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## REVIEW

# Critical Review of Managed Annihilation, Dean Bavington

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'The equation of animal and vegetable life is too complicated a problem for human intelligence to solve, and we can never know how wide a circle of disturbance we produce in the harmonies of nature when we throw the smallest pebble into the ocean of organic life' (Marsh 1965: 103)

## Introduction

Up to the end of the twentieth century, the Newfoundland region in Canada was purportedly so rich in cod that boats had trouble sailing through the shoal (Linking Social and Ecological Systems 1998). After the Second World War's end, the abundant catches attracted an increasing number of sailors to the region. Berkes and Folke argue that fish had become an important source of nourishment for Europeans and demand soared as they were in the process of rebuilding their agriculture system (Linking Social and Ecological Systems 1998). However, within just a few decades this resource, once thought to be inexhaustible, almost came to an abrupt end (Bavington 2010).

Between the 1500s and the 1850s, local Newfoundlander fishermen adapted to the fluctuations in fish landings by seasonally changing occupation. This flexibility was supported by a mercantile system whereby

fishing was designed to satisfy family needs and the produce could be exchanged with traders against other goods. From the 1850s to the 1950s, the progressive transformation of this social organization into an industrial capitalist society put pressure on the fishermen to stabilize the annual flow of landings (Bavington 2010). Science thus became a tool for managing political strategies, and the era of the modern fishing industry began. From then on, the offshore stock of cod became a commodity under heavy control as demand from international, rather than local, markets was prioritised (Cayley 2009).

Dean Bavington is a researcher at the Environmental History Department of Nipissing University in Canada [Network in Canadian History and Environment (NICHE)]. In *Managed Annihilation*, he looks in a critical manner at the management of the Canadian fishing industry and its evolution from a pre-industrial to a modern political context. He then proposes an alternative management strategy based on moral values and the integration of local knowledge via democratic decision-making. Only a few months after the release of *Managed Annihilation*, Bavington's research is already being used to stress the importance of developing participatory management (Peterson 2010, Yard 2010). Moreover, his analysis is being drawn on to denounce the Canadian government's failure to address the crisis of the fishing industry. Given the degree of international interest and what is politically, economically and socially at stake in the area of Newfound-

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land, the attention attracted by Bavington's analysis comes as no surprise. However, it may be too soon to fully appreciate both the book's impact, and its influence on governmental decisions in Canada.

Bavington argues that modern societies' managerial obsession distort nature by treating it as an exploitable commodity. Like others before him, he urges stakeholders in the fishing industry to search for alternative strategies to preserve fish stocks and ensure the integrity of the fishermen (Bavington 2010). As early as 1958, David Lowenthal called attention to the fact that '[m]en should act within the limits of the knowledge and understanding of their environment, as we do not know how actions might interfere with an ecosystem already in place' (272). The policies of the Canadian government, however, have not reflected this concern. In 1949, the date at which Newfoundland became part of the Canadian confederation, the island was in a deep economic crisis. At that time (and until the 1992 moratorium), the government's failure to intervene in protecting offshore stocks from European trawlers contributed to overexploitation. In early 1990, the government's refusal to acknowledge the importance of local knowledge, combined with political and economic opportunism, pushed the stocks of cod in Newfoundland and Labrador to the edge of extinction. This is precisely the issue Bavington tackles in *Managed Annihilation*.

Though the book has only recently been published, I argue here that *Managed Annihilation* offers valuable insights into the current crises of resource management. I will discuss how *Managed Annihilation* can help us understand governmental aspirations to control fluctuations in landings. I will then analyze how this has shifted the human-environment relationship from one of adaptation to nature to one characterised by the scientific modelling of nature and the desire to command and control. Bavington is particularly opposed to contemporary practices, and in his last chapter he presents an alterna-

tive to existing managerial strategies. Given the historical grounding of his study, I then discuss the limits of Bavington's argument with reference to the wider literature on contemporary natural resources management.

### **Human-Environment Relationship**

In trying to explain how certain decisions prevailed over others in Newfoundland, Bavington emphasizes the governmental bias toward scientific, rather than lay, knowledge. The development of new and efficient technologies for use in fishery, such as the dragger and the sonar, created an illusion of control over the increasing amounts of cod that could be caught. However, as mechanization spread in the fishing industry, managerial strategies started progressively affecting the human-environment relationship and created a shift in the balance. Science was considered a source of absolute truths and a means to command nature, rather than a tool for increasing our understanding of the natural world (Bavington 2010, Sismondo 2009). Given this situation, one needs to account for what knowledge was taken to be scientific, who upheld that view and for what purpose. In *Managed Annihilation*, Bavington challenges this vision of the unilateral power of science and redefines the field, '[as a] successive refinement and enlargement of theories to cover an increasing amount of data without necessarily reaching the truth' (Sismondo 2009: 4). Bavington focuses on the justice and compassion that should drive science and management in the first place. He explains that, 'local ecological knowledges refer to the physical and biological aspects on how to fish but also to the economic and political context of fishing' (Bavington 2010: 73). He argues further that concerning models of managing the fishing industry, scientific theories should not be induced from empirical observations but should, instead, be a method for evaluating them (Sismondo 2009). For Bavington, moving away from the generalization of scattered data to a more reliable methodology,

based on an exchange of knowledge with the locals, is a vital step toward preserving not only fish stocks but also the fishermen's dignity. This is no small matter and should not be taken for granted. The decision to direct political strategies toward population-based fishery management in the late 1990s influenced the fishermen's lifestyles as well as their livelihoods: the progressive imposition of quotas, licensing and the creation of a welfare system led them to become less family-oriented, less committed to the community, more individualistic and increasingly financially driven (Bavington 2010).

When fish scientists started recognizing their inability to restore cod stocks at the end of the nineteenth century, a new managerial model was implemented to reform the fishing industry in Newfoundland. The post-moratorium budget cuts and the remaining dispersed cod populations offshore meant the Department of Fisheries and Oceans in Canada (DFO) faced both a scientific, and an economic, challenge. According to Bavington's analysis, fishermen were drawn into this new relationship without any political leverage at their disposal to challenge government decisions. Fishermen were the principal actors in the post-1992 Local Ecological Knowledge approach (LEK), but were vulnerable to the intentions of national authorities that were dehumanizing them (Bavington 2010). The fishermen were employed as a cheap alternative to unaffordable modern fishing technologies and equipment (Callon 1986). On paper, the DFO's restructuring was designed to delegate more authority to inshore fishermen. Not only were they supposed to be involved in analyzing factors influencing natural fluctuations in fish catches – although this was once considered beyond their basic understanding – but their participation in collecting data was also meant to support the creation of a space for interaction between them and political participants (Bavington 2010, Klooster 2010). In a process of local empowerment, I claim that it is essential for local authorities to encour-

age smarter economic and social regulations from the ground up. This can have positive repercussions for the whole community. However, in this case, the Canadian government did not waver from its neo-liberal, market-based strategy. In Bavington's view, this new paradigm ended the fundamentally flawed concept of control over nature and replaced it with debates among actors about environmental issues (Callon 1986).

### **Alternatives to Managerial Strategies**

Managed Annihilation provides an analysis of cod stock fluctuations in Newfoundland and looks at prospects for the future. The book ends with an acknowledgement of science's limits. Bavington then takes the argument further in claiming that the command-and-control approach used to respond to the fishery management crisis created disharmony wherever trawlers cast their anchors. In line with George Perkins Marsh's argument, Bavington perceives modern man as a disturbing agent (Lowenthal 2000: 278). Since the 1950s, industrial societies have progressively conquered every offshore area around Newfoundland, dividing the ocean into sectors as though it were patches of legally-delimited and privately-owned land (Bavington 2010). The exposure of cod shoals to ever-more powerful fishing technologies results in the stocks' inability to cope with year-round intensive fishing (MacKenzie 2001). Indeed, the entire food chain in the area has been affected. Deprived of its natural balance, the Northern Atlantic food web has had to adjust to the extensive reduction of the targeted fish. The consequences of the wild's domestication have been unfolding like Russian dolls. Besides the elimination of cod species, the region faces the problem of a dying oceanic microcosm, a decline in numbers of zooplankton and a decrease in nitrate – a natural fertilizer (MacKenzie 2008). In 1864, Marsh claimed that natural resources management had to be implemented through careful control and intelligent planning (Marsh 1965).

Given the impact men have had on the ecosystem in Newfoundland, Bavington supports an even more radical alternative and suggests a revising the whole idea of management. Despite his position, I argue that he does not go as far as questioning the current dependence of the cod on a plethora of technologies implemented by the Canadian authorities.

Fish scientists have sharpened their knowledge of the cod's life cycle, food habits and reproductive behaviour, and scientific failures in the 1980s to recover fish stocks highlights the importance of a new perspective on the 'egg to plate' management of cod (Bavington 2010). Addressing this problem involves integrating scientific knowledge within the context of a wider, more connected and responsible world. Human actions have unpredictable consequences on the environment that are sometimes impossible to fully comprehend (Marsh 1965). Given those limits, fish science, despite its adherence to peculiar experimental methods of doing science, also needs lay knowledge in order to make better-informed decisions. Indeed, for Bavington, it is important to disempower scientific authority, challenge its universal representation of nature and leave room for uncertainty. This is necessary to adjust existing, and acquire new, knowledge on fishery. It will encourage discussion among all stakeholders, rather than leave decisions based on hierarchical command-and-control strategies to management (Bavington 2010). Bavington's analysis of knowledge production reveals that fishery management has been over-simplified. The solutions to recovering and stabilizing fish landings have been reduced to scientific perspectives. The dominant narrative explaining the near extinction of cod in the region has emphasized the domestication of the fish and the fishermen. This is said to have given '[an illusory sense of control] to decision-makers that the problem was [easily] identifiable and the solution straightforward to implement'(Hulme 2010: 561). However, the

massive depletion of cod is much more than a fish landing problem and the solution needs to include local fishermen, too. By describing what constitutes ecologically adequate and equitable fishing practices, fishermen could play an important role in shaping the fishing industry of the future.

### **Limits to Bavington's Argument**

In his last chapter, Bavington restates his reservations about the managerial approach. His response to the fishery crisis would be to replace the ecosystem-based paradigm and market-based strategy and introduce moral values. In Bavington's view, recognizing the limits of the resources' exploitation is what will help make better-informed decisions for the sustainable use and recovery of Newfoundland's resources. I agree with Bavington when questioning the capitalist resource extraction strategy the Canadian government has been following. The cost of mismanagement has been enormous for the region – financially, socially and politically. All of those involved in this interdependent network have been impacted, from the oceanic microcosm to national and even international organisations. The question, however, is whether Bavington's compassion over profit argument stands in practice as well as theory. I propose that not only does his argument weaken the initial and thorough historical analysis he provides, but that Bavington's conclusion also fails to fully consider adaptive approaches to management.

Having presented his main argument – that the original cause for the cod shoals' annihilation was the shift from an environmentally-friendly, pre-industrial society to a noxious capitalist one – Bavington ends on a contentious note (2010). However, he does not give sufficient space for a detailed explanation of his alternative solution to management. Moreover, he fails to define the concepts of 'passion', 'justice' and 'compassion' that he uses to illustrate his point. Leaving it to the reader to contextualize these notions could be misleading. That he mentions the

European rush to Newfoundland after World War II, for example, shows that the meaning he attaches to these abstract concepts may be contingent. Indeed, Bavington's use of broad and abstract concepts in a competitive international context undermines the foundations of his alternative solution. Furthermore, Bavington's alternative contradicts some of his earlier arguments against managerial strategies. Re-scaling the fishing industry to an inshore spectrum would require the introduction of strict control mechanisms over parts of the ocean. Areas would need to be delineated, and the quantity and the type of technology employed would have to be restricted so as to ensure environmental sustainability.

However, it is possible to conceive a middle ground. Academics such as Garry Peterson favour an adaptive management approach that includes spatial and temporal components (2010). 'Ecological resilience' is an example of this compromise that refers to an environment's capacity to adapt to disturbances without changing its fundamental characteristics (Folke and others 2004). Subscribing to the 'ecological resilience' argument, scholars including Crawford Stanley Holling have looked at the interaction between ecological and social systems. From this perspective, human interventions can create opportunities to maintain or restore a healthy ecosystem (Holling 2001). These geographers favour 'ecological resilience' and would agree with Bavington with regard to the damage caused by the market-based approach to cod fishing. But they would consider the restoration of the stock in Newfoundland to be possible with the right kind of management. Indeed, scientific interventions could be beneficial, as scientists could gather knowledge on the ecosystem and any disturbances affecting that environment. This more nuanced perspective encompasses both social and scientific aspects to promote what Peterson describes as the development of new institutions and different experimental methodologies (Peterson 2010). This

outlook achieves what Bavington's approach fails to reconcile: the social-economic and scientific dimensions that ecosystem restoration projects need.

## Conclusion

In *Managed Annihilation*, Bavington not only challenges the prevalence of scientific-based knowledge over local knowledge, he also underscores the limits – and further still, the dangers – of a managerial approach to the restoration of cod stocks in Newfoundland. His critique of scientific modelling does not seek an anti-science approach, but rather the greater inclusion of local participation in the field. At the beginning of this review, I mentioned two concepts I proposed to look at: the human-environment relationship and the alternative to managerial strategy. Throughout the book, Bavington is concerned with the evolution of the cod industry in two different settings: the pre-industrial and the contemporary. Comparing the two, he contests the strategy the government has been following for the last fifty years and stresses our responsibility toward the restoration of the ecosystem in the area. My discussion of historical, social-economic contexts reveals a clear consciousness of the problem, even if it now appears more difficult to address the problem in 2012 than in 1950 (due to the number of political, economic and social interests involved). As Bavington points out in his last paragraph, any new approach reducing the scientific or political impact might be impossible given the financial significance of the fishing industry (2010). Nonetheless, those challenges are being discussed in different media, such as blogs, forums and political campaigns. Many participants in these debates push for a redistribution of power between the different actors in the cod network. After reviewing the different issues at stake, it appears critical to re-order the process of decision-making in Canada to manage cod better, and to give it a chance to recover from its annihilation for the benefit of future generations.

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