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Territories of conquest, landscapes of resistance: the political ecology of peasant cultivation in Dharwar, western India, 1818-1840.

This article complements my previous 'Cotton, climate and colonialism in Dharwar, western India 1840-1880', effectively providing a prequel to its narrative of failure of the most significant colonial cotton improvement project in nineteenth-century India.¹ Here, I look back at the initial period of emergence of colonial rule and explore the crucial antecedents of the cotton project which, I argue, lay in the flawed revenue policies of the new colonial administration, the lack of local knowledge and consequent focus on a series of misconceived crop experiments designed to secure higher economic returns from the local agrarian environment. The concept of 'agrarian environment' brings together research domains that have tended to be analysed separately in the historiography of rural India. As Agrawal and Sivaramakrishnan have pointed out, historical works on the period of major upheaval between the decline of the Mughal and Mahratta empires and the consolidation of British rule have largely failed to engage with the ecological dimensions of the changing agrarian world.² Indeed, agrarian studies of western India focussing on the districts of the old 'Bombay Presidency' during this period tend to be few and far between, with Dharwar and the Southern Mahratta Country suffering particularly from research neglect.

This paper is the first localised study of Dharwar during the crucial period of the onset of colonial rule, based on the 'interwoven dynamics' between the local agrarian and environmental worlds.³ It makes three essential arguments: first, that the excessive and unsustainable revenue burdens imposed on the local *raiya*s or peasant cultivators led to the strengthening, rather than the weakening of their survival-oriented customary crop choices; second, that the ideology of cultural superiority notwithstanding, the new rulers' struggled to understand, and thus secure desired agricultural outcomes from, an 'alien' rural environment; and third that the *raiya*s were able to make use of their more advanced environmental knowledge not only to maintain their habitual modes of cropping, but also to resist an initial 'improvement' project focussed on foreign cottons. As in my previous article, I draw on historical political ecology to explore the encounter between a contested colonial government's attempts to create territorialised spaces conducive to the growth of 'economic' crops, in particular cotton, and a vibrant local socio-nature, made up of both human and non-human (plants, soils, climate) actors, which often responded in unforeseen and subversive ways. Political ecology amplifies the concept of agrarian environment by emphasising the production and co-constitution

of landscapes by both human and non-human agencies; it represents a paradigm shift away from a simple focus on human influences (e.g. colonial power) bearing down on largely passive natural environments, to a more complex understanding of the productive, entangled agencies of the human and non-human.⁴ The theoretical perspective of political ecology signals a further departure from virtually the entire existing literature on the agrarian history of early British colonial western India.

While the 'question' of history has been addressed differently by political ecologists, I see the situating of time and place specificities as essential to any rigorous interpretation of human interactions with nature in the past. Historical political ecology needs to be concerned as much, if not more, by what mattered to people in the different pasts in their relationships with the environment, as what matters to us now. While digging into history primarily to shed light on contemporary situations, as Offen and Davis have advocated, is a perfectly legitimate enterprise, a more open and reflective approach might perhaps provide us with a richer perspective on alternatives than one that is merely concerned to invoke history as a supporting actor in an attempt to unravel a particular aspect of 'contemporary human-environmental relations'.⁵ A nuanced appreciation of historical difference might yield fresh and surprising insights into peoples' resilience in coping with and adapting to environmental stresses according to resources and ideologies available to them in different times and places. This can reveal not only continuities but also disjunctures between present and past conceptual frameworks, and is as applicable to the colonial as to any other historical period. This study, situated in the specific conditions of early British colonial rule in Dharwar, reveals the considerable ingenuity of the indigenous cultivators in responding to the new agrarian environmental challenges, while also suggesting the vulnerabilities, rather than the strengths, of the colonial order.

It relies on a close 're-reading' of the British colonial archive: although a crucial dimension of imperial hegemony, I view the colonial archive not as 'a neat and orderly world infused with transparent and unambiguous meaning' about how Europeans conceptualised colonised landscapes, but as a fragmented and unstable 'formation of documents, categories, stories and images', which reveal multiple, conflicting and contradictory interests, projects and agendas.⁶ The revenue records of the East India Company pertaining to Dharwar during this period suggest the extent of officials' reliance on different groups of indigenous informants for knowledge about land tenure, crops, soils, climate, as well as about cultivating and revenue collection practices. These documents emerged out of the immediate

necessities of early colonial rule, and offer a realm of possibilities for readings 'beyond words' that enable at least a partial recovery of indigenous perspectives.⁷ They thus reveal colonial knowledge as a 'fissured epistemological terrain', open to invasion by alternative voices, experiences and meanings. Moreover, alongside the will to power and presumption of cultural superiority, these texts also testify to some officials' doubts, anxieties and disagreements with superiors, sometimes accompanied by a critical disposition towards the colonial order itself. Revenue and agriculture oriented documents generated at a later period of colonial rule in Dharwar would not necessarily be motivated by the same needs and would generate different stories about the agrarian environment.

Early British colonial rule in India was dominated by the issue of tax revenues. Indeed, it was the securing of the *Diwani*, or the right to collect taxes, from the Mughal emperor in 1765, that established the East India Company's territorial power, initially in Bengal. For much of the remaining century of Company rule, the development of the colonial state was shaped by administrators' anxieties about how best to maximize revenues from an agrarian economy which they were culturally ill-equipped to understand. The perceived failure of the Bengal Permanent Settlement to produce stable taxable surpluses from the local *zamindars* (landowners), led to the emergence of an alternative model of revenue collection known as *raiyyatwari*, as the Company expanded its territories into southern and western India. Raiyyatwari involved by-passing the intermediary level of landlords and collecting land taxes directly from *raiyyats*, or peasant cultivators, in each village. Each cultivator was now assessed individually on the basis of the potential produce of his fields and given occupancy rights on condition that he paid his taxes. However, it was the colonial government that now claimed, on the basis of Indian precedent, ultimate ownership of all land under their jurisdiction subject to some exceptions. The new system was shaped and enforced by the all-powerful agent of colonial governance in the countryside, the Collector, who vested with new judicial powers, was required to accumulate 'intimate knowledge' of the land and people he ruled over.⁸ Unlike the zamindari system, which was partially based on liberal principles of minimal government, raiyyatwari thus plunged the state deeper into the rural world and the everyday lives of its Indian subjects, but its persuasiveness required levels of cultural respect and empathy which the colonial mode of hegemony precluded.⁹

ELUSIVE RAIYATWARI, OR THE ANXIETIES OF COLONIAL HEGEMONY.

Dharwar and the wider region of the 'Southern Maratha Country' (Figure 1) were conquered by Thomas Munro in 1817-18, in the wake of the final Anglo-Mahratta War, and it was Munro himself who had also founded the raiyatwari system as Judicial Commissioner in the Madras Presidency in the first decade of the century.¹⁰ Munro's presence in Dharwar for about a year as both imperial conqueror and administrator, enabled him to preside over the pacification of the district and to begin to implement a strategy of hegemonic territorialisation which he bequeathed to the Bombay government led by his fellow Scot, Mountstuart Elphinstone. Munro's initiatives involved attempts to win over both the restive *jagirdars* – the local landowning 'chiefs', and the rest of the peasant population by offering the former protection from the increased revenue demands of the Mahratta *Peshwa* (king) and by reducing the latter's land tax charges set by the Mahratta government.¹¹

[Figure1-map of SMC.pdf](#)

Conquest, however, proved the relatively easy part. Munro's self-assurance as conquering imperial overlord was quickly replaced by the anxieties of succeeding Bombay government officials as they discovered just how much of the best arable land in Dharwar the Southern Maratha Country was held in privileged tenure and not subject to state revenue assessment. This region was somewhat arbitrarily assigned to the Bombay Presidency even though it had, historically, been at the heart of the south Indian kingdom of Vijayanagara with its extensive *jagirs* (or 'little kingdoms') and *inam* lands. Established by successive kings since the sixteenth century, jagirs represented a system of privileged landholding by which the king conferred aspects of his sovereignty to jagirdars or local chiefs, often his government officials and revenue collectors. Jagirs comprised lands that came to be defined as *inam* (meaning gift of land conferred as an honour from a ruling authority) and in turn, jagirdars established their own authority vis-à-vis the lower orders by giving away some of this land to their dependants and service providers, such as village headmen and food producing farmers.¹² As Nicholas Dirks has shown, these gifts of land exempt from the burdens of taxation were part of a moral economy which allowed their numerous recipients, including cultivators, a life of relative security in the face of the uncertainties of the agricultural harvest due to the dry south's climatic unpredictability.¹³ Successive post-Vijayanagara regimes made great efforts to claw back alienated revenue for their own uses, and as we have seen, it was the Mahratta Peshwa Baji Rao II's bitter feud with the major jagirdars of the Southern Mahratta

Country over this issue that appears to have fatally undermined his authority and enabled Munro's successful military intervention.¹⁴ Moreover, the weakening of his regime also seems to have led to the awarding of additional 'non authorised' inams to a wide range of groups with interests in the land by the Peshwa's disaffected local revenue officers.¹⁵

The Bombay government thus discovered that almost half of the arable land in the Southern Maratha Country was revenue free.¹⁶ As late as the 1880s, alienated land still comprised almost a third of all arable land in Dharwar.¹⁷ Elphinstone's priority, however, was to secure the loyalty of the dominant local jagirdars as the indispensable class of regional collaborators and he quickly moved to reassure them that their hereditary jagir and inam possessions would be guaranteed according to 'the ancient custom of the Maratha empire'.¹⁸ But leaving the revenue-free lands of the inamdars largely undisturbed intensified a momentum towards high assessments in the remaining *sarkar* (government) territories, as the East India Company's Court of Directors brought increasing pressure to bear on the Bombay government to maximise its revenues so as to recoup the heavy expenditure on military conquest and its aftermath. As a result, there emerged a fundamental contradiction between the desired moderate assessment underpinning of raiyatwari and the immediate revenue needs of the colonial state: from the outset, therefore, raiyatwari and the hegemonic territorialisation it required were checked and subverted by the contradictory logic at the heart of colonial governance.

For the new rulers, the 1820s in Dharwar was largely a period of pacification involving unsettling, culturally fraught negotiations with indigenous groups, often leading to unexpected and unstable outcomes.¹⁹ In 1823, Elphinstone felt able to declare, on the basis of the initial settlement initiated by Munro, that the 'southern jagirdars were prosperous and contented'.²⁰ But barely a year later, violent conflict erupted upon the death of the *Desai* (chief) of the princely state of Kittur, a territory 20 miles north of Dharwar, over the unheralded issue of succession through adoption. The Bombay government refused to recognise the new Desai on the grounds that he had been adopted as heir without their express permission. As this was an issue of royal honour, a full scale insurgency broke out during which Dharwar Collector St John Thackeray was killed.²¹ At the time of his death, Thackeray was grappling with the problems of trying to give local shape to the desired new raiyatwari revenue system; but unable to find 'reliable' land records and unwilling to trust the views and evidence of local people, he decided to use the former Maratha collections as the basis for his initial land tax assessments of the

Southern Maratha Country 'collectorates'. With revenue maximisation initially foremost in mind, Thackeray enhanced the already oppressively high rates fixed under the last Peshwa;²² in Dharwar, this amounted to a net increase in tax assessment of Rs. 4 lakh (400,000) between 1819 and 1825.²³ Faced with complaints of over-assessment by the now individually taxed raiyats, he had attempted to reverse tack and had made some hesitant first moves towards 'raiyyatwari' by declaring these rates to be only temporary until a full survey and classification of all lands was undertaken. These classifications would establish reasonable revenue assessments which would be 'in force for many years', and he began this work by carrying out a survey of three Dharwar talukas in the early 1820s. Significantly though, he did not promise that the resulting 'government demands would not be greater than the amounts currently fixed'.²⁴

However, in the wake of the traumatic Kittur rebellion, William Chaplin, Revenue Commissioner for the Deccan, and an ardent supporter of Munro's raiyyatwari ideal, expressed his grave misgivings about the late Collector's initiatives and more generally about existing revenue policies. Addressed to his superiors in the Bombay government's revenue department, the reports that make up his 'Observations upon the state of Dharwar' (1825) draw upon extensive fact-finding tours of the district and conversations with a wide range of cultivating groups. As a result, we have a text that is partially shaped by indigenous voices while also testifying to Chaplin's own reflections on these encounters and his resulting anxieties about the impact of high assessments on the local peasant population. Chaplin observed that the raiyats had found the revenue increases in Dharwar over the last six years hard to bear, particularly in the eastern cotton-growing talukas; nor had the outcomes of Thackeray's more recent experimental revenue settlements proved successful, as the *jamabandi* (the expected amount of land revenue to be collected in a given year) in the newly surveyed talukas had remained unrealised for successive seasons. The Collector's revenue rates had remained excessive and contained 'many inequalities' because his surveys had not considered differences in soil quality in each of the categories of farmed, uncultivated and waste lands.²⁵ As a result, his settlements constituted 'an unsound basis for extending cultivation or improving the condition of the people'.²⁶

Overall, Chaplin continued, the cultivators of Dharwar were struggling against the 'three evils' of high rents, low prices due to 'the extraordinary depression of the prices of agricultural produce in the last two years', and scanty produce resulting from bad harvests owing to rainfall failure. They now found themselves unable to

pay even the former Mahratta revenue and their situation, he suggested, was 'partly due to a change of circumstances under our government'. Cultivators had seen their land rents increase significantly just as changes introduced by British rule were adversely impacting on their ability to pay. The policy of opening up more land for cultivation had simply led to a surfeit of the crops usually grown, resulting in a fall in prices throughout the district. In the eastern cotton-growing talukas of Navalgund and Ron (Figure 2), peasants were additionally suffering from the government's abolition of the indigenous cotton agency which had disrupted their accustomed markets and led to a drop in cotton prices. Finally, many sources of income previously available to the raiyat and his extended family, which he could count on to make up the revenue payments under previous Maratha administrations, had disappeared with the advent of British rule. In particular, the activities of the princely courts, the high number of troops, retainers, horses and cattle maintained by the Peshwa and his jagirdars had created a huge demand for all kinds of agricultural produce and straw forage and provided additional employment opportunities. The curtailment of these sources had reduced peasants' overall income; as a result, a serious situation was now emerging, Chaplin warned, as in most of the Dharwar talukas, peasants were abandoning much of the land previously under tillage because of their 'reduced circumstances' and their inability to meet their individual revenue payments.²⁷

[Figure2-map of Dharwar.pdf](#)

With British policies dampening demand, the agricultural depression identified by Chaplin was destined to persist beyond the 1830s in western and southern India. In Dharwar, it was marked by a fall in agricultural prices, with the price of the *jowar* (millet) food staple declining by half in the decade 1822-32.²⁸ The taluka of Navalgund in north-eastern Dharwar, provides a bird's eye view of the effects of early revenue policies on a depression-hit locality. Identified by revenue officials as particularly promising for an extension of lands under cultivation owing to the pervasiveness of cotton 'for which the demand may be considered unlimited',²⁹ it had been subject to one of Thackeray's initial 'raiyatwari' surveys. In spite of the agricultural depression and fall in cotton prices, revenue assessments were now based on the potential 'capabilities of the land' rather than on the 'value of the produce', and consistently set at a high level in the 1820s and 30s. Indeed, high assessments were meant to have a disciplining and 'improving' function which was 'to render imperative exertion on the part of the cultivator to raise produce enough to meet all demands on him'.³⁰ However, as the foremost revenue reformer George

Wingate later observed, these assessments were never realised in practice as they were 'much in excess of the capabilities of the taluka', in spite of 'bribes of waste lands given rent free, or threats of imprisonment and confiscation of property'.³¹ Unable to meet their payments, peasants reduced their cultivation or relinquished their lands altogether, heading for neighbouring jagir estates with their inam lands subject to lower taxation. As a result, tillage in some parts of Navalgund fell 'from three-quarters of the arable *sarkar* land to less than one-third' in the 1830s. Even in its most climatically advantaged *pargana* (sub-division) of Morab, with its fair rainfall, all the government villages were 'in a decaying condition' with cultivation and revenue reported as 'rapidly falling away'.³² In contrast, the neighbouring jagir territories were said to be flourishing, with extensions in land under cultivation and buoyant revenues which Wingate attributed to their more progressive assessment regime compared to the British districts. A similar situation appears to have existed elsewhere in Dharwar: in the southern taluka of Kod, where owing to excessive assessment 'only three-eighths of the whole quantity of arable land is under tillage and belong mainly to inamdars',³³ it was reported that, but for the cultivation of these inam estates, 'a large portion of the population would have been compelled to emigrate or been swept off by famine and disease'.³⁴ As David Washbrook has remarked, in the post-conquest period, inam may be viewed as a landscape of 'resistance', appearing in the eyes of the peasantry, as 'one of the few available means of preserving resources essential to social survival'.³⁵

Alongside the cultivation of inam lands, peasants had also devised a few other strategies to escape from highly taxed government land. One was to use their local knowledge to identify and occupy land offered on *kaul* terms (i.e. with minimal taxation): this was uncultivated 'waste' but potentially productive lands that colonial revenue officials were, following Maratha precedent, making available in a bid to increase the population of the district and bring more land under cultivation. Chaplin observed that 'the ryats know full well the characteristics of the land and will select and occupy the best, particularly if assessed and offered on *kaul* terms, relinquishing their currently cultivated lands, to the great detriment of the revenue'.³⁶ Here too, they were continuing a long pre-colonial tradition of local migration in search of fresh lands and new livelihoods when faced with oppressive taxation or climatic catastrophes.³⁷ Less frequently, there would be more open resistance: many cultivators of Morab, for instance, gained notoriety amongst colonial revenue officialdom for their non-violent resistance and readiness to go to jail rather than pay what they regarded as unjust tax increases.³⁸ Finally, some cultivators also held both government and inam lands at the same time, and it was

often the proceeds of the latter that enabled them to pay the assessment on the former.³⁹

In Dharwar therefore, as elsewhere in western India, raiyatwari remained an elusive project for colonial revenue officials throughout the 1820s and 1830s. A combination of the pervasiveness of inam lands, lack of local knowledge, and over-assessments of remaining sarkar territories, pushed the realisation of raiyatwari beyond immediate possibilities. During this period, almost half the arable land in the district lay outside the control of the Bombay government, while a third of 'state-owned' territory remained 'waste', as a result of depression-hit peasants actually reducing the area under cultivation.⁴⁰ Moreover, in their initial, hesitant field surveys, finding 'no authoritative record of original assessments, no reliable data, no correct lists of fields and their classification into sarkar and inam lands', Thackeray and his assistants relied rigidly on old Maratha assessment rates and struggled with an inadequate conceptualisation of local soils.⁴¹ Although the Bombay government appears to have recognised the intellectual strengths of Chaplin's critique, no corrective action was undertaken in practice, and Thackeray's survey and assessment remained the basis of all subsequent annual revenue settlements in Dharwar, until their radical revision by Wingate in the 1850s.⁴² Similarly, although the government set up an 'Inam Commission' in 1843 to investigate claims with a view to reclaiming much of the alienated land, lack of indigenous co-operation meant that very little was achieved by the end of Company rule in 1858.

WORKING WITH NATURE: PEASANT CROP CHOICES

Inam lands represented one aspect of the local agrarian environment that remained largely beyond the control of colonial designs. Moreover, the landscapes of Dharwar were not passively waiting to be moulded into colonial patterns by the new European rulers, but possessed their own power to act in the world, which impinged on and always threatened to subvert the intentions and actions of colonial power. From a political ecology perspective, landscape appears as 'an animate realm in-and-of-itself', possessing agency that is distributed across the various species and elements that make it up. These entangled human and non-human life forces are brought into being by 'a historical process of interaction in which both are shaped'.⁴³ Over time, landscape becomes legible and meaningful to humans partly through physical activity and labour. The peasants of Dharwar made sense and built up knowledge of their local environment as they prepared their fields, sowed food and other crops, and anticipated the arrival of the monsoon rains. In the process, they devised strategies to work with natural forces so as to attempt to secure the

optimum human subsistence outcomes, without ever believing that they could control or 'master' these forces. This brought them into conflict with the very different objectives and ideologies of the colonial state, which was anxious to prioritise crops, particularly cotton, that would yield maximum exchange value and boost revenues.

Although concrete statistical evidence relating to the actual proportion of Dharwar cultivators unable to meet their revenue demands is lacking in the sources for this period, contemporary observers' descriptions suggest that the majority of peasants, particularly in the eastern cotton-growing talukas, were living on the edge of their resources and were becoming increasingly prone to indebtedness. Chaplin's extensive fact-finding tour of these localities in the early 1820s suggested that peasants here had been particularly hard hit by the double whammy of over-assessment and agricultural depression, and the main aim of his reports was to make concrete proposals to relieve their 'distress'.⁴⁴ Writing a quarter of a century later, while preparing his survey and revised 'raiyatwari' assessment of the taluka, Wingate found that little had changed in Navalgund. Many of the landholding cultivators, he observed, 'are dependent upon the labour of each day for a meal, and possess no ostensible means of cultivating at all. By begging and borrowing they obtain a little grain and a couple of bullocks to sow their fields'.⁴⁵ Similarly, in the neighbouring southern taluka of Bankapur, 'the great body of cultivators' were described as being poor in farming resources, with 'stock so deficient in some villages as not to amount to more than 1 bullock to 30 acres of cultivated land'.⁴⁶ The plight of these poorer cultivators was made worse by the actual timings of revenue collection. In the villages of Navalgund, the annual revenue was collected in four equal monthly instalments, but the first collections from both the *kharif* (early) and *rabi* (late) harvests, in mid-December and mid-March respectively, were made before the crops were ready for sale on the market. To meet the revenue demand, cultivators were forced to borrow funds from moneylenders at high rates of interest. The result was growing indebtedness, for, as Wingate observed, 'while the revenue continues to be collected at this unseasonable period of the year, there is little hope of rescuing the cultivator from the hands of the money-lender, even under a revised assessment'.⁴⁷ Significantly, however, Wingate went on to emphasise that these poorer smallholders were not part of his plan for a revised 'raiyatwari' settlement, the primary aim of which, he argued 'should be to get rid of the whole of this class of people, whom it seems almost absurd to consider as cultivators'. He added that although 'a considerable reduction of cultivation may be the consequence of this

step, the loss of revenue will be next to nothing, for the individuals in question pay but little, while the lands they vacate will soon be occupied by better men'.⁴⁸

But a prosperous class of cultivators was hard to find in the early period of British rule in the Southern Maratha Country. Partially caused by the heavy land revenue demand and by the loss of previous sources of income derived from the extensive local royal courts and armies, the agricultural depression led to the near-universalisation of peasant petty commodity production, with the result was that 'virtually everybody in rural society became a "peasant"'.⁴⁹ One important consequence of increased material scarcity in an already ecologically vulnerable zone was that peasants focussed even more on their regular crops and relied on their knowledge of the local material environment to ensure their survival. This is not to suggest that indigenous knowledge fitted perfectly with existing environmental conditions. Its resources remained generally inadequate when faced with climatic events and natural hazards such as rainfall failure, droughts or floods. However, partly on account of these very experiences, peasants had been compelled by the demands of their livelihoods to build up a detailed, localised store of knowledge about climatic conditions that included skills in predicting rainfall and in adapting weather conditions to their cropping strategies.

Dharwar broadly comprised three climate zones, with a habitually defined contrast between a damp red soil west and a dry black soil east, but peasants were aware that micro-climates both between and within its various talukas tended to vary considerably. In the villages making up the 'wet' taluka of Hubli in the west, for instance, there were often marked differences between the hilly and flat parts of the same village. While the hills condensed the vapour of the clouds passing over them, causing frequent showers during the June to October monsoon months, on leaving the hills the clouds tended to float away at great elevation, only occasionally discharging rain over the plains.⁵⁰ Similarly in 'dry', cotton-growing Navalgund in the east, the westerly parganas of Morab and Rattigwad tended to receive more than adequate monsoon showers.⁵¹ In these circumstances, raiyats had come to identify specific local topographies of rainfall, groups or even parts of villages which they defined as *malnad* or *muladu*, i.e. belonging to the region of rain, and they had learned to recognise not only rainfall timings but also differences in duration and intensity. They had come to name the different falls of rain during the agricultural year, according to the 27 lunar asterisms and these functioned as markers of seasons; the different seasons were described as beginning or ending with a particular named rain, and the raiyats used these rains to inform the sequencing of their tilling

operations.⁵² Thus, the rains of the constellation of *Rohini*, between May 23 and June 4, signalled the start of the *mungari* or *kharif*, i.e. early, crop sowing season.⁵³ Peasants had also become accustomed to predicting the arrival of rain through plant and animal indicators within their local environment. These included the early ripening or rotting of fruit, the full bloom of neem trees, the sweating of goats (due to increased atmospheric moisture), the abundance of insects, the movement and chirping of birds.⁵⁴

Smallholders who made up the bulk of the *Lingayat* agricultural population oriented their crop choices around the production of jowar or jola (*sorghum vulgare* or Indian millet) designed to sustain family livelihoods and reduce the risks resulting from climatic hazards. A rain-fed, eco-friendly crop, jowar and its products served as the main food for the local population, with the grain being either broken down and cooked into little cakes or ground into flour and made into chapatis; the straw, moreover, provided the best fodder for their cattle.⁵⁵ Peasants used their knowledge of local soils and microclimates to optimise production of this crop as they were aware that it could withstand short-term drought conditions, remaining dormant in moisture deficient conditions and resuming growth with the arrival of more favourable weather. As a result, they were able to grow eighteen different varieties of this foodstuff, all maturing within 3-4 months of sowing.⁵⁶ Sixteen of these were *mungari* (early) crops, sown in June-July, at the onset of the south-west monsoon, drawing on the nourishment provided by the plentiful rainfall over the western red soil hills and on the greater moisture-retaining capacity of the black soil of the eastern plains where these monsoon rains were far less reliable.

The other two, known as *bili jola* and *kari-goni jola*, were finer varieties and generally preferred in the preparation of food. These were *hingari* (late) crops, grown solely on black soil, sustained by the more regular rainfall of the north-east monsoon over eastern Dharwar in September-October.⁵⁷ If the cultivators judged that these rains were adequate to ensure prolonged moisture in the soil after the monsoon, they would grow a second late grain crop, usually wheat or *gram* (pulses) to succeed, on the same fields, the early jowars.⁵⁸ Indeed, jowar was not merely a subsistence crop but, with a huge local demand for its straw used as cattle fodder, a surplus was produced for the market. In a region of climatic vulnerability, the crucial importance for smallholding raiyats of jowar food production, supplemented by the often considerable possibilities of local trade, was barely recognised by the colonial state even though cultivators' occupancy rights meant that it could do little to actually limit its production. Jowar did not feature in official 'raiyyatwari' thinking and policy

making as it was perceived to be a 'low value' crop for revenue purposes. This would not be the last time that the policies of British colonial agriculture officials designed to introduce or prioritise specific cash crops would fail owing to their refusal to recognise the importance of food crops for both local consumption and exchange.⁵⁹

From their knowledge of soil and climate, peasants were also aware that the deep moisture-holding capacity of the black soils was capable of hosting jowar and the local cotton known as *Kumta*, in a complementary pattern of rotation. Fields sown with jowar in one year would have cotton (and in some places, wheat) planted the next year, and vice versa.⁶⁰ Like jowar, *Kumta* cotton had a significant function in sustaining local livelihoods, with peasants careful to put aside the best of the harvested crop for home spinning (rather than for export), while the dry stalks were a cheaper alternative to firewood as fuel for cooking and heating.⁶¹ Again, as with jowar, its seeds were also used as food for cattle and its leaves for sheep and goats.⁶² Some of the high quality yarn produced in their homes by the labour of women was passed on to *darzis* (tailors) or to village weavers who were paid only for the labour required for the manufacture of the cloth the peasants desired. As a result, a colonial observer noted approvingly, 'a much better description of cloth, in accordance with the taste of the consumer, is frequently manufactured', underlining once again the raiyats' cultural attachment to cotton's use-values. The remainder of the yarn was sold to merchants and weavers in the market towns of the district for the manufacturing of a wide variety of cloths for the local population.⁶³

Jowar and *Kumta* thus had a productive ecological entanglement, their diverse and complementary properties meeting many of the essential needs of the local peasant population. In the 1820s and 30s, it was estimated that half of the cultivated *Kumta* cotton was consumed in the home market of the Southern Maratha Country and the other half exported, via the port of *Kumta*, to Bombay in the north (and from there mainly to China and in very small quantities, to Britain) and to Bangalore in the south. With more outlets for sales than for any other crop, cotton was always readily convertible into cash that raiyats could use to meet their land revenue payments. Nonetheless, its cultivation was always subordinated to the growing of jowar food crops. In fact, the smaller the farm, the larger the proportion likely to be taken up by subsistence food production. Wingate noted that while at least 50,000 acres of land were suitable for cotton production in the eastern localities of Bankapur taluka, actual cultivation was 'considerably within this estimate' as on small farms 'more than half of the land suited for cotton I imagine to be appropriated to the production

of food'.⁶⁴ Even a reasonably well-to-do raiyat, holding 30 acres of cultivated land would in a normal year set aside about 16 acres for jowar and not more than 8 for cotton.⁶⁵ Very often, it was much less than this: in the taluka of Dharwar, for instance, it was reported that very little cotton was grown at all even though 'the climate is admirably suited to the crop' and 'the prices of produce range higher in this district than in any other of the Collectorate'. The raiyats, however, found it 'more profitable to raise jowar from which, besides the grain, a large return is obtained by the sale of the straw in Dharwar and the villages along the Belgaum and Hubli roads'.⁶⁶ The raiyats thus appear to have perceived jowar as a more valuable all-purpose crop than cotton.

Peasants' knowledge and appreciation of their environment was also in evidence in their production and use of various kinds of manure to improve the soil, drawing on renewable elements from their immediate surroundings. The main type of manure used, referred to by colonial officials as 'mixed manure', was made up from cattle droppings and urine, leaves of cotton plants, stubble from crops, earth, weeds, and ashes collected in a pit in the compound of the raiyat's house and allowed to increase as required. The pit ensured the coolness required to prevent evaporation. One method was to throw the cattle urine, collected by ducts, into the pit, so that its saline properties and nitrogen would enrich and aid the fermentation of the manure. Just before the sowing season, the manure was carted to the fields, spread on the earth and ploughed into the soil. An approving British revenue official commented that the peasants 'have discovered what many in our own country seem yet to learn, that one of the best ways to retain the enriching properties of manure is to collect it in a *pit* and not in a *heap*'.⁶⁷

Another method was to get sheep and goats to eat the cotton plant leaves, the weeds and stubble, so that their urine and droppings could be used as manure. The sheep and goats would be moved all over the cultivated field to ensure an even spread. In this way leaves and grasses would be returned to the fields that produced them, but in a manner that fertilised and renewed the soil. Another type of manure used to enrich the soil, known as 'green manure', was produced from *guryellu*, a local black variety of the oilseed plant *sesamum indicum*. It was sown in late May or early June and grown for three months until it began to flower. It was then cut down by the *kunti* (heavy hoe) and ploughed into the soil, and considered sufficient manure for two years.⁶⁸ In areas of mixed arable/forest land, an alternative to using manure was the controlled burning of 'jungle' lands, with the soil allowed to lie fallow for a couple of seasons until the rejuvenated forest area sprang up again.

Burning released nutrients into the soil and got rid of unwanted brush vegetation, and had long been practiced by peasants as a sustainable mode of managing the local environment.⁶⁹

Among the elements of non-human nature that peasants relied on, none was more important than water. In the various localities of Dharwar, raiyats had developed water-harvesting practices based on traditional storage reservoirs or tanks which collected surface run-off during monsoons. These supplemented rain water, providing drinking water for both domestic and cattle use and enabling the irrigation of crops as required. Indeed, colonial officials were prone to wax lyrical about the sophisticated network of tanks they encountered, built in the time of ancient Indian kingdoms. In the southern taluka of Kod, for instance, they noted the many 'fine specimens' of tanks dating from the fourteenth century kingdom of Anegondi which drew on the numerous *nullahs* (natural water streams) that crossed the entire territory. In fact, they readily admitted that 'the number and size of its tanks for irrigation' together with 'its thickly crowded villages' provided 'abundant evidence that Kod was once a populous and flourishing district'. But from the vantage point of the late 1840s, the third decade of colonial rule, Wingate was compelled to note the painful contrast: 'now, unfortunately, all is changed. Its fine plains for the most part lie untilled, its tanks are choked with mud, its once populous villages have dwindled away to a few miserable huts'. Much of the land once devoted to rice, for instance, was no longer cultivated, the loss amounting to 7000 acres in relation to the survey of 1825. 'There can be no question', he added, 'that the state of many of the tanks has greatly deteriorated within the last 23 years, and that a considerable extent of land has from this cause become incapable of irrigation'.

Traditionally, tanks were maintained and improved by village communities as a cooperative undertaking, but the privatisation of land occupancy for revenue purposes had disrupted the 'capability of union' and the availability of 'the resources necessary for such considerable undertakings'. Wingate called on his Bombay government superiors – in vain as it turned out – to undertake a programme of waterworks as on this depended 'the development of the productive resources of this fine district',⁷⁰ boldly reminding them that the 'ruinous condition' of tanks constituted 'a standing reproach upon British administration'.⁷¹ The focus of the colonial state, however, was as we shall see, on new 'improvement' schemes. Restoration of water resources was given a very low priority on *laissez-faire* ideological grounds in the case of suggested new public waterworks – 'no needless expenditure should be incurred on irrigation works' was an oft-repeated mantra of

the Bombay government.⁷² Even in the case of simpler tank repairs to which raiyats were very willing to contribute, the increasing bureaucratisation of the Bombay government led to long delays in decision-making during which costs tended to escalate and be ultimately deemed to be excessive.⁷³

UNCOOPERATIVE NATURE: THE VICISSITUDES OF COLONIAL
'IMPROVEMENT'.

Water provision was not part of the arsenal of 'improvement' initiatives which, as from the 1820s, were identified as a fundamental aspect of colonial governance in western India. As Richard Drayton has pointed out, the verb 'to improve' originally meant making agricultural land profitable, a meaning that was carried into colonial contexts with new missionary zeal.⁷⁴ It enabled the identification of alleged deficiencies in local peoples and natural environments which required treatment by the science of European botany. Made up of low-value indigenous species, the deficient natural environment of western India and its passive peasants needed to be 'improved' and made productive through the introduction of foreign 'economic' plants that could be developed into profitable commodities and yield buoyant revenues once the raiyatwari system became fully operational.

In 1827, Bombay Governor Sir John Malcolm formally proposed the establishment of the Dapuri Botanic Garden in Poona to the Court of Directors, to be located on the grounds of the government bungalow he had acquired as a summer residence. Although partly modelled on the Calcutta Botanic Garden set up forty years earlier, Malcolm had some specific objectives in mind in the context of what he regarded as the agricultural 'improvement' requirements of western India. The purpose of Dapuri, he asserted, was 'utility alone'. A couple of decades before William Hooker made a similar argument to justify the expansion of Kew Gardens, Malcolm was aware that Dapuri required economic justification. From the superintendents of the Gardens already established at Calcutta, Madras and Ceylon, the Dapuri superintendent would 'procure from those places plants and trees, the introduction of which was desirable and particularly useful improvements for this part of India'.⁷⁵

Malcolm was particularly keen to see the 'culture of potatoes' and of other foreign vegetables introduced to local people: he did not have a particularly high opinion of jowar as a foodstuff and believed that the natives required 'not only example but every stimulus we can apply to rouse them to exertion in the pursuit of objects which are obviously for their advantage'.⁷⁶ Dapuri botanic garden would be Malcolm's contribution to the 'civilising' improvement of local nature, and he

possessed sufficient self-confidence to proceed with his plans without the explicit sanction of the Government of India: *a-posteriori*, the none-too-pleased Court of Directors authorised its setting up as an experiment.⁷⁷ It ultimately fell to the Edinburgh-trained surgeon-naturalist Dr Charles Lush to shape Dapuri into a functioning botanical space that would turn Malcolm's blueprint into reality. The Governor's estate comprised seventy acres and Lush's plan was to gradually use most of this area for botanical and agricultural experimental purposes, confidently asserting that the depth and quality of its black soil and 'a never failing supply of water' would enable the raising of 'everything which the colonists of Australia have been able to produce'.⁷⁸

In procuring 'improving' seeds, plants and trees for the Garden, Lush cast his net far and wide: there were cotton seeds of the Bourbon, Louisiana and Pernambuco varieties from America and Brazil, mulberry plants from Italy, China and St Helena for the breeding of silk worms. Tea and orange plants were brought from China, 'superior' Virginian tobacco from America, coffee plants from Mocha in Yemen, potato, celery and artichoke from Europe, yam from Mozambique and arrow-root from the Caribbean, acclimatised in Goa and Bengal respectively.⁷⁹ There were also a number of vegetable crops 'of European origin', which were held to be 'admirably adapted for clearing the land of country weed'. As one of Lush's main objectives for the Garden was to facilitate the introduction of different timbers into the region, teak and saule (weeping willow) plants were obtained from other Botanic Gardens.⁸⁰ Lush also emphasised the importance of experiments with 'superior' Lucerne grass which he regarded as crucial to 'the improvement of the vegetable food of man and beast'. The introduction of Lucerne and other crops requiring irrigation would also enable increases in land assessments and result in greater revenue for government. Equally promisingly, a local raja having expressed interest in receiving instructions on 'the English mode of cultivating the potato', a description of a successful experiment in cultivating 'large tubers' at Dapuri was translated into Marathi, sent to him, and circulated more widely to 'native gentlemen' who were at the same time invited to 'send gardeners to Dapuri for the purpose of learning our mode of cultivation in general'.⁸¹ Dapuri was to be an exercise in the production of a new hegemonic landscape that would demonstrate the superiority of European botanical and horticultural skills.

However, Lush appears to have held a number of misconceptions about the soil and climate at Dapuri. In his initial report of 1828 to the Bombay government, he referred, somewhat vaguely, to 'the general qualities of the climate of the Deccan,

the range of temperature and the moderate monsoons', which were allegedly consistent with the natural conditions that enabled 'the great extent of vegetable productions of other countries'.⁸² The ideology of cultural superiority inherent in the doctrine of 'improvement' precluded any real engagement with local peasant knowledge which would have helped Lush reflect on the 'natural conditions' that enabled the cultivation of a host of indigenous crops in the region and thus provided insights into possibilities for foreign plants. He would have discovered, for instance, that cultivators made distinctions within the local black soil according to depth and moisture-absorbing capacity, and that cropping choices were linked to different seasons and based on the most optimum combination of soil and climatic condition.

As it turned out, neither was the soil at Dapuri as deep as he had suggested, nor was water provision from the local river as easily accessible as he had imagined. The Garden had been set up in something of a rush, and botany was destined to play second fiddle to agricultural experiments with foreign 'economic' plants. After visiting Dapuri in September 1832, a French botanist, Victor Jacquemont, referred to it as 'le jardin soi-disant botanique de Dapour' ('the so-called botanic garden of Dapuri').⁸³ Soil and environmental misconceptions allied to a more general lack of local knowledge, ensured disappointing outcomes to these experiments. The 'finer kinds' of potatoes imported from Europe 'simply degenerated' as it was found that the black soil was not deep enough for 'their advantageous cultivation'. Soil and climate proved equally inhospitable to the coffee plants while the tea plants failed to thrive as 'the sun here is too powerful for the development of the young buds'; nor was the attempt to introduce 'a superior breed of silk worms' from Italy any more successful as, once again, they failed to prosper in the locally set up silk farms.⁸⁴

In these instances, colonial desire was confronted by the materially uncooperative characteristics of local nature, thwarting the designs of imperial 'improvement'. In others, it was belatedly discovered that a much touted foreign species was not actually as good as its local equivalent: thus, even though 'the natives were successfully growing' Lucerne grass, this was found to be not quite as useful or as economical as the local *Haryali* grass, Lush eventually realising that it was 'superior to all others as fodder for cattle which not only grows spontaneously but is very difficult to root out'.⁸⁵ The few successes with imported plants generally occurred in cases where they had already been acclimatised in soils elsewhere in India. With this information, indigenous gardeners were able to use their knowledge of the local varieties to grow the plants successfully. For instance, a species of yam originally from Mozambique had been brought to and grown in nearby Goa, and had become

known as the 'Goa potato'. Lush introduced it to Dapuri, and he quickly found that the species 'succeeds very well in the hands of the natives', confidently predicting that it would turn out to be 'more succulent than the common yams of this country'. In the light of such skills, the native gardeners were not keen to take up Lush's offer of horticultural instruction, and he confessed to only being able to keep 'sixteen boys for the purposes of training' as the Mahratta and Kanarese *malis* (gardeners) 'do not believe we can teach them anything profitable'.⁸⁶

Dapuri had received only lukewarm support from the Court of Directors who never viewed the Garden as a priority for government spending and resources. Thus, when Lush proposed, in 1836, that the Botanic Garden be established on a permanent, secure basis, its perceived failings were held not to warrant an upgrade in its status. More significantly, in the first decade of its existence, its performance was affected by the Bombay government's decision to set up, fund and prioritise experimental cotton farms in Gujarat and the Southern Maratha Country and the concurrent appointment of Lush to head the latter. Even while he was making plans for the setting up of Dapuri, Malcolm was under increasing pressure from the Court of Directors to come up with initiatives for 'improving the quality of the cotton grown in India through the introduction of new and better species' with the aim of 'rendering the produce of British India fit for the general consumption of the manufactures of Great Britain'.⁸⁷ This was merely the latest episode in a string of cotton improvement projects initiated in different parts of India at the behest of Lancashire since the advent of Company rule, but all of these sites, predominantly in Gujarat and south India, had proved unsuccessful. In appointing Lush, Malcolm was confident that his 'scientific knowledge' would make 'a great contribution to the success of the proposed experiments'.⁸⁸ Barely a year into his post at the Botanic Garden, Lush found that he had to divide his time and energies between Dapuri and the cotton farm at Sigihalli in Belgaum. 'Improvement' priorities were now redirected from the growing of a range of foreign plants expected to be successful over the longer term to focussing on one already available, cotton, held to possess greater potential to respond to immediate market demand and thus yield profit and increases in revenue in the short term. At Dapuri, Lush had already begun experimenting, on a small scale, with different varieties of both indigenous and foreign cottons with a view to ascertaining 'the reasons for the diminution in size of the pods and the shortening of the staple' already apparent in the case of the latter by the 1820s.⁸⁹

The cotton project was to involve ‘the introduction of the culture of superior kinds of perennial cotton and improvements in the indigenous mode of cultivation, cleaning and preparation of annual cottons’.⁹⁰ The Court of Directors were particularly keen that cultivators should be taught ways of making their cotton ‘more merchantable’ by careful cleaning as current consignments of cotton to England from western India were ‘almost entirely deficient of every property which is esteemed by the British manufacturer’.⁹¹ In spite of their rich local uses, Kumta and other indigenous cottons were never quite good enough for the British textile industry. Cotton thus represented, far more than any other plant, the translation of the ‘will to improve’ into an explicit programme of hegemonic persuasion. Cotton rendered the domain to be improved ‘as an intelligible field with specifiable limits and particular characteristics’, constituting a boundary between colonial experts possessing ‘the capacity to diagnose deficiencies in others, and those who are subject to expert direction’.⁹²

In December 1830, Lush decided to locate the main experimental farm at Sigihalli in Belgaum which, he later admitted, was not ‘what is usually understood by a cotton district’, rather than in the black soil lands of eastern Dharwar (Figure 3). His decision was based on wanting to identify a new environment for the introduction of foreign cottons far from the accustomed modes of cultivation of the Dharwar peasants, and also on cheap labour considerations. Experiments in ‘improved’ modes of cotton cleaning, he asserted, could be more easily performed in Belgaum ‘where no habits or prejudices interfere, and where labourers of the class required will work for a rupee a month in wages’, almost half the rate prevailing in the Dharwar cotton country.⁹³ Secondly, he stated that Brazilian Pernambuco cotton, one of the foreign perennials, seemed to grow well in the red rocky soil of Sigihalli and its environs where it could also be watered by a stream if necessary, whereas it had failed completely in the drier black cotton soils of Dharwar in 1829. Indeed, he believed that this cotton was ‘now locally naturalised’ and further proposed to experiment with Bourbon, Georgian Upland and Pernambuco perennials as well as with American New Orleans and Egyptian annuals. Lush’s plan was to extend the perennial cottons grown on the farm throughout Dharwar district once he was able to demonstrate their viability to, and incentivise local cultivators.⁹⁴

[Figure3-map of India.pdf](#)

Covering an area of 262 acres, Sigihalli Farm was almost four times the size of Dapuri Garden. Once again, however, Lush’s hopes were dashed, European horticultural efforts proving no match for the resistance of the local soil and climate

to the foreign cottons. After initial promise, the theoretically longer life Pernambuco plants became increasingly blighted and produced very poor crops. The plants of the Bourbon variety that were tried at the same time failed to come up at all, while the American green-seeded Georgian Upland and New Orleans degenerated rapidly, yielding nothing of value.⁹⁵ With the bulk of the foreign cotton experiments at Sigihalli appearing to fail by the early 1830s, Lush was forced into a change of heart and took American seed to the Dharwar cotton country to be sown by local cultivators. Here, he found that he had to offer cultivators in Navalgund 'considerable advances in price of about 30 per cent' to get them to sow this cotton and pick it 'clean'. But once again, the Upland plants tended to wither and deteriorate, although the peasants had some success with New Orleans. However, Lush discovered that this cotton only fetched a quarter of a pence more on the Bombay market than local Kumta cotton, so the experiment failed to give the American variety 'an additional value commensurate with the expense of preparation'.⁹⁶ He observed that 'prices for the coarser (Indian) cottons most in demand have risen in a higher ratio than those of finer quality of which there is a smaller consumption', and was forced to conclude that even if successfully grown, the foreign perennial cottons 'cannot be extended throughout the Dharwar district as the rise in value and extension of its own staple is sufficient to prevent this'.⁹⁷

In addition to lack of demand in a period of agricultural depression, poorer cultivators in particular had more fundamental reasons to be reluctant to grow the foreign cottons, as they made clear to the *mamlatdars* (indigenous 'heads' of talukas) sent by Dharwar Collector Baker to enquire into the matter. The perennial cottons took up a great deal of their limited land space for over a year, while the annuals, though sown at the same time and in the same fields as Kumta, 'took longer to come to maturity and did not come up so well'.⁹⁸ Nor were any of them as valuable as Kumta for cattle fodder. They informed Hubli mamlatdar Anand Rao that in addition to involving much additional labour and costs, these patterns of tillage disrupted their subsistence livelihoods interfering, in particular, with jowar cultivation whose variety and different periods of maturity over the agricultural season could no longer be accommodated. The presence of the 'exotic' cotton plants also hampered their customary grazing of cattle in the cotton fields during the month prior to the arrival of the south-west monsoon. As they prioritised the well-being of their cattle, these plants ended up destroyed in their small farms. Cultivation of foreign cottons, they concluded, 'should be undertaken by people of capital and not by those who live hand to mouth'.⁹⁹

The cultivators also found the foreign plants 'very delicate', observing that their seeds were more brittle than Indian cottons and thus impossible to clean with their habitual foot roller. The seeds ended up smashed and mixed up with the staple during the ginning (cleaning) process.¹⁰⁰ Improvements in local ginning practices were an important dimension of the colonial cotton projects, and hopes were high that the new state-of-the-art Whitney saw-gin, 'so easily worked that it can even be managed by slaves' according to one colonial official, would do for the new foreign and perhaps even Indian cottons, what it had apparently achieved for American cotton.¹⁰¹ In America, by revolutionising the speed at which the wool was separated from the seed, this machine was credited with enabling a massive leap forward in cotton productivity in the first couple of decades of the nineteenth century. In the Southern Mahratta Country, however, the staple of the American (and other foreign) plants had been transformed by exposure to the local environment, becoming more brittle and unstable, and it could not withstand the high velocity of the saws of the Whitney machines. The fibre of these cottons was often 'cut to pieces' and rendered useless for manufacturing purposes.¹⁰² In 1835, use of the Whitney saw-gin was forbidden by order of the Bombay government, bringing to a head the crisis in experimental foreign cotton cultivation.¹⁰³

The following year, acting on the advice of Collector Baker, the Bombay government resolved to shut down the Sigihalli Farm (together with the experimental farm in Gujarat) and discontinue the government-funded experiments with foreign cottons. It regarded the attempts to introduce new species of cotton and 'improved' modes of cleaning and cultivation as having failed, observing that even though the experimental farm had been in existence for almost six years, none of the cultivators in its vicinity had taken to growing any of the foreign cottons, nor had they 'in the slightest altered or deviated from their accustomed modes of cultivating, gathering and separating the cotton from the seed'.¹⁰⁴ The previous year, Lush had advocated precisely the opposite course of action: in a significant reversal of opinion, he had proposed that the Farm be extended by a thousand acres and be mainly devoted to experiments in the cultivation of Kumta cotton. This 'country' cotton, he now believed, 'was best adapted to the peculiarity of the local climate and had greater chances of regularly producing a fair crop than unnaturalised seed'.¹⁰⁵ Having set out to introduce 'superior' kinds of cotton and to 'improve' local peasants, the wheel had now come full circle and it was Lush himself who had been re-educated into acknowledging the value and resilience of the local species and the cultivating skills of the raiyats. He had been impressed, he observed, by the well-established principle amongst local cultivators 'that the best state in which cotton can be prepared for

packing is by separating the cotton from the seed as early as possible after it is gathered from the pod'. This, he added, 'accounts for the superiority of the state of the staple in cotton prepared by the foot roller', the latter being very effective in separating any impurity or dirt from the cotton.¹⁰⁶ Lush was now even prepared to see merits in the 'common primitive foot roller'.¹⁰⁷ However, his hopes of pursuing experiments with Kumta on an expanded farm did not materialise, the Bombay government viewing its maintenance in a period of retrenchment as 'a waste of public money', and at the end of 1836, the Farm was closed down for good.¹⁰⁸ Experiments with foreign cottons were to be resumed on a grander scale in the 1840s and would last for almost half a century, but few if any lessons were learnt from the failure of the cotton projects of the 1830s.

CONCLUSION

Nancy Peluso has recently observed that understanding how history is told or remains untold should be crucial to any political ecology analysis.¹⁰⁹ Reflecting upon this thought, I have suggested that historical political ecology can itself offer a conceptual lens for reading colonial documents 'against the grain' and for generating fresh insights about human-environment interactions from archival traces. Political ecology's sensitive attention to the agency of local producers, to the production of nature by human and non-human actors, and to the unravelling of the political and economic forces at work in colonial contexts, has enabled the contesting of official narratives and at least a partial reconstruction of the agrarian environmental history of Dharwar in the early British colonial period. At this time, new to the particular environments of Dharwar and the Southern Maratha Country, colonial officials required place-specific information from local informants about land tenure, crops, soil and climate in order to construct their particular modes of rural governance, in particular the desired raiyatwari revenue system. The records generated from these different 'worlds and visions brought into contact' convey a great deal of information about the local agrarian environment as well as about differences in how it was perceived.¹¹⁰ Essentially, colonial projects sought to maximise land and selective crop productivity for revenue purposes while peasant priorities focussed on using the land sustainably to produce a more balanced range of crops with a view to ensuring food and livelihood security.

These documents, therefore, do more than simply reveal 'how Europeans conceptualised "their" colonial landscapes' and the consequent material effects on the local environment and people.¹¹¹ As records of encounters, they include the perceptions of peasant cultivators whose responses to colonial projects and views

about their local agrarian world, needed to be at least partially acknowledged. Wingate's revenue survey and settlement reports, for instance, concerned as they were with reforming a failed land revenue system, needed to make some space to convey the problems faced by the local raiyats as a result of excessive tax demands, if only to support his own arguments. In this way, even though the records are heavily weighted in favour of colonial voices, they contain fragments and subtexts that shed a fair amount of light on the world of Dharwar peasant producers. These moments offer insights on the material and cultural factors underlying their crop choices and reveal a range of agricultural practices that were not always viewed unsympathetically by colonial observers on the ground. Moreover, the textual intrusion of indigenous voices and experiences can be read against the colonial priorities and perceptions set out in the larger narrative.

Colonial voices do not in fact present a unified hegemonic discourse on the people and agrarian environment of Dharwar; rather, they appear as fragmented and contradictory, reflecting the fragile architectural edifice of a contested colonial power engaged in fraught and unsettling negotiations with 'strangers'. During this period, hoped-for colonial outcomes were more often than not unsuccessful, generating documents that betrayed the anxieties of dissenting officials. Misgivings about initial revenue policies led to Chaplin's field tours of Dharwar and his discovery of their devastating impact on local cultivators. As a result, he became the most vocal early critic of over-assessment, and his reports provide a record of the declining condition of the peasantry in the early years of British rule. In the same vein, Wingate's survey reports, which attempted to reconstruct raiyatwari from the ruins of over-assessment, include the frank admission that initial revenue policies had been disastrous as well as bold criticism of the Bombay government's failure to construct and renew water conservation sources such as tanks. Situated in the early period of British rule in India, these documents could not of course have the same intent, scope, depth of knowledge and therefore the 'subversive' impact recently ascribed by Helen Tilley to the African Survey carried out a century later by colonial scientists at a time when anti-colonial ideological forces were gathering momentum.¹¹² Nonetheless, they reveal some of the tensions and contradictions of colonial rule in western India at this initial juncture. Reading against the grain has therefore involved paying particular attention to fragments or moments where anxieties are expressed, critiques formulated and plain failures openly acknowledged.

NOTES

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