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ARTIFICIAL DISASTERS AND ENVIRONMENTAL REFLEXIVITY: THE TORREY CANYON DISASTER AND THE PARADOX OF ENVIRONMENTALISM

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The accelerated development of scientific expertise, particularly in the ecological sciences, was a major contributor to the development of modern environmental consciousness.[1] The growth of the biological sciences created a cultural space in which social and technological change could be imagined as having systemic ecological impacts.[2] They emphasised the scale and scope of human on natural history, and our increasing awareness of the complexity of the relationship between human society and the natural world. The effects of this transformation are most commonly signified by the publication and popularisation of Rachel Carson's *Silent Spring* in 1962.[3]This awareness of an increasingly reflexive relationship to industrial and technological development, sometimes summarised in the concept of 'risk

1. Anna Bramwell, *Ecology in the Twentieth Century: A History* (New Haven; London: Yale University Press, 1989); Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995); John Clark, *Bugs and the Victorians* (New Haven; London: Yale University Press, 2009).

2. J. F. M. Clark, 'Pesticides, Pollution and the UK's Silent Spring, 1963–64: Poison in the Garden of England', *Notes and Records: The Royal Society Journal of the History of Science*, 15 February 2017, 20160040, doi:10.1098/rsnr.2016.0040.

3. Thomas R. Dunlap, *DDT : Scientists, Citizens and Public Policy* (Princeton Guildford: Princeton University Press, 1981); Mark Hamilton Lytle, *The Gentle Subversive: Rachel Carson, Silent Spring, and the Rise of the Environmental Movement* (New York: OUP USA, 2007).

society', has been argued to be a characteristic of late-modernity. The emergence of a distinctive environmental consciousness and politics is often regarded as a new political form reflecting the social and cultural influence of environmental reflexivity.[4]

Historians have, however, also acknowledged that the impact of environmentalism has been patchy in its effects.[5] While environmental ideas have disseminated widely though political discourse and popular culture, nowhere has that resulted in overturning the fundamental logics of modernity: the ceaseless pursuit of capital accumulation and associated technological development.[6] The development of environmental reflexivity therefore presents historians of science with a paradox. On the one hand, powerful counter-currents to the techno-scientific society emerged out scientific endeavour, while on the other, the social and cultural impact of environmental discourse, despite its powerful alliance with scientific expertise, has been uneven.[7]

The tensions between scientific authority and civic authority have been the subject of intense discussion in social studies of science. However, understanding these paradoxical effects of reflexive consciousness of the environment also requires engagement with the details of everyday encounters with scientific expertise, and the understanding that emerges from them. That is to say a social history of environmentalism (and its limits).[8] It is well-recognised that there are commonly antagonisms between popular and expert conceptions of the environment, but the implications of this for understanding the paradox of environmentalism has not been explored in enough detail.[9] In this article, I discuss some of the material from oral history interviews with people involved in the *Torrey Canyon* disaster, which I undertook with colleagues in 2012.[10] Although this project involved more than fifty lengthy interviews with local people who remembered the disaster, I shall refer

4. Ulrich Beck, *Risk Society: Towards a New Modernity* (SAGE, 1992); Barbara Adam, Ulrich Beck, and Joost Van Loon, *The Risk Society and Beyond: Critical Issues for Social Theory* (SAGE, 2000).

5. Jean-Baptiste Fressoz, 'Beck Back in the 19th Century: Towards a Genealogy of Risk Society', *History and Technology* 23, no. 4 (2007): 333–50, doi:10.1080/07341510701527419; Jean Baptiste-Fressoz, 'The Lessons of Disasters - Books & Ideas', accessed 17 July 2013, http://www.booksandideas.net/The-Lessons-of-Disasters.html.

6. Fabien Locher and Jean-Baptiste Fressoz, 'Modernity's Frail Climate: A Climate History of Environmental Reflexivity', *Critical Inquiry* 38, no. 3 (March 2012): 579–98, doi:10.1086/664552.

7. Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Cambridge, Mass.: Harvard University Press, 2004).

8. Chad Montrie, *A People's History of Environmentalism in the United States* (London: Continuum, 2011); Marco Armiero and Lise Sedrez, eds., *A History of Environmentalism: Local Struggles, Global Histories* (London: Bloomsbury Academic, 2014).

9. Brian Wynne, *Rationality and Ritual: Participation and Exclusion in Nuclear Decision-Making* (London: Earthscan, 2011).

10. This project was funded by a British Academy/ Leverhulme Trust Small Grant 110572. The interviews were undertaken by Anna Green, Jos Smith and myself. Copies of the recordings will be deposited with the Cornwall Record Office.

here to the narrations of events by two people in particular.[11] Antony Farrell, who as a child and young man lived in St Ives, and David Stevens, a local fisherman whose father was one of those working on the clean-up operation. Both give accounts of the tense encounter between local everyday forms of knowledge and scientific expertise which took place during the days and weeks after the catastrophe.

On 18 March 1967, the oil tanker SS *Torrey Canyon* carrying 119,000 tons of crude oil from Kuwait became impaled upon the notorious Seven Stones reef fifteen miles off the Cornish coast. At the time, it was the largest shipwreck in history, and the first great oil pollution incident caused by a new type of vessel, the supertanker. The crew were evacuated safely ashore, but the Labour government, unprepared for an emergency on this scale, were initially constrained by the shipowners' determination to salvage the vessel, and the oil from its punctured tanks began to leak into the sea. Aided by prevailing winds and an exceptionally high spring tide, many thousands of tons of oil fouled the sea, beaches, coves and harbours around the northern coastline of Cornwall, Land's End and the Lizard peninsula, eventually reaching the coast of Brittany.[12]

Deeply concerned by the potential economic impact on the short summer tourist season in Cornwall the government launched 'Operation Mop Up'. A caustic compound chemical dispersant, known rather misleadingly as 'detergent', was sprayed by the army to emulsify the oil so that it could be washed back into the sea by fire service pumps. After rough seas broke the ship into two, and then three pieces, the decision was taken to bomb the vessel to ignite and burn off an estimated 20,000 tons of oil remaining aboard the broken vessel. Over the four to six weeks that the crisis lasted, oil and 'detergent' killed tens of thousands of seabirds, damaged inshore fisheries, and destroyed the sea wracks, anemones, sand eels, crustaceans and other life on the rocks and foreshore.

The salvage of the stricken vessel, and the clean-up operation that took place ashore, were directed by a combination of central and local government and the Royal Navy. Despite the *ad hoc* nature of the response, the clean-up process was characterised by the still prevailing technological optimism of the time. Solly Zuckerman, the British government's Chief Scientific Adviser, co-ordinated a team of experts offering a centralised response to the developing crisis. In his autobiography, Zuckerman presents his advice to government as co-ordinated directly with other experts from London. He was flown to the Royal Naval Air Station at Culdrose, near Helston, for a meeting with the Prime Minister, and then over

11. A. Green and T. Cooper, 'Community and Exclusion: The Torrey Canyon Disaster of 1967', *Journal of Social History* 48, no. 4 (1 June 2015): 892–909, doi:10.1093/jsh/shv004; Timothy Cooper and Anna Green, 'The Torrey Canyon Disaster, Everyday Life, and the "Greening" of Britain', *Environmental History* 22, no. 1 (1 January 2017): 101–26, doi:10.1093/envhis/emw068.

12. Crispin Gill, Frank Booker, and Tony Soper, *The Wreck of the 'Torrey Canyon'* (Newton Abbott: David & Charles, 1967); Richard Petrow, *The Black Tide: In the Wake of Torrey Canyon.* (London: Hodder & Stoughton, 1968).

the wreck of the *Torrey Canyon*, before immediately returning home to Norfolk. Zuckerman did not see for himself the developing situation on the beaches, or the operation to disperse the oil at sea under the co-ordination of the Royal Navy.

Co-ordinating the scientific response to the disaster "which for a week or two filled the papers" was, Zuckerman writes "the most spectacular of the 'one-off' jobs that came my way, but it was certainly not as important as some others; for example, the UK's space programme…"[13] Zuckerman's somewhat cursory visit to the scene of the disaster is illustrative of an official neglect of local knowledge in determining the nature of the response. The interventions of government scientists not only served to mitigate the effects of the disaster, but also implicitly reproduced ideas of legitimate or useful knowledge and the political effects of such distinctions. They marginalised local knowledge of topography and the marine environment, and privileged technical fixes to the immediate economic problem of oil dispersion at the expense of ecological consequences.[14] The clean-up operation reproduced differences in power that were felt strongly in the county. Local people provided labour for the clean-up operation, but were ignored as sources of relevant environmental knowledge. The subsequent official scientific report entirely neglected any input from the community affected.[15]

This cleavage between community knowledge and professional and technical expertise remained a strong memory many years later. For some, the *Torrey Canyon* experience came to stand for alienation from governmental expertise. Local fisherman and farmer, David Stevens, recalled that in their planning of when and where to spray detergent on the oil the authorities failed to seek out advice on tidal movements and coastal conditions. One encounter between these authorities and his father, a local fisherman, was remembered a particularly antagonistic:

> "When the bigwig, whether he was a general or brigadier, or what he was, he was put in charge. When my father come back my father was annoyed. He pooh-poohed my father. "You don't know about… my experts have told me that the tides doesn't work that way". And my father said. "Look I've been a lifetime working up and down on that coast. I'm telling you that if we do not take the boats west there will be oil in St Ives". "No! My experts have told me. No. It won't happen". So my father said, "Right, on you". Next morning, there's the oil. We knew it would happen."[16]

13. Solly Zuckerman Zuckerman, *Monkeys, Men and Missiles* (London: Collins, 1988).

14. Donna Haraway, 'Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective', *Feminist Studies* 14, no. 3 (1988): 575, doi:10.2307/3178066.

15. Solly Zuckerman, *The Torrey Canyon. Report of the Committee of Scientists on the Scientific and Technological Aspects of the Torrey Canyon Disaster* (London: HMSO, 1967).

16. David Stevens, 26 July 2012, 00:00-05:00

The recounting of this encounter reveals a profound and lasting experience of the devaluation of local knowledge. Matters are determined by a 'bigwig', a derogatory term signalling a self-important individual in charge. At stake in this moment is more than the question of differential epistemic power. The clash of expertise and the claims of local knowledge is related as powerfully emotive. It is a bitter memory, the impact of which remains raw. The sense that his father had been denigrated, perhaps even humiliated, by the encounter (that he was "pooh-poohed") is powerful. This effect of this rejection is, from Steven's perspective, a rejection of a lifetime of place-based experience. The subsequent pollution of the shoreline therefore comes not just as a terrible disaster, but as a vindication of the value local knowledge. The world is turned upside down, and the bigwig is revealed to be ignorant: "we knew it would happen".

Faced with pollution on an un-precendented scale, scientists took the opportunity in Cornwall to experiment with a whole range of possible responses. This technological experimentation took forms that perplexed some. For Stevens, the clash between his father's situated knowledge and governmental expertise was also an encounter between practical experience with abstracted experimental methods that *in situ* border on the ridiculous.

> "So as time went on we had these government boffins sent down who had these wonderful ideas of how to disperse the slicks. And we had one came down and we had to go out in our small boat—we had two small boats, the punt and the gig—and his idea was we had to go down to Zennor cove, pick up a couple of bales of straw from a farmer (this is in the boat). We had chicken wire mesh given to us, and we were to put the straw on the slick and then surround it with the wire mesh and set light to it. Well, if this scientist only knew, crude oil has to be kept warm in a tanker to be able to be pumped out, 'cause it's very thick. There's no way it was going to set light to it. But we had these weird and wonderful ideas coming down, and we had to accommodate them of course."[17]

Steven's narrative emphasises a ritualistic subordination to a senseless power. The necessity of accommodating an experiment that is doomed to fail.

Ridicule of these "weird and wonderful" ideas is the response to a feeling of exclusion from the 'bizarre' experimental methods of science. These are counterpointed by Stevens to the inter-generational quality of place-based knowledge, which he is keen to underscore as a legitimate form of intelligence, even if it is surrounded by a 'superstition' that makes it unrecognisable to the abstract experimental understanding of modern science.

> "You pass your knowledge on, farming is the same thing. And that is something that goes way back in families. And more probably, I can't think of it at the present moment

17. Stevens, 05:00-10:00

> in time, there's something my father have told me that his father have told him, that I've probably gone on and told my two sons. And you know, yes, fishermen were superstitious and the old ancient folklores and all like that, but they were intelligent men. I mean, if you imagine taking a boat to sea with just a compass, and then bringing it back, it'd be no mean feat, is it? You know, there in't many people could do that nowadays, is there?"[18]

It is significant that this knowledge is represented historically by Stevens as in decline. Few people would now choose to pilot a fishing vessel by compass alone. Modern technology and the decline of rural fishing communities have eclipsed much of this form of practical understanding. The encounter with scientific understanding in the course of the *Torrey Canyon* disaster is therefore implicitly framed in terms of a history of the decay of traditional fishing communities and economies in the county. Subordination of local knowledge to modern science must thus be understood as part of this longer history of social and geographical transformation, and a powerful associated sense of cultural loss.

For Stevens the encounter of expert knowledge and quotidian understanding is one of humiliation and frustration by a power that is alien, and at times even ridiculous. Technologies applied to the clean-up operation could also become suitable object for satire. Materializations of the frustration of the authorities in the face of events beyond their control. Antony Farrell narrated a failed experiment with a boom to protect St Ives Bay. The boom was to stretch:

> "All the way, in theory, from Porthgwidden, by the island, across to Godrevey on the other side. And that was looked at with a sort of a wry smile by local people. My grandfather was all in favour of it, and I suspect it was because he knew what the outcome was going to be. I think it was the Department of Environment (*sic*) that was responsible for putting the boom across. Essentially it was a chain to weigh it down at each end and in the middle, but it consisted of floats, or a whole series of floats kept together or linked together by good quality rope, and then a plastic barrier that was kept vertical. Probably you know a kind of a mini wall, really. But, I mean even a cursory glance by those of us that live here was: "do they really think that's going to keep the oil out?", I mean you know when you get a seascape that might have fifteen, twenty-foot waves this mini plastic barrier which was really in terms of floating above the surface only six or seven inches high, it was kind of, it was never going to work, it was never going to happen."[19]

18. Stevens, 25:00-30:00
19. Antony Farrell, 28 May 2012, first sound file, 25:00-30:00

Farrell gives us a subversive perspective on the encounter between this technology and local knowledge. It is suggested that local people encouraged government officials to pursue interventions precisely because they knew they would fail. There is a certain perversity in this, in so far as the failure of the boom meant the inevitable pollution of the beaches, someting which everyone wished to avoid. Yet this desire to see officialdom publicly frustrated, even at one's own expense, is instructive of the intensity of local frustration at exclusion from the decision-making process. It reveals the way in which ideas of 'pollution', 'risk' and 'disaster' were politically mediated. In this case, as in that of Steven's father, the pollution of the beaches was a satisfying exemplification of what happens when you ignore local knowledge. An environmental catastrophe turns from a meaningless disruptive event into an opportunity to see expert opinion break itself against a problem it cannot solve.

All this suggests that the development of public concerns with risk have been very uneven. While oil from the *Torrey Canyon* presented a clear risk to the society, economy and environment of Cornwall in the late nineteen-sixties, oral memory did not straightforwardly relate the effects of disaster in this way. Few of those interviewed for this project felt any substantive change in their relationship to the environment because of the disaster. Just as the grounding of the *Torrey Canyon* on the Seven Stones was a consequence of forces beyond their control, so also the government's response reinforced a sense of being subject to events. The "battle of the beaches" involved a large amount of local labour, but very little community decision-making. Consequently, failures were confirmations of official bungling, even if the results of the environment and community were intensely negative. Some, like Stevens continue to evince a strong scepticism of scientific knowledge in other fields such as climate change.[20] Events like the *Torrey Canyon* disaster and their paradoxical impacts on everyday life, reveal the social and cultural limits of environmental reflexivity. At once a terrible disaster, the oiling of Cornwall's beaches was also a welcome assurance of the legitimacy, even superiority, of local knowledge marginalised by expert opinion.

20. Stevens, 20:00-25:00