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Science, Law and the Raj: Cultural Fields of Fish(y) Fact

AARTHI SRIDHAR

University of Amsterdam, Amsterdam and Dakshin Foundation, Bengaluru
Email: aarthi77@gmail.com

ABSTRACT

Nineteenth century fact-making in British India was a cultural endeavour shared among its diverse colonial experts. Through a critical sociological reading of archival documents and official records, this paper contributes to aquatic-marine historiography by unpacking utterances and deeds of irrigation engineers, pisciculture proponents, naturalists and administrators regarding the facts of ‘injury to fish supplies’ and the preservation of these supplies by law. It argues that early scientific fisheries investigation and their culmination in the Indian Fisheries Act, 1897 were not the result of a successful separation of science and politics, or of fact from interest. Rather, colonial cultures of fact-making were forged in the interplay of the imperial utilitarianism and hybridity inherent to rule-making in the colony, which renders early fisheries science in India as a field of postcolonial politics by other means.

KEYWORDS

Fisheries, fact, Bourdieu, poaching

In 1836, we built a weir in Tanjore,¹ called the Coleroon² Anicut, about thirty miles from the sea ... In the following years, a prodigious quantity of fish were stopped by it as soon as the freshes came down and immense quantities were annually taken at it, of course generally full of roe... I should suppose that the injury to the coast fisheries must be very great, now that seven of the principal rivers of the east coast ... are thus barred.³

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1. In the southern peninsula of British India under the Madras Presidency; present-day Thanjavur.
 2. The Coleroon (Kollidam) is the northern channel of the west-flowing Cauvery river.
 3. Extract of letter from Cotton to G.T. Haly, 26 July 1867, Public Works Department (hereafter PWD) (Irrigation) April(A)(National Archives of India (hereafter NAI)): No 3–5.

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The short letter that the retired military engineer General Sir Arthur Thomas Cotton sent Colonel G.T. Haly of the Madras Army in 1867 registered an unsettling view on irrigation works. The correspondence between the two officers pointed to an emerging paradox⁴ in imperial irrigation infrastructure – that of introducing risk (if not ruin) while serving a greater good as public works. The anicuts,⁵ irrigation dams and numerous weirs built in the nineteenth century across Indian rivers, began noticeably obstructing the migration of abundant freshwater and diadromous fish, a potential source of food in a landscape rendered rainfall-deficient⁶ and famine-prone by irrigation apologists⁷ – the very conditions that colonial irrigation infrastructure sought to transform through its utilitarian works.⁸ Cotton’s letter was repeatedly cited in the records of the newly established Public Works Branch of the Home Department, as the inspiration for the first scientific state-funded investigations into facts related to injury to and preservation and regulation of British India’s fisheries. These colonial fact-making practices animate the enquiry of this paper. I argue that fact-making in colonial science and law was primarily a relational cultural enterprise whose persistent universalising claims reproduced the unequal and distinctive social relations of colonial rule.

The first chapter of the British Raj, when Indian fish and fisheries began attracting state attention, marked a period of multiple intersecting transformations: in public works infrastructure,⁹ colonial administration and rule of law.¹⁰ Cultural practices and knowledge contestations served as technologies of rule and modalities of domination.¹¹ These changes, in turn, led to shifts in social relations concerning the environment, mediated partially by famine, taxation policies and property rights across agrarian geographies.¹² A recent study of the Indian Fisheries Act (IFA) places Haly at the centre of events and interrogates

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4. C. Howe, J. Lockrem, H. Appel, E. Hackett, D. Boyer, R. Hall et al. ‘Paradoxical infrastructures: Ruins, retrofit, and risk’, *Science Technology & Human Values* **41** (3) (2016): 547–65.
 5. An anicut and a weir are similar in their function of creating a reservoir of water for irrigation purposes.
 6. A. Tozzi, S. Bouzarovski and C. Henry, ‘Colonizing the rains: Disentangling more-than-human technopolitics of drought protection in the archive’. *Geoforum* 135 (2022): 12–24.
 7. A. Ramesh. ‘Indian rivers, “productive works”, and the emergence of large dams in nineteenth-century Madras’, *The Historical Journal* (2020): 1–29.
 8. D. Gilmartin, *Blood and Water: The Indus River Basin in Modern History* (Berkeley: University of California Press, 2015), p. 186.
 9. A. Ramesh and V. Raveendranathan, ‘Infrastructure and public works in colonial India: Towards a conceptual history’, *History Compass* **18** (6)(2020): 281–309.
 10. E. Kolsky. *Colonial Justice and British India: White Violence and the Rule of Law* (Cambridge, UK: Cambridge University Press, 2020).
 11. B.S. Cohn, *Colonialism and its Forms of Knowledge: The British in India*. (Princeton: Princeton University Press, 1996).
 12. A. Agrawal and K. Sivaramakrishnan, *Agrarian Environments: Resources, Representations and Rule in India*, (Durham, North Carolina: Duke University Press, 2000).

delays in passing the IFA, finding parallels in Indian forestry history.¹³ The present paper offers a theoretically grounded examination of imperial cultural categories within colonial experts' practices of scientific enquiry and legal-administrative reasoning regarding facts of injury, 'preservation' of fish and fisheries regulation in the latter half of the nineteenth century. In what ways did relations of rule in the Raj influence colonial experts' engagement with utilitarian scientific and legal categories in their fisheries investigations? How did certain colonial actors and practices gain dominance in addressing fisheries as matters of concern?¹⁴ What was the place of non-human agency in struggles for domination within these social spaces? The present paper addresses these questions by examining colonial writings, administrative archival records and debates on colonial India's fisheries – where I read 'along the grain'¹⁵ into a paper trail beginning in Indian rivers but connected to the marine realms of the Indian Ocean and imperial fields of Empire. Following Stoler, I attempt to look for what is 'not written' within colonial utterances, interpretively seeking shared beliefs and the political work of colonial inscriptions¹⁶ of fact on fish and fisheries.

Section one outlines the historiographic framework of this paper, drawing from aquatic-marine environmental history, legal histories and science studies. Section two accentuates the scholarship that guides the paper's analysis of how fact-making about injury to fish from irrigation infrastructure interfaced with the social position of colonial officials and imperial ideologies of improvement. Section three follows the first scientific investigation of fish and fisheries across the *Raj* by medical officer and naturalist-ichthyologist Francis Day, examining how symbolic hierarchies influence ichthyological field practice. Section four probes specialist facts on non-human agency proposed by revenue official and angling enthusiast Henry Thomas Sullivan and the fate of his draft Bill for fisheries. The section reflects on how Thomas's facts on Indian fish behaviour were reconciled with prevalent legal reasoning on regulating such entities. The final section describes the engagement of the Raj's senior administrators with emerging scientific and legal facts in their own practices of statecraft, followed by concluding remarks on the refiguration of the existing system of inequalities and hierarchies through the IFA, 1897.

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13. S. Sivramkrishna and A. Jyotishi, 'Dammed Waterways and a Colonial Legacy: Statutory Law-Making in the Conservancy of Indian Fisheries, 1867-1897', *Global Environment* 16 (3): 559–593..
 14. 'Matters of concern' refer to domains of articulation composed of subjectivity, interestedness and entanglement distinct from 'matters of fact' which convey properties of objectivity and immutability. B. Latour, 'Why has critique run out of steam? From matters of fact to matters of concern'. *Critical Inquiry*, 30(2)(2004): 225–248.
 15. A. Stoler, *Along the Archival Grain: Epistemic Anxieties and Colonial Common Sense*, (Princeton, NJ: Princeton University Press, 2009).
 16. M.S. Hull, 'Documents and bureaucracy.' *Annual Review of Anthropology*, 41(2012): 251-267.

I. SCIENCE, LAW AND AQUATIC-MARINE ENVIRONMENTAL HISTORIOGRAPHY

This section locates the contributions of this paper to aquatic-marine historiography, attentive to the discursive role of the biological sciences in shaping human relations with freshwater and marine spaces.¹⁷ It specifies two intertwined theoretical perspectives employed to analyse fact-making: the first considers fact-making as shared cultural practice in domains of colonial law and science; the second sees practice itself as an arena of social struggle.

Early aquatic-marine historiography reified categories of the marine sciences and attempted to understand ecosystem baselines, map historical marine populations and chronicle the decline of what was hitherto considered the ‘inexhaustible seas’, with an eye on better management.¹⁸ More recent critical scholarship, however, has examined the place of science in mediating controversies arising from the contested use of these spaces and species. Prominent works have examined the emergence of specific ‘political’ concepts such as ‘maximum sustainable yield’ (MSY) critiquing its fit for scientific fisheries management in the twentieth century.¹⁹ Others have examined the effects of technoscientific enhancement of commercial fish (especially of *Salmonidae*) on people’s relations with the environment.²⁰ These histories of boreal fisheries of Europe, North America (Atlantic and Pacific) and Nordic countries reveal fisheries science, a nascent ‘applied’ science²¹ as fundamentally preoccupied with taming multiple freshwater-marine uncertainties and unknowns – political, methodological, social and ecological. Specific to the Indian Ocean, Fernando’s multispecies account of the Mannar pearl fisheries reveals a co-constitution of marine-molluscan environments, their attendant scientific and legal categories and their materiality.²² The present paper adds to this emerging historiographic corpus from South Asia by applying relational sociology to examine colonial scientific practices as implicitly political endeavours entailing racialised knowledge. It differs from marine-aquatic historiography that sees

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17. I use the term aquatic-marine to connect both freshwater and marine histories, engaging both empirical domains and their shared and translocal actors and entities. L. Robin, and J. Carruthers, ‘Introduction: environmental history and the history of biology’, *Journal of the History of Biology* **44** (1)(2011): 1–14; C. Keiner, ‘How scientific does marine environmental history need to be?’ *Environmental History* **18** (1)(2013): 111–20.
 18. W.J. Bolster, ‘Opportunities in marine environmental history’, *Environmental History* **11** (3) (2006): 567–97.
 19. C. Finley, *All the Fish in the Sea: Maximum Sustainable Yield and the Failure of Fisheries Management* (Chicago: University of Chicago Press, 2011).
 20. J.E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (Seattle: University of Washington Press, 2009).
 21. G. Gooday, ‘“Vague and artificial”: the historically elusive distinction between pure and applied science’, *Isis* **103** (3) (2012): 546–54.
 22. T. Fernando, ‘Mapping oysters and making oceans in the Northern Indian Ocean, 1880–1906’, *Comparative Studies in Society and History* **65** (1) (2002): 53–80.

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scientific knowledge as the production of apolitical, objective and immutable facts, however useful to practical management.²³ Neither does the paper follow posthumanist epistemologies that flatten ontology between humans and non-humans. Instead, the paper calls for sociological attention to inequalities produced by human actors' words and deeds as 'braced' with non-human agency, by which scientific practices endure and influence aquatic-marine nature-cultures; a relational historiography.²⁴

The first theoretical approach engaged in this paper is the approach that views fact-making as a shared *cultural* practice, drawing from legal history and histories of colonialism. Legal historian Barbara Shapiro pioneered genealogical thinking, linking domains of science and law, and termed their shared socially embedded practices as 'cultures of fact'.²⁵ She drew attention to the generational persistence²⁶ of such practices of fact-making in the two domains where natural philosophy drew its cultural referents from the older tradition of fact, in law. These cultural practices included establishing witnesses, judge and jury qualifications, reliability of witness skill, expertise and testimony, separation of domains of decision-making between judges and jury etc.²⁷ Hierarchies and inequalities present in the early modern period are seen in late colonial and contemporary fact-making practices around fisheries. McEvoy first problematised practices of science and law in fisheries. He argued that forms of property and legal institutions set up to scientifically regulate Californian fisheries were 'creatures of history' that unfairly mediated between nature and culture and, in the process, became mutable themselves.²⁸ In British India, colonial constructions of pre-colonial knowledge, custom and tradition, particularly through the lens of 'difference', are argued to have facilitated liberal colonial domination, not in the least through specific legal cultures.²⁹ Early South Asian environmental history read this domination as upsetting a romanticised state of pre-colonial ecological equilibrium, though recent scholarship is attentive

23. V. van Sittert, 'The other seven tenths', *Environmental History* **10** (1)(2005): 106–09.

24. A. Jones, 'Word and deed: Why a post-poststructural history is needed, and how it might look', *The Historical Journal* **43** (2) (2000): 517–41; E. Sayes, 'Actor–network theory and methodology: Just what does it mean to say that nonhumans have agency?' *Social Studies of Science* **44** (1)(2014): 134–49.

25. B.J. Shapiro, *A Culture of Fact: England, 1550-1720* (Ithaca: Cornell University Press, 2000)

26. Shapiro focuses on the period from the sixteenth to the seventeenth century.

27. Shapiro, *A Culture of Fact*, pp. 8–13.

28. A.F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850–1980* (Cambridge: Cambridge University Press, 1986), p. 13.

29. Cohn attributed the difference between indigenous and colonial legal forms to a clash in values. See B. Cohn, *An Anthropologist among the Historians, and Other Essays* (New York: Oxford University Press, 1987); P. Chatterjee, *The Nation and Its Fragments: Colonial and Postcolonial Histories* (Princeton, NJ: Princeton University Press, 1993); K. Ramnath, 'The colonial difference between law and fact: Notes on the criminal jury in India', *The Indian Economic and Social History Review* **50** (3) (2013): 341–63.

to heterogeneity, contradiction and inequality generated by colonialism and within the very rubric of modernity.³⁰ Colonial rule of law is argued to have failed in extending the notion of a generalised universal legal subject, or even a universal modality of justice delivery, whether by judge or jury or both.³¹ In the context of judicial disputes over water and fisheries in India, Devika Shankar discusses the making of provincial legislation such as the Bengal Private Fisheries Act, 1889, exploring legal mutations and arguing that slippages in colonial judicial interpretations of property rights reconfigured human-water-fish relations, transforming fish- and water-commons into property of the state while simultaneously rendering certain public waters as private property.³² Her focus on the materiality of water across historical time and colonial geographies highlights the indeterminacy and multiplicity of even accepted and received knowledge, whether fact or law, regarding the properties of water. This paper builds on these interpretations to develop further insights into the persistence of unequal and inconsistent practices within European fact-making fields of science, law and administration across colonial aquatic-marine expanses and social contexts.

A second theoretical approach employed in this paper draws from historical sociology to focus on practice. The paper welds concepts drawn from ‘historically minded’³³ scholarship within sociology of science to aquatic-marine environmental historiography. It adopts Pierre Bourdieu’s conceptual corpus, specifically the interlinked building blocks of symbolic capital, habitus and field, to explore fact-making as deeply cultural and persistent hierarchical practice. The Bourdieusian ‘field’ represents a sub-set of a social space³⁴ of struggle, where actors compete within established ‘rules of a game’ for valued objective social positions through subjective actions guided by historical embodied dispositions – their ‘habitus’, and the pursuit of varied forms of ‘symbolic capital’.³⁵ In such a specialised social space, neither structure nor agency claims causal supremacy, as habitus, capital and field work in tandem. Within the supra-fields of imperial improvement, natural history and colonial administration examined in this paper, I follow cultural practices of colonial

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30. M. Rangarajan, ‘Environmental histories of South Asia: A review essay’, *Environment and History* 2 (2)(1996): 129–43; E. Kolsky, ‘A note on the study of Indian legal history’ *Law and History Review* 23 (3) (2005): 703–06.
 31. K.K. Raman, ‘Utilitarianism and the criminal law in colonial India: A study of the practical limits of utilitarian jurisprudence’, *Modern Asian Studies* 28 (4) (1994): 739–91.
 32. D. Shankar, ‘Water, fish and property in colonial India, 1860–1890’, *Past & Present* 258 (1) (2023): 79–114.
 33. D.R. Weiner, ‘Demythologizing environmentalism’, *Journal of the History of Biology* 25 (1992): 385–411.
 34. A social space may be thought of as a sum total of all possible social positions within it at a time and place (C. Hardy, ‘Social space’, in M. Grenfell (ed.) *Pierre Bourdieu: Key Concepts* (New York, Routledge, 2021), p. 231).
 35. P. Bourdieu, *The Logic of Practice*, trans. R. Nice (Stanford, California: Stanford University Press, 1990 [1980]).

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officials whose expertise and identities afforded them differential social positions. Centrally, the struggles between these unequal human actors' relations shape their practices differently in the Indian colonial context, despite being driven by imperial imperatives. In this struggle, human actors' encounters and relations with non-human entities in the colony are examined with a 'methodological bracing'³⁶ that does not claim intentionality or radical symmetry either between all humans or all non-human entities. Instead, I am interested in how colonial non-human agency contributes to the emergence of human agency as an affordance of social practice.

2. ANICUTS, INJURY AND FAMINE-MEDIATED FACTS

The observation of injury to fish at anicuts was scarcely a straightforward description of fact. This section examines how relations within the field of imperial improvement, in the instance of colonial irrigation, structured social struggles and constructed facts of injury to an emerging resource – Indian fish. At the time of his correspondence on injury to fish, Cotton had already been knighted in 1861 for pioneering irrigation projects and later 'productive works'³⁷ that transformed agrarian British India through hydraulic control. He continued to advise and promote major irrigation works well after retirement, even as he acknowledged the grave injury to fish. Cotton's career began with the Madras Engineers in the 1830s and he eventually gained Empire-wide fame for his irrigation structures across the major south Indian rivers. His life is portrayed as one dedicated to proselytising modern irrigation – a utilitarian mission that aimed at improved water provisioning for agriculture, and simultaneously served as a vehicle to introduce natives to modern values of work, redeeming them from a hopeless life of sloth and abject poverty. For this, Cotton is either revered or criticised by present-day farmers more than a century after his death in 1899. Between 1860 and 1877, after his irrigation projects on the Cauvery were concluded, a series of famines affected large parts of the Madras Presidency, of which the Orissa famine of 1866 and the subsequent Madras Famine of 1876–77 were the most wretched examples. The famines engaged the sympathy of the British public for whom, Andrew Thompson argues, Empire was a thoroughly internalised fact.³⁸ Cotton and colonial officials were at the centre of the famine discourse and debates on Empire's public works – discursive struggles that simultaneously invoked and shaped benevolent colonisation and imperial liberal ideology.

36. Sayes, 'Actor–network theory'.

37. Ramesh, 'Indian rivers'.

38. A.S. Thompson, *The Empire Strikes Back? The Impact of Imperialism on Britain from the Mid-19th Century*, (Harlow: Pearson Education Limited, 2005), p. 6.

Colonial irrigation was central to ‘the character of the Government in the eyes of the natives’.³⁹ These infrastructures afforded agency among colonial engineers by activating their symbolic capital, distinguishing engineers like Cotton from other colonial officials and dissidents who opposed public expenditure on irrigation. Cotton’s words, but also deeds of dam-making, carried extraordinary force within the Public Works Department. His pronouncements on injury to migrating fish and sea-fisheries fixed attention on another culprit altogether. His letter drew official scrutiny towards the ‘capture of fish full of roe’ in ‘prodigious’ numbers at the revered anicuts, exhorting government to accord his (and Haly’s) observation fuller attention. Cotton’s symbolic social position within the colonial irrigation field made his observations (far more than Haly’s) that of an expert witness of the ‘fact’ of injury at the anicuts.⁴⁰ Facts in his letters and subsequent investigations refigured the cause of injury from anicuts, to the *capture of fish by fishers* at the anicuts – an entirely refigured matter of concern. The officials of the Government of Madras’s Revenue Department corroborated Cotton’s observation about fishing practices for sable fish at anicuts.⁴¹ Not only was their attention focused on fishing practices but, more specifically, they highlighted the capture of spawning sea fish migrating during particular seasons. In the wake of the Orissa famine of 1866, famine, water and food appeared and disappeared as text and context in the ensuing official correspondence. Famine helped recast received knowledge among colonial officials – about ideals of a landscape’s fish supply, its optimal use, and valued stages of fish life history drawn from the zeitgeist of European acclimatisation and practical preservation – and splice these onto an Indian landscape.

Even imperial solutions encountered differential treatment in the colony. A few laconic technological attempts were attempted to overcome ruin at anicuts and large weirs. Technologies such as fish ladders and tinkering efforts such as widening under-sluices of dams were objective solutions much favoured and trialled in Europe and America, but which met their match in subjectivity regarding irrigation water in the colony. Officials feared that such retrofitting infrastructures would divert ‘productive’ water⁴² – symbolically more precious for colonial India than in imperial Britain – and they were not funded or pursued again. Where imperial solutions dithered, problems appeared equally provisional. The differences between large colonial irrigation anicuts and weirs across the Indian rivers were significant, the latter being built on smaller rivers and streams and often being temporary structures, but culpability was judged based on the prevailing doxa of colonial irrigation control and imperial

39. L.E. Hope and W. Digby, *General Sir Arthur Cotton, His Life and Work* (London: Asian Educational Services, 2005), p. 478.

40. Shapiro, *A Culture of Fact*, pp. 14–17.

41. The ‘ilish’ or Indian shad (*Tenualosa ilisha*).

42. G.T. Haly, ‘On the fisheries in India’, *Journal of the Society of Arts* 19 (1871)(21 May 1871): 520–25, 524.

improvement.⁴³ Temporary weirs threatened the careful control of water supply and revenue from newly introduced canal water taxes. By contrast, the dams, anicuts and large canals of the Raj were insurmountable leviathans – literally in the case of migrating fish, and figuratively for colonial officials who confronted the paradox of irrigation’s ruin. The pithy statement of the Commissioner of Delhi summed up their predicament: ‘There is sometimes a very wholesale destruction of fish in the canal when the waters are suddenly shut off, but this I fancy cannot well be avoided.’

The spectre of colonial dams, anicuts and canal infrastructure receded in subsequent official investigations which focused on other moral wrongs of injury committed by fishers and their fishing practices. The social positions of imperial apologists and their imbrication with favoured infrastructure leviathans constructed facts about injury to fish by self-censoring comment on impacts of irrigation dams and canals and directing the gaze to the nature of Indian fish and fisheries.

3. NATURALISTS’ FACTS ABOUT INJURY AND INDIAN FISH (1867–1875)

Where facts of ‘injury’ were refigured by anicut experts, they simultaneously drew the attention of fish experts. This section examines fact-making cultural practices in the field of colonial natural history. When Colonel Richard Strachey, India’s first Inspector General of Irrigation Works, first heard in June 1868 about the matter of injury to coast fisheries from irrigation works in the Madras Province, he displayed the force of advantaged social position. He insisted on investigating the practical importance for Indian fish supply before mitigating injury from weirs, accentuating his opinion that sea fisheries were more profitable than fresh-water fisheries, and expressed faith in salmon ladders but offered no funds for them. The doxa of British utilitarianism⁴⁴ dictated that profitable resources like fish needed to be studied, controlled and improved by British capitalist interest as a greater good for the greater number. Indian fishing could additionally be investigated for its culpability in injuring a potential imperial resource. Strachey framed the boundaries of the enquiry, broadly, as an ichthyological enquiry. His social position, firmly embedded at the top of colonial irrigation bureaucracy and rule, saw him safeguarding imperial irrigation public works in this enquiry⁴⁵ by referencing salmon ladders

43. Doxa refers to misrecognition of forms of social arbitrariness, whereby individuals retain pre-reflexive, unquestioned beliefs. C. Deer, ‘Doxa’, in Grenfell (ed.) *Pierre Bourdieu*, pp. 114–18.

44. E. Stokes, *The English Utilitarians and India* (Oxford: Oxford University Press, 1959).

45. Gilmartin argues that Strachey was appointed expressly to oversee the provision of water across India to give effect to Britain’s new public role in relation to India. See Gilmartin, *Blood and Water*, p. 106.

as solutions, while simultaneously kicking off a utilitarian endeavour – investigating facts on Indian fish and fisheries in a ‘landscape of famine’. Hyndman, the British socialist would later decry such capitalist interests as concealing the real cause of famines – the draining of India’s wealth at the cost of native subject welfare.⁴⁶

In 1868, the Secretary of State agreed with Strachey and took steps ‘to act on Cotton’s letter’, commissioning ‘a single naturalist to investigate the fish and fisheries of the whole of British India’. There were eager volunteers to undertake such an enquiry. Colonel Haly, now retired in Britain had offered his own services⁴⁷ to enquire into the ‘conservancy of fisheries’ but met with no discernible enthusiasm. In a poorly attended speech at the Society of Arts in May 1871, he complained about being ignored despite having ‘originated the important enquiry’ into fisheries.⁴⁸ Although an ardent supporter of Empire, Haly was deeply critical of government inaction on the Orissa famine and openly criticised the governor of Madras for dabbling with failed acclimatisation using trout and salmon from England and gourami from Mauritius – projects that others (such as ichthyologist-naturalist Francis Day) took great pains to put in place with the support of the governor as well as influential pisciculture proponents in England. The reputable choice before the Secretary of State in 1869 was between Surgeon Major Thomas Caverhill Jerdon, then with the Royal Asiatic Society of Calcutta and nearing retirement, and Surgeon Major Francis Day of the Government of Madras, a promising fish expert in the Raj.

Cultural practice in natural history informed social position and vice versa, as seen from a closer examination of Day’s monumental investigation but also records of his life. Day was born into a land-owning, educated upper class family in England. He later studied anatomy at St. George’s Hospital under the noted physician Henry Day and befriended fellow student Frank Buckland⁴⁹ who would become one of Britain’s most flamboyant proponents of pisciculture and acclimatisation. Their friendship spanned decades and mutually nurtured their natural history forays. Day had joined the Madras Establishment⁵⁰ of the East India Company as an Assistant Surgeon in 1852 but found himself returning to service from sick leave in England to a differently governed India in 1858. He was at once eager to find support for his ichthyological interests in the Raj, as under company rule.⁵¹ He is said to have spent every opportu-

46. M. Morris, ‘From anti-colonialism to anti-imperialism: the evolution of HM Hyndman’s critique of empire, c. 1875–1905’, *Historical Research* 87 (236) (2014): 293–314.

47. Letter from Haly to Secretary of State, 31 July 1867, in PWD, NAL, 1869.

48. Haly, ‘On the fisheries’, 521.

49. T. Collins, ‘From anatomy to zoophagy: A biographical note on Frank Buckland’, *Journal of the Galway Archaeological and Historical Society* 55 (2003): 91–109.

50. A medical wing of the Madras Army

51. P.J.P. Whitehead and P.K. Talwar, ‘Francis Day (1829–1889) and his collections of Indian fishes’, *Bulletin of British Museum of Natural History* (5) (1976): 1–189, p.24.

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nity to undertake natural-history forays, suggesting that the military medical service was a backdoor channel that allowed access to natural-history practice which had few formal opportunities at that time.⁵² Despite his deficient knowledge of Burmese customs and language and complete dependence on an interpreter,⁵³ Day's military posting in war-torn Burma allowed him to collect several specimens and publish his observations on fishes and fisheries of Burma as he did for virtually all other sites where he was posted within British India. Day's personal pursuit of natural history and his specialist publications constituted his cultural capital. His generational social capital allowed him to pursue piscicultural improvement projects in India. In 1866, Buckland readily came to Day's assistance, wading out into freezing waters in England's river Test, netting enough trout to transport eggs by sea and over land for Day's trout acclimatisation experiment in the Nilgiris for which the latter was fêted with a silver medal by the *Société d'Acclimatation* of Paris in 1872. Day's habitus – his embodied confidence in inscribing unfamiliar lands, environments and customs while exploiting opportunities to accumulate symbolic capital, secured his ichthyological credentials. Habitus in turn fixed his advantageous social position with socially sanctioned 'interestedness' – embodied qualities necessary for a single naturalist to study Raj-wide fisheries.

The Secretary of State urged the Government of Madras to employ Day as the 'single naturalist' that Strachey recommended, despite his level of expertise inviting some scepticism.⁵⁴ Day would later credit Strachey for assistance in enabling him to pursue his enquiries into the fish and fisheries of India by naming the *Barbus (barbodes) Stracheyi*,⁵⁵ after the man. He also named the barb *Sahyadri denisonii* after the Governor of Madras William Thomas Denison (1861–1866), an avid proponent of acclimatisation in Tasmania⁵⁶ who supported Day's introduction experiments and additionally granted him leave to travel to England and publish the *Fishes of Malabar*. These cultural practices within biological nomenclature served as historical records of individual contribution, but also of relational practice; in this case enlisting ambitious naturalists and powerful administrators over novel fish.⁵⁷ Prior and reciprocal relations went hand-in-hand with published and demonstrable (via acclimatisation experiments) evidence of expertise and were partially attributable to one's social position within the field.

52. *Ibid.*, 22.

53. *Ibid.*, 45.

54. *Ibid.*, 35.

55. F. Day, *The Fishes of India; being a Natural History of the Fishes Known to Inhabit the Seas and Fresh Waters of India, Burma and Ceylon* (London: Bernard Quaritch, 1878). See p. 12.

56. Whitehead and Talwar, *Francis Day*, p. 25.

57. M. Menon, 'Making Useful Knowledge: British Naturalists in Colonial India, 1784–1820' (Ph.D. Thesis, University of California, San Diego, 2013).

Day's India-wide investigation reveals cultural and hierarchical valuation practices inherent in natural history. He relied on oral and written testimonies of numerous Revenue Department officials – district collectors (many of whom were occasional anglers themselves), *tehsildars* and *zamindars*. His enquiries were formally dispatched to officials across India but the questions posed to collectors and *tehsildars* differed vastly. Collectors were asked their opinions on 27 items ranging from ownership of rivers to opinions on and evidence of harm from fishing, regulation and trade prospects from fisheries. Day believed these subjects could only be judged reliably and answered accurately by Collectors who adjudicated disputes and were familiar with judicial processes. Information solicited from *tehsildars*⁵⁸ and *zamindars* concerned natives. Of the sixty questions posed to them, none solicited their opinion on prohibiting fishing, or evidence of injury from fishing. Their testimonies or views were deemed markedly less reliable compared to those of the Collector, in keeping with hierarchies of positions within the administrative field. Virtually no facts were solicited from fishers – their observations often seen as muddying the testimonials of more reliable accounts. Fishers and fish in the Raj attracted colonial spokespersons or native gentry who filled-in for subaltern silence.

The practice of collecting catch data finds its earliest Indian reference in Day's investigations as detailed in his reports. Day relied on networks of unequal humans in this endeavour. In preparing his reports from Cuttack, Day complained of many challenges, since he 'frittered away' much time in sending away his own servants to gather information while awaiting information from the *tehsildar*, who, in turn, awaited voluntary reports from local informants. Information was not always forthcoming or reliable from natives. Staff had to be suitable and up to the demanding task of handling fish: a '*Mahomedan* peon' would be attached to the naturalist at all moments of his investigation to help collect eggs and fry, 'his religion ensuring that he would not be squeamish to the task'. In each district one additional peon of that region would assist in collections and observations. It was evident that the 'single naturalist' was not the sole first-hand 'witness of facts'⁵⁹ and collector of information, but relied instead on a sizeable network of informants, with varying degrees of credibility in Day's eyes. Pokrant et al. argue that Day copied into his *Fishes of India* entire sections pertaining to the fisheries of Bengal directly from Hamilton-Buchanan's study of the *Fishes of the Ganges*⁶⁰ with minor updates and scant attention to 'historical consciousness' within this textual archive of science.⁶¹ Despite these inconsistencies, social distinction and colonial hierar-

58. A lower ranking revenue official, in charge of a smaller jurisdiction of a *tehsil*.

59. Shapiro, *A Culture of Fact*, p. 15.

60. B. Pokrant, P. Reeves and J. McGuire, 'Bengal fishers and fisheries: a historiographical essay', in S. Bandhopadhyay (ed.) *Bengal: Rethinking History. Essays in Historiography* (Delhi: Manohar Publishers and Distributors, 2001), pp. 93–118.

61. L. Daston, 'The sciences of the archive', *Osiris* 27 (1) (2012): 156–87.

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chiefs of knowledge and practice ensured that Day, the reliable witness, could legitimately retain or discard material emerging from the hierarchically structured network of observation and existing ‘archives of science’ to construct his fish(y) facts.

Natural history practices circulated and embedded persistent traces of facts across Empire through the cultural practices of recording and publishing. Day’s final reports on fresh water and sea fisheries of India were printed in 1878 and widely circulated among government departments in India and learned societies of Britain and beyond, winning appreciation at the 1883 Great International Fisheries Exhibition in London. Day concluded from his peculiar investigations that the supply of fish in Indian rivers was ‘exceedingly insignificant’ and blamed various forms of fishing for this. His publications also reiterated the piscicultural promise of fish as a stable source of food against conditions of famine. His *Food of Fishes*⁶² declared the importance of leaving small fish for larger and more profitable fish, translating onto Indian conditions the piscicultural rationalities that undergirded the hierarchical culture of Salmonidae. Day’s statements on fish agency and their place in an ecological hierarchy must be read with prevailing piscicultural imperatives in the colonial famine landscape. The ‘improvement’ impulse lent the necessary moral heft to impose colonial law for fish preservation which would criminalise the injuring of small fish from small weirs, traps and small-meshed nets. Day’s reports lacked fishers’ testimonials and was silent on colonial irrigation infrastructures.

3. FISH FACTS IN ANGLING, GAME AND PENAL LAW

Practices in the field of natural history had to contend with practices in legal history when it came to the question of human relations with animal nature. This section examines facts produced by expert angler and administrator Henry Sullivan Thomas in his draft legislation and the subsequent adjustment of these facts for an Indian context, through administrative and judicial reinterpretation of fish facts using English game and criminal law. Concurrent with Day’s investigations and his official reports, in 1873 the Madras Board of Revenue had requested Thomas to prepare draft legislation for the preservation of fish. Thomas’s elaborate draft bill of 1873 mirrored the fisheries laws of England and was generally ignored by the administration for the next ten years – the devastating decade of the Madras famine. By 1883, Thomas had risen to become member of the Board of Revenue and jumped at the chance to resurrect his ‘Bill for the Protection of Fisheries’ which he eagerly re-submitted to the Madras Government.

62. F. Day. *On the Food of Fishes – Special Handbook Issued in Connection with the Great International Fisheries Exhibition, London* (London: William Clowes and Sons Ltd, 1883), p. 45.

Two interwoven facts marked Thomas' arguments in his revised draft law⁶³ – the exceptional migratory nature of 'Indian fish' and the necessity of angling knowledge in judging Indian fish. Of these migrating Indian fish, whether those that literally climbed and walked such as the climbing perch (genus *Anabas*) and snakeheads (genus *Channa*) noted by Day,⁶⁴ or the aestivating fish observed in muddy tanks and river beds, Thomas added a new behavioural fact based on his own personal observation, that of an exceptional and uniquely 'Indian' trait:

If Indian fish had not an intensely migratory spirit whence would all these areas of arid sandy beds and sun-baked hollows be peopled with fish life? If Indian fresh-water fish were like English fresh-water fish such places must remain barren of fish ... It is marvellous to see them busily migrating as if their very lives depended on it, as doubtless they do ... Hunger the grand motor, is doubtless the power that drives them to migrate. It is as fry that they migrate for food, not as in England as parent fish for spawning. It is not to seek the sea as salmon par go; it is only to find fresh fields and pastures new in which they may obtain more food. Food, food, food is their cry as in countless hosts they hurry down the swelling flood.⁶⁵

In Thomas's description, one locates the agency of the fish in an image of relentless mobility and extreme vulnerability, driven by hunger in the famine landscape, rather than a higher breeding impulse. Indian fish-agency was at its height as fry, an important life-stage to secure for successful pisciculture and acclimatisation. The fry's vulnerability was further ecologically circumscribed by an exacting landscape privileging a base want – 'food, food and food' – contrasted with composed adult salmon migrations in England. Thomas's statement of facts drew weight from his own popular publications *The Rod in India* and *Tank Angling*, citing which he argued that knowledge of English fish found among so many of his fellow colonial officers, did not necessarily imply knowledge of Indian fish. He distinguished fish expertise by limiting it only to those with a close field-based expertise akin to 'every naked Indian fisherman' who understood fish behaviour but was deprived on account of his race of ways of thinking 'it out in sequence', as only the European expert angler could. The rest of Thomas' design for an Indian fisheries law was modelled along English legislation, replete with 'fishing districts', 'water bailiffs', inspectors and other structural features such as fines, fees and licenses – a vast apparatus of imperial control. In April 1888, a Conference in Delhi attended by administrators discussed Thomas' bill. They were clear that the expert angler's facts

63. Mr Thomas' Fisheries Bill, Revenue and Agriculture (Fisheries)(A)(NAI, 1889): 1–10.

64. F. Day, 'The fish and fisheries of Bengal', in W.W. Hunter (ed.) *A Statistical Account of Bengal – Fishes and Botany of Bengal*, Vol. XX (London: Trubner & Co., CPH, Delhi, 1976), pp. 6–9.

65. Revenue and Agriculture (Fisheries)(A)(NAI, 1889): 1–10.

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on highly migratory Indian fish and its consequent state control needed to be compatible with an older lineage of facts on fish, in law.

Diverse legal facts were produced in the 1800s about state concerns with fish, property relations, modes of fishing and fish trade in British India. The Permanent Settlement of 1793 touched on the subject of fisheries by bestowing on zamindars (landowners) fishing rights along with riparian rights, within settled estates. In the Raj, fishers, lessees and 'jalkar'⁶⁶ rights holders in Bengal and the Northern Provinces were embroiled in legal disputes over rights to water and fish which were adjudicated by various provincial courts, sometimes generating contradictory judgements.⁶⁷ However, legal disputes remained provincial and centred on individual land-owners' property disputes over freshwater rather than raising any explicit concern over supplies of freshwater and marine fish for a wider human population. Day's investigations and Thomas's draft bill attempted to unsettle this provincial mindset.

Emerging notions of property relations were at the heart of legal disputes. Across India, Collectors and subordinate officials, including irrigation works engineers, had begun leasing out 'several fishery' (public fisheries in state owned waters including irrigation canals and reservoirs) in the provinces of Bombay, Bengal, Sind and other regions in return for revenue. The questions of ownership of finfish themselves, however, elicited legal ambiguity in the Raj. In the course of settling challenges to ownership of waterbodies, including tidal influenced rivers, disputes related to fishing had made their way to several courts across the country, raising questions of the applicability of Roman law to the colonial context and generating contradictory judgements.⁶⁸ The observations of the *Sadr* court⁶⁹ of Sind in 1883 was important in settling the diverse legal pronouncements about fish as property and was discussed by administrators specifically in relation to Thomas's draft bill. In that case,⁷⁰ a lessee of 'government waters' had approached the magistrate stating that 'poachers' had taken fish that belonged to the lessee. Contemporary fish and game laws in England stated that fish and game were *ferae naturae*⁷¹ and could

66. Jalkar literally translated as 'produce of the water' and referred to the rights of estate owners to the same, mainly including fish. See P. Reeves, 'Inland waters and freshwater fisheries: issues of control access and conservation in colonial India', in D. Arnold and R. Guha (eds), *Nature, Culture and Imperialism: Essays on the Environmental History of South Asia* (New Delhi: Oxford University Press, 1995), pp. 260–92.

67. R. Reeves, 'Regional diversity in south Asian inland fisheries: colonial Bengal and Uttar Pradesh compared', *South Asia: Journal of South Asian Studies* 25 (2) (2002): 121–35.

68. Shankar, 'Water, fish and property'.

69. A Sadar Diwani Adalat was a court of revenue that dealt with civil disputes.

70. *Empress versus Jeo walad Pandhi and Others*, Sadr Court of Sindh Province, Criminal Revision No 130 of 1883. NAI (1888) June Rev & Ag Dept (Fisheries)

71. In Roman law, fish, birds and bees were considered to be *ferae naturae*, or *animalia libera*, in contrast to domesticated animals – *mansuetae naturae*.

not be made property till caught.⁷² Central to the idea of ‘wildness’ was mobility; game and fish both had to be pursuable and pursued before they could be hunted and claimed by an individual. Diadromous ‘Indian’ migratory fish typified wildness and could move between multiple categories of water, fresh-water and tidal, public and private. The Sadr court reiterated the view of other court judgements⁷³ that people could not be prosecuted for catching fish from ‘private waters’ (if they could naturally move out of these) and, moreover, that fish that could move across water were ‘wild’ and hence common to all. They had to be made un-wild to become private property. Government officials were concerned that this interpretation would disadvantage lessees who would not be able to catch enough fish to pay for their leases. Concerns over fish supply took on a slightly different character in these court utterances and arguments, from destruction of fish *in itself* to its destruction as *potential property*, a new line of argument for introducing interference in fisheries by legislation.

If fish in its wild form was only ‘inchoate’ property (not fully formed) then theft could not be pinned on any accused, and fish would themselves be common to all who had the ability to catch them. This would also make it difficult for the colonial state to interfere with ordinary fishing practices in public and private waters. With influential lessees approaching courts against sporadic fishing by non-lessees (raiyats, tribals, other fishers), pressure was mounting on the provincial governments to declare such fishing illegal, as ‘poaching’ or ‘theft’. In legal cases where English fish and game laws stood in direct contradiction to the lessees claiming Indian migratory fish as their private property, some officials resorted to an additional interpretation that was available in India – that of the sections of the Indian Penal Code (IPC) pertaining to ‘theft’ (Section 378). This section of the IPC held that penal law was auxiliary to substantive law⁷⁴ and also rehearsed the view that English law would be followed whereby fish were indeed *ferae naturae*.⁷⁵ However, it contained various provisions which allowed for allegations of ‘dishonest’⁷⁶ fishing to be established by

72. This view was not uniformly resorted to by many of the magistrates and judges in local cases. See S. Sen and R. Adelstein, ‘Fishing rights and colonial government: institutional development in the Bengal Presidency’, *Cambridge Journal of Economics* **45** (2) (2021): 313–31.

73. For a discussion on fisheries related judgments from this period, see Shankar, ‘Water, fish and property’.

74. W. Morgan and A.G. Macpherson, *The Indian Penal Code (Act XLV of 1860): With Notes* (London: G.C. Hay, 1863).

75. Section 378 of the IPC states, ‘Fish in running waters, such as rivers, and canals and in the lakes and seas are *ferae naturae* and cannot be the subject of theft. So also fish in open irrigation tanks, or tanks not enclosed on all sides, where even the right of fishing has been let out to a licensee are considered as *ferae naturae* and not subject of theft’.

76. IPC defined dishonesty as follows: ‘Whoever does anything with the intention of causing wrongful gain to one person or wrongful loss to another person, is said to do that thing “dishonestly”.’

introducing the idea of wrongful gain or loss.⁷⁷ The ‘inchoate right’ of lessees to fish assumed greater strength if it was possible to circumscribe the agency of fish as *ferae naturae*, using the penal interpretation of human actions in relation to fish. For instance, the sections of the IPC (Chapter VIII) pertaining to Offences Against Public Tranquillity, made it possible to charge fishers with ‘unlawful assembly’ if they were to forcefully exercise even their incorporeal rights and privileges, such as rights of commons or rights of fishing, or hunting, *ferae naturae*.

Fish agency, rather its wildness, could be recast by limiting human agency through substantive or procedural law such that certain forms of obtaining wild fish amounted to creating wrongful loss to the rights of others. ‘Poaching’ was the term used by administrators who examined penal law options to refer to a whole class of fishing practices that caused such wrongful loss. Day, Thomas and a host of administrative officials used this term in India in the absence of substantive law that defined it. Poaching referred principally to a morally wrong act – the catching of certain fish, in certain places, at certain times, and almost always by comparison against prevailing moral codes, practice and law in Britain. The take of India’s ‘intensely migratory fish’ such as mahseer invited special moral sanction. Day and Thomas had both drawn attention in their publications to ‘wanton destruction’ caused by diverse fishing styles using traps, weirs and poisons, even though there were no prior baselines and though both native fishers such as the ‘cadar’ [Kadar] and recreational anglers recalled impressive mahseer sizes in their fishing.⁷⁸ Day criminalised virtually all these fishing forms as destructive even as he acknowledged prevalence of local prescriptive rights over a few fisheries. Social hierarchies privileged viewpoints that judged certain fishing as fair or portrayed others as dishonest in relation to extraordinary fish that brought together India’s vast freshwaters and bountiful seas as property-in-the-making.

The interpretative braiding of angling facts with those drawn from English game law and criminal law underscored Indian fish as inchoate property of powerful lessees, vulnerable to criminality and in need of state interference. The next section outlines how a final decade of political reasoning by administrators and law-makers finally recast injury to fish, and the fate of the Indian Fisheries Act.

77. Section 23 of the IPC defines ‘gaining wrongfully, losing wrongfully’ as follows ‘A person is said to gain wrongfully when such person retains wrongfully, as well as when such person acquires wrongfully. A person is said to lose wrongfully when such person is wrongfully kept out of any property as well as when such person is wrongfully deprived of property.’

78. Several references, including Day’s own reports on Cyprinidae in Thomas’ *Rod in India* attest to large sizes of mahseer across varied geographies, including wide rivers and mountainous streams. See pp. 36–37.

4. THE FINAL ACT: FACT-MAKING BY STATECRAFT

The decades following 1880 were marked by a number of political changes, such as the inclusion of Indians in the Civil Service, the controversial Ilbert Bill by which Europeans could be tried by Indian judges, and the emergence of the Indian National Congress. These could be seen as shifts in the wider political field which upstaged existing social positions and made way for a new crop of aspirants. In the administrative practices of law-makers, the views of Local Government assumed a new degree of importance. By way of comparison, the Indian Forest Act of 1878 was passed within a matter of a few years of debate⁷⁹ and resulted in the setting up of the requisite forestry establishment. Despite Thomas' published pleas to promote pisciculture and legislation as a means to tackle food shortage from famines, nearly half a century passed before the law saw light of day. In this time, not only was fish agency reconfigured, but also the political field of state-subject relations.

The Delhi Conference drew consensus on the need for special legislation to settle future confusion about property rights in fisheries, game law interpretation of fish and injury to property.⁸⁰ The question that dominated subsequent concern was whether legislation would be beneficial or result in interference with the customs and usages of a restive population. This question was placed squarely before the Revenue and Agriculture Department in the 1890s, since it addressed two important concerns – those of taxation and food supply. The final correspondence⁸¹ on the Fisheries Bill between the Revenue and Legislative Departments highlight the process of weighing the experts' value-laden testimonies on facts about fish behaviour, supply and evidence of wrongful fishing against administrative values placed on expediency of matters of state such as interference by law. Studying over two decades of correspondence on the subject, in 1892, Under Secretary J.W.P. Muir Mackenzie declared Thomas's bill unsuitable and liable to cause 'irritation' of local governments. He reframed the objective of legislation as eventually empowering Local Governments themselves and not 'the creation or expansion of revenue, or the definition of rights in fisheries, but the increase of the food-supply obtainable from fish'.

The under-secretaries and secretaries engaged in a detailed debate on the 'evidence' for deterioration of fish supply, declaring the naturalists' and anglers' opinions as being 'interested' views. One secretary reasoned that, whenever asked about the supply of fish, both sportsmen and fishing classes stated that supply had decreased.

The value of the evidence of the latter class (fishing classes) is vitiated by the fact that they are unwilling to see introduced the reforms which would arrest

79. See R. Guha. 'An early environmental debate: The making of the 1878 forest act', *The Indian Economic & Social History Review* 27 (1)(1990): 65–84.

80. Revenue and Agriculture, NAI, 1888.

81. Indian Fisheries Bill, Revenue and Agriculture, June (A)(NAI, 1896): No 1-13.

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the diminution of the supply and the former (sportsmen) must be considered interested witnesses.

E.C. Buck, Secretary of the Revenue and Agriculture Department, countered this view, stating that 'sportsmen were after all the only intelligent witnesses available' whose 'evidence need not be rejected because they are interested'. P.P. Hutchins, another official, reasoned that fishers' evidence was 'all the more reliable' if it was against their interest, else they would be 'hostile witnesses' of the fact of abundant supply that was sure to be the outcome of legislation. Mackenzie reasoned that fishermen feared restriction involved in fisheries reforms and law and therefore preferred to state that the supply was still sufficient. He found professional fishermen's interests to be 'irreconcilably opposed' to that of the sporting angler, given that they 'did not care for the fishermen of the future'. Mackenzie's colleagues weighed these reasons and agreed that a 'simple and mild measure' was all that was called for, which would increase fish-supply in localities where it had diminished.

The Delhi Conference had feared that imposing mesh size limits would give rise to 'inquisitorial practices on the part of the subordinate establishments' tasked with enforcing the rules.⁸² In the 1890s, officials presented counter views to reconsider the material evidence of wrong-doing needed to justify mesh regulation and future prosecution. Mackenzie remarked that the offence of fishing with nets with meshes smaller than the regulation, could only be proven by producing the net. This might make false charges harder to generate, but was also a conducive setting for bribery and corruption. He reasoned that the power to search for such nets would also be liable to be abused but also, without such powers, the rule itself would be impossible to enforce.

There were two counter views regarding mesh size limits and their effects on fish themselves. Mackenzie cited the opinion of J. V. Stuart, Deputy Commissioner of Lalitpur, from the North Western Provinces on this matter,

The small nets would not only destroy fry but small fish which are well known enemies of fry, and mesh-regulation might thus prove to some extent destructive of the very class of fish which it is intended to preserve, by stopping the check which now exists on the multiplication of their enemies.

Another note from an official in Assam was produced which highlighted 'the great difficulty of distinguishing fry from other small fish', suggesting that the subject was simply too tricky to legislate on.

Despite Day's monumental ichthyological enquiries and Thomas's expert advice on the dangers from fishing practices, the administrative officers of the Raj's Revenue and Agriculture Department questioned these fish experts' attribution of blame to small meshed nets. By giving voice to dissenting views of officials from previous decades of fisheries enquiries, they resurrected fresh doubt about the culpability of small fish as 'enemies' of fry, in effect

82. Ibid., p11.

interrogating the transposition of established European piscicultural facts over Indian fish.

The question of the private rights to fisheries remained a prickly one. E.C. Buck fast-tracked this to an extent by stating that, although the right approach would be to institute a detailed process such as had been followed for the settlement of forests, he would not recommend the same now and risk causing further delay. He wished to see the entire issue settled within his fast-approaching tenure and not risk further delay. He proposed a law that would leave details of control to local governments to settle, 'for want of precise information and positive experience'. He attributed the delay in legislating to 'a natural hesitation to impose restrictions over the waters of the whole Empire which have hitherto been free of restriction from dread of unforeseen consequences and oppression of the people'.⁸³

In 1893, Under Secretary Sir P.P. Hutchins revised Thomas' 1883 draft (succeeding three earlier versions) and admitted that 'the draft has been so cut about that it may not be fully intelligible or may not hold together quite consistently'. In August of 1893, Hutchins' draft was circulated to the Council in India and, within a month, sent to the Secretary of State and the Legislative Department. Sir Harvey James of the Legislative Department brought up the need for the protection of estuaries and sea waters which Hutchins' draft had simply omitted. Marine spaces were reintroduced in the final version, with a simple clause extending jurisdiction to the sea to a distance of one marine league.

Denzil Ibbetson⁸⁴, Secretary to the Government of India in the Revenue and Agriculture Department was strongly opposed to many aspects of even Hutchins' watered down draft bill of 1893. To even this barebones legislation he voiced his strong objection, acknowledging the last-minute nature of his comments, at the penultimate state of its promulgation.

I cannot help thinking that this is one of those cases where, in trying to do good to the people against their will, we are apt to forget that, save in matters of the gravest importance, our first duty is to keep the people contented with our rule ... My feeling is strong that our great fault is over-governing them; and that nothing is so certain to render them discontented, and therefore so dangerous and unwise, as interference with their domestic concerns and daily life.⁸⁵ ... Moreover, any increase in the supply that may result will be too gradual to be appreciated by the people; while the restriction and inconvenience will be constantly felt by them.

83. *Ibid.*, p 17.

84. Ibbetson had served as a Settlement Officer in 1875 and census and caste reports for the Punjab. He was also a member of the Agriculturists' Relief Commission 1891–92 and would oppose 1907 canal uprisings in the Chenab in his role as Lt. Governor (Gilmartin, *Blood and Water*, p. 176)

85. NAI, *Indian Fisheries Bill*, p. 18.

Ibbetson's statements illustrate the administrative discursive practice whereby 'categories of emancipation were turned into categories of rule'.⁸⁶ He anticipated the views of irrigation officials concerned that the Water Cess Act in the state of Madras might antagonise landowners by taxation. Equally, he was concerned about the poorer masses' recalcitrance. The colonial administrator challenged the views of the fisheries experts, ichthyologist Day and angler-administrator Thomas, whose own narratives on preservation of fish circulated over the past two decades in published books and reports. Ibbetson concluded that, while fish were no doubt caught in a 'wasteful manner', there was only 'the scantiest evidence' and 'mainly bare opinion', to show that the stock of fish was decreasing. He especially objected to the sections on 'poaching', stating that it was the norm for the poorer classes in India to freely fish in water that was private property and that imperial notions might put exclusionary ideas into owner's minds where none existed before. He argued that the legal word would present limitations, even if it acknowledged customary rights.

It is easy to save customary rights on paper, but the courts require the strictest proof of a custom in derogation of the full rights of a proprietor. The contest will always be between the rich man and the poor man; the latter will not have the slightest idea of what sort of evidence is required; and, more so, he will make assertions that are obviously untrue, and support them by evidence that is manifestly false, and is bound to go to the wall.⁸⁷

Two more years passed after Ibbetson's remarks, and the Fisheries Bill saw more administrative debate on its applicability to various provinces and whether it would override existing local laws such as the Bengal Private Fisheries Act, 1889. The final papers that contain the penultimate discussions prior to introducing the Indian Fisheries Act were inaccessible in the archival record, leaving only a slim three-page document titled 'The Indian Fisheries Act' appended to the voluminous debates of the previous decades⁸⁸ – a sharp contrast to Thomas's forty-page Draft Fisheries Bill 1883 that would have prevailed over the Indian sub-continent. The final version, however, in a fell swoop brought state jurisdiction over sea fisheries; provided powers to local government to legislate over fisheries practice, ushering in a new, albeit muted, resource regime of freshwater and marine fisheries.

CONCLUSION

This paper offers a reflexive contribution to aquatic-marine environmental history, showing how disciplinary knowledge is wielded in struggles to

86. Mukherji, *Shadow of Empire*, p. xx.

87. NAI, *Indian Fisheries Bill*, p. 29.

88. Indian Fisheries Act (IV of 1897), Legislative (A)(NAI, 1897): No 47–58.

establish facts about the slippery subjects of aquatic-marine environments. Using Bourdieu's theory of practice, the paper has explored how symbolic capital, social position and habitus influenced fact-making in the putatively distinct epistemic fields of colonial fisheries technoscience, and colonial law and governance. This resulted in a fractured and scientifically hollow law on the one hand, but a successful act of colonial government and the reproduction of colonial inequality.

As an example of relational environmental history, the paper has shown how cultural practices coalesce and transfer across knowledge-practice domains, but also reveals mechanisms that makes them endure. It has argued that the analytical practices between the domains of law and science produced facts that were simultaneously scientific, social and moral. Such 'facts' on fish and fisheries were historically contingent and context-dependent, and derived from intersecting genealogies of truth-making and truth-makers (credible experts and witnesses of fact). Truth-making practices were shared by scientist-naturalists, administrators and civil servants, reminiscent of Shapiro's everyday 'cultures of fact'. Expert reasoning was not pre-ordained in these cases, but rather influenced by colonial reasons of state. Books and case law transported facts, made and reinforced expertise and served as archives of prior knowledge which endured as valued objects affording cultural capital within fields of imperial resource regimes. Non-human agency (of living and non-living entities) was of vital consequence in embodying observed and imagined properties, in circulating facts that were variously interpreted by humans depending on their social positions.

The IFA of 1897 ushered in and legitimised an enduring place for the state in the everyday practice of freshwater and marine fisheries and their governance in India. In its wake that lasted beyond Independence, the law-making process fixed the doxa of a pisciculture knowledge-ethic and regulatory imagination through deep and particularised cultural practices of colonial rule. It is by historicising entangled disciplinary words and deeds in shaping colonial resource regimes that epistemic practices of fact are made visible as politics by other means.