

Those who did not benefit from nuclear wealth sometimes expressed resentment with what they deemed disproportional remuneration. In September 2017, I was welcomed into Whitehaven’s antiquarian bookstore with a torrent of complaints by the owner as he held forth that the region depended completely on one industry. Sellafield, he claimed, was “like a cuckoo,” having displaced other ven-

tures. Moreover, it was shameful how SL people earned a lot for “doing nothing.” He did not believe any nuclear waste got cleaned up at all. Remarks like these were not unusual among outsiders to the nuclear industry, and in a mitigated version I heard them uttered by some players in the nuclear supply chain as well. And yet most people I met in West Cumbria referred to the industry as an asset to the region, providing livelihoods to many.

Discussion partners within the industry, however, mentioned inequalities, in particular the income gaps between those working for the industry and those in less well-paid jobs, as a root cause for West Cumbria’s failure to become independent. This was what SL sought to tackle with a refresher to its Social Impact Strategy. In 2020, the company relaunched the strategy under the heading SiX: Social Impact, Multiplied (Sellafield Ltd. 2020). The refreshed version conveyed the same key points as the 2018 original, aiming for “thriving communities,” but included concrete plans and budgets to overcome inequalities, in particular through skills



Figure 3. Repairs begin at Whitehaven’s West Pier lighthouse, a Harbour Commissioners project funded primarily through Sellafield Limited’s SiX (Social Impact, Multiplied) program, August 2021. Photo by Petra Tjitske Kalshoven.

development. According to Gary McKeating, SL's head of community and development, "It's not about telling people what's best for them. It's about giving communities the tools to be independent, self-reliant, and successful in the long-term."²¹

DEPENDENCY

The notion of dependency as a negative trait goes largely unquestioned in corporate, political, and casual discourse about West Cumbria. Dependency is framed not only in terms of jobs and livelihoods, partly laced with expressions of irritation over the dependent's expectation of being bailed out through supposed handouts, but also in terms of emotional attachment through invoking the parent-child relationship, considered inappropriate between adults.²² This taken-for-grantedness of dependency as intrinsically problematic merits some scrutiny in light of recent anthropological work in political economy that takes issue with a straightforward relationship between care and dependency and questions the rhetoric of "jobs for all." In *Give a Man a Fish*, James Ferguson (2015) draws on southern African case studies to question negativity associated with dependency. He discusses the emergence of social welfare programs that go against the accepted "development cliché": "Give a man a fish, and you feed him for a day. Teach a man to fish, and you feed him for a lifetime" (Ferguson 2015, 35). "The slogan encapsulates a certain development ethos, economically expressing a core belief that the object of development work is transformation, not charity, and that recipients of aid should get productive skills and the opportunity to work, not handouts and dependency" (Ferguson 2015, 35). Ferguson questions this tenet—perhaps there is no need for more fish, and most certainly people contribute to society in other ways than through wage labor. Instead, he makes a case for a politics of redistribution, arguing that increased production through wage labor may not always be warranted, or even economically useful. The sharing of assets may not only mitigate inequalities—it might prove productive. In the southern African cases Ferguson discusses, particular kinds of dependency involving a share of money, goods, or prestige may even be seen as desirable. In contexts with a long history of inequalities, where specific kinds of dependency are associated with being embedded in mutually beneficial relationships and with *being* someone, that is, with personhood, the parent-child metaphor may connote care and obligation rather than stigmatized dependency (Ferguson 2015, 162).

This kind of rethinking of taken-for-granted socioeconomic relations remains absent from West Cumbria. In local business and stakeholder meetings,²³ conceptions of the circular or stationary economy, or a move from production

toward redistributive politics, are never seriously on the table. The emphasis remains invariably on economic growth. Dependency, associated with a lack of entrepreneurship, is considered to stand in the way of growth, the unquestioned key to preparing for the future.²⁴

Ferguson's argument for a new perspective on dependency nonetheless holds interest here, for two reasons: first, ethnographically, I found that dependency in West Cumbria is not a deplorable state; rather, it is wielded as a tool in asserting one's rights vis-à-vis the nuclear industry. It also constitutes an assumption on the part of the industry that makes it act, as an obligation toward its "dependents" (workers, supply chain, and West Cumbria as the host region)—in ways similar to the obligations playing out in the southern African case studies. Dependency, then, can be considered a strategic tool rather than a burden. Second, because of the time scales involved in nuclear decommissioning, radical societal and economic change is likely to occur anyway, including potentially different framings of dependencies between human animals, non-human animals, and local and planetary ecosystems.²⁵



Figure 4. Sellafield site in its agricultural West Cumbrian habitat, with a farm in the foreground and Lake District fells in the background, just after the rain, 2019.

Photo by Petra Tjitske Kalshoven.

THE FISH IS IN THE WATER AND THE WATER IS IN THE FISH

Despite WCSSG's initial resistance, a WCSSG working group called the Enablers took up SL's challenge, and in February 2019 the WCSSG convened in Cleator Moor to revisit the matter. When I arrived at the meeting, tables had been rearranged to accommodate a workshop format. The Enablers chair kicked it off, asking: "How do we maximize community benefits from SL?"—nicely bringing out, and taking for granted, how the company was viewed in West Cumbria, namely, as a local resource meant to benefit the community. He went on to explain that this was "*our* meeting," "*we* have designed it," but he extended his thanks to SL for facilitating it. The company's Jamie Reed attended just to "clarify points," telling the now familiar story of SL's expected demise and urging community representatives to take action now that there was still time. As a student of American literature, Reed offered a quotation he attributed to Arthur Miller: "The fish is in the water and the water is in the fish"; SL and West Cumbria are closely intertwined—a reality he both acknowledged and problematized.²⁶ Reed pointed out that the end of reprocessing would mean the end of twenty-four-hour, round-the-clock operations (implying the end of particularly lucrative shift work), a 25 percent reduction in activity, and 2,000 surplus roles "if we do not act."

At the workshop that followed, the facilitators (SL and NDA staff) gathered answers to a question formulated by the Enablers, which put kinship firmly center stage: "What would you wish West Cumbria to look like for your grandchildren?" I was struck by how difficult it proved to imagine a future world with markedly different work arrangements and social relations. Changing societal contexts did not find mention, apart from technological advances such as better connectivity. Instead, the discussion kept coming back to new nuclear possibilities, well-paid jobs for coming generations, and economic growth. When we were asked to list barriers to opportunities, a councillor at my table reacted immediately: "Fear of radioactivity!" Properties in his village should fetch more than they do, he explained—outsiders (that is, potential property buyers looking to Cumbria for retirement) associated the nuclear presence incorrectly, in his view, with risk.

Was this a case of what [Chloe Ahmann \(2019\)](#) has called "subjunctive politics"? Ahmann asks why residents of Baltimore recently showed enthusiasm for a highly polluting trash incinerator in an already contaminated neighborhood. She suggests "subjunctive politics" at work, a process of decision-making with roots in an attitude that things could be even worse, leading to suboptimal decisions by effectively limiting the choices that people envisage for themselves. Baltimore residents, Ahmann writes, opt for jobs in the short term, knowing full well that

the incinerator might bring health problems in the longer run. In West Cumbria, future possibilities seem to be kept within boundaries as well, but not because of a sentiment that things could be even worse. Rather than feeling they have to settle for what they know is far from ideal, as in the Baltimore case, West Cumbrians are quite comfortable in their present circumstances and strive for more of the same: a continuation of lucrative jobs and benefits.

Such a welcoming stance toward the nuclear comes across from a different angle in [Başak Saraç-Lesavre's \(2019, 2020\)](#) writings on Carlsbad, New Mexico. Her work on positive local perceptions of the Waste Isolation Pilot Plant (WIPP), a geological repository for nuclear waste, complicates straightforward social science conceptions of risk. Seeking to extend the life of WIPP, entrepreneurial local actors who wish to keep nuclear involvement going associate risk not with nuclear waste buried underground, but with a decline of nuclear activity ([Saraç-Lesavre 2020](#), par. 11). Pride in expertise and tradition takes center stage in these local actors' perspective on nuclear enterprise as a valuable source of local power. What works differently in West Cumbria, however, is that local actors seem content with the nuclear industry driving business initiatives. The industry sees this as a source of frustration, since it expects the region to be proactive and demonstrate less dependency.

SL FACILITATING ITS OWN DEMISE

The WCSSG was not alone in its somewhat reluctant attempts at future-making. I attended a flurry of workshops in 2018–2019 organized by different fora in West Cumbria (including the Local Enterprise Partnership, the Cumbria Innovation Partnership, Copeland's mayor, WCSSG, and SL), all meant to come up with ideas for future prosperity. What was most striking to me was the active role that the nuclear industry took in driving these initiatives—a role that went well beyond the call of corporate duty. Even though SL insisted that the community needed to drive transformation, SL took the lead in the processes meant to lead to change. To a remarkable extent, SL employees took charge of events and workshops. More often than not, facilitators at initiatives turned out to be employees on the SL payroll seconded to a local community or trade organization. When I drew SL discussion partners' attention to such entanglements, I was told that SL saw itself indeed as an enabler, "an anchor institution," full of knowledgeable and capable people "supporting" the area.

SL, then, while professing to wean off its child, seemed to tighten the bonds even further in facilitating all local efforts to sever the ties of kinship. Added to

this was the company's insistence on being careful with "taxpayers' money," on making savings and investing in communities to make SL's mission worthwhile to taxpayers, which only served to strengthen the alleged dependency. I wondered whether this continued reliance on SL "capability" would prove conducive to promoting the new élan that was part of SL's discourse on transformation.²⁷ In many conversations with me, SL professionals criticized their company for its focus on process rather than delivery. Yet my impression was that the workshops the company facilitated were precisely adding process, not delivery.²⁸ In this presence-absence quandary, SL seemed to be facilitating its own withdrawal while perpetuating an ethos from which it wished the region to move away.

It dawned on me that all was indeed Sellafield. The fish was in the water and the water in the fish—they were as one, sharing kinship and kinship terminology and birthing forth bodies that went about their key business of process. Even the WCSSG (formally considered independent) was conjoined with the nuclear industry it was supposed to scrutinize—quite apart from the nuclear roles many WCSSG members had enjoyed in their working careers, both the WCSSG plenary group and each working group were facilitated by a secretary on the SL payroll.²⁹

From supply-chain companies to schools to rugby clubs to facilitators, the bonds between SL and non-SL organisms seemed difficult to disentangle. Tasked with negotiating this symbiosis formally were WCSSG leaders and SL communications and stakeholder relations officers, caught up in an intricate *pas de deux*. These dynamics concerned not so much dependency than hedging one's bets and moving carefully through familiar choreographies. Far from being helplessly dependent on the nuclear industry, local leaders, themselves often experts in the nuclear, showed strategic positioning, fondly invoking "the community"—as would the nuclear industry from its carefully fostered perspective of care.³⁰

In the sparring that occurs between the industry and the WCSSG, nuclear expertise is a shared asset rather than the industry's primacy. An inverse resonance becomes apparent with [Hugh Gusterson's \(2000\)](#) well-known story of local opposition that occurred in 1988–90 against a nuclear waste incinerator planned in California, in which he highlights rhetorical strategies adopted by Lawrence Livermore National Laboratory, on the one hand, and the anti-incinerator movement, on the other. In both camps, expertise proved key to scoring points, with the anti-incinerator activists engaging experts to do so on their behalf. In the West Cumbrian case, community representatives embody expertise in matters nuclear themselves—yet in the WCSSG's rhetorical practice when in their "child" role, it tactically takes a backseat.

ANALOGY OF THE WHALE FALL THROUGH TIME

And one may well protest, why *shouldn't* West Cumbria put its energies into drawing profit from the nuclear industry as long as it sticks around—in particular if this could well be for a considerable time to come? For in the course of 2019, a problem in SL's call to action turned out to be the slowness of its own expected demise. My discussion partners increasingly felt a lack of urgency, fed not only by many West Cumbrians' desire for intergenerational careers in the nuclear industry but also by SL's continuing recruitment to cope with what looked like burgeoning amounts of decommissioning activity.³¹ The new CEO Martin Chown, who took over from Foster in February 2020, moved away from the emphasis on decline. In an online meeting of the British Energy Coast Business Cluster during the COVID-19 crisis, he declared that Sellafield had a changing rather than a declining mission. Any decline was expected to be shallow in terms of money, jobs, and people. "We are stopping reprocessing," he said on June 17, 2020, which was "significant, but not the most significant." Where Foster had warned of the potential withdrawal of government funds with too little entrepreneurialism evident, Chown celebrated Sellafield as a huge construction site leading the way in innovative decommissioning.

A 2018 conversation with a technical manager preparing retrievals from the Magnox Swarf Storage Silo (MSSS), considered one of the U.K.'s most hazardous legacy buildings, provided enlightening insights into decommissioning time scales. Huge silo-emptying tanks running on rails had to be brought in, first requiring the clearing of space for a rail system.³² Operators had to be trained and hired to manipulate joysticks and work from screens. Electrical systems had to be kept running at all times to ensure the monitoring of potentially dangerous buildup in temperature and hydrogen levels. Notoriously slow procurement processes for purchasing or commissioning innovative tools required streamlining. Besides, the manager said, "We don't know how the tooling will work with the real waste—they are tested with simulants [that is, non-radioactive materials]." If there was one thing that would make his work easier, it would be simulants acting like the real thing. Because of these unknowns encountered in retrieval endeavors, which turned deceptively simple activities into projects of many years, he said, complying with governmental short-term budgetary cycles proved problematic. Other discussion partners claimed tasks had been carried out more efficiently before NDA government bureaucracy kicked in. And yet, perhaps ironically given the emphasis on entrepreneurialism, operating under the government's aegis enables the longevity of this not-for-profit mission and its associated socioeconomic benefits. Even more

fundamentally, the sheer materiality of the site's inventory (that is, its radioactive waste, nuclear materials, and contaminated structures) requires the passing of time for radionuclides' radioactivity to diminish, so that they can be acted on and made safe more securely. Walking away from the site is simply not an option, as it would leave entire ecosystems exposed to ill effects from leaks or unmonitored emissions.³³

Decommissioning, the decomposing of the Sellafield site, then, is expected to provide jobs for a long time to come. This brings us back to the whale fall, the habitat that springs up around a whale carcass. A carcass goes through different stages of use by deep-sea creatures as the whale, as a result of the surrounding conditions, slowly decomposes:

(1) a mobile scavenger stage, wherein scavengers such as hagfishes, sleeper sharks and amphipods feed on whale soft tissue; (2) an enrichment-opportunistic stage, where remains of the whale dispersed over the surrounding sediment are utilized by an opportunistic community with high population densities but low species richness; (3) a sulfophilic stage, where microbial consumption of organic compounds in the lipid-rich bones as well as in the organically enriched sediment sustains the production of hydrogen sulfide, which is then utilized by a chemo-synthetic community; and (4) a reef stage, where the whale bones serve as hard substrate outcropping from the seafloor and as a refuge for a variety of deep-sea animals. (Treude et al. 2009, 2)

As organic metaphors are wont to do, the whale fall standing for the West Cumbrian nuclear habitat tempts the imagination, provoking analogies of which the merit lies in sparking potential insights into social dynamics. Stage 1 above could be compared to the beginnings of the Sellafield nuclear site when it was called Windscale, charged with the production of plutonium. Scientists, construction workers, and engineers flocked to West Cumbria, where they stayed in the Greengarth staff hostel (Davies 2012, 44–47) and in company houses in Seascale that aligned with a worker's rank (Garratt 2016). Mobility was a major factor in these years, with some "incomers" putting down roots. The coastal resort of Seascale, just south of Sellafield, where a private educational facility proved a draw for highly educated parents, was a party town in those early years. Stage 2 may be compared to the boom period, when a new reprocessing facility, Thorp (Thermal Oxide Reprocessing Plant), was built in the 1980s. Construction workers congregated in the town of Egremont, just north of Sellafield, which became notorious for pub crawls

and brawls, turning it into “something from the Wild West” (Davies 2012, 102).³⁴ Sellafield required supply-chain involvement benefiting a wide area, while species richness remained low as the supply chain’s efforts centered exclusively on the nuclear. Stage 3 represents perhaps where West Cumbria was during my fieldwork, with SL’s call for diversification of the supply chain and with engineering and (de) construction firms feeding on its bones, standing in for the chemo-synthetic creatures. This stage of active decommissioning might be sustained for an extended period of time with the new CEO putting much less emphasis on decline,³⁵ the U.K. government continuing its funding of the SL cleanup mission, and SL stepping up its investment in skills and young people, spreading rich layers of sustained sustenance throughout West Cumbrian communities. Nutrients here sit both in the decaying carcass (“lipid-rich bones”) and in its West Cumbrian substrate (“organically enriched sediment”), highlighting the organic relations between SL and its social environment, notwithstanding SL’s efforts at loosening ties.



Figure 5. Legacy facilities on Sellafield site in the process of being decommissioned, close to the main gate where trucks are inspected before they are allowed to enter the site, 2019. On the left (with the crane perched above it) is the Pile One chimney where the 1957 Windscale fire occurred. Photo by Petra Tjitske Kalshoven.

In stage 4, the carcass has become a “hard substrate outcropping” where organisms can take refuge. Amy R. Baco and Craig R. Smith (2003) notice a surprisingly high biodiversity at this stage (including “whale-bone specialists”), when all that remains of the whale is bone. Could this represent the grounding for a diversified supply chain? But what might happen to this vibrant community if a fresh carcass fails to materialize, and dematerialize? The fish might be in the water and the water in the fish, but would the water flow away with the fish if it could be found elsewhere, as some discussion partners suggested: “People will go where job opportunities take them.”³⁶

Of great interest here is the high-level nuclear waste that will remain active for thousands of years beyond the generations of organisms feeding on the boney carcass. For now and into the more immediate future, this waste proffers the primary nourishment in the whale fall, as it is SL’s mission to take care of it through retrieving and packaging. But the waste may provide yet additional sustenance. In 2018, the U.K. government launched a siting process for a deep geological disposal facility on the basis of current scientific consensus suggesting that the burial of high-activity waste deep underground proves the safest way to dispose of it. This siting process is grounded in volunteerism. Attracted by the prospect of new (nuclear) jobs and investment, parties in both Copeland and Allerdale have come forward as potential hosts, citing their nuclear expertise and the fact that the lion’s share of Britain’s high-activity nuclear waste is already in the region as it is—at Sellafield. Moreover, in response to the United Kingdom’s ambition to achieve net zero carbon emissions by 2050, research is exploring the use of heat radiated from high-activity waste as a source of energy.³⁷ There have also been calls for further research into using spent fuel to feed into new forms of nuclear power generation in a so-called closed fuel cycle (Bodel, Butler, and Matthews 2021). Rather ironically, then, given the toxic longevity of nuclear waste, it is precisely this major societal problem of high-level waste that possibly extends the nourishing life of the whale carcass in, and even beyond, its West Cumbrian fall.

THE SOCIAL CONTRACT OF THE WEST CUMBRIAN WHALE FALL

Biological descriptions of a whale fall and the stages it passes through foreground the organisms feeding on the remains of the whale. The whale itself is interesting for what it has on offer during its decomposition—in fact the whale carcass is the key reason for the organisms to be there at all, and yet its role remains largely passive. This image resonates with my findings about socioeconomic and

affective dynamics in West Cumbria. While the nuclear industry was seemingly in charge and calling the shots (and still quite alive despite its decommissioning), it was the lively mass around it that, by pouncing on it and benefiting from its presence, kept it relevant. This surrounding mass had become one with the industry in feeding on it—just like the organisms in the whale fall that ingest the remains of the whale, sharing flesh and kinship. Any insistence on one-way dependency fails to account for such dynamics of reciprocity—which resonates with [Ferguson's \(2015\)](#) plea for a redistributive politics that replaces the notion of dependency with that of a “rightful share.”

The symbiosis that characterizes the whale fall dynamics of West Cumbria was inadvertently brought out in CEO Martin Chown's comments in SL's company bulletin in August 2020, at the launch of SiX, following the first wave of COVID-19:

Perhaps the most visible sign that we [SL] are back [from COVID-19], not just in our workplaces, but as *a fundamental part of our communities*, is that we are finally able to launch our new approach to social impact—SiX. . . .

To me, not only does this signify our continued wish to *help* our communities, but it clarifies why it is so important.

We've got 100 years' worth of work at Sellafield and to do it *we need a skilled, resilient, and resourceful community* that can host a range of businesses in support of that work. In turn, that requires a healthy and motivated population, high levels of educational attainment, self-reliance, and entrepreneurialism. ([Chown 2020](#); emphasis added)

While seeking to distance the child with his call for self-reliance and entrepreneurialism and maintaining the perspective of SL as a “helper,” Chown sketched a picture of mutual benefits—a social contract. Later in August 2020, an SL-driven “Nuclear Prospectus” for West Cumbria painted a bright nuclear future, one in which Rebecca Weston, the chair of the Clean Energy Sector Panel (and, typically, also SL's chief operating officer), declared, “we must move from dependence on Sellafield to a more diverse economic future”—while the prospectus advertised a relentless focus on nuclear opportunities ([Clean Energy Sector Panel 2020](#), 3).

I realized I should have posed another question to the NDA's presenter, six months earlier, about West Cumbrian dependency, namely, to what extent it mat-

tered. Neither SL nor the whale were dead in the water, precisely because of the social contract of their ecosystemic relations. Thinking through the metaphor of the whale fall enables a critique of the notion of *dependency*: it becomes a term wielded by both the industry (as a reproach) and the region (as a burden) in their familiar, and familial, sparring over the joys and frictions of symbiosis.

Kari suggests that the industry itself invented and strategically invoked the industry-awareness frame to put a more positive spin on its relationship with communities (Kari 2020, 36). This may well be so, but West Cumbrians show themselves to be so industry-aware as to strategically invoke the nuclear-oasis frame and include it in their negotiating and renegotiating of the social contract. This is a social contract of symbiosis rather than of dependency, and its power dynamics play out more evenly than either of the parties might like to acknowledge. As West Cumbrian pundits show—taking care not to make this explicit—playing the card of dependency, which transpires as a discursive tool rather than an analytic category, may prove quite entrepreneurial indeed, for years to come.

ABSTRACT

The nuclear site of Sellafield in West Cumbria, North West England, embarks on a long period of decommissioning. Sellafield Limited (SL), the government-owned company running the site, is intent on disentangling the strong socioeconomic and affective relations with its host area with a view to making West Cumbria less dependent on SL, the area's major employer, as the company prepares for a slow withdrawal. Comparing West Cumbria to a whale fall, the habitat that comes into being around the nourishing presence of a decomposing whale carcass, I suggest that West Cumbria has feasted on Sellafield through different stages of nuclear activity, from its production of plutonium down to the long-life materiality of its nuclear legacy wastes. From this perspective on a symbiotic relationship, dependency is shown to be not a one-sided reality but a discursive tool wielded by both the industry and West Cumbrians for different strategic purposes. [nuclear decommissioning; Sellafield; dependency; organic metaphor; symbiosis; whale fall]

NOTES

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and intellectual support from the University of Manchester's Dalton Nuclear Institute. A very special thank-you goes out to Aaron Daubney for imagining a whale carcass, bringing it up to the surface, and inspiring me to make it morph with my ethnography into this tale of symbiosis in West Cumbria.

1. See the website at <https://wcsgg.co.uk/about-us/> (accessed March 25, 2021). On the same page, Sellafeld Limited's praises are sung, immediately revealing the entanglements between the WCSSG and the nuclear industry it is supposed to scrutinize.
2. See the NDA's socioeconomic report: <https://www.gov.uk/government/publications/socio-economic-report-2018-to-2019/socio-economic-report-2018-to-2019> (accessed March 25, 2021) and *NDA 2020*. To put these amounts into perspective: SL receives about £2 billion annually in government funding (that is, taxpayers' money) to carry out its operations.
3. Care for communities is also a duty in accordance with the U.K. Energy Act 2004, which lists among the NDA's functions "giving encouragement and other support to activities that benefit the social or economic life of communities living near designated installations, designated sites or designated facilities" (part 1, chapter 1, section 7e; see <https://www.legislation.gov.uk/ukpga/2004/20/section/7>, accessed July 27, 2020).
4. My interest in the notion of dependency stems from my familiarity with the ethnohistorical work of Toby Morantz, who taught and supported me during and after my PhD work at McGill University. Morantz's work on the fur trade, and on whaling, highlights intricate patterns of interdependency between Eurocanadian Hudson's Bay traders, Cree, and Inuit (e.g., *Morantz 2002, 2010*).
5. The designation "Gem Town" was awarded by the Council for British Archaeology (<http://isgap.org.uk/gem-towns>). Having prospered as a result of transatlantic trade and coal mining in previous centuries, Whitehaven makes a rather unloved impression in spite of various attempts at regeneration over the past decades. In 2014, an imposing office complex for SL employees, Albion Square, was built in Whitehaven, meant to make the town more vibrant and alleviate staff traffic to site (<https://www.visit-whitehaven.co.uk/albion-square>, accessed August 24, 2021). During my fieldwork period, SL was realizing investments aimed at enlivening the town, including turning a decrepit bus station into a restaurant cum meeting hub for small businesses and painting the light-houses in the lovely harbor that previously benefited from European financial support.
6. For brief U.K. nuclear histories, see *Hogg 2016* and *Blowers 2017*. For narratives of living with the nuclear in West Cumbria, see *Davies 2012*.
7. For a 2018 parliamentary report on decommissioning progress at Sellafeld, focusing on legacy ponds and silos, see <https://publications.parliament.uk/pa/cm201719/cmselect/cmpubacc/1375/137506.htm>, accessed August 25, 2021. The term *legacy* is used for nuclear infrastructures and wastes resulting from operations carried out by previous generations, with which the current generation of operators, scientists, and engineers has to deal.
8. According to the *NDA (2020, 17)*, "Sellafeld . . . directly employs around 10,000 people, with a further 17,000 jobs supported in Cumbria indirectly." The boroughs of Copeland and Allerdale, which together make up West Cumbria, have populations of about 68,500 and 97,500. Plans are underway for a reorganization of Cumbria's administrative layers (currently parish, borough, and county), which would put an end to the boroughs and result in two unitary councils, West Cumbria (including Allerdale, Copeland, and the city of Carlisle) and East Cumbria.
9. A relationship that has evolved over a long period of time; compare *Lorna Arnold (1992, 58–59)* discussing the years preceding the 1957 Windscale fire: "In its brief history of tribulations and achievements Windscale—a unique and isolated site—had developed a powerful corporate loyalty and pride reminiscent of the local patriotism that Italians call *campanilismo*. Perhaps it is fanciful to think that Windscale staff looked at the tall pile stacks almost as an Italian looks at the bell tower of his parish church, but certainly the establishment's sense of identity and self-reliance was very strong, and it had a tradition

- of solving its own problems.” For the fascinating role played by company housing in attracting staff and strengthening nuclear bonds in the early period of plutonium production in West Cumbria, see [Garratt 2016](#).
10. During COVID-19, SL encouraged those employees not considered “key workers” to engage in volunteering, reinforcing its local ties and its community-orientated reputation ([Kalshoven 2021](#)). In August 2020, SL asked employees volunteering as school governors to make themselves known, so that info on SL careers could be distributed effectively. In a podcast, CEO Martin Chown praised a supply-chain company for creating a partnership with a primary school, strengthening ties between industry and children at the “key age where they consider their future options.” SL employees on the corporate graduate scheme visit schools routinely as ambassadors for science, technology, engineering, and mathematics (STEM) subjects. The company sponsors educational ventures and campuses, further reinforcing the region’s focus on nuclear skills and careers.
 11. This trial was part of the Sellafield Site Futures project, <https://www.mub.eps.manchester.ac.uk/thebeam/2019/10/11/exploring-sellafields-limitless-future> (accessed August 21, 2020).
 12. In an interview in 2017, an SL manager annoyed by SL-bashing on social media spoke to me rather less positively of “piranhas around a rotting horse.”
 13. Discussion partners were often keen to know whether SL sponsored my research. On learning that this was not the case, even though senior SL people were supportive of it and the BNFL funding did offer me nuclear “patronage,” they seemed slightly disappointed and in a few cases less interested in participating in the research, for example, in workshops to which I invited them—it was as if I did not depend enough on the nuclear! The company itself seemed quite reassured by the institutional affiliation with nuclear research that I had through the University of Manchester’s Dalton Nuclear Institute and Dalton Cumbrian Facility, and it generously offered me site access.
 14. The usefulness of metaphors in future making is also highlighted in foresight studies, for example, [Inayatullah et al. 2016](#).
 15. Most notably Radiation Free Lakeland, <https://mariannewildart.wordpress.com>, and CORE, Cumbrians Opposed to a Radioactive Environment, <http://corecumbria.co.uk>. Compare [Baxter and Lee 2004](#) for an interview-based study of perceptions of risk (conceived of as socially constructed in a context of everyday life experience) concerning a waste-treatment facility in Alberta, Canada, in which the authors note amplification of risk at regional and national levels as opposed to attenuation of risk at the local level.
 16. In recent work addressing ethics in the nuclear realm, the term *acceptance* is problematized as it implies “the public” passively enduring corporate or governmental decisions. See [Taebi 2016](#), which argues for the criterium of *acceptability* instead.
 17. Compare [Andrew Blowers \(2017, 116\)](#) on “semi-feudal overtones” between Sellafield and West Cumbrians. [Françoise Zonabend’s \(1993, 61\)](#) fascinating ethnography of the nuclear facilities at La Hague, Normandy, similarly paints a social history foregrounding local anxieties in “a land that has been robbed of its identity by a high-risk industrial establishment.”
 18. Contrast [Brian Wynne, Claire Waterton, and Robin Grove White \(2007, 32\)](#), drawing on 1992–93 focus groups in West Cumbria, who suggest that any pride is not located in West Cumbria’s considering itself a center of excellence in nuclear science and technology, but rather in its carrying a burden for the rest of the country.
 19. In other words, to “move away from the low-barrier, sort of feel-good mini investments,” as SL head of community and development Gary McKeating put it in a Social Impact Multiplied podcast, August 19, 2020. Community expectations here chime with the “family social contract” that [Anna Storm and Tatiana Kasperski \(2017, 41–42\)](#), in their relational taxonomy of mono-industrial towns, associate with the steel and iron industry, involving ample company investment in town planning and festivals, marked by “care between workers and company management.” When industrial activities wind down, they note, those operating according to the “family social contract” expect continuing care.

20. For his work on the topic as an MP, see [Reed and Cunningham 2005](#). In November 2021, it was announced at a WCSSG meeting that Reed was set to leave SL and join the NDA.
21. See <https://www.gov.uk/government/news/introducing-six-sellafield-ltds-new-social-impact-programme> (accessed August 5, 2020). In an interview I had with anti-nuclear activist Martin Forwood in April 2018, he noted a tension between dependency and deprivation: “The area has become dependent on the industry,” he said, “but where is all the largesse that SL is supposedly distributing? There is deprivation locally, how is this possible? Where do all these alleged millions go?” With SiX 2020, SL professed to address such inequalities.
22. Compare [Brian Wynne \(1992, 299\)](#) with an additional perspective on the role of “social dependency” in an article on Cumbrian sheep farmers and the 1986 Chernobyl fallout, which highlights local qualms with a lack of transparency following the Windscale accident: “The farmers identified socially with family, friends and neighbors who were part of the Sellafield industrial workforce. They recognized their own indirect and sometimes direct social dependency upon the plant—not only neighbors but also close relatives of the hill-farmers work there. Thus, underlying and hounding their expressed mistrust of the authorities and experts, there was a countervailing deep sense of social solidarity and dependency.”
23. The term *stakeholder*, referring to anyone interested in or affected by an issue, is widely used by discussion partners in all kinds of roles and very much normalized in West Cumbria in the fora I have engaged with. Its use is certainly not limited to industry players.
24. The local emphasis on wage labor and jobs is also strikingly evident in the controversial local support for a coking coal mine planned to be dug just south of Whitehaven. The project proposed by West Cumbria Mining was put on hold in 2021 after a national and international outrage over climate concerns, widely covered in the press. See, for example, [Reed 2021](#)—surprisingly, this *New York Times* article makes no mention of the continuing importance of the nuclear industry in West Cumbria.
25. This turns nuclear decommissioning into a fertile ground for exploring future-making scenarios that a University of Manchester interdisciplinary team has tentatively begun studying (<https://www.mub.eps.manchester.ac.uk/thebeam/2019/10/11/exploring-sellafields-limitless-future>, accessed August 21, 2020). I will elaborate on this in a new multisited ethnographic project funded by the U.K.’s Economic and Social Research Council, entitled “Mimesis in action: nuclear decommissioning as conceptual playground for societal and ecological future making,” beginning May 2022.
26. I take the heading for this section from Reed’s reference to Arthur Miller’s *The Shadow of the Gods* (1958). I am aware that, unfortunately for my key metaphor, a whale is not a fish.
27. *Capability* is a favorite SL term.
28. An SL discussion partner confessed to me that he heartily disliked the ubiquitous Post-its at workshops—to him they signaled the meeting would be all about process, without any tangible results. Another SL employee shuddered at the mere mention of a “workshop” without proper tools to *make* something.
29. Entanglements between WCSSG and the nuclear industry in West Cumbria came strikingly to the fore following the death of CORE’s Martin Forwood, a longtime campaigner against nuclear reprocessing, in October 2019. A minute of silence was observed at WCSSG meetings, with appreciation being expressed of his professionalism and informed critique. To my surprise and confusion, members remarked, however, that it felt rather odd to celebrate Forwood’s anti-nuclear reputation at the WCSSG. For Forwood’s obituary, see <https://www.theguardian.com/environment/2019/oct/16/martin-forwood-obituary>.
30. This dynamic is evident also in West Cumbria’s having come forward as a potential host community in the U.K. government’s siting process for a deep geological disposal facility, which was launched in 2018 ([Kalshoven 2020](#); cf. [Hecht 2018](#)). Preceding this move,

- the WCSSG chose to emphasize West Cumbria's uniqueness in its familiarity with all things nuclear and its longtime stewardship of the country's nuclear waste: "We are the host community *now*, a unique community in its understanding, history, and impact. . . . Our community has supported the industry for a long time" (WCSSG Enablers meeting, Egremont, April 12, 2018).
31. Further complicating the narrative of the threat of fewer job opportunities at SL is an expected shortage of working-age people in Cumbria (Oxford Economics 2017).
 32. On MSSS emptying tanks, see: <https://www.gov.uk/government/news/sep2-moves-into-position-for-retrievals> (accessed October 19, 2021). Note the head of legacy silos at SL remarking, "This is a marathon, not a sprint." For retrieval operations from legacy buildings becoming SL success stories, see also Kalshoven 2020 on the decommissioning of a legacy pond.
 33. WCSSG meetings in 2019–2021 included extensive updates on a newly discovered leak at MSSS, with an elusive source and underground pathway. See <https://www.gov.uk/government/collections/sellafield-ltd-incident-reports-and-notice> (accessed October 19, 2021).
 34. And allegedly, according to some discussion partners, involving a surge in cases of venereal disease.
 35. When I expressed my bemusement in a conversation with an NDA representative over this change in tone compared to Chown's predecessor Foster's, the NDA discussion partner suggested that Foster might have been irked by what he viewed as the region's entitlement, on top of its supposed dependency.
 36. When I asked an SL team leader in 2019 for his hopes for West Cumbria, he said he hoped the region would not to be "mothballed" as had happened in areas where industries had closed overnight. But who knows, he said, what the future might hold: "Perhaps capitalism will come to an end!" A year later, the COVID-19 measures aimed at keeping economies afloat taken by many governments, including Britain's Conservative one, intriguingly saw an unprecedented sharing of resources.
 37. See, for example, research into capturing heat mentioned in the SL-supported "Nuclear Prospectus" for West Cumbria (Clean Energy Sector Panel 2020, 18).

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