

# Biology and Utility, Meanings and Histories

*Since its origin in Indian agriculture, cotton has been facing various problems with the most recent being a wave of farmers' suicides. But, amidst all the crises, cotton has a significant role in India's political, economic, symbolic and aesthetic culture. It carries beauty, meaning and identity. A country like India without cotton is unimaginable. Highlights of the written documents presented in a recent workshop.*

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A workshop on Indian cotton, co-organised by Ronald Herring and Ann Grodzins Gold for the South Asia National Resource Centre a consortium of Cornell and Syracuse universities in the US, took place on April 29-30, 2005 in Ithaca, New York. Our problematic was:

Indigenous to the south Asian subcontinent, cotton has carried especially powerful meanings – political, economic, symbolic and aesthetic. Varieties, qualities, and costs of cotton were important to the British imperial project in India. Symbolic politics around self-reliance and self-rule featured cotton during the anti-colonial struggle. Independent India now plants more cotton acreage than any other country, yet yields are among the lowest in the world and quality is uneven. Suicides among cotton farmers dramatised links between cotton cultivation and technical change in agriculture under globalisation. Cotton was the first transgenic crop approved for cultivation in India; this decision involved large-scale political controversy. Reverse 'biopiracy' of Bt cotton genes from Monsanto has been both hailed as the act of an indigenous 'Robin Hood' and denounced as a slippery slope of biological pollution and genetic roulette. On agronomic grounds, cotton seems incompatible with sustainable development: the toll on soil and water and people of toxic externalities is difficult to justify; returns are unstable, indebtedness endemic. Yet home-spun cotton was of central symbolic importance to Gandhi's 'satyagraha', to understandings of colonial rule and resistance; rhetorical battles around globalisation today frequently

appropriate the cotton imagery of the independence movement. Once woven into cloth – dyed, printed, embroidered – cotton plays significant roles in the art and identity of specific communities, as well as commerce. However deep or disputed the problems of cotton cultivation, it is hard to imagine an India without cotton.

Putting cotton itself – as plant, wealth, cloth and artistic medium – at the centre of an interdisciplinary conversation energised cross-currents of discourse – agriculture and aesthetics; rural and global. In this summary, we highlight only the written contributions. Chairs and designated respondents included Alaka Basu, Richard Bownas, Alicia DeNicola, Geraldine Forbes, Chandra Talpade Mohanty and Milton Zaitlin. Contributions from the floor were numerous, but undocumented. Some materials are posted on the website: <http://www.einaudi.cornell.edu/southasia/conference/cotton/>.

## Seed and State

Ronald Herring, opened the workshop with a paper that rhetorically asked "Is There a Case for Growing Cotton in India?". Cotton competes with sugar for the crop causing the most misery in human history. Herring noted that heavy pesticide loads in India poison people, water and creatures – including insects that prey on cotton pests, deepening an unvirtuous cycle. Pesticides for cotton consume more than half of India's pesticide bill. Residues of pesticides in soft drinks created a major stir and even led to the banning of some beverages by Parliament in 2003. Cotton absorbs fungible water, hard currency, government subsidies and land – all with

high opportunity costs, but with insecure returns for average cultivators, as dramatised by the wave of suicides in the cotton belt which began in 1998, especially in Warangal district, Andhra Pradesh. Transgenic [Bt] cotton has spread rapidly underground, first from the small seed firm Navbharat, and then from farmer to farmer, evading national regulatory authorities and undermining India's biosafety regime mandated by the Cartagena Protocol.

Though transgenic cultivars evidently improve farmer profits and reduce pesticide use, as in China and other countries, many in the scientific community in India fear the genetic roulette unleashed in the countryside. Moreover, Herring explained, powerful political forces continue to oppose all products of genetic engineering. As in the colonial times, the state (specifically the Genetic Engineering Approval Committee in Delhi) referees cotton varieties, mediating pressures from cotton farmers and their organisations and opponents of transgenic crops by allowing some cultivars in some states at different times and not others. Farmers tend to ignore this complex regulatory frame, growing whatever works best and back-crossing their own transgenics. International market rigging by richer nations depresses international prices of cotton; and despite the WTO rule against US cotton subsidies for this reason, the ability of the US state to delay compliance does not augur well for immediate relief to cotton farmers worldwide. Moreover, improvements in yields in nations such as China – where both government and private Bt cottons are dominant among farmers – create stiff competition.

Cotton has long been a matter of state, as explored in the paper 'Bureaucratic Hubris and Peasant Resistance: Colonial Cotton Improvement and Its Failure' by Sumit Guha. International trade in raw cotton took off in the later 18th century – beginning with the English East India Company's desire to find commodities to sell the Chinese before the expansion of the opium trade. Cotton-growing districts of Gujarat were acquired early to extract raw cotton in lieu of taxes. The explosive growth of cotton manufacturing in England from the end of the 18th century soon outstripped supplies of raw cotton from the Mediterranean; Indian and American cotton began to supply British manufacturers. American cotton was much preferred, but anxieties concerning its supply

began as early as 1809. The East India Company was already functioning as an arm of the home government which was, in turn, feeling the pressure of the rising manufacturing interest in England. Alarmed at the trend of US policy preceding the war of 1812, the court of directors explicitly urged promotion of “a liberal supply of cotton wool” from “our territorial possessions in Asia”. As British manufacturers saw their margins decline, they turned not only to technological improvement and speed-up, but also to the efforts to lower labour and raw material costs by consistent pressure on the British Indian administration to ‘improve’ Indian cotton.

Colonial officialdom consequently began a campaign to teach the peasants of India how to farm. An early enterprise was the translation of a tract on cotton farming originally intended for west Africa into Gujarati! (‘Seeing like a state’ requires flattening variation across ecosystems and peoples.) American cotton planters were recruited to stimulate the knowledge infusion. Peasant resistance to promotion of new seeds was met with coercion by officials eager to impress their bosses with successes in the field. The consistent assumption was that farmers could not recognise their own interests. In an interesting parallel to some modern NGO discourse, this recalcitrance was attributed to either their ignorance or to their being manipulated by capitalist forces. Peasants thus needed a coercive emancipation from local exploiters. A formal structure of control – the cotton department – was created for improving the quality of cotton exports from India. It was headed by a retired army officer with a Victoria Cross, but no agronomic experience.

Despite state hubris, peasants pursued a stealthy independent programme of seed diffusion and selection. There is a historical precedent for the contemporary underground spread of Bt cotton cultivars contrary to Delhi’s bio-safety regime. Guha noted that it was only after the failure of ‘coercive improvement’ that the newly created agriculture department began to try to work collaboratively with farmers to evolve commercially viable selections. This effort began to succeed in the 1930s and 1940s. By the end of that decade the Nehruvian programme of autarkic economic development once again began to regulate peasant farming in ways eerily reminiscent of colonial war-time controls. Coercive paternalism cut-off growers from their export markets and price controls

compelled them to subsidise an increasingly inefficient mill industry.

## Encounters with Bt Cotton

The pesticide treadmill that threatens India’s farmers and ecologies has two solutions – organic farming and transgenic insect-resistant cultivars. Each is presented as the antithesis of the other, in India and internationally. This construction by public intellectuals is not unchallenged on the ground. Devparna Roy explored local understandings in her paper: ‘To Bt or Not to Bt? Controversy among Organic Cotton Farmers in Central Gujarat’. Roy found that the “firewall between genetic engineering and organic agriculture” was not shared by farmers making seed choices. Data from 30 self-identified organic farmers in Gujarat fell into three categories – first, least surprisingly, those who argued that Bt cotton cannot be a part of organic farming and second, surprisingly, those who argued that Bt cotton is consistent with organic farming. A third category consisted of those who were undecided.

Farmers who argued that Bt cotton is inconsistent with organic farming subscribed to an organismic view of nature – that nature is composed of the current range of organisms, which are the basic units of a natural order. More pragmatically, these farmers feared negative impacts of transgenics on soil fertility. The opposite position – that Bt cotton is consistent with organic farming – was held by farmers who insisted that a gene from a soil bacterium – and not a synthetic chemical pesticide – had been put into the cotton plant, enabling the plant to make its own (organic?) pesticide. This plant-made toxin is one commonly used in organic agriculture throughout the world in foliar applications, though in a more costly and less efficient way. These farmers believed that Bt cotton did not affect soil fertility. In practice, several of the self-identified organic farmers who in theory rejected transgenic cotton grew Bt cotton in 2003-04 and were considering growing Bt cotton in 2004-05. Hybridity of views among cotton farmers on the ground seems as common as hybridity of the cultivars they grow.

Devparna Roy’s paper re-energised the discussion of whether ‘Bt cotton has failed’, as often proclaimed. Stone was critical of both GMO boosters and critics who have taken limited (sometimes tainted) studies of performance as verdicts on Bt cotton

in general. The Bt seeds from large firms like Mahyco/Monsanto and Raasi may contain the same gene as illegal Navbharat 151, but the political economy and effects on the cultivator are quite different. Stone suggested that Navbharat was successful partly because it skirted regulatory protocols, which impede development of locally adapted cottons. Moreover, this cotton decoupled the Bt trait from the concerns over globalisation, bio-colonialism, and ‘Monsanto imperialism’ that polarise politics. Bt cotton has succeeded in China partly because it is being bred locally and illegally. If biotechnology firms and NGO critics were concerned about the plight of Indian cotton cultivators, they might reconsider the Navbharat scenario.

Ron Herring countered that the problem is conceptual and operational; biologically there is no such thing as ‘Bt cotton’, but rather multiple cultivars with and without the Bt (Cry 1Ac) gene, some suited to certain circumstances better than others. Wilting, short staple length, yield – all are characteristics of cultivars, not of a single gene that codes for one protein toxic to a class of insects. Herring noted that the pervasive phenomenon of spurious seeds complicates matters further and neither farmers nor researchers can readily determine whether or not a cultivar claiming to be Bt is authentic biologically – or a knock-off sold by hucksters attempting to cash in on the Bt mania that followed the discovery of insect-resistant Navbharat 151 in Gujarat during the great bollworm rampage of 2001.

Glenn Stone’s paper considered Bt cotton in light of information flows into and among cultivators. He argued that it was essential to break down the ‘skilling’ process whereby farmers adjust to changing conditions and incorporate new technologies into management strategies. Skilling must be based on environmental learning, either from observation or indirectly from social learning. When problems of recognisability and hurried technological change impede skilling by observation, farmers rely increasingly on social learning which is in turn based on lack of observation. His data show that deskilling has led to strongly localised and ephemeral patterning in cotton choices with virtually no agronomic basis.

Workshop participants asked if this conclusion resonated with Sumit Guha’s report of colonial suppositions that Indian cotton farmers were ignorant. No, replied Stone; ‘de-skilling’ results from rapid

transformations in environment and technology coupled with tenuous and deceptive information flows. This situation predated the 2002 arrival of Bt cotton, but Bt cotton has exacerbated the underlying problem: while offering protection against one serious cotton pest, it has brought new problems in recognisability and accelerated technological change.

Stone's presentation underscored the contemporary symbolic importance of cotton seeds to state and civil society. Farmer suicides have been attributed to new seeds, as have significant increases in yields and reduced pesticide use; cotton farmers themselves confronted great controversy in adapting to new seed choices introduced by transgenic cultivars. Spurious seeds multiply, with claims of Bt and not-Bt at different price points. Neither state nor market provides authoritative knowledge. In Devparna Roy's study, Gujarati farmers nevertheless seem able to manage their cotton choices; Glenn Stone's account of Andhra Pradesh presents farmers as overwhelmed by complexity, generating a puzzle of state-level variance within the larger problematic of Indian cotton.

### Beauty, Meaning and Identity in Cotton Cloth

Later in the workshop the focus shifted to cotton beyond the fields, transformed into cloth. Both papers dazzled participants with colour slide illustrations. Farhana Ibrahim delivered a paper based on her doctoral research in Gujarat: 'Cloth, Identity and Authenticity: Creating Community through Clothing in Kachchh', drawing on her ethnographic research among the jatts – a pastoralist community that once scattered across Kachchh and Sindh. Some jatts continue a mobile and pastoral life along the border with Pakistan, while others have become more sedentary. Kachchh is known for its richly embroidered cotton fabrics and recently, NGOs active in this region have helped establish market channels for these handicrafts to an upmarket clientele in India and, increasingly, overseas.

Ibrahim showed how some jatt communities use traditions of clothing and embroidery to sustain a moral community, providing some autonomous space vis-à-vis pressures of both state projects and Islamic reformists. Ibrahim argued that for the jatts producing themselves as essentially moral subjects – through an embodied

discourse on clothing – becomes a strategic response to the otherwise stigmatised subject positions in which they may be confined by both the orthodox religious as well as the supposedly more secular-liberal state perspectives.

The centrepiece of this strategic importance of cotton lies in the distinctive garment prescribed for everyday wear for all jatt women. A long flowing red dress, gathered in and tied at the waist, is covered in the front with a large square patch of dense embroidery called 'ghor'. While in earlier times the dress was made of the same coarse hand-woven cotton cloth on which the ghor is embroidered, women today prefer lighter cotton or even synthetic fabric for the dress, but the ghor continues to be embroidered as before. Ibrahim elaborated on a particular lineage, the Garasia jatts, who strongly associate their women's distinctive dress with an ancestral female figure often called 'Mai'. Garasia jatts refer to women's garments as a gift bestowed by Mai – a gift bearing a deep sacred power. Even when worn out, this dress must be handled with utmost ritual care. Garasia jatts are opposed to marketing their embroidery and resist pressures to do so – whether by NGOs hoping to increase cash flow into the community or by Islamic reformists who urge them to give up the 'superstitions' and associated clothing relating to Mai. For these jatts, the ornate cotton ghor is a medium for moral community, agency and identity in a world of transnational pressures both economic and religious.

Whereas Ibrahim focused on multiple meanings of cotton for a single small community in Gujarat, 'Aesthetic Expressions in Cotton', by Banoo J Parpia, offered a breathtaking panoramic tour of fine cotton textiles throughout the south Asian history. Cotton as 'India's gift to the world', was the overarching theme. She and her husband, Jeevak Parpia, are collectors driven by a passion for Indian cottons and Indian textiles. Parpia described their "aesthetic approach" to textile collecting as grounded on the distinctive Indian definition of 'art' based on the concept of 'rasa'. She believes that ordinary objects, whose creators are usually anonymous, can provide an aesthetic experience entirely dependent on the viewer. Her approach rests on an appreciation of materiality as an expression of culture.

Parpia pointed out that India's historical pre-eminence in producing cotton textiles continued unbroken from antiquity to the

industrial revolution, when mechanical spinning and weaving machinery in Britain presented a serious challenge. Archaeologists in 1921 discovered a fragment of woven cotton attached to a silver vase belonging to the Indus Valley civilisation. This cotton was cultivated, not wild; and the fibers were dyed – an evidence that the fabric was decorated and embellished using highly sophisticated skills. Parpia traced evidence of Indian cotton in Babylon, ancient Greece, Rome and Arabia, and showed the artistry, elegance and amazing variety of cotton textiles produced in India in more recent centuries. Indian cottons have been prized throughout the world for their fineness of weave, brilliance of colour, rich variety of designs and a dyeing technology which achieved an unrivalled fastness of colour.

One striking continuity connected these two papers: the importance of non-utilitarian uses for cotton. Parpia's list resonated with Ibrahim's Garasia jatt case – cotton textiles serve as indicators of rank and signifiers of prestige and status; they have spiritual and ritual importance and are ascribed protective and healing powers and are understood to have a transformative effect on wearers.

### Corporal and Corporate Economies of Production

Both contributions to the final session moved beyond the world of woven cotton as an artistry and an identity to issues of production and utility; both looked at their topics at least partially through the lens of gender. 'Common Histories, Divergent Paths: Cotton, Jute and Coir', was co-authored by Shobha K Bhatia, Jennifer Smith and Corri Zoli. While Bhatia and Smith drew on their fieldwork on coir and jute production in Kerala, Zoli traced some of the history of cotton in colonial and post-colonial India.


In this unusual collaboration between two engineers and a humanist, the authors, in three distinctive but harmonious voices, situated recent research on natural fibres in the context of cotton's long history. They addressed commonalities and differences in historical, technical and social aspects of the three crops – including impact on workers (primarily poor rural women) – similarities in positions within international political economy (first/third world relations); the role of culture and advertising in global marketing and the 'gendering', 'classing' and 'racing' of

labour relationships in India. They pointed out that issues around production of cotton, jute and coir offer a window into the history of colonialism – thus linking back to Guha's paper. With their focus on gender, and specifically on women's labour in the cultivation and production of natural fibres for industrial uses, Bhatia, Smith and Zoli provided a segue into the workshop's concluding presentation.

Priti Ramamurthy gave the day's final and appropriately culminating talk, 'Cotton Body Politics and Inter-generationality in Andhra Pradesh'. Ramamurthy's work was an inspiration for the workshop organisers from the beginning. Her paper began appropriately with moments in her own intellectual trajectory during 20 years of involvement in the study of cotton. Ramamurthy has approached her subject through a methodology which she describes as a feminist commodity chain analysis. In one of several earlier publications around cotton issues, she tracked a 'madras' cotton shirt as it moved across national and cultural boundaries, to look at specific

articulations of power, meaning and practice. This included textual analysis of a series of Land's End ads in the US juxtaposed to changing gender and sexual relations in cotton-growing Andhra Pradesh. Her paper highlighted the convergence of strands of agricultural production, cultural meanings, and global economics.

Child labour, mostly of girls, is critical for hybrid cotton seed production – which Ramamurthy calls "floral sex work". Not only were the hybrid cotton buds which were being manually cross-pollinated sexed as male and female, but girls' labour was naturalised as being particularly suited for this work through discourses of physical suitability and, particularly, of sexuality. Floral sex work is constructed as only appropriate for girls pre-menarche; if older girls are employed they are expected to stay away when they are menstruating lest they "destroy the entire crop". Of course, these practices, she points out, engage broader issues of child labour that raise conflicts with aspirations of nationalism and modernity.

In introducing what she calls the 'corporeal politics of cotton', Ramamurthy returned the workshop to the wave of farmer suicides in Andhra Pradesh, originally raised by Stone and Herring. She discussed three ways farmer suicides are being politicised: as representations of state failure in electoral politics; as technologies of governmentality in the realm of policy and as elements of inter-generational justice. These 'excessive obsessions' with two sorts of cotton bodies – suicides and the seed-cotton girl child – obscure the 'absences' of some cotton bodies from popular discourse – for example, those affected by soaring infertility rates in the wake of 30 years of growing cotton with heavy doses of pesticide. In concluding, Priti Ramamurthy suggested that a refigured conception of justice across generations might transform stories of personal suffering associated with cotton to matters of public concern and action. 

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