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**The Legitimation of Risk and Democracy:
A Case Study of Bt Cotton in
Andhra Pradesh, India**

Elaine Desmond

**A thesis presented for the qualification of PhD
National University of Ireland, Cork
Department of Sociology,
School of Sociology and Philosophy,
College of Arts, Celtic Studies & Social Sciences**

December, 2013

**Head of Department: Dr. Kieran Keohane
Supervised by: Dr. Kathy Glavanis-Grantham
Dr. Gerard Mullally**

Contents

Acknowledgements	vi
List of Appendices	viii
List of Tables and Figures	x
Abstract	xii
Glossary	xiii
Abbreviations	xvi
Map of Andhra Pradesh, Telangana and Warangal	xvii
 <u>Chapter One</u>	
Introduction: Bt Cotton and the Struggle for Legitimation in Andhra Pradesh	1
1.1 Thesis Overview and Contribution	1
1.2 Bt Cotton and Agrarian Risk in Telangana and Warangal	12
1.3 Risk Definition and the Legitimation of Democracy in Andhra Pradesh	20
1.4 Layout of the Thesis	28
 <u>Chapter Two</u>	
The Indian Village and a Differentiated Exposure to Risk	33
2.1 Introduction	33
2.2 Agrarian Crisis and the Differentiation of Risk in Village India	33
2.3 Caste, Land-holding and Gender in Social Risk Positions	40
2.4 Reform and the Renegotiation of Power Relations	47
2.5 The Struggle for Legitimation and Bt Cotton	53
 <u>Chapter Three</u>	
Bt Technology and Democratic Legitimacy in Indian Politics	67
3.1 Introduction	67
3.2 The Indian Context and the Institutionalisation of Democracy	67
3.3 The Core-Periphery Model and Crisis in Relations of Definition	73
3.4 Democratic Legitimacy as a Circulation of Power in Knowledge Construction	87

Chapter Four

Bt Cotton and the Struggle for Legitimation in Telangana and Andhra Pradesh 98

4.1	Introduction	98
4.2	Bt Cotton and the Legitimation of Neo-liberalism in Andhra Pradesh	99
4.3	The Negotiation of Risk and the Telangana Armed Struggle	107
4.4	Agrarian Risk in Telangana and Warangal	113
4.5	The Telangana Movement and Bt Cotton	122

Chapter Five

Methodology: The Social Construction of Research into Risk 130

5.1	Introduction	130
5.2	The Social Construction of Knowledge and the Ontology of Risk	131
5.3	Ethnographic Research and a Bi-Level Constructionist Approach	134
5.4	Researcher Positionality in the Research Process	145
5.5	Power and Ideology in Critical Discourse Analysis	155
5.6	Ethics and the Legitimation of Research into Risk	161

Chapter Six

ANALYSIS PART I: A Comparative Analysis of the Differentiated Risk Exposure of Village Participants in the 2010/2011 Cotton Season 166

6.1	Introduction	166
6.2	Village Overview	167
6.3	The Village Risk Coalitions	173
6.4	Actual Results for the 2010/2011 Season	183

Chapter Seven

ANALYSIS PART II: Legitimation and the Micro Level Construction of Risk in the Villages 204

7.1	An Overview of Perspectives on Bt Cotton by Village	204
7.2	Legitimation and the Construction of Risk by Village Participants	209

Chapter Eight

ANALYSIS PART III: Legitimation and the Meso Level Struggle to Define Risk in Andhra Pradesh State Politics	242
8.1 Introduction	242
8.2 The Discourse Coalitions	242
8.3 Legitimation in the Meso Level Definition of Risk	244

Chapter Nine

Discussion: Power Relations and the Legitimation of Risk and Democracy	276
9.1 Introduction	276
9.2 Differentiated Risk Exposure: A Comparative Analysis of Bt Cotton	277
9.3 Village Power Arrangements in the Differentiation and Construction of Risk	285
9.4 Village Democracy and the Elevation of the Risk Discourse	295
9.5 Political Power Arrangements and Knowledge Construction in Risk Definition	301

Chapter Ten

Conclusion: Legitimation and the Macro Constitution of Telangana and Global Society	309
10.1 Thesis Objectives and Limitations	309
10.2 The Negotiation of Agrarian Risk in the New State of Telangana	310
10.3 Knowledge Construction and Democratic Legitimacy in Telangana State	319
10.4 Legitimation and the Constitution of Global Society in a World at Risk ...	327

Declaration

I, Elaine Desmond, declare that this thesis is my own work and has not been submitted for another degree either at University College Cork or elsewhere.

Signed _____

Date _____

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List of Appendices

Appendix 5.1	Consent Form: Village Sarpanch	363
Appendix 5.2	Consent Form: Participants	364
Appendix 5.3	Confidentiality Agreement with Translator	365
Appendix 5.4	Interview Guide for Qualitative Village Interviews	366
Appendix 5.5	Interview Guide for Quantitative Village Interviews	369
Appendix 6.1	Village Composition - Bantala, 2010/2011	373
Appendix 6.2	Village Composition – Nandanapuram, 2010/2011	374
Appendix 6.3	Village Composition – Orgampalle, 2010/2011	375
Appendix 6.4	‘Rules’ of Orgampalle Village	376
Appendix 6.5	Caste Wards and Location of Participants – Bantala	377
Appendix 6.6	Caste Wards and Location of Participants – Nandanapuram	378
Appendix 6.7	Caste Wards and Location of Participants – Orgampalle	379
Appendix 6.8	Total Cultivation Costs per Participant, Bantala Risk Coalitions ..	380
Appendix 6.9	Total Cultivation Costs per Participant, Nandanapuram Risk Coalitions	381
Appendix 6.10	Total Cultivation Costs per Participant, Orgampalle Risk Coalitions	382
Appendix 6.11	Break-down of Cultivation Costs per Participant, Bantala Risk Coalitions	383
Appendix 6.12	Break-down of Cultivation Costs per Participant, Nandanapuram Risk Coalitions	384
Appendix 6.13	Break-down of Cultivation Costs per Participant, Orgampalle Risk Coalitions	385

Appendix 6.14	Yields, Selling Price and Profit and Loss per Participant, Bantala Risk Coalitions	386
Appendix 6.15	Yields, Selling Price and Profit and Loss per Participant, Nandanapuram Risk Coalitions	387
Appendix 6.16	Yields, Selling Price and Profit and Loss per Participant, Orgampalle Risk Coalitions	388
Appendix 6.17	Debt Levels per Participant, Bantala Risk Coalitions	389
Appendix 6.18	Debt Levels per Participant, Nandanapuram Risk Coalitions	390
Appendix 6.19	Debt Levels per Participant, Orgampalle Risk Coalitions	391
Appendix 7.1	Interview Schedule for Cited Participants, Micro Level: The Villages	393
Appendix 7.2	Questionnaire Results	395
Appendix 7.3	Micro Level: Legitimation through Authorisation	399
Appendix 7.4	Micro Level: Legitimation through Moral Evaluation	400
Appendix 7.5	Micro Level: Legitimation through Rationalisation	401
Appendix 7.6	Micro Level: Legitimation through Mythopoesis	402
Appendix 8.1	Interview Schedule with Cited Participants: Meso Level	404
Appendix 8.2	Meso Level: Legitimation through Authorisation and Core-Periphery Positioning	405
Appendix 8.3	Meso Level: Legitimation through Moral Evaluation and Core-Periphery Positioning	406
Appendix 8.4	Meso Level: Legitimation through Rationalisation and Core-Periphery Positioning	407
Appendix 8.5	Meso Level: Legitimation through Mythopoesis and Core-Periphery Positioning	408
Appendix 8.6	Bt Cotton and the Definition of Risk and Democracy: A Meso Level Summary	409

List of Tables and Figures

Tables

Table 2.1	Distribution of Operational Holdings, 1961/62	51
Table 2.2	Cotton Production, Area and Yield, 2001-2012	55
Table 6.1	The Villages at a Glance	167
Table 6.2	Participants – Cultivators: Landless	173
Table 6.3	Bantala Risk Coalitions	175
Table 6.4	Nandanapuram Risk Coalitions	178
Table 6.5	Orgampalle Risk Coalitions	181
Table 6.6	Average Cultivation Costs, 2010/2011	185
Table 6.7	Average Seed Costs, 2010/2011	187
Table 6.8	Average Input Costs, 2010/2011	188
Table 6.9	Average Labour Charges, 2010/2011	189
Table 6.10	Average Tractor and Oxen Hire Costs, 2010/2011	191
Table 6.11	Land Lease Charges, 2010/2011	193
Table 6.12	Average Yields, 2010/2011	194
Table 6.13	Average Prices received for Cotton, 2010/2011	196
Table 6.14	Average Net Profit/(Loss), 2010/2011	197
Table 6.15	Average Debt Levels, 2010/2011	199

Figures

Figure 3.1 The Core-Periphery Model and the Circulation of Power	88
Figure 7.1 Questionnaire Results: Q.1, Bantala, 2010/2011	205
Figure 7.2 Questionnaire Results: Q.1, Nandanapuram, 2010/2011	207
Figure 7.3 Questionnaire Results: Q.1, Orgampalle, 2010/2011	208

Abstract

This thesis explores the inter-related attempts to secure the legitimation of risk and democracy with regard to Bt cotton, a genetically modified crop, in the state of Andhra Pradesh in India. The research included nine months of ethnographic fieldwork, extensive library and newspaper research, as well as university attendance in India, undertaken between June, 2010 and March, 2011. This comparative study (involving organic, NPM and Bt cotton cultivation) was conducted in three villages in Telangana, a region which was granted secession from Andhra Pradesh in July, 2013, and in Hyderabad, the state capital. Andhra Pradesh is renowned for its agrarian crisis and farmer suicides, as well as for the conflict which Bt cotton represents. This study adopts the categories of legitimation developed by Van Leeuwen (2007; 2008) in order to explore the theory of risk society (Beck, 1992; 1994; 1999; 2009), and the Habermasian (1996: 356-366) core-periphery model as means of theoretically analysing democratic legitimacy.

The legitimation of risk and democracy in relation to Bt cotton refers to normative views on the way in which power should be exercised with regard to risk differentiation, construction and definition. The analysis finds that the more legitimate the exercise of power, the lower the exposure to risk as a concern for the collective. This also has consequences for the way in which resources are distributed, knowledge constructed, and democratic praxis institutionalised as a concern for social and epistemic justice. The thesis argues that the struggle to legitimate risk and democracy has implications not only for the constitution of the new state of Telangana and the region's development, but also for the emergence of global society and the future development of humanity as a whole.

Glossary

<i>Adivasi:</i>	India's indigenous population, also referred to as 'tribals'
<i>Ahimsa:</i>	Non-violence. From Sanskrit meaning 'do no harm'
<i>Bandh:</i>	Civic strike
<i>Brahmin:</i>	Also Brahman. Caste grouping at apex of caste system
<i>Bhagavad Gita:</i>	Seven-hundred verse scripture which is part of the <i>Mahabharata</i> Hindu epic
<i>Charkha:</i>	Spinning wheel
<i>Crore:</i>	Ten million
<i>Dal:</i>	Thick stew made from pulses
<i>Dalits:</i>	Scheduled Castes. Formerly 'Untouchables'
<i>Dharma:</i>	Duty to be morally upright
<i>Dharna:</i>	Mode of compelling debt payment by sitting at the debtor's door without eating
<i>Dora:</i>	Large land-holder in Telangana
<i>Gheraos:</i>	Encirclement of individuals or office by large groups as a form of intimidation in protests
<i>Godown:</i>	Warehouse
<i>Gram Sabha:</i>	Meeting of all adult voters in the village, held twice per year
<i>Gram Panchayat:</i>	Village council
<i>Hartals:</i>	Strike action as form of civil disobedience
<i>Jagirdar:</i>	<i>De facto</i> ruler of a territory with right to extract revenues. Developed during time of Muslim rule in India (early thirteenth century)
<i>Jail bharos:</i>	Form of civil disobedience where protestors seek arrest in order to gain recognition for their cause

<i>Jajmani:</i>	Occupational inter-dependence associated with the caste system
<i>Jati:</i>	Sub-castes or endogenous occupational groups within the caste system
<i>Kacha</i> house:	House made from mud with roofs of rice straw or other thatching material
<i>Khadi:</i>	Homespun cotton. Advocated by Gandhi in resistance to British rule
<i>Kshatriya:</i>	<i>Varna</i> category associated with kings, governors and warriors. Second in varna ranking after <i>Brahmins</i>
<i>Lakh:</i>	One hundred thousand
<i>Lathi:</i>	Stick which may be topped with metal. Used by Indian police as a means of crowd control
<i>Mahabharata:</i>	One of the major Sanskrit epics from ancient India. Estimated to date from 900 or 800 B.C., it remains highly influential in contemporary India
<i>Naxalites:</i>	Also referred to as Maoists, or Communist Party (Marxist-Leninist). Declared a terrorist organisation by the government
<i>Nizam-ul-Mulk:</i>	Often abbreviated to <i>Nizam</i> . Title given to the sovereigns of Hyderabad State between 1724 and 1948
<i>Pakka</i> house:	Made of cement and bricks
<i>Panchayat Raj</i> Institutions:	Three tier system of local governance, involving village, mandal and district levels
<i>Quintal:</i>	Unit of volume for cotton. Equivalent to one hundred kilograms
<i>Rabi:</i>	Rabi crops are sown in winter and harvested in spring. They include wheat and grams
<i>Rasta roko:</i>	Form of civil protest. Involves the blocking of roads and railways
<i>Rupee:</i>	India's unit of currency. At the time of the research, one euro was equivalent to between sixty and seventy rupees.
<i>Salwar kameez:</i>	Form of Indian dress which involves loose trousers, a long shirt and a scarf (<i>chunni</i>)

<i>Sarpanch:</i>	Head person in village
<i>Sarf-e-khas:</i>	Crown lands across the former State of Hyderabad which were claimed by the <i>Nizam</i>
<i>Satyagraha:</i>	Form of nonviolent resistance inspired by Mahatma Gandhi. Loosely translated from Sanskrit as ‘truth force’
<i>Swadeshi:</i>	Self-sufficiency. Term used by Gandhi to advocate the boycotting of British goods as form of resistance to British rule
<i>Swaraj:</i>	Self-governance or self-rule
<i>Varna:</i>	A broad category of the caste system
<i>Vaishya:</i>	Third ranked <i>varna</i> category
<i>Vedas:</i>	Ancient sacred texts, of which the <i>Rig Veda</i> is one of the earliest texts in the world and dates to c. 1,500 B.C.
<i>Zamindar:</i>	Revenue collector under Muslim rule and later land owner under the British
<i>Zamindari:</i>	System of land tenure where the <i>zamindar</i> collected rents from cultivators to pay to the government

Abbreviations

APL:	Above Poverty Line
BC:	Backward Caste
BPL:	Below Poverty Line
CPM:	Communist Party (Marxist)
FC:	Forward Caste
GEAC:	Genetic Engineering Approval Committee
HCU:	Hyderabad Central University. Also known as the University of Hyderabad (UoH)
IMF:	International Monetary Fund
INDIRAMMA:	Integrated Novel Development in Rural Areas and Model Municipal Areas
MFI:	Micro-Finance Institution
NGO:	Non-Governmental Organisation
NPM:	Non-Pesticide Management
NREGS:	National Rural Employment Guarantee Scheme
OBC:	Other Backward Caste
PDS:	Public Distribution System
PRIs:	Panchayat Raj Institutions
RCGM:	Review Committee on Genetic Manipulation
SHG:	Self-Help Group
SC:	Scheduled Caste
WTO:	World Trade Organisation



Map 1:

Andhra Pradesh, the Telangana region,
and the district of Warangal

Source: www.mapsofindia.com

Chapter One

INTRODUCTION

Bt Cotton and the Struggle for Legitimation in Andhra Pradesh

1.1 Thesis Overview and Contribution

For centuries, India has intrigued Western authors who have sought to encapsulate something of the essence of this vast and ancient society. Hegel ([1837] 1991: 139) described India as a dreamy ‘land of imagination’ in which all that was ‘rigid and contradictory [was] dissolved’ (ibid.: 140). Later, Weber ([1916], 1958: 185) discussed the ‘world-fleeing mysticism’ of the Indian spiritual tradition. Such early portrayals conjured images of a mystical, timeless setting, comprised of passive subjects who were far too preoccupied with philosophical concerns to attend to the considerable risks of their material reality.

This thesis takes a different view. It argues that India has been, and remains, the site of highly localised and contingent power struggles, where social actors seek to negotiate risk and secure a just form of governance in tense battles to safeguard their ontological survival. It is argued that this social struggle has, more recently, been channeled through a democratic praxis which is, along with Indian society itself, being transformed as a result of ongoing attempts to secure the legitimation of risk and democracy.

The dynamic interaction between risk and democracy is here explored through a bi-level study of Bt cotton, a genetically modified crop, in Andhra Pradesh, India. Fieldwork for this study was undertaken between June, 2010 and March, 2011, a time chosen to coincide with a cotton season. The thesis concentrates specifically on those aspects of Indian society which pertain to risk, both as a material and political concern, and adopts discourse analysis in two distinct ways in order to analyse data at both a micro (village) and meso (institutional) level.

The location of India has been selected given its political and sociological centrality as the world's largest democracy, as well as its intriguing positioning in the 'world at risk' described by the German sociologist, Ulrich Beck (2009). Paul Brass (1990: xi) argues that India is one of the 'most culturally diverse and socially fragmented' societies in the world. Robinson (1988: 254), too, suggests that Indian society is 'possibly the world's most complex.' In recognition of this, the in-depth analysis of Bt cotton undertaken within this study does not claim to be representative of the views on Bt technology in India as a whole. Likewise, it does not claim to provide a comprehensive agrarian analysis, but relates only to those aspects of agrarian life which were found to have a direct relevance to Bt cotton cultivation.

The theoretical concept of 'risk society' developed by the German sociologist, Ulrich Beck (1992; 1994; 1999; 2009), is the central theoretical framework of the thesis. Beck (1992: 22-23) claims that contemporary risks are distinguished by

their potential for irreversible harm on a global scale. Given the intangibility and the uncertainty or ‘non-knowing’ (Beck, 2009: 115) with which these risks are associated, Beck (1992: 23) argues that they ‘exist only in relation to (scientific or anti-scientific) knowledge about them.’ Hence, they are ‘particularly *open to social definition and construction*’ (ibid.) [italics in the original].

Risk theorists assert that the genetic modification of crops is highly symbolic of global risk society (Strydom, 2002: 33; Giddens, 2003: 33; Renn, 2008: 180; Beck, 2009: 74-76). Renn (2008: 180) claims that genetically modified (GM) crops fall within the category of risk classified as ‘ambiguous’ given that they are linked to ‘unresolved uncertainty’ (ibid.: 179). Because of this, they are subject to bans in many states world-wide,¹ and remain highly controversial due to the fears for human and environmental risk with which they are associated.²

Cotton is one of India’s most ancient and symbolic crops (Santhanam and Sundaram, 1997; Shiva et al., 1999: 602). Archaeological evidence uncovered cotton fabrics from the Mohenjo Daro excavations in modern day Pakistan dated c.

¹ States which ban GM crops include Japan, Australia, Austria, Hungary, Greece, Bulgaria and Luxembourg. Available at <http://www.examiner.com/article/what-countries-have-banned-gmo-crops> Accessed on 24/9/2013. Only four African countries – Burkino Faso, Egypt, Sudan and South Africa - commercially cultivate GM crops, although GM food aid is now accepted by many, provided it is milled. Cameroon, Nigeria, Kenya, Malawi and Uganda are currently conducting field trials. Available at <http://allafrica.com/stories/201309040277.html> Accessed on 24/9/2013.

² In 1996, a study conducted by Dr Arpad Pusztai at the Rowett Institute in Scotland found that rats fed with GM potatoes developed immune system dysfunction and organ abnormalities (Smith, 2004: 15-31). There have also been reports of allergies experienced by cultivators, food allergies related to GM soy, sheep deaths, and the potential for other, as yet, undetected, unintentional changes within the wider ecological system (Smith, 2007). These include concerns for pollen drift, gene drift, ‘superweeds’, and Bt resistance (Buttel, 2005: 313). Full details of the main concerns related to GM crops are available in Smith (2007) and in Shiva et al. (2011). Available at http://www.navdanya.org/attachments/Latest_Publications7.pdf Accessed on 16/10/2013.

2,500 B.C. (Cohen, 2010: 32). The cotton crop was also pivotal in the country's fight for independence from British colonialism. Mohandas Karamchand Gandhi (1869-1948), popularly known as Mahatma (Sanskrit: 'high-souled'), became globally renowned for his role in the Indian struggle for freedom from British rule. Gandhi advocated non-violent resistance and *swadeshi* or self-sufficiency as a means of challenging the illegitimate use of power associated with colonialism. The idea of *khadi* or homespun cotton was central to this, and the *charkha* or spinning wheel became the emblem of the independence movement.

Bt cotton was officially approved for cultivation in India in 2002. The crop is genetically modified to incorporate one or more *Cry* genes from the soil bacterium, *Bacillus thuringiensis* (Stone, 2011: 387). This is purported to render it resistant to Lepidopteran bollworms, of which the most destructive is the American bollworm (*Helicoverpa armigera*).³ Prior to its official approval, the crop had been illegally adopted by cultivators as early as 1999 (Herring, 2012: 48).⁴ The UK government also offered significant aid funding to Andhra Pradesh in 2001 in order to promote the research and development of biotechnology.⁵ This was at a time when Bt crops were banned in the UK due to safety concerns (Harding and Vidal, 2001).

³ Multiple gene hybrids which extend the resistance to further pests were introduced in 2006.

⁴ Mahyco, a well established Indian seed company, was granted permission to import one hundred grams of Bt cotton seed as part of an agreement with Monsanto as early as 1995 (Scoones, 2005: 252). The Review Committee on Genetic Modification (RCGM) later approved forty field trials in nine states (ibid.). It would appear that the wider diffusion of the technology arose as a result of a failure to adequately regulate these early field trials (ibid.: 253).

⁵ Biotechnology is a broad area which incorporates the development of edible vaccines for cholera, rabies and hepatitis B, as well as gene therapies for various genetic disorders (Sharma, 2004: 741). It is recognised, however, that the development of GM crops is by far the most controversial area of research in this diverse field (ibid.).

By 2009, eighty-seven per cent of the Indian cotton crop was sown to Bt varieties (Choudhary and Gaur, 2010: 1). The adoption rate of Bt cotton in the country has made it the fastest-adopted agricultural technology in history (Dinham, 2001, as cited in Stone, 2007: 68). It has also made Indian farmers the fastest adopters of Bt cotton in the world (Monsanto, 2006, as cited in *ibid.*).

The accelerated diffusion of a technology associated with ambiguous risk highlights Giddens' (2003) portrayal of globalised society as a 'runaway world'. The financing of the technology's research and development in Andhra Pradesh with UK aid funding also illustrates the way in which risk society is being diffused as part of the contemporary development project. In this regard, this thesis argues that Bt technology is symbolic of a far wider debate concerning the way in which science and technology are being emphasised as the basis for the future development of India generally (Sharma, 2004), and of Andhra Pradesh in particular (Frankel, 2005: 616; Rajan, 2006: 78).

The adoption rate of the technology is highlighted by proponents as evidence of its success in alleviating rural poverty. However, its diffusion has also coincided with significant protests, amid claims of crop failure, and links to animal deaths, as well as to farmer suicides. These demonstrations have been led by a strong NGO sector which, as Stone (2011: 387) observes, has 'contested the new technological regime at every step.'

The current study explores the paradox of a technology whose widespread adoption coincides with significant opposition. This is undertaken using the concept of legitimation as a means of examining the conflict through the discourse of cultivators and risk definers themselves. According to Habermas (1973: 3, as cited in Pile, 1990: 15), legitimation refers to the ‘practices of people and how they understand the situation of which they are a part.’ Bernstein (2004: 18, as cited in Clark, 2007: 197) argues that legitimacy is ‘highly contextual, based on historical understandings...and the shared norms of the particular community granting authority.’

This thesis asserts that the process of legitimation is mediated through power relations. These significantly influence the way in which social practices (here, the cultivation of Bt cotton), and political institutions (related to democratic praxis), are accepted. This mediation of the legitimation process through power relations is explored using Van Leeuwen’s (2007; 2008) ‘categories of legitimation’ which examine legitimation through a) authorization; b) moral evaluation; c) rationalization; and d) mythopoesis.⁶ The use of these categories as an analytical framework at both the micro and meso levels is in line with Van Leeuwen’s (2008: 106) view that legitimation refers to both ‘practices and institutions.’

⁶ It should be noted that Van Leeuwen uses the American spelling of ‘authorization’ and ‘rationalization’, while the current thesis adopts British spelling – ie., authorisation and rationalisation, as a standard format. Where direct references are made to Van Leeuwen’s text, however, the American spelling is adopted.

Foucault (as cited in Fournet-Betancourt et al., 1987: 129) claimed: 'I don't believe there can be a society without relations of power.' This thesis supports this view; however, it also argues that power can be exercised with varying degrees of legitimacy. The American critical theorist, Nancy Fraser (1989: 18), notes that Foucault attempted to bracket the problematic of legitimacy in his work, yet questions remain as to how successfully this was achieved.

Certainly, Foucault's portrayal of the exercise of power in a society controlled by means of panoptical governmentality implicitly suggests a normative judgement that such an exercise of power is illegitimate and undesirable, even as it is asserted as unavoidable. It is also noted that Foucault's purported non-legitimationist stance was belied in his assertion of the need for ethics 'as a practice of the self' (1984, as cited in Fournet-Betancourt et al., 1987: 129) which would allow 'games of power to be played with a minimum of domination' (ibid.).

The thesis adopts the core-periphery model developed by Habermas (1996: 356) as a means of 'demarcat[ing]...legitimacy from illegitimacy' (Habermas, [1973], 1976: 201) as a political concern. This thesis takes the view, along with Habermas, that without this capacity to differentiate the exercise of legitimate as opposed to illegitimate power, there is no basis for social struggle. Thus, as Habermas (1994: 96) argues, without a normative standard of legitimation, the questions would become: 'why fight at all?...Why ought domination to be resisted?'

This thesis argues that a legitimate exercise of power can be assessed by the extent to which it promotes social and epistemic justice in the negotiation of risk. This relates to the idea of inclusion incorporated in the theorisation of a ‘circulation of power’ posited by Habermas (1996: 356) as a means of illustrating legitimate democratic praxis. Here, the concept of development is critiqued on the grounds of its potential to ideologically legitimate a distribution of resources which contributes to an ongoing differentiation of risk, and to support the institutionalisation of illegitimate power as part of democratic praxis.

The central finding of the thesis is that risk is inherent in power relations. It argues that the potential for the legitimisation of an illegitimate exercise of power which would seek to secure an unjust differentiation of exposure to risk, and an unjust marginalisation of discourses which seek to assert such risk through democratic praxis, is the real concern for a ‘legitimation crisis’ (Habermas, [1973], 1976) in risk society. The thesis concludes that Bt cotton is a highly problematic response to the agrarian crisis in Telangana, not least due to the differentiated risk exposure associated with the context, as well as the ambiguity of the technology itself. The research highlights that a response to risk which emphasises the welfare of the collective, and a legitimate exercise of power which seeks to secure social and epistemic justice at both micro and meso levels, represents the most effective response to ontological risk. It finds that the greater the degree of illegitimacy associated with the exercise of power, the more profound is the extent of the risk to which the collective of humanity is exposed.

The particular contribution of this thesis is as follows:

- a) The study explores the legitimisation of the potential risk of Bt cotton from the perspective of cultivators themselves. This is a need which is highlighted by Ho et al. (2009) who claim, 'we know little about farmers' experiences and perceptions of GM crops' potential risks and benefits';
- b) The fieldwork was conducted over a period of nine months from March, 2010 to June, 2011. The requirement for such a prolonged study is highlighted by Pearson (2006: 309) who asserts the need for an 'extended period of time 'in the field'' using a 'reflexive ethnographic approach';
- c) The analysis seeks to provide an empirical basis for Beck's theorisation of risk society. This relates to critiques of Beck's work which refer to the 'striking absence of empirical research' to support his claims (Campbell and Currie, 2006: 162), as well as the lack of a 'broader discussion of risk-construction' (Lacy, 2002: 59) in his work.
- d) The research entails an exploration of the wider context of agrarian risk in which Bt cotton adoption is embedded. Kuruganti (2009: 29) argues that '[a] matter of great concern is the lack of analysis of the current agrarian crisis in India (and using that understanding to predict the implications from risky technologies)'.

- e) The analysis is comparative and explores the potential of Bt cotton for the alleviation of the risks of the wider agrarian crisis when compared with that of alternative cultivation methods. The need for this is asserted by Ramanjaneyulu (2006: 563) who argues that, 'before making...categorical statements on [Bt] technology', more effort should be made 'to study...other options available' (ibid.)

- f) The study involves both a micro (village) and a meso (institutional) level. This recognises that these levels are mutually constitutive, and that an analysis of the wider political context is central to locating the discourse of villagers within the wider ideological struggle to constitute society. This seeks to present a 'political economy [of risk]', the need for which is highlighted by Lacy (2002: 59);

- g) Finally, it should be noted that the researcher worked in logistics for the multinational, Syngenta, for seven years. Along with Monsanto, Syngenta is one of the key organisations involved in the research and development of Bt technology worldwide. The combination of this employment history with a more recent study of Sociology, and volunteer work with the Irish Green Party, supports the constructionist approach adopted in this thesis. This recognises that it is through the discursive conflict between antagonistic perspectives that societies are transformed (Strydom, 2002: 151).

The researcher's own position, as a result of her eclectic background and five years of study on the Sociology of GM crops, is that the production and application of knowledge is a function of the ethos of a given society. This ethos also informs judgments on legitimacy. GM technology may well hold potential benefits for farmers, particularly in areas such as drought and flood resistance. However, this potential would need to be explored through responsible research within local contexts with an emphasis on equity and the long-term welfare of the collective. It would also require that the technology is adopted appropriately in conjunction with, and informed by, the experiential knowledge of cultivators, and supported by informed, environmentally-aware extension workers.

It is evident from the current study, however, that technological innovation diffused as part of neo-liberal development occurs within highly unequal contexts. Here, the application of knowledge often serves the interests of power-holders, and reinforces a differentiated exposure to risk. Protests against technological innovations are, therefore, essentially challenges to the power structures engaged in knowledge construction, and the values with which such knowledge construction is associated. This is particularly pertinent in the case of Bt crops, given that the plant is known to produce a toxin which proponents claim is hazardous to target organisms only. The legitimization of the technology is, therefore, highly dependant upon the degree of trust in scientific knowledge which exists within a given society. Bt technology also leads to questions as to the extent to which economic gains associated with, for

instance, the cost saving on pesticides, should supersede concerns for human and animal health.

It is clear, therefore, that the application of GM technology within a given society is strongly informed by the values which underpin that society. In the case of the current study, it is argued that a clash of values lies at the root of the power struggle which Bt cotton represents. The resulting ideological conflict means that the potential of GM technology generally will remain highly contingent upon legitimisation struggles at local, national and global levels. These struggles will themselves be strongly informed by exogenous challenges, such as those resulting from climate change.

1.2 Bt Cotton and Agrarian Risk in Telangana and Warangal

The concept of ‘risk society’ describes the de-territorialised risk which Beck argues characterises contemporary global society. According to Beck (1992: 2; 1995: 1; 2009: 7), modern risks are manufactured as a result of scientific and technological innovation, and distributed as the basis for development. Campbell and Currie (2006: 151) note the ambiguity of Beck’s usage of the term ‘risk’. This is variously defined as a ‘probabilit[y] of physical harm due to...technological...processes’ (Beck, 1992: 4) and a ‘systematic way of dealing with hazards’ (ibid.: 21). Adams (1995: 180), too, highlights that Beck’s ‘definition of risk as a way of dealing with what is commonly called risk [represents] a confusing tautology.’

This thesis adopts a position of ‘weak naturalism’ (Strydom, 2011: 10) which argues that, while social knowledge is constructed, there is a natural reality which exists beyond the attempts of humanity to grasp it. In this sense, it is argued that risk represents an epistemic gap pertaining to future contingency which must be negotiated ideologically in the present. The actualisation of risk as a material reality is contingent and is, therefore, subject to probability assessments.

This view of risk coincides most closely with the definition posited by Giddens (2003: 22) that ‘[r]isk refers to hazards that are actively assessed in relation to future possibilities.’ The current study also asserts, however, that the de-territorialised risk associated with the epistemic gap related to Bt technology is subject to legitimisation in context. Thus, it is argued that while the legitimisation of risk is ideologically informed by a wider global power struggle, the influence of such wider ideologies is mediated through the power structures in local contexts.

Beck (1992: 19) argues that the ‘social production of *wealth* is systematically accompanied by the social production of *risks*’ (ibid.) [italics in the original]. In Andhra Pradesh, the adoption of Bt cotton is embedded within a wider shift to neo-liberal policies, most strongly associated with the *Vision 2020* initiative which was launched by the government in 1999. This pledged to alleviate poverty by the year 2020 (Gupta, 2002; Frankel, 2005: 616). The idea was that this would be achieved through a focus on technological innovation, economic growth, and support for non-farm sources of employment (Bandyopadhyay, 2001: 900; Frankel, 2005: 616).

The legitimization of the ambiguous risk associated with Bt technology was secured through its potential to deliver economic benefits as a means of alleviating the risk of poverty, particularly for vulnerable small and marginal cultivators (Choudhary and Gaur, 2010: 20).

The research upon which this study is based was undertaken both in Hyderabad, the state capital, and the Telangana region of the state. As a location for research into risk, Telangana is noted as being particularly vulnerable, not least due to its exposure to an acute agrarian crisis, the risks of which are evident from the high number of farmer suicides with which the region is associated (Galab et al., 2009: 166-167; Ramachandran et al., 2010: 8).

Historically, Telangana has also been the site of significant political unrest. In more recent decades, this has been associated with protests for secession from Andhra Pradesh, a demand which was granted on the 31st July, 2013.⁷ Protests against the bifurcation are ongoing. Given that the new state had not yet been created at the time of writing, and that the state of Andhra Pradesh was the focus of the political analysis in the study, this thesis continues to refer to Andhra Pradesh in the present tense.

⁷ Available at:
<http://www.thehindu.com/opinion/lead/a-state-that-must-fulfil-a-higher-purpose/article4971018.ece>
Accessed on 31/07/2013.
Available at:
<http://www.thehindu.com/news/national/andhra-pradesh/telangana-bill-not-coming-in-monsoon-session/article4978082.ece> Accessed on 29/8/2013.

A total of twenty-six participants from three villages in the Warangal district of Telangana form the central focus for the exploration of the struggle to legitimate the risk of Bt cotton at the micro level of cultivators. Warangal has been referred to as 'the most controversial district in India' (Herring, 2008b: 145) given that a high adoption rate of Bt cotton coincides with ongoing protests against it.⁸

Beck (1992: 41) notes that '[t]here is a systematic 'attraction' between extreme poverty and extreme risk.' This research highlights that, in Warangal, the ambiguous risk of Bt technology is legitimated within a wider context of ontological risk. This context of risk impacts upon the 'trade off' (Renn, 2008: 196) involved in the legitimation of an ambiguous technology, and the judgment on 'how much uncertainty one is willing to accept for some future opportunity' (ibid.). This is also asserted by Gaurav and Mishra (2012: 3) who claim '[cotton] varieties with the Bt gene are as susceptible to all the risks in cotton cultivation that non-Bt varieties are, and ignoring such risks [would represent] a serious analytical flaw.'

In Warangal, these wider risks include water scarcity, the general non-viability of agriculture, ecological degradation, climatic catastrophes, and the vagaries associated with the erratic rains of the Indian monsoon (Le Mons Walker, 2008: 557; Rao, 2009; Deshpande, 2010c; Reddy and Mishra, 2010a; Singhal, 2010). As

⁸ This opposition is highlighted in the protests with which the district is associated. These focus on the crop failure of Bt cotton, as well as the pest attack and low yields which cultivators assert it is associated. A sample of these protests is available at:
<http://www.hindu.com/2004/10/16/stories/2004101604770500.htm>
<http://www.indiatogether.org/2005/may/agr-apcotton.htm>
<http://yaleglobal.yale.edu/content/bitter-sweet-gm-crops>
Accessed on 27/10/2013.

Reddy and Mishra (2010a: 43) observe, the resultant agrarian crisis is characterised by the fact that ‘a growing proportion of the farming community [is unable] to meet their basic consumption needs from their dependence on agricultural income.’ It is also recognised, however, that the exposure to such risks in Warangal is highly differentiated in line with power relations.

Each of the three villages in this study is associated with different perspectives on cultivation as a means of negotiating agrarian risk. In Bantala, Bt cotton is strongly legitimated, and only Bt cotton is grown. Meanwhile, however, the technology is banned in Orgampalle and cotton is cultivated using only organic methods.⁹ In Nandanapuram, Bt cotton is adopted by many villagers, in conjunction with significant opposition to it. A small number of cultivators in the village have also opted to cultivate cotton using a practice referred to as Non-Pesticide Management (NPM).¹⁰ These alternative methods are facilitated through the affiliation of Orgampalle and Nandanapuram with the NGOs, Crops Jangaon and the Deccan Development Society, respectively.

The analysis highlights that the villages are not only associated with different approaches to Bt technology; they are also characterised by differing power arrangements which result from the diversity of caste compositions and land-holding patterns with which they are associated. The study illustrates the way in

⁹ Organic cultivation prohibits the use of chemical pesticides, fertilisers and Bt technology.

¹⁰ Cultivators using NPM or Non-Pesticide Management methods oppose the use of pesticides and Bt seed varieties. However, chemical fertilisers are permitted as part of cultivation praxis.

which these differing power relations contribute to the legitimization of a particular distribution of resources and differentiation of risk associated with access to resources; it also indicates the centrality of power relations to the way in which wider ideologies are mediated and legitimated as a concern of risk construction in the villages. It is recognised, too, that these power relations are themselves subject to change as a result of shifting material and normative positions emerging from local processes of legitimization.

The current study incorporates a comparative material analysis of the differentiated exposure to risk of cultivators adopting the various cultivation methods in the 2010/2011 season. This season was characterised by widespread flooding which led to significant crop loss. This analysis suggests that Bt technology is a high-cost, high-risk strategy for negotiating the risks associated with the agrarian crisis. This is also highlighted by Gaurav and Mishra (2012: 14) who argue that ‘costlier production techniques [are] riskier, especially in bad crop seasons.’

The study also suggests that the alternative methods of NPM and organic cultivation appear to offer more viable alternatives for vulnerable cultivators, particularly in catastrophic seasons. The lower risks associated with these methods were highlighted by the finding that, despite the catastrophic season, not a single NPM or organic farmer in the study made a loss, while almost half of the Bt cotton farmers did so. The significantly higher debt exposure of Bt cotton cultivators also

indicates the greater risk-taking with which Bt cotton is associated as a farming praxis.

The material analysis, therefore, raises questions as to the way in which the risk of Bt cotton is ideologically legitimated, not only given the ambiguity associated with the risk of the technology itself, but also due to the additional cultivation costs and indebtedness with which it is particularly associated in an already high-risk agrarian context. This exploration is particularly pertinent in Telangana given that high levels of debt are strongly related to farmer suicides (Sridhar, 2006: 1560; Galab et al., 2009: 169; Deshpande and Arora, 2010a: 24; Deshpande and Shah, 2010c: 134; Iyer and Arora, 2010: 266; Sreedhar, 2010: 227). The Indian social anthropologist, A.R. Vasavi (2012), notes that farmer suicides in India are sidelined to 'shadow spaces' which lurk behind the dominant narrative of India's high-profile economic success.

The analysis highlights that, in those villages where Bt cotton is cultivated, it was introduced by farmers who were influential as a result of their positioning within the particular composition of the villages. These farmers were imitated by the less powerful in line with the 'prestige bias' highlighted by Stone (2007: 71), in which farmers emulate each other on the basis of social status. Bt cotton is also perceived as a more advanced, 'modern' farming practice. Adoption also occurred as a result of the 'conformist bias' identified by Stone (ibid.). Here, the uptake of the technology created a ripple effect which facilitated its ideological legitimation.

The current research indicates that the potential risks of Bt technology were initially legitimated due to its reduced requirement for pesticides and its potential to deliver increased yields, both leading to higher incomes. This study highlights, however, that the legitimation of the technology has begun to wane over time as yields have decreased, costs have spiralled, and debts have accumulated. There is also growing anxiety with regard to the technology itself in terms of its purported contribution to ecological degradation and animal deaths.

The analysis of the influence of power relations on the legitimation of risk at the micro level also explores the way in which risk is negotiated as a political concern in the villages. This examines the ‘vernacularization of democracy’ (Michelutti, 2007: 639) as the process by which ‘democracy become[s] embedded in particular cultural and social practices’ (ibid.). Here, the focus is on the *Gram Sabha* meeting, or village assembly, as the institutionalised forum of village democracy.

As Kumar (2006: 213) notes, the *Gram Sabha* meeting is envisaged to ‘facilitate dialogue, introduce people to the art of negotiation and collective decision making...and [provide a] forum to seek accountability of...leaders.’ According to the Andhra Pradesh Panchayat Raj Act (1994), village assemblies are legally obliged to convene at least twice per year.¹¹ These assemblies represent a forum whereby the risks of the current development model could potentially be deliberated

¹¹ These stipulations vary by state. The Andhra Pradesh requirements are available at: http://www.rd.ap.gov.in/EGS/SA_Rules_170408_final.pdf Section 3 (2): q. Accessed on 27/10/2013.

upon, and elevated to wider decision-makers involved in the definition of risk as a political concern.

The study highlights, however, that the meeting has instead become associated with the accessing of development funds in an attempt to negotiate risk as a material concern. This serves to legitimate the current development model and the ongoing differentiation of risk exposure with which it is associated. In this regard, the analysis provides some support for the claim by Corbridge et al. (2013: 176) that India's is a 'patronage democracy'.

This study also highlights, however, that there is more to village democracy than simply the accessing of patronage. This relates to the wider village mobilisations which assert the risks of Bt cotton. These eschew the *Gram Sabha* meeting, and are co-ordinated across villages by NGOs. This thesis asserts that these mobilisations are central to ensuring that discourses of risk are recognised, and that power is contested, as part of democratic praxis. They also serve to secure the legitimacy of democratic praxis as a concern of both the micro level of the villages, and the meso level of state politics.

1.3 Risk Definition and the Legitimation of Democracy in Andhra Pradesh

Beck (1992: 185) argues that contemporary risks have created the requirement for a '*new political culture*' [italics in the original] as a means of undertaking decision-

making. According to Beck (ibid.), this involves ‘new demands for political participation *outside* the political system [italics in the original].

The legitimisation of democracy as a meso level institutional concern in Andhra Pradesh is explored using the core-periphery model developed by Habermas (1996: 356-359). This posits that democratic legitimacy is characterised by a ‘circulation of power’ between the core of government and the periphery of civil society. Here, legitimacy is derived not only from the distribution (and redistribution) of material resources as a concern for promoting social justice in the alleviation of risk; it is also secured through the promotion of epistemic justice with regard to the inclusion of micro level discourses of risk within wider attempts to construct knowledge pertaining to the definition of risk, and to the future development of society.

Nancy Fraser and Axel Honneth (2003) discuss the relative significance of recognition and redistribution in securing social justice. This thesis asserts, in line with Fraser, that both are essential to the negotiation of risk. In the current study, social justice relates to the distribution of resources as a material concern, while epistemic justice refers to the inclusion of potentially marginalised normative perspectives in attempts to define risk politically. Both are concerned with the material alleviation of risk, though it is argued that epistemic justice can occur through democratic praxis in the absence of social justice, given adequate representation and/or the sufficient mobilisation of interests. It is argued that this is

occurring, to some extent, in the current study, due to the efforts of NGOs in representing the discourses of risk asserted by the economically marginalised.

This thesis recognises that the mass mobilisations which seek to highlight the risks of Bt cotton eschew the institutionalised structures of democratic praxis in the villages. Nonetheless, the thesis adopts the Habermasian model to illustrate that these mobilisations are not *outside* the political system as Beck suggests, but are central to it, and vital to securing its legitimacy. This is particularly true given the threat of an illegitimate concentration of power which, as the analysis highlights, characterises the attempts of certain power holders to secure closure in risk definition.

The primary risk at the meso level is that of ‘legitimation crisis’ (Habermas, [1973], 1976). Habermas (ibid.: 2) argues that a legitimation crisis ensues when ‘fewer possibilities for problem solving are allowed than are necessary for the continued existence of the system.’ The meso level analysis highlights, however, that the risk of legitimation crisis is not primarily associated with an inability to establish solutions with regard to risk; instead, it arises from the possibility that a theoretically illegitimate institutionalisation of power will be legitimated as part of democratic praxis itself.

The meso level study involves ten participants from the areas of politics (the Congress Party and Communist Party (Marxist)), regulation (the Review

Committee on Genetic Modification), four representatives from industry (all from Monsanto), and three NGOs (the Deccan Development Society, the Centre for Sustainable Agriculture and Crops Jangaon). The meso level analysis focusses on the way in which the ideological struggle for legitimisation of particular definitions of risk is mediated through power relations associated with the institutional positioning of the participants as part of democratic praxis.

The analysis highlights the way in which the struggle at the meso level relates to conflicts regarding the institutionalisation of power, and the type of knowledge construction which will form the basis of development. This thesis argues that this legitimisation struggle will be highly relevant in the new state of Telangana, and will determine the degree of legitimacy associated with its democratic praxis, as well as the normative conceptualisation of development which will inform the macro constitution of Telangana society. This supports the view of Clark (2007: 195) that 'legitimacy [is] a constitutive element within a society.' It is also, however, highly relevant to the global struggle to establish knowledge on the risk of Bt technology as a concern of the collective of humanity.

Beck (1994: 8) argues that risk society is associated with a 'profound institutional crisis'. The current research highlights that this relates to attempts to institutionalise power with regard to knowledge construction. This indicates that scientific knowledge is being asserted as a means of securing democratic closure in risk definition. This relates to the 'authoritarian technocracy' (1995: 166) described by

Beck. When assessed theoretically, the exercise of power which this would entail would be deleterious to democratic legitimacy, and significantly limit the ability of those on the periphery to have their normative perspectives concerning development recognised. The blending of scientific knowledge with a neo-liberal market rationale is highlighted in the emergence of intellectual property rights administered by the World Trade Organisation,¹² as well as the Indo-US Knowledge Initiative (Raina, 2006: 1622) which seeks to establish stronger research partnerships between the corporate sector and public research institutions.

The potential for a hegemonic concentration of power secured through scientific knowledge within risk society is particularly evident in the proposed legislation to introduce a Biotechnology Regulation Authority of India, formed of eminent scientists. This would supersede the government as the apex decision-making body on biotechnology in India (Gupta, 2011: 739). It is argued that such an institutionalisation would secure an illegitimate exercise of power within democratic praxis itself, and support the authoritarian tendencies which Fraser (2008: 140) asserts are a characteristic feature of democratic societies.

The analysis indicates that the assertion by power holders of the primacy of a commodified and decontextualised form of scientific knowledge as the basis for risk definition within the current development paradigm represents a significant

¹² The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs) involves the globalisation of intellectual property laws, and extends patent protection to modified genes (Weis, 2007: 138).

threat to the ability of cultivators to assert discourses of risk. It also highlights the significant potential for ‘epistemic injustice’ described by the British philosopher, Miranda Fricker (2007), where social actors are denied in their ‘*capacity as...knower[s]*’ (ibid.: 20) [italics in the original].

This raises significant concerns for epistemology itself given its potential reduction to a ‘scientism [which] means that we no longer understand science as one form of possible knowledge but rather identify knowledge with science’ (Roderick, 1986: 50). This thesis asserts that this potential for a reductionist simplification of knowledge construction at a time when humanity is seeking to address an epistemic gap characterised by its complexity represents a profound threat to the ontological survival of humanity.

The study argues, however, that the attempts to institutionalise the illegitimate exercise of power which would give rise to such reductionist knowledge construction are strongly contested. The potential for exclusion of the discourse of risk articulated by cultivators is, it is argued, alleviated somewhat by the activism of English-speaking scientists from NGOs and the Communist Party (Marxist) in opposition. These actors assert the need for knowledge construction which incorporates the perspectives of cultivators as a concern for the legitimisation of risk in context.

This analysis highlights the way in which micro level mass mobilisations bolster the negotiating power of NGOs and secure the recognition of their perspectives. Through their co-ordination of these mobilisations, NGOs ensure that the core is obliged to remain open to the discourse of risk on the periphery. This supports the view of Strydom (2002: 109) that, 'there are different types of power' and that those who 'attack dominant meanings are by no means powerless' (ibid.). This thesis argues that the activity of NGOs enhances the legitimacy of democratic praxis itself. This is also highlighted by Haunss (2007: 161) who asserts that 'while challenging the legitimacy of their opponents, [NGOs] may, at the same time, strengthen the legitimacy of the system as a whole.'

Given that all participants at the meso level of this study are scientists, the conflict relates to the normative conceptualisation of development which should inform the knowledge construction associated with science. Thus, the analysis highlights that, within the conflict concerning knowledge construction, values remain central. Here, the NGO and the CPM actors assert that scientific knowledge must incorporate local experiential knowledge as a concern for epistemic justice, and as part of the transformation of scientific knowledge itself. The analysis indicates, however, such a transformation is itself dependant upon the struggle to legitimate democracy within local contexts.

The analysis also highlights the legitimisation trap in which the Andhra Pradesh government is caught. This is due to its need to secure economic growth in response

to the aspirations of its citizens, many of whom are classified as poor, while simultaneously being obliged to protect its citizens from risk, and to maintain law and order in the case of protests which entail civil disobedience. The significance of the ongoing differentiation of risk exposure in Andhra Pradesh, and the protests associated with its legitimisation, means that the globalised form of development associated with neo-liberal policies must be tempered with government initiatives which seek to address this differentiated exposure to risk in context. This is also noted by Habermas ([1973], 1976: 54) who argues that the '[s]tate [must] compensate...for dysfunctional consequences of the accumulation process' associated with capitalism.

Given India's historic reliance on development aid from external powers, and the consequences of this on its autonomy to take decisions on its own development, there is also a marked concern with self-sufficiency at the meso level. It is recognised that globalised trade is currently enhancing India's positioning globally, and has mitigated India's reliance on foreign aid. However, globalisation also entails negotiation with global power structures in ways which threaten autonomy, and inhibit the ability of the government to respond to the legitimisation demands of its own citizens. Here, the analysis explores the way in which the state is conflicted by competing threats to its own legitimacy.

It is noted that, according to the Democracy Index published by the Economist Intelligence Unit, India is classified as one among fifty 'flawed democracies' in the

world (*Deccan Chronicle*, 5/1/2011). It is also recognised, however, that Indian democracy is ‘deeply paradoxical’ (Chandhoke and Priyadarshi, 2009: ix). This thesis asserts that the chaotic radicalisation of citizens in Andhra Pradesh, and the non-institutionalised ‘[p]arliament of the streets’ (Lummis, 1996: 142), ensure that power is contested within a democratic praxis which also has strong authoritarian tendencies. The analysis highlights that this radicalisation, turbulent as it is, contributes to the glimpses of legitimacy with which democratic praxis in Andhra Pradesh is characterised.

1.4 Layout of the Thesis

The approach to the study of the legitimisation of risk and democracy in this thesis is as follows:

Chapter Two explores the dimensions of caste, land-holding and gender as the basis for risk differentiation in the context of the Indian village. It also presents the differing perspectives with regard to the legitimisation of risk in the Bt cotton debate. It argues that the conflict regarding Bt cotton is symbolic of a wider struggle to legitimate the exercise of power, and the distribution of resources and differentiation of risk with which this is associated;

Chapter Three presents the Habermasian (1996: 356) core-periphery model as the theoretical framework adopted to analyse the legitimisation of democracy. The chapter also examines the potential for ‘institutional crisis’ (Beck, 1994: 8) with

regard to the contemporary debate on Bt brinjal. This highlights the way in which the ideological struggle which Bt technology represents is having a direct material impact on attempts to institutionalise the exercise of power through democratic praxis. It is argued that, through their opposition to Bt technology, the NGOs in the current study are playing a crucial role in seeking to establish a more legitimate democratic praxis as a concern for social and epistemic justice;

Chapter Four explores the historical struggle to secure a legitimate exercise of power in response to agrarian risk in Telangana, and the district of Warangal within it. The chapter also examines the competing demands for legitimacy which confront the Andhra Pradesh government, not least given the attempts by political power-holders to reconcile their support for a neo-liberal development model with demands for secession in Telangana, and the history of radical communism in the region. Efforts to negotiate these demands have led to the Andhra Pradesh government being referred to as ‘the most troublesome’ in India (Jishnu, 2010) with regard to its negotiation of the Bt technology debate.

In **Chapter Five**, the methodological approach to the research is examined. The chapter argues that, as in the case of knowledge construction in risk definition, the construction of knowledge in social research is mediated by power relations related to the ‘positionality’ (Pearson, 2006: 308) of the researcher. It argues, however, that reflexivity on these aspects significantly adds to the learning which research entails. The chapter also highlights the significant ethical dilemmas involved in research

into risk, but argues that these need to be balanced against the ethical implications of the failure to undertake such work.

Chapter Six introduces the Risk Coalitions as the basis for a comparative quantitative analysis of risk differentiation in relation to cotton cultivation using Bt, organic and NPM methods in the 2010/2011 season. This indicates that Bt cotton is a high-risk, high-cost method of cultivation in relation to the other methods, particularly in the far from atypical catastrophic seasons associated with the agrarian crisis in Telangana;

In **Chapter Seven**, Van Leeuwen's (2007; 2008) categories of legitimation are used to structure a less critical form of discourse analysis. This aims primarily to foreground the perspectives of the villagers. The chapter highlights the way in which the legitimation and delegitimation of Bt cotton is embedded within wider normative perspectives on development. The 'vernacularization of democracy' (Michelutti, 2007: 639) indicates that village democracy is strongly focussed on the securing of patronage as a means of accessing resources in the negotiation of risk. It also highlights, however, a discourse of rights which underpins village mobilisations and, in the case of Bt cotton protests, seeks to challenge the legitimacy of the differentiated risk exposure associated with neo-liberalism.

Chapter Eight entails an analysis of the impact of power relations on the meso level ideological struggle to define risk as part of institutionalised democratic

praxis. Here, the Habermasian core-periphery model (1996: 356) and Van Leeuwen's (2007; 2008) categories of legitimation are used to structure a more critical form of discourse analysis. This chapter examines the interplay between knowledge construction and the legitimation of power in democratic praxis. It argues that attempts by power holders to promote scientific knowledge as a means of closure in democratic praxis are theoretically illegitimate. It also illustrates the way in which these attempts are challenged by Bt cotton opponents who call into question the ideology of development itself;

In **Chapter Nine**, the research findings are discussed. This suggests that Bt cotton is a particularly high risk cultivation method for more vulnerable participants. It also discusses the impact of power relations on risk construction and definition at both the micro and meso levels. The chapter argues that, although informed by global discourses, the struggle which Bt cotton represents is contingent upon power structures and legitimation struggles in local contexts.

Chapter Ten concludes the thesis with a discussion of the implications of the research for the new state of Telangana, as well as for an emergent global society. It argues that the government of the new state needs to begin to unpack the ideology of development, and to secure greater inclusion in decision-making from those who are attempting to negotiate agrarian risk within Telangana itself as the basis for its own legitimation. This chapter also asserts that the fundamental struggle in global risk society, as in Andhra Pradesh, is that between values which relate to the

distinction between the legitimate and illegitimate exercise of power, and posits that it is on the outcome of this highly contingent clash that the future survival of humanity rests.

Chapter Two

The Indian Village and a Differentiated Exposure to Risk

2.1 Introduction

This chapter explores the way in which agrarian risk, and a differentiated exposure to it, is a central aspect of village life in India. It outlines how this differentiated exposure occurs as a result of village power structures which operate primarily along the dimensions of caste, land-holding and gender. This examines the way in which the differentiation of power along these dimensions results in the ‘*social risk positions*’ described by Beck (1992: 23) [italics in the original]. The analysis highlights that such risk positions are central not only to the differentiation of risk exposure as a direct material concern, but also to its ideological legitimisation through particular risk constructions.

The chapter also critically examines the way in which Bt cotton as an ‘ambiguous’ technology (Renn, 2008: 168) is associated with competing interpretations of material reality (ibid.: 77). This is explored through an analysis of the competing views with which attempts to legitimate the risk of Bt technology are characterised.

2.2 Agrarian Crisis and the Differentiation of Risk in Village India

The research at the village level has been undertaken in light of the view that the global forms of power suggested in Beck’s (2009) ‘world at risk’ can best be

explored through understanding the infinitesimal practices of a micro level context where the negotiation of risk has a direct ontological meaning. This refers to Foucault's 'microphysics of power' (Gordon, 1991: 3) and recognises that the legitimisation of risk is mediated through power structures in local contexts.

India is home to 640,867 villages.¹³ This has led to its depiction as 'a land of villages' (Inden, 1990: 131). Similarly, the American political sociologist, Barrington Moore (1966: 318), described the village as 'the basic cell of Indian society.' Karl Marx claimed that the social organisation associated with villages in ancient India and China represented a distinct 'backward', pre-capitalist, Asiatic mode of production (Hindess and Hirst, 1975: 184).¹⁴ Here, villages were depicted as subject to despotic rulers and portrayed as one step above barbaric.

Marx's views were formulated on the basis of reports from British colonial administrators which described Indian villages variously as 'self-sufficient communities' (Elphinstone, 1866: 69-71) and 'village republic[s]' (Metcalf, 1810, as cited in Inden, 1990: 132).¹⁵ This was due to the common ownership of land, the combination of cultivation with village industries, and the existence of village councils (*panchayats*) formed of elders who managed issues of justice relevant to the village.

¹³ Figures from the 2011 Census of India. Available at: http://www.censusindia.gov.in/2011-prov-results/paper2/data_files/india/paper2_at_a_glance.pdf Accessed on 5/3/2013.

¹⁴ According to Marx, the Asiatic mode of production was characterised by the absence of private land ownership, as well as the self-producing unity of handicrafts and agriculture in the villages (Hindess and Hirst, 1975: 200).

¹⁵ In fact, the idea of the self-sufficiency of the village has been strongly refuted in later literature. The highly regarded Indian sociologist, M.N. Srinivas (1987: 38), argued that villagers would not have been entirely self-sufficient, but would have depended upon weekly markets for commodities such as salt, spices, iron, silver and gold.

Marx argued that the autonomous nature of the village and the absence of class conflict, as well as the presence of a caste system, had rendered Indian society static and unchanging, preventing its progression through the industrialisation of capitalism, and so on to the advanced stage of socialism. He ([1867], 2007: 394) claimed, '[t]he structure of the economic elements of [Asiatic] society remains untouched by the storm clouds of the political sky.' Marx (1853: 94, as cited in Madan, 2002: 4) also argued that 'these idyllic village communities...restrained the human mind within the smallest possible compass, making it the unresisting tool of superstition, enslaving it beneath traditional rules, depriving it of all grandeur and historical energies.'

Gandhi, however, took a different view. For Gandhi, the village was symbolic of India itself, and central to his conceptualisation of the country's future development. He claimed that the Indian village represented 'a spiritual vision of life which had not been corrupted by materialism' (Brown, 2008: xvii). He argued, 'the moment you talk [to villagers]...wisdom drops from their lips. Behind the crude exterior, you will find a deep reservoir of spirituality' (1938: 44, as cited in Frankel, 2005: 10). As Omvedt (1993: 11) observes, Gandhi's wholesale 'rejection of industrial capitalism led him to formulate...the goal of Indian independence in terms of the regeneration of Indian village society, a small-scale, labour-focussed society.'

In his study of the negotiation of the risk of water scarcity in a village in Andhra Pradesh, Robert Wade (1994: 1) notes that villages differ ‘even within culturally homogenous areas’ as a result of their internal social structure and demographic composition, as well as their relations with external markets. He (ibid.) also argues that scarcity and risk are central aspects of village life.

The analysis of the three villages in the current study highlights that power relations defined by the particular composition of castes and land-holding within each village contribute significantly to variations in village society. (All three villages have strong ties to external markets given their cultivation of cash crops). Such power relations are also found to have a significant impact upon the negotiation of risk as both a material (risk differentiation) and an ideological (risk construction) concern.

India is a predominantly agricultural country and sixty-eight per cent of the country’s population lives in rural areas.¹⁶ Indian agriculture has, however, been subject to an agrarian crisis for generations (Deshpande and Arora, 2010; Le Mons Walker, 2008; Reddy and Mishra, 2009; Roy, 2006). This has threatened the viability of agriculture as a primary source of livelihood. The crisis has a complex variety of causes, many of which are historical and some of which are more modern in origin.

¹⁶ 2011 census data. Available at:
http://censusindia.gov.in/2011-prov-results/paper2/data_files/india/paper2_at_a_glance.pdf
Accessed on 5/3/2013.

Historically, it is argued that the particularly extortionate extraction of revenues by imperial rulers contributed significantly to ontological risk in the villages. As Romesh Dutt ([1892], 1970: xviii), an Indian civil servant working for the British colonial government, observed, ‘the Land Tax in India was [such as] was never known under any government in Europe or Asia.’ This meant that ‘Indian cultivators were permanently poor’ (ibid.: xxviii).

Similarly, the allocation of land to intermediary revenue collectors known as *zamindars*¹⁷ during British colonialism led to a consolidation of power and an unequal distribution of the means of production. It is argued that this historic system of tenure lies at the root of the contemporary agrarian crisis (Deshpande and Arora, 2010: 2; Roy, 2006: 5392).

The unequal access to land continues to represent a significant risk for many of those involved in Indian agriculture. As Frankel (2005: 97) highlights, following Independence in 1947, more than one-fifth (twenty-two per cent) of all rural households were landless, a further twenty-five per cent owned less than one acre, and fourteen per cent owned uneconomic holdings of between one and 2.5 acres.

This meant that sixty-one per cent of rural India was landless or owned marginal

¹⁷ During the period of Mughal rule in India (which was at the height of its power from the late seventeenth until the early eighteenth century), *zamindars*, or landlords, had collected taxes in return for a fixed proportion of the levy as a fee (Frankel, 2005: 31). A variety of regional names existed for the *Zamindar*. *Mirasidar* was a comparatively modern term for a titleholder and revenue-payer (Bayly, 1998: 198). Similarly, *Deshmukh* (ibid.: 67) and *Dora* (Omvedt, 1994: 67) were the titles for large land-holders and revenue-takers in Andhra Pradesh. The term *dora* was most frequently used by villagers in the current study.

holdings, a situation which represented significant ontological risk in a context where agriculture often represented the sole means of survival.

Ecological factors also contribute significantly to the agrarian crisis. The vagaries of the Indian climate, and the frequent droughts, floods and cyclones with which the country is associated, have contributed to the poverty of village life. The recurrence of droughts has also made cultivators particularly reliant on access to irrigation in order to increase the productivity of their holdings.¹⁸ Since India's turn to neo-liberal policies in 1991, however, public investment in irrigation has been largely neglected, and irrigation has become a cost to be borne by farmers themselves (Reddy and Mishra, 2009: 49). However, the sub-optimal plots of land often do not permit efficient use of water.¹⁹

It has been recognised for some time that ground-water exploitation has reached unsustainable levels in dry regions (Reddy and Mishra, 2009: 9). A report produced by the Royal Commission of Agriculture in India (1927, 377-379, as cited in Roy, 2006: 5394) claimed that 'the groundwater supply [in Bengal] is becoming more and more precarious, leading to agricultural crisis...It has greatly increased the cost of constructing new wells, as well as of labour and the cost of lifting the water to the surface.'

¹⁸ This reliance on irrigation, and the earlier centrality of the state in organising it, led to Wittfogel's (Hindess and Hirst, 1975: 198-207) depiction of Asian societies as 'hydraulic states'.

¹⁹ The command area for modern tubewells powered by electric pumpsets is five to ten acres (Frankel, 2005: 320). Not only are many plots smaller than this, but land-holding in India often involves fields which are scattered, rendering private attempts at irrigation inefficient (ibid.: 319). As noted by Wade (1994: 11), scattered holdings reduce the risk of crop loss. This is due to the varied micro-conditions with which geographically distant plots of land may be associated, such as differences in soil type, gradient, proximity to water, etc.

The balance of soil fertility is particularly relevant in a country such as India which has been home to settled agriculture for millennia. Mukherjee (1926, as cited in Roy, 2006: 5394) argued that ‘the introduction of commercial crops...upset the ancient system of crop rotation which served very well for fertilising the soil.’ Similarly, the improper use of fertilisers introduced during the Green Revolution has led to an imbalance of soil nutrients and loss of soil fertility (Reddy and Mishra, 2009: 11).

The commercialisation of agriculture has also introduced new areas of risk. There is an increased exposure of farmers to volatile commodity prices and rising costs (Reddy and Mishra, 2010: 55). Furthermore, changes in cultivation practices and crop choices as a result of attempts to secure profitability have affected natural processes of fertility restoration. The deforestation associated with the commercialisation of agriculture has led to the silting up of rivers, while the dried up irrigation tanks which previously provided a fertile field for a second (*rabi*) crop have now become marshes in the dry season and an ideal breeding ground for mosquitoes carrying malaria (Roy, 2006: 5394). This has further reduced agricultural viability.

As Frankel (2005: 96) notes, ‘[following Independence], yield levels in India were among the lowest in the world.’ This meant that the country was unable to meet the consumption needs of its growing population for the first decades after Independence and relied heavily on food aid, particularly from the United States

(Varshney, 1998: 68-69). The general stagnation of agriculture at this time meant that ‘millions of rural poor [were] precariously subsisting or slipping below the line of poverty’ (Frankel, 2005: 97). Given the differentiation in power relations in the countryside, however, not everyone was exposed to the risk of agrarian crisis equally, and it is to this aspect of differentiated risk exposure which this chapter now turns.

2.3 *Caste, Land-holding and Gender in Social Risk Positions*

Given that fifty-five per cent of India’s citizens are classified as poor (*Times of India*, 16/7/2010),²⁰ a technology which delivers economic benefits to the wealthy at the expense of the poor cannot be politically or morally legitimated. It is also recognised, however, that the poor are not homogenous, but are characterised by their significant differentiation in line with local power structures. This differentiation impacts not only upon exposure to risk, but also upon the capacity to influence others in risk construction in ways which legitimate the power structures themselves. Renn (2008: 35), too, highlights that risk and the legitimisation of power are inextricably linked.

The current study highlights the way in which each of the three villages varies according to their caste composition and land-holding pattern. In order to analyse vulnerability to risk, this thesis posits that, in the context of the Indian village, the

²⁰ This figure is derived using a Multi-dimensional Poverty Index developed by the United Nations Development Project and the Oxford Poverty and Human Development Initiative. This includes indicators related to schooling, child mortality, availability of electricity, drinking water, sanitation, cooking fuel and assets. It does not, however, appear to include a measure on indebtedness.

key dimensions relevant to differentiating risk exposure and influencing risk construction are those related to caste, land-holding and gender.

The current analysis uses the term 'Risk Coalition' in order to analytically demarcate the 'social risk positions' identified by Beck (1992: 23). This combines the idea of a social risk position with Hajer's (1997: 12-13) concept of a 'discourse coalition.' This recognises that risk construction as a micro concern and risk definition as a wider meso institutional concern are conducted through discourse.

Caste as a Social Risk Position

Bayly (1999: 1) refers to the Indian caste system as an 'elaborately stratified social hierarchy that distinguish[s] India from all other societies.' The term *casta* (derived from the Latin *castus* meaning chaste) was used in sixteenth century Spain and Portugal to denote species or breed (ibid.: 105). This thesis suggests that the caste system in India is a highly complex and sophisticated means of legitimating the differentiated exposure to risk associated with the power structures which caste represents.²¹

The race dimension to caste as a desire of the fair-skinned Aryans to maintain pure blood lines, and to segregate themselves from the darker-skinned indigenous Dravidians, was legitimated through the (now discredited) 'science' of ethnological studies conducted during British colonialism. This found that the fair-skinned

²¹ This view directly challenges that of the renowned French anthropologist, Louis Dumont. In his classic text, *Homo Hierarchicus*, Dumont (1972) suggests that the central concern of caste with purity and pollution encompassed power and held it in check.

Aryans were ethnologically more ‘advanced’ than native Dravidians (Bayly, 1999: 167-175). The association also helped to legitimate British colonialism, as ‘fair skinned’ became synonymous with ‘advanced.’ This highlights the way in which purportedly ‘scientific’ knowledge has historically been used to legitimate power relations, and the differentiated exposure to risk which they entail.

The concept of *varna* relates to the depiction of caste in the vast body of sacred texts referred to as the *Vedas*.²² The *Veda* texts distinguish between the twice-born (*dwija*) upper castes²³ of Brahmin (priests and scribes), Kshatriya (warriors and lords) and Vaishya (traders) and the lower caste, non-twice-born Shudra or servile class. Here, status is equated with ritual purity, and detailed rules of interaction govern relations between upper and lower castes in order to avoid the potential for ‘pollution’ which lower castes are purported to represent. These include strict rules of connubium (referring to marriage) and commensality (related to the sharing of food).²⁴ So-called Untouchables, and the hill and forest populations now commonly referred to as ‘tribals’, occupy an ambivalent place below, outside or parallel to this *varna* scheme (Bayly, 1999: 9).

Brahmins, representing the apex of the caste system, were characterised by their special privilege. As Ramakrishna (1983: 4) notes: ‘[a]lthough they [Brahmins]

²² The *Vedas* are the earliest records of Indian culture and are estimated to date to between 2,000 and 2,500 B.C. (Nehru, 2004: 72). These legitimate the caste system as a form of social organisation given that they depict caste as divinely ordained.

²³ These are associated with the wearing of a sacred thread, the *suta*. Only male members of the Brahmin, Kshatriya and Vaishya *varnas* are entitled to undergo the ceremony of *upanayana* where the sacred thread is bestowed upon the bearer (Frankel, 2005: 5).

²⁴ A detailed account of these is provided in Dumont’s (1972) *Homo Hierarchicus*.

were a minority, they commanded unchallenged respect and status and acted as the arbiters of morals in society by virtue of their monopoly over learning and ritualistic supremacy.’ So-called Untouchables, meanwhile, were subject to the most pernicious forms of discrimination. This involved their segregation to the margins of the village.²⁵ They were also traditionally denied admittance to schools, shops and village shrines, and banned from using wells (Freeman, 1977: 37). Even the shadow of an individual designated as untouchable was said to be defiling (Bayly, 1999: 197).

The concept of *jati* refers to the experience of caste in the ‘concrete and factual’ domain of everyday social life (Khare, 1983: 85). The *jati* formed the basis of the *jajmani* system (Mandelbaum, 1970: 160-180), where occupational services were provided in return for a specific proportion of crop share for the service provider. As Frankel (2005: 5) observes, the *jati* refers to ‘smaller, hereditary, endogamous groups associated with a traditional occupation and related to one another in terms of ritual pollution or purity.’ *Jatis* in each region number in the hundreds and can be grouped within the broad *varna* categories (with the exclusion of the *jatis* associated with Untouchability). The Shudra *varna*, as the non-twice-born service providers, contains the most extensive list of *jatis*.²⁶

²⁵ This segregation continues, and is a characteristic feature of Indian villages. Beteille (1971: 26-39), Freeman (1977: 24), Omvedt (1994: 70), Robinson (1988: 83) and Srinivas (2003: 26) all report a similar segregation in villages studied in various states throughout India.

²⁶ According to Srinivas (1987: 38), the essential *jatis* in each village were the carpenter, blacksmith, leather-worker, potter, barber and washer-man.

While *varna* categories of caste are universal and common to all areas of India, 'caste (as *jati*) at the local level often contains considerable ambiguity about rank in the context of complex economic and social relations' (Frankel, 2005: 5).²⁷ Robinson (1988: 20), too, in her study of Medak district in Andhra Pradesh, notes that *jatis* are regionally variable with regard to both naming conventions and ranking. The analysis for the current study suggests that the power associated with caste *jatis* is strongly related to their numerical representation and ownership of land within particular villages.

The occupations of alleged Untouchables included those deemed too lowly and polluting for the caste Hindus defined within the *varna* system. These included that of 'sweepers' (of roads) and leather workers (Freeman, 1977: 37). So-called Untouchables were also involved in the handling of dung and animal remains and, given that death was regarded as particularly defiling, they served as cremation-ground attendants and tonsurers (head-shavers) of mourners (Bayly, 1999: 192).

It is clear that caste had a significant influence on the ability of social actors to negotiate and construct risk. As Frankel (2005: 5) notes, 'in pre-modern times, rigorous criteria of pollution and purity had qualified only the upper twenty per cent or so of the population for even the rudiments of education.' This meant that upper caste Brahmins, Kshatriyas and Vaishyas were well placed to claim privileged positions during imperial rule. This also served to reinforce their elevated positioning within the village power structure. At the other extreme, the heightened

²⁷ Bayly (1999: 8) notes that the term caste is commonly used to refer to both *varna* and *jati*.

exposure of purported Untouchables to risk is highlighted by Bayly's (1999: 195) observation that nineteenth-century famine records indicate that village servants designated as Untouchable were among the first to perish in times of scarcity.

Land-holding and Social Risk Positioning

Ownership of land is particularly central to risk negotiation in a country such as India where agriculture often represents the primary means of subsistence. Upper castes were in a better position to gain access to land as a result of the allocation of land rights to upper caste *zamindars* and revenue collectors during British rule. This meant that higher castes not only enjoyed access to privileged positions of power, but also benefitted from greater land ownership. Landlords came from higher castes, while lower castes were often landless (Varshney, 1998: 45).

The revenue-taking associated with British rule, and the poverty of the majority of cultivators, led to the strengthened status of the upper caste Vaishya or merchant *varna*. These self-made traders often served as money lenders and were referred to in regional vernaculars as *banias* or *saukars* (Bayly, 1999: 213). They often went on to buy up land from Brahmins²⁸ and other indebted proprietary groups (*ibid.*), and so materially reinforced their ideologically-sanctioned power.

²⁸ Brahmin *Zamindars* themselves often fell into indebtedness given the extortionate land rents which they were liable to pay to colonial authorities, even in years of crop failure.

Gender and Social Risk Positioning

Omvedt (1993: 12) argues that the ‘self-sufficient village [was] linked to the paternalistic rule of kings.’ Within this, the need for the conduct of women to be closely controlled owing to their potential for the destruction of the very underpinnings of the caste system is highlighted in the sacred text, the *Bhagavad Gita*, contained within the ancient *Mahabharata* epic.²⁹ Here, it is stated that ‘when women are corrupted, confusion of castes arises’ (as cited in Bayly, 1999: 13). The positioning of women is thus legitimated on the basis of caste values which have been defined by men.

Females continue to be regarded as a burden in Indian society. This is asserted by Bayly (1999: 54) who claims that caste values define the family of wife-receivers as conferring honour on the family of the bride, the wife-givers. Bayly (ibid.: 332) also highlights how, in the case of weddings, the giving of dowry (a payment made by the bride’s family to the groom) is considered an upper caste custom, while bride price (where the groom’s family pays the bride’s family) is associated with lower castes.³⁰

The perception of females as a burden persists despite the fact that they undertake the majority of agricultural and household work. Da Corta and Venkateshwarlu

²⁹ The Sanskrit epic, the *Mahabharata*, has been dated to c. 900-800 B.C. (Metcalf and Metcalf, [2001]; (2006): xxvi). It remains a highly influential narrative within Indian society, and discusses the ethics of kingship and views on the legitimate exercise of power.

³⁰ The practice of the giving of dowry was made illegal under the Dowry Prohibition Act of 1961 (Shurmer-Smith, 2000: 89). As the current research highlights, however, it is still very much a feature of Indian life. The costs of dowry have risen significantly in recent years. Shurmer-Smith (2000: 91) notes the emergence of the term ‘Maruti marriages’ where new Maruti cars are offered in partial settlement of a dowry in urban areas.

(1999: 71) note the increasing ‘feminisation of agricultural labour’. According to Garikipati (2009: 517), a study conducted in 2001 estimated that 43.4 per cent of agricultural labourers are women. However, women’s household status, wages and working conditions remain acutely depressed (ibid.). Similarly, their rights to property are also poorly defined (Corbridge and Harriss, 2000: 209), and property remains subject to patrilineal inheritance (Agarwal, 1995: A-39). As a result of their restricted access to assets and to political power, Krishnaraj (2006: 5376) notes that women are most at risk from food deprivation.

2.4 Reform and the Renegotiation of Power Relations

It should be noted that power relations require ongoing negotiation in response to repeated attempts at their delegitimation. This is particularly true in the Indian context. An array of anti-caste and caste reform movements³¹ arose in line with the Independence movement as the diffusion of discourses of freedom and equality increasingly served as a basis with which to challenge indigenous forms of oppression. After Independence, power structures were further undermined through the abolition of Untouchability³² and of *zamindars*.

³¹ These included the anti-Aryan Self Respect Movement (Weiner, 2001: 194), the Dalit movement of Untouchables led by B.R. Ambedkar in the 1920s (Omvedt, 1994: 82; 144-58), and the non-Brahmin movement in the south during the 1920s and 1930s (Ramaswamy, 1978). The derogatory-sounding euphemism of ‘backward caste’ arose from a split in the non-Brahmin movement in the 1930s. Here, members of lower-ranking ‘clean’ Shudra *jatis* sought to distinguish themselves from upper caste non-Brahmin groups – namely, Kshatriyas and Vaishyas (Bayly, 1999: 241).

³² Untouchability was abolished in Article 17 of the Indian Constitution. This was strongly influenced by the pivotal role of B.R. Ambedkar, a former Untouchable, in the framing of the Indian Constitution (Bayly, 1999: 269).

As part of the attempt to challenge the power structures associated with caste, those previously described as Untouchables and India's indigenous 'tribal' populations became known as Scheduled Castes and Tribes respectively, owing to their listing on a special schedule of the 1950 Constitution. This identified them as meriting special treatment from the state as a result of their particular deprivation. This was delivered through a system of 'reservations' in which quotas of educational places and government jobs were allocated to the castes listed on the schedule (Brass, 1990: 5).

During the 1990s, proposals to implement the recommendations of the Mandal Commission³³ to extend reservations to broader sections of the Indian population were violently resisted, particularly by those from the twice-born *varnas* (Brahmins, Kshatriyas and Vaishyas), now known as Forward Castes. These protests included the self-immolations of high-caste student protestors who feared the risks to their own education and employment opportunities (Bayly, 1999: 301). Upper castes also argued that quotas for 'unworthy' minorities would lower the country's professional and educational standards (Bayly, 1999: 299).

Since the 1990s, Sharma (2011: 113) asserts that caste has become increasingly politicised and exploited for political gain. However, Varshney (2000: 4) argues

³³ The Mandal Commission was established to identify wider sections of India's population beyond Scheduled Castes and Tribes who could be considered in need of positive discrimination measures. The commission published its findings in 1980, recommending that almost half the population could be classified as 'backward' and, therefore, in need of special treatment by the state (Bayly, 1999: 292). Attempts to implement the recommendations did not begin until 1990 given their controversial nature (Singh and Verney, 2003: 6).

that such politicisation has permitted the power relations associated with the caste hierarchy to be challenged, given that lower castes can ‘use their numbers to electoral advantage, and fight prejudice and domination politically.’ The analysis in this thesis asserts that, at the micro level, the struggle associated with caste is highly context-dependent, given the variability in power arrangements arising from the caste composition and land-holding patterns of particular villages.

The traditional view of women in Indian society has also been challenged. Omvedt (1993: 97) notes how India’s active women’s movement continues to highlight atrocities against women such as dowry deaths³⁴ and female feticide,³⁵ and to assert the need for land rights for women (ibid.: 96). More recently, Amendments 73 (1991) and 75 (1993) to the Indian Constitution guaranteed thirty-three per cent of *panchayat* (village council) seats for female candidates (Trivedi, 2010: 196).

Jawaharlal Nehru (1889-1964) was a key figure in the struggle for India’s independence from the British, and served as India’s first prime minister from 1947 until his death in 1964. He is most associated with his support for Fabian socialism, democracy, and science and technology as the basis for India’s development. With regard to land ownership, Nehru attempted to bring about greater equality in land-

³⁴ Dowry deaths remain a significant problem. A brief selection from the Andhra Pradesh press during the nine month research period highlights reports of female suicide due to harassment for more dowry through self-immolations (*Deccan Chronicle*, 5/10/2010) and hangings from ceiling fans (*Deccan Chronicle*, 3/12/2010; *Times of India*, 13/3/2011), as well as murders by husbands due to dowry disputes (*Times of India*, 3/11/2011; 7/2/2011).

³⁵ Verma (ibid.: 30) notes that more than two million foetuses are killed every year because they are female.

holding through institutional changes such as land reform, land ceiling legislation³⁶ and the proposed establishment of cooperative farming. Nehru (as cited in Varshney, 1998: 33) argued that '[b]y forming cooperatives, [farmers could] pool their resources for providing credit and getting their supplies of seeds, implements, fertilisers, etc. and can organise the sale of their produce.'

Nehru's efforts to establish a more collective approach to agriculture were, however, largely thwarted by existing rural power holders (Robinson, 1988: 270; Varshney, 1998: 42; Frankel, 2005: 202; Kohli, 2009: 86). Cooperative farming, in particular, was strongly resisted due to its purported threat to the private ownership of land, as well as its association with coercive implementation in the contexts of China and Russia (Frankel, 2005: 165).

Zamindari abolition enjoyed greater success, but led to the emergence of landlords with various sized holdings who rented land to tenants (Rudolph and Rudolph, 1987: 50). As Table 2.1 highlights, shortly before Nehru's death in 1964, forty per cent of India's population operated marginal holdings, while a further twenty-two per cent operated small holdings which were vulnerable to risk.

³⁶ Land ceiling did have some limited success. By the end of December 1976, approximately 1.1 million acres of surplus land had been distributed (Frankel, 2005: 551).

Table 2.1 Distribution of Operational Holdings, 1961/62

<i>Category of holding</i>	<i>Size group (acres)</i>	<i>1961/62 %</i>
Marginal	Less than 2.5	39.07
Small	2.5 – 4.99	22.62
Semi-medium	5 – 9.99	19.80
Medium	10 – 24.99	13.99
Large	25 acres and above	4.52

Source: The National Sample Survey, Number 140, and the Ministry of Agriculture and Irrigation, as cited in Frankel (2005: 493).

Following Nehru's death in 1964, the onset of the technocratic approach to agrarian risk further contributed to the renegotiation of power structures in rural India. This began with the introduction of high yielding varieties (HYVs) of seeds during the Green Revolution throughout the 1960s and 1970s and, more recently, has been associated with the onset of the Gene Revolution (Fukuda-Parr, 2007) in which the introduction of Bt technology is embedded.

The emergence of farmers as a political force in recent decades has led to claims of a 'new agrarianism' (Rudolph and Rudolph, 1987: 333; Varshney, 1998: 118).³⁷ The mobilisation of cultivators throughout the 1970s and 1980s heightened their political power as lobbyists. Through mass protests, cultivators asserted demands associated with the waiver of agricultural loans, as well as higher crop prices and

³⁷ Varshney (1998: 118) argues that this new agrarianism contrasts with the agrarianism associated with authors such as Tolstoy, Rushkin and Gandhi who celebrated the 'blissful simplicity and spiritual richness' of village life.

subsidies (Varshney, 1998: 120-122). These mobilisations were particularly associated with the Shudra (or Backward) castes (Omvedt, 1993: 115).

The changing constellation of power within Indian society is evident from the observation that Shudra castes now often represent the new dominant castes in the villages. The concept of a dominant caste was developed by M.N. Srinivas (1987: 44) who notes that ‘members of a dominant caste are in a privileged position vis-à-vis the other local castes, and its leaders wield considerable power. The leaders have the greatest stake in the village and, generally, it is they who organise local activity, whether it be a festival, general protest, or fight. They dominate the traditional council or *panchayat*.’

The ongoing upheaval in the rural context led M.N. Srinivas to observe in the early 1990s (as cited in Omvedt, 1993: 318) that a revolution of ‘shifting dominance’ was occurring in the Indian countryside. Bt cotton has, therefore, been introduced into a context which is characterised by its highly contested power structures and ongoing agrarian risk. This context, together with the ambiguity associated with the technology itself, has contributed to a plurality of perspectives with regard to the technology’s contribution to alleviating the risk of the agrarian crisis. These will now be explored.

2.5 *The Struggle for Legitimation and Bt Cotton*

The change in approach associated with the introduction of high yielding varieties of seeds in the 1960s,³⁸ and the increasingly prevalent need for fertilisers, pesticides and assured irrigation on which HYV seeds are reliant, is generally referred to as the Green Revolution.³⁹ The adoption of Green Revolution technology saw a shift in emphasis from institutional measures, such as land reforms, which sought to redistribute resources as a means of addressing the agrarian crisis, to a more technocratic approach which focussed on productivity, efficiency and wealth generation within the existing distribution of resources.

It is argued that the Green Revolution allowed India to conclude its dependence on food aid, particularly from the United States. This dependence had led to a loss of autonomy in risk negotiation due to the imposition of conditionalities in return for such assistance (Varshney, 1998: 69; Frankel, 2005: 584). The argument that the United States continues to dominate Indian agricultural policy through powerful institutions such as the World Bank, Ford and Rockefeller Foundations, and multinational companies, such as Monsanto, will be explored in Chapter Three. As a result of the Green Revolution, however, by 1971, India was in a position to unilaterally terminate its imports of American PL-480 wheat (Varshney, 1998: 69).

³⁸ Unlike seed varieties which pollinate naturally, hybrid or HYV seeds are derived from controlled cross-pollination which selects for favourable traits of specific parent plants.

³⁹ Paul Brass (1990: 287) highlights that the most notable success of the Green Revolution was in wheat production and, to a lesser extent, rice. The impact was highly regionally concentrated – in the south, to Andhra Pradesh, Tamil Nadu and Kerala and, in the north, to Punjab, Haryana and western Uttar Pradesh (ibid.). The Marxist economist, Utsa Patnaik (2007: 2), argues that the Green Revolution benefitted big farmers and rich peasantry, while having ‘ruinous effects’ (ibid.) on the environment and smallholders.

As highlighted, the Green Revolution also contributed to shifting power relations in the countryside through creating aspirations among small and marginal farmers who sought their share of Green Revolution wealth. In this quest to achieve wealth, however, it is argued that cultivators simultaneously increased their vulnerability to risk (Shiva, 1991; Reddy and Mishra, 2009: 15).⁴⁰

The commercial approval of Bt cotton in 2002 began what is widely referred to as the Gene Revolution (Shiva, 1991: 210; Fukuda-Parr, 2007). In many ways, legitimisation for the Gene Revolution has been a direct result of the Green Revolution. This is due to the observation by Karihaloo and Kumar (2009: 1) that the bollworm, a major cotton pest, had developed resistance to the pesticides adopted so intensively during the Green Revolution. This had forced farmers to apply as many as ten to sixteen sprays of pesticides per season. The Bt gene was inserted into HYV seeds (Kuruganti, 2009: 32), a modification which was purported to render the crop resistant to the bollworm for the first ninety days of the plant's growth.⁴¹

Proponents argue that Bt cotton has been a remarkable success and has doubled cotton yields (Choudhary and Gaur, 2010: 2). India has become the world's second largest cotton producer after China (Karihaloo and Kumar, 2009: 1; Choudhary and

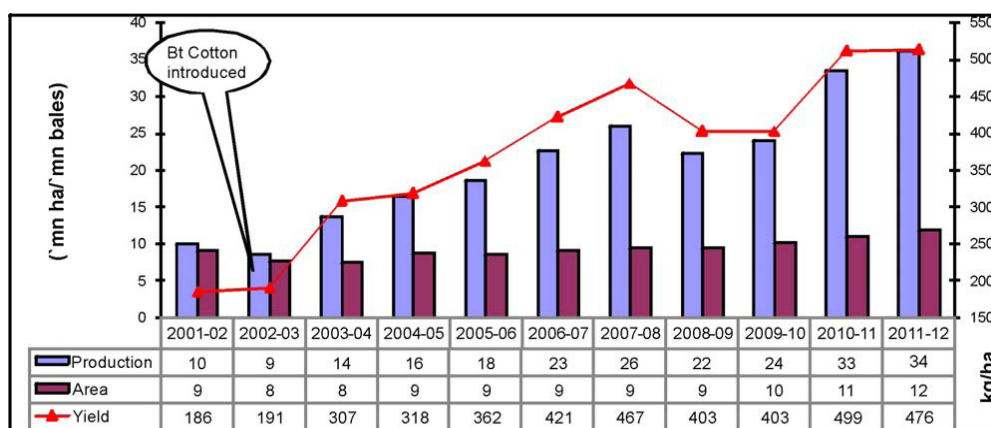
⁴⁰ As Frankel (2005: 510) notes, 'by the 1970s, the growth generated by the new [Green Revolution] technology began to slow in the face of depleted soil fertility, shortages and rising prices of fertilisers, problems of rust disease and power cutbacks that shut down electric pumps [for irrigation].' Vasavi (2010: 76) also notes a decline in productivity, as well as the increasing costs of production and environmental destruction associated with Green Revolution belts, such as Punjab.

⁴¹ Bt cotton cultivators are also required to plant a 'refuge crop' of non-Bt cotton surrounding the Bt cotton plot to ensure that bollworm feeding on Bt cotton will breed with those feeding on non-Bt cotton, and so prevent resistance from developing (Qayum and Sakkhari, 2005: 37).

Gaur, 2010: 5). Supporters of Bt cotton argue that the technology has been significant in increasing yields and has, therefore, played a major role in contributing to India's economic growth.

Many opponents in the villages argue that the increased cotton volumes are due to the more widespread adoption of cotton, and do not relate to yield increases. Indeed, as Choudhary and Gaur (2010: 2) note, India has a larger area of cotton than any other country in the world. However, as Table 2.2 indicates, the increased acreage alone is not sufficient to explain the exponential rise in cotton volumes. These are particularly prevalent after the introduction of Bt cotton in 2002, and suggest that the introduction of Bt cotton did indeed coincide with yield increases.

Table 2.2 Cotton Production, Area and Yield, 2001-2012



Source: Directorate of Economics and Statistics, Ministry of Agriculture, as cited in State of Indian Agriculture Report 2010-2011, Department of Agriculture and Co-operation online Report (2012:8).⁴²

⁴² Available at <http://agricoop.nic.in/sia111213312.pdf>
Accessed on 9/3/2013.

Of the estimated 9.6 million hectares of cotton in India in 2009, eighty-seven per cent were Bt cotton hybrids, of which sixty-four per cent were rain-fed (Choudhary and Gaur, 2010: 5). This represents a significant risk given the reliance on an erratic monsoon for the cultivation of a cash crop associated with high expenditure on seeds, fertilisers and pesticides. Nonetheless, by 2009, Bt cotton hybrids had been adopted by eighty-eight per cent of the 6.4 million cotton growers in India (Choudhary and Gaur, 2010: 7). This included significant numbers of small and resource-poor farmers.

The adoption rate is asserted by proponents as evidence of the success of the technology and its alleviation of risk for all classes of farmer. These views have, however, been strongly contested, particularly from many within India's strong and vibrant NGO sector.⁴³ This has led to a struggle relating to the legitimization of the risk which the technology represents in terms of the trade off involved in its potential to alleviate the existing material risk of the agrarian context.

In terms of this thesis, it is argued that the legitimization of risk involves a material dimension related to the technology's scale neutrality and its potential to alleviate poverty through delivering benefits for all classes of farmer, within the existing distribution of resources. The legitimization of risk also entails an ideological component, however, given that trade offs associated with decision-making on risk are ideologically legitimated through risk construction in discourse. Both of these

⁴³ India is referred to as 'the NGO capital of the world' (Kudva, 1996: 1, as cited in Katzenstein et al., 2001: 248).

aspects will now be explored with regard to the struggle to secure the legitimization of risk which Bt cotton involves.

Poverty and the Legitimation of Bt Cotton

The ongoing risk associated with the Indian agrarian context is evident from Frankel's (2005: 494) observation that, by 1971, the number of landless workers had begun to rise as indebted farmers were obliged to give up their lands. It is also highlighted by the spate of suicides which began to occur in waves from the 1980s which are particularly associated with India's cotton-producing belt (Deshmukh, 2010: 175).⁴⁴ One quarter of a million farmer suicides (256,913) were recorded for the country as a whole between 1995 and 2010 (*The Hindu*, 3/07/2012).

Research on Bt cotton has yielded an array of results with regard to the technology's potential to alleviate the risk of agrarian poverty. A study conducted by Morse et al (2007: 44) in the state of Maharashtra during the 2002-03 season featured questionnaire-based survey results from sixty-three non-adopting, and ninety-four adopting, households of Bt cotton. This found that Bt plots had 2.5 times the gross margin of non-Bt plots. Similarly, Karihaloo and Kumar (2009: 14) cite the results of field trials on large plots conducted in 1998-99 by Mahyco⁴⁵ and monitored by the Review Committee on Genetic Modification (RCGM).⁴⁶ This

⁴⁴ Cotton is mainly grown in nine states - Maharashtra, Tamil Nadu, Rajasthan, Karanataka, Gujarat, Punjab, Haryana, Andhra Pradesh, Madhya Pradesh, as well as small areas of Punjab, Orissa, Assam and Uttar Pradesh.

⁴⁵ Monsanto bought a twenty-six per cent stake in the Indian seed company, Mahyco, in 1998 (Scoones, 2005: 252).

⁴⁶ The Review Committee on Genetic Modification is the regulatory body charged with monitoring field trials in India.

study, which featured twenty-six sites in seven states,⁴⁷ reported a yield increase of forty per cent with Bt cotton hybrids.

Choudhary and Gaur (2010: 20) argued that '[i]n terms of income distribution, all types of households benefit [from Bt cotton], including those below poverty line.' This purported increase in income for Bt cotton cultivators is associated not only with a reduced spend on pesticides, but also with higher yields (ibid.: 17). Further studies also highlight increased labour rates for female agricultural labourers (Subramaniam and Qaim, 2010: 295). Thus, the legitimization of the risk of Bt cotton is founded primarily upon its ability to alleviate the risks associated with the poverty of the most vulnerable.

Other studies highlight, however, highly variable results in this regard (Bennett et al, 2006⁴⁸; Qaim et al, 2006⁴⁹). A study conducted by Qayum and Sakkhari (2005: ii)⁵⁰ in Andhra Pradesh found that non-Bt yields were higher, and pesticide use was the same, for Bt and non-Bt farmers with small land-holdings. Meanwhile, research

⁴⁷ The states featured in these trials were Andhra Pradesh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra and Tamil Nadu.

⁴⁸ The study by Bennett et al. (2006) was carried out on nine thousand Bt and non-Bt cotton plots in the state of Maharashtra between 2003-03. Questionnaires were conducted by Mahyco and monitored by the Genetic Engineering Appraisal Committee (GEAC), the apex regulatory authority in India. This highlighted spatial and temporal variation in the performance of Bt varieties (Bennett et al., 2006: 70).

⁴⁹ Qaim et al. (2006) researched three hundred and forty-one cotton farmers in Maharashtra, Karnataka, Andhra Pradesh and Tamil Nadu in the 2002-03 season. They found significant variation in the performance of the technology associated with agro-ecological differences and variability in farmers' spraying habits (Qaim et al., 2006: 56).

⁵⁰ The research by Qayum and Sakkhari (2005) was conducted in Andhra Pradesh during the 2002-03 season, and featured one hundred and sixty-four farmers in twenty-seven villages. Income and expenditure data was obtained by means of structured interviews conducted at fortnightly intervals throughout the season. Eleven NGOs assisted with the data collection.

conducted by Dev and Rao (2007: 3)⁵¹ during the 2004-2005 season in four districts of Andhra Pradesh, including Warangal, found negative farm incomes in the case of both Bt and non-Bt cotton. This was despite the better yields obtained by Bt cotton farmers – nine quintals per acre as opposed to seven for non-Bt farmers (ibid.: 2).⁵² This research indicated that cotton farming itself was non-viable, regardless of the seed varieties used. The variability of results led Subramaniam and Qaim (2009: 256) to argue that a ‘typical cotton growing village’ does not exist.

It is argued that there are a large number of intervening factors which influence crop performance, other than the modification associated with Bt technology. Kuruganti (2009: 31) claims that parameters such as a good monsoon, low pest pressure and soil type are also highly relevant. He (ibid.) argues that, in Gujarat, increases in cotton production are more likely to be linked to the increase in irrigation and to the hybrid varieties themselves, rather than to Bt technology. Indeed, the percentage of land area which is irrigated in India has risen significantly from 8.2 per cent in 1950-51 (Barik, 2010: 2) to 45.3 per cent in 2008-09.⁵³ This difficulty in establishing direct cause and effect relations with regard to Bt technology has led Gaurav and Mishra (2012: 6) to argue that it is contributing to a ‘stochastic production process’ in which agriculture has become a gamble.

⁵¹ This research involved focus groups and structured interviews, and featured six hundred and twenty-three cultivators (seventy per cent of whom were cultivating Bt varieties).

⁵² It should be noted that, according to Herring (2008a: 147), Mahyco-Monsanto claim that yields of up to fifteen quintals per acre are possible with Bt cotton.

⁵³ State of Indian Agriculture Report, 2010-2011, p. 13. Available at: <http://agricoop.nic.in/sia111213312.pdf> Accessed on 9/3/2013.

Tripp (2009: 82) highlights the influence of climatic variation on Bt cotton outcomes and notes that, even in the same growing environment, different farmers have variable capacities in dealing with climatic risk. He also argues that the risks associated with Bt cotton are more difficult to bear for resource-poor farmers given that smaller farmers have limited access to irrigation. Smale et al. (2006: 205) note that the more heterogenous the growing environment, the more variable the benefits of Bt cotton are likely to be, and argue that India is particularly complex in this regard. These authors (ibid.: 209) claim that, given this variability across time and geographical location, economic findings on Bt cotton cannot be generalised.

In terms of seeking to assess this variability, Smale (2012: 117) highlights the trade-off between the sampling bias associated with smaller samples, and likely measurement errors in larger surveys. Both Smale (ibid.: 115) and Qaim et al. (2006: 52) highlight that studies on Bt cotton use average data to present findings which often mask the degree of heterogeneity among individual farmers. The current study seeks differentiate average findings on costs, yields and incomes between Risk Coalitions. It also presents this data at the level of individual farmers in order to explore the relative micro level impact of Bt cotton variability on poverty alleviation and risk exposure in the 2010/2011 season.

Within the wider Indian context, poverty figures are used to alternately legitimate or delegitimate the technocratic approach to poverty alleviation. Many authors argue that the Green Revolution had a positive effect on poverty figures overall (Brass,

1990: 265; Corbridge and Harriss, 1990: 84; Frankel, 2005: 608; Reddy and Mishra, 2010: 55).⁵⁴ A similar claim is made with regard to the Gene Revolution. The Planning Commission reported that ‘from 2004-2005 to 2009-2010, the rate of poverty in India fell from 37.2 per cent to 29.8 per cent, which means around 360 million people currently live in poverty.’⁵⁵ The number of rural poor in India was officially set at thirty-three per cent for 2009-10, as opposed to an urban poverty figure of twenty per cent.⁵⁶

This thesis argues, however, that poverty alleviation cannot be assessed without a consideration of debt levels. Both the Green and Gene Revolutions have been associated with the dramatic extension of credit facilities to farmers. As Varshney (1998: 120) argues, the ‘[a]doption of the new [HYV] technology required credit; and the government, for its part, vastly expanded its credit operations in order to facilitate the Green Revolution.’ The significant costs associated with the fertilisers, pesticides and irrigation required for the cultivation of HYVs have led NGOs to argue that alternative methods, such as Non-Pesticide Management (NPM) (Ramanjaneyulu, 2006) and organic farming (Misra, 2009), are more viable due to the lower costs and reduced ecological damage with which they are characterised.

⁵⁴ The relation of prices to poverty has always been the main factor in estimating those below poverty level, defined by calculating real *per capita* expenditure on a basket of food items needed to meet minimum calorific requirements. Frankel (2005: 607) highlights that uncertainty exists as to the estimates of poverty in the 1980s and 1990s due to concerns for the representativeness of expenditure patterns from the villages, shops and markets from which price data was collected.

⁵⁵ Available at <http://www.bbc.co.uk/news/world-asia-india-17441347> Accessed on 17/3/2013.

⁵⁶ Available at http://www.thehindu.com/multimedia/archive/00957/Poverty_Line_957814a.pdf Accessed on 20/4/2013.

The Contested Construction of Risk and the Ideology of Development

Attempts to secure the ideological legitimization of risk are closely related to efforts to legitimate the current neo-liberal model of development. Here, claims of India's growing 'middle class' (Kohli, 2009: 10), and the increasing incorporation of a rural elite within this (Corbridge and Harriss, 2000: xx), are asserted by neo-liberal proponents to promote the ideological legitimization of the technocratic approach.

The emphasis on India's increasing middle class as the basis for the ideological legitimization of the neo-liberal development model has also created the impetus for India's burgeoning consumer society. As Varma (2007: 183) argues, 'the middle class' ability to consume [has become] an index to progress.' Similarly, Corbridge and Harriss (2000: 257) note that the term 'middle class' in India is associated with 'the ownership of at least three of four assets: motor vehicle, television set, electric pumpset [and] non-agricultural land.'

Proponents of the technocratic approach argue that the greater prosperity associated with Bt technology has contributed to allowing more families to keep their children at school, and so provides the basis for India's ongoing development. Indeed, India's literacy rates have risen from sixty-four per cent for males and thirty-nine per cent for females in 1991 (Frankel, 2005: 608) to eighty-two per cent for males and sixty-five per cent for females in 2011.⁵⁷

⁵⁷ The rural literacy rate for males was seventy-eight per cent and fifty-eight per cent for females, according to 2011 figures. This was opposed to urban figures of eighty-nine per cent and seventy-nine per cent, respectively. Figures from the 2011 Census of India. Available at: http://censusindia.gov.in/2011-prov-results/paper2/data_files/india/paper2_at_a_glance.pdf Accessed on 5/3/2013.

The ideological legitimization of a technocratic approach as the basis for development is, however, strongly contested. Le Mons Walker (2008: 558) argues that, since India's adoption of neo-liberal policies in 1991, the absolute number of rural poor is rapidly increasing as the state withdraws from welfare provision. This is highlighted by the stark inequity with which the country continues to be associated. The country was ranked sixty-seventh out of eighty-four countries in the Global Hunger Index for 2010 (*Times of India*, 12/10/2010). At the same time, the number of Indian billionaires rose from nine in 2004, to thirty six in 2007 and to fifty-three in 2008 – four of them ranking among the top eight in the world in terms of net worth (Kroll, 2008, as cited in Le Mons Walker, 2008: 564).

The high-profile Indian activist, Vandana Shiva (1999: 601), asserts that the benefits of Bt technology go to seed and chemical corporations through expanding markets, while the costs and risks are exclusively borne by small farmers and the landless. Her view that Bt cotton serves to reinforce existing power structures is clear in her assertion that the technology represents a 'corporate control of seeds' (ibid.).

The ambiguity associated with the technology, and the difficulty in isolating its impact from other factors in the agrarian context can be seen from the arguments of opponents that the addition of a *CryIAC* gene to HYVs has made little contribution to the increase in cotton yields. Kuruganti (2009: 31) argues, 'if pest incidence is

low due to climatic and other conditions, there cannot be yield increases due to protection from crop losses [as a result of] insect-resistant varieties’.

This uncertainty is also associated with the safety of the technology itself. NGOs assert reports of livestock deaths which they argue have occurred as a result of the animals having grazed on Bt cotton. Herring (2008: 155) argues that the idea that these deaths could have resulted from the animals having grazed on Bt cotton is biologically impossible.⁵⁸ He observes, however, that ‘the claim itself gets wide publicity, is difficult to disconfirm on the ground, and has the ring of authenticity as a product of local knowledge.’ The demand for ‘scientific’ proof from scientifically uneducated cultivators in order to support their assertions of risk with regard to the animal deaths is redolent of the ‘evidence trap’ referred to by Renn (2008: 133). Thus, the ideological legitimization of the risk of Bt cotton remains subject to the profound ‘non-knowing’ asserted by Beck (2009: 115).

As part of the attempts to secure the ideological legitimization of the neo-liberal approach to risk negotiation, government initiatives have sought to institutionalise a trickle down effect (Frankel, 2005: 503). This has included the Public Distribution System which was introduced in 1972, as a means of delivering subsidised food items to the most vulnerable.⁵⁹ It is noted, however, that these rations require access to

⁵⁸ It is argued that Bt cotton is toxic only to organisms which contain receptors to Bt proteins – namely, the *Lepidoptera* and *Phthiraptera* classes of insects (Karihaloo and Kumar, 2009: 3).

⁵⁹ Under the terms of the Public Distribution System, households with an annual income of less than Rs 6,000 are issued with white ration cards which entitle them to five kilograms of rice at two rupees per person per month from fair price shops. This is up to a ceiling of twenty kilograms. Pink card holders are also entitled to rations up to a lower ceiling. Sugar, kerosene and edible oil are also provided at reduced

cash, a commodity which the rural poor, by definition, lack. The PDS has been criticised for its inefficient targeting of the poor (Deb, 2009: 70) where it is argued that restricting access only to the poor is 'administratively unachievable and expensive' (ibid.), and for its leakages and waste (Indrakanth, 1997). It has been argued by Varshney (1998: 7) that, given the extent of India's inequality, food surpluses often coexist with hunger. The situation highlights the impact of power relations on the ideological legitimisation of an ongoing differentiation of risk exposure.

In conclusion, this chapter has argued that the risk associated with the agrarian crisis in village India is differentiated along dimensions relating to caste, land-holding, and gender. The resulting 'social risk positions' (Beck, 1992: 23) serve as the basis for power relations which are subject to an ongoing legitimisation struggle. The debate concerning the legitimisation of Bt cotton can be seen as symbolic of this wider struggle to legitimate power through the assertion by opponents of the unequal exposure to risk associated not only with the technology, but also with the neo-liberal development model within which the technology is embedded.

Scoones (2005: 302) highlights that mobilisations associated with opposition to Bt technology relate to emergent forms of citizenship and, as such, 'present the opportunity to create a new democratic politics.' They thus represent, he argues, 'new images both of hope and anxiety' (ibid.). The key question, as Scoones

prices. According to Le Mons Walker (2008: 572), due to pressure from the World Bank, the ration prices for rice rose from two rupees to Rs 3.50 in the 1990s. The two rupee price has since been restored.

(2005: 302) highlights and which this thesis seeks to explore, becomes '[w]hat type of politics is biotech creating?' This thesis will now turn to an exploration of the Bt cotton debate as a concern of democratic praxis.

Chapter Three

Bt Technology and Democratic Legitimacy in Indian Politics

3.1 Introduction

In this chapter, risk definition as a function of institutional decision-making is explored. This is undertaken through, firstly, examining democratic praxis within the Indian context. The chapter then presents the core-periphery model developed by the German critical theorist, Jürgen Habermas (1996: 354-359), as the central framework adopted to analyse democratic legitimacy.

The core-periphery model is adopted in two ways: firstly, it is used as a basis to explore power relations as the ‘relations of definition’ referred to by Beck (1995: 43). Here, definitional power is differentiated according to the model’s empirical positioning of actors based upon their decision-making power. Secondly, the model is used to explore the relation between democratic praxis and the exercise of power as the basis for analysing democratic legitimacy in the Bt cotton debate. This is undertaken through adopting the Habermasian depiction of legitimate democratic praxis as a ‘circulation of power’ (1996: 356) between the core and periphery.

3.2 The Indian Context and the Institutionalisation of Democracy

The democratic ideal is defined as self-rule (Dahl, 1989: 3) or self-determination (Bohman, 2007: 2). Gandhi referred to self-rule as *Swaraj* and argued that it represented both a political and an ethical project. In Gandhi’s view, democracy

required the ability to learn how to exercise personal power responsibly in order to secure the freedom of the collective. He (1910, as cited in Parel, 1997: 73) claimed, 'it is *Swaraj* when we learn to rule ourselves....If we become free, India is free.'

The concept of self-rule is particularly meaningful in Indian society. This is not least due to the centuries of imperial rule and colonial oppression which the country has endured, and which culminated in a long fight for freedom from British rule.⁶⁰ Through the efforts of Mahatma Gandhi and other nationalist leaders, this struggle for freedom became a mass movement and serves as the legacy for the formation of the contemporary Indian state.

It is also recognised, however, that the realisation of self-rule as a political praxis in a country of India's inequality, complexity and diversity has proved notoriously difficult. In fact, authors argue that India has been undergoing a 'crisis of governability' (Kohli, 1990: ix; Corbridge and Harriss, 2000: 253) for some time. The celebrated Indian political analyst, Rajni Kothari (2005: 69), contends that the legitimacy of India's democratic institutions has been slowly eroded since Independence. This 'deinstitutionalisation' (Corbridge and Harriss, 2000: 76) of Indian politics is particularly linked with Indira Gandhi's⁶¹ time in office. Indian

⁶⁰ British rule in India is generally regarded to have begun with the Battle of Plassey in 1757. As a result of this conflict, the British East India Company, initially established as a commercial venture, gained the power to extract revenues from the local population (Nehru, [1946], 2004: 321). The British occupation of India ended in 1947 following a long struggle for independence.

⁶¹ Indira Gandhi served as Prime Minister of India for fifteen years (1966-1977; 1980-1984). She imposed Emergency rule on the country between 1975 and 1977 when democratic rights were suspended, and political opponents arrested. This time was associated with a by-passing of the decision-making institutions of government, and a subsequent damage to their legitimacy from which they have struggled to recover (Sharma, 2010: 79).

politics has also been associated with increasing levels of criminalisation, corruption and violence (Corbridge and Harriss, 2000: 95; Mohanty, 2004: 110; Frankel, 2005: 21; Sharma, 2010: 68).

And, yet, it is also acknowledged that Indian democracy cannot be lightly dismissed. Instead, the world's largest democracy is noted for its deeply paradoxical nature (Chandhoke and Priyadarshi, 2009: ix). The country has a free press, numerous political parties and free elections, with a voter turnout of around sixty per cent (Sharma, 2010: 89). It is also recognised that grave concerns for the institutionalisation of democratic praxis coincide with the diffusion of the democratic ideal to increasing sections of Indian society.

Sharma (2010: 67) observes, 'democracy has become such an indelible part of the nation's political consciousness that – despite the disillusionment with 'politics as usual' – most Indians continue to maintain a deep philosophical commitment to democracy.' This 'deepening of democracy' (ibid.: 68) has, however, created problems associated with increasing political fragmentation. Thus, it is argued that India has become 'increasingly democratic and increasingly difficult to govern' (Manor, 1988: 72, as cited in Corbridge et al., 2013: 125).

India is also the site of an ideological struggle with regard to the country's development and the way in which risk should be negotiated as part of this. As has been noted, this has seen the redistributive focus of the socialist approach favoured

by Nehru largely eschewed in favour of a 'growth first' (Kohli, 2009: 154) neo-liberal emphasis on improvements in productivity.

It is recognised that the ideal of self-rule in a country marked by the poverty of the Indian context is highly problematic. It is argued that the ongoing liberalisation⁶² of the Indian economy, rather than occurring as a result of reasoned decision-making by India's leaders in consultation with its citizens, has instead been imposed by external powerful structures in return for borrowing and, in the past, for food aid (Frankel, 2005: 271).⁶³

The link between self-sufficiency and a country's ability to define its own decisions was noted by Indira Gandhi, who argued that 'many countries were trying to influence India' as the nation was not self-sufficient (1969, as cited in Frankel, 2005: 403). Critics contend that the undue influence of the United States government and the reliance on IMF and World Bank funding are exposing India to risk, and undermining the autonomy of India's decision-making institutions (Frankel, 2005: 403; Kothari, 2005: 57; Kohli, 2009: 153). It is also argued that food aid was allocated on a 'short-tether' basis in 1965 in order to exert pressure on India's leaders to undertake the agrarian reforms associated with the Green

⁶² Liberalisation measures include currency devaluation, deregulation, privatisation and trade liberalisation (Le Mons Walker, 2008: 559).

⁶³ The rupee was devalued by thirty-six per cent by Indira Gandhi in return for food aid in 1966 (Frankel, 2005: 298). Similarly, a \$5 billion loan from the IMF in 1981 was approved on the basis that India would remove trade barriers (Mohanty, 1986: 254; Kohli, 2009: 157). The more recent structural adjustment undertaken as a result of borrowing in 1991 is largely regarded as India's shift to a more fully neo-liberal approach. This is associated with the further removal of barriers to globalised trade, and the increased withdrawal of the state from public spending on welfare measures (Le Mons Walker, 2008: 573; Kohli, 2009: 39). Talks are also ongoing regarding a Free Trade Agreement with the European Union.

Revolution (Varshney, 1998: 70; Corbridge and Harris, 2000: 69; Frankel, 2005: 286). This also served to secure the ideological shift away from socialism which the US government was keen to secure (Varshney, 1998: 28; Frankel, 2005: 341).

The influence of external actors, such as the United States, on India's policy-making with regard to the negotiation of risk remains strong. In 2005, India entered into an Indo-US Knowledge Initiative in agriculture which was signed with President Bush as a precursor to India's 'second Green Revolution' (Raina, 2006: 1622). This aims to foster public-private partnerships between the two countries. However, the agreement, which seeks closer collaboration with multinationals as part of India's development, precluded public consultation and is unavailable for open perusal (ibid.).

The Indian political analyst, Atul Kohli (2009: 42), argues that the state in India is increasingly required to alternate between demands to its legitimacy related to economic growth and those related to redistribution. It should be recognised, however, that the discourse of risk also serves as a new basis for challenging the legitimacy of the state. This has been reinforced through the protests and civil unrest which are an indelible aspect of Indian society.⁶⁴

⁶⁴ The idea that the current development model is strongly contested on the grounds of its risks is evident from a brief selection of Indian media reports during the nine months covering the research period. These include protests against a thermal power plant in Sompeta, Andhra Pradesh (*Times of India*, 15/07/2010), claims of unfair compensation and illegalities with regard to land grabs for industry (*Times of India*, 8/9/2010; 10/9/2010), the displacement of India's indigenous tribal populations due to mining activities in Srikakulam, Andhra Pradesh (*Times of India*, 31/01/2011) and demonstrations against the building of industries due to ecological destruction and the displacement of communities, such as a \$12 billion steel mill in Orissa (*Deccan Chronicle*, 2/2/2011).

There are also signs that India's global positioning has been changing in recent years. This may signal the beginning of a somewhat strengthened, though still highly circumscribed, ability to negotiate risk on its own terms. India's altered positioning in 'development' terms was highlighted by the recent announcement that the UK intends to stop all aid funding to India by 2015. The Indian foreign minister, Salman Khurshid, asserted the view that '[a]id is the past and trade is the future.'⁶⁵ This posturing is significant given that, as has previously been highlighted, global power relations exert a significant influence on a state's ability to negotiate risk on its own terms, in ways which respond to the legitimization demands of its citizens.

The changing stature of India within global power circles is evident from the heightened pressure by India's politicians on the United States government to endorse a permanent seat for India on the UN Security Council in return for trade alliances (Sharma, 2011: 120-122; *Times of India*, 17/11/2010). This was a particularly prominent theme during the visit of President Obama in 2010 (Sharma, 2011: 120-122), and highlights India's attempts to re-negotiate its place in global power relations.

In light of this wider context, this chapter now turns to a closer examination of the Indian democratic process, using the struggle to define the risk associated with Bt

⁶⁵ Available at: <http://www.bbc.co.uk/news/uk-politics-20265583> Accessed on 2/4/2013. An article in the *Times of India* (13/3/2011) entitled 'Post-colonial British angst at Indian disdain for aid' also asserted the view that India would be 'unmoved' if British aid money was spent elsewhere.

technology as the lens with which to explore the political praxis of Andhra Pradesh in greater detail. This analysis is undertaken using the Habermasian core-periphery model (1996: 356-359) as a central analytical framework.

3.3 *The Core-Periphery Model and Crisis in Relations of Definition*

Kothari (2005: 1) makes the crucial observation that democracy is both an ‘institutional and ideological’ concern. This recognises that democracy is both an ideal associated with self-rule and normative principles such as equality, justice, liberty and fraternity, and a political praxis which attempts to institutionalise this ideal. This thesis argues that the legitimisation of democratic praxis entails references to the normative principles which serve as the basis for its inspiration. This relates to the idea of ‘internal transcendence’ (Strydom, 1999: 13) where normative principles, such as justice and equality, serve as the basis for legitimating the exercise of power within immanent democratic praxis.

At the meso level, the analysis seeks to capture the dynamic and contested nature of Indian democratic praxis through the use of the core-periphery model (Habermas, 1996: 356-359).⁶⁶ This model is adopted due to its illustration of the ideal of democracy in terms of a legitimate democratic praxis in a way which is amenable to analysis.

⁶⁶ Indian analysts have also been attracted to the ideas of Habermas. For instance, the celebrated Indian political theorist, Thomas Pantham, finds much commonality in the works of Gandhi and Habermas in terms of their critiques of Western capitalism. This is discussed in *Beyond Liberal Democracy: Thinking with Mahatma Gandhi* in Pantham and Deutsch (1986: 325-346) and *Habermas' Practical Discourses and Gandhi's Satyagraha* in Parekh and Pantham (1987: 292-310).

The current exploration of the Indian democratic process is undertaken with a particular focus on the power relations involved in the attempts to construct knowledge in relation to the definition of risk associated with Bt cotton. Here, the core-periphery model is adopted in two ways. Firstly, it provides an empirical framework for the differentiation of institutional actors according to their decision-making power within society. This is used to analyse the 'relations of definition' described by Beck (1995: 43), as well as the potential for 'institutional crisis' which Beck (ibid.: 8) suggests attempts to define risk represent.

Secondly, the model is used to analyse the attempts by social actors to negotiate their own power as part of knowledge construction in democratic praxis. This is undertaken through adopting the model's portrayal of the ideal of democracy as a 'circulation of power'⁶⁷ to serve as a normative reference point for the analysis of the suggested exercise of power proposed by actors in their own framing of how democratic praxis should operate. Both of these aspects will now be explored with regard to the current analysis of the Bt technology debate.

The Core-Periphery Model and Relations of Definition

The core-periphery model is here used to explore the 'relations of definition' (Beck, 1995: 43) in terms of the differentiation of social actors with regard to their formal decision-making power. This differentiation can be seen as that which exists between those who make collective and official decisions on behalf of society

⁶⁷ For Habermas (1996: 356), decision-making power is traced through communication flows between the core and periphery.

(which are formalised through legislation), and those who are in positions to advise and influence them, but cannot themselves officially decide. This recognises Strydom's (2013)⁶⁸ view that the core-periphery model 'lays out the actual parameters of the ground on which differently positioned actors meet, negotiate and struggle.'

It is recognised that institutions vary greatly in terms of the influence which they can exert on decision-makers. This is a primary source of contention within contemporary India as influencers from industry seek to assert their power over and above the 'official' decision-making function of the state. As this chapter will highlight, this contributes to the 'institutional crisis' described by Beck (1994: 8). This thesis suggests that the potential for an illegitimate exercise of power to be institutionalised as part of democratic praxis represents the real potential for a 'legitimation crisis' (Habermas, [1973], 1976) at this level.

The Core as Decision Makers

The parliamentary bodies and those actors who comprise the incumbent government and opposition parties are referred to by Habermas (1996: 354-355) as the *political core*. The core is distinguished from the periphery by virtue of its 'formal decision-making powers' (ibid.: 355). In India, the core is comprised of the parliamentary complex of the central government in Delhi,⁶⁹ as well as the

⁶⁸ E-mail communication with Piet Strydom, a recently retired Senior Lecturer in Critical Theory at University College Cork (4/3/2013).

⁶⁹ As Sharma (2010: 68-73) notes, the key institutions of national governance are the executive (composed of the president and the Council of Ministers), the Parliament, and the Supreme Court. India's parliament,

institutions of democracy associated with the federal states. Given that it is the federal state which is constitutionally responsible for agricultural policy, the government of Andhra Pradesh is regarded as the core in terms of the current analysis. However, it is noted that, with regard to the debate on Bt technology, the relation of the Andhra Pradesh state to the wider core of Delhi is itself characterised by considerable conflict. This will be explored in Chapter Four.

It has been argued that the government in India privileges science-based decision making (Gupta, 2011: 737). This has led to its being referred to as a 'laboratory state' (Visvanathan, 1988: 257) and has raised concerns with regard to its impartiality. Similarly, the legitimacy of the core itself is questioned due to the perceived influence of global institutions such as the World Trade Organisation and World Bank in the state's development planning. As the analysis highlights, the influence of such external actors is regarded by opponents of Bt technology as limiting the core's ability to take decisions which respond to the demands of its own citizens as a concern of legitimisation.

In the current study, the core is represented by the incumbent Agricultural Minister in Andhra Pradesh (from the Congress Party),⁷⁰ and the spokesperson for the

the supreme legislative body of the country, consists of a bicameral legislature made up of the *Lok Sabha* (House of the People or lower house) and the *Rajya Sabha* (Council of States or upper house). The Supreme Court is the highest legal tribunal and the ultimate interpreter and guardian of the constitution. As Sharma (ibid.: 71) highlights, the Supreme Court is an institution of considerable significance in India.

⁷⁰ The Congress Party was at the forefront of India's struggle for independence from British rule. It has been referred to as 'an umbrella party' (Varshney, 1998: 30) given the variety of ideological positions which it incorporates.

Communist Party (Marxist) or CPM in opposition.⁷¹ The Congress Party actor is largely supportive of the technology and the neo-liberal ideology⁷² in which it is embedded, while the CPM actor opposes both.

While such competing ideological views between political parties in the core are fundamental to the praxis of democracy, it should be noted that there have been increasing questions associated with the constitutional legitimacy of the neo-liberal ideology from the Supreme Court itself. Sharma (2011: 71) highlights that the Supreme Court has begun to assert its authority with regard to the questioning of government policy in recent years. This was evidenced by the insistence of the Court during the research period that food rotting in *godowns* (warehouses) should be distributed for free to the poor (*Deccan Chronicle*, 7/9/2010).

The response by the Prime Minister, Dr Manmohan Singh, that the Supreme Court should not get involved ‘in the realm of policy formulation’ (*Deccan Chronicle*, 7/9/2010) serves to highlight the tension between institutions within the parliamentary complex of the core itself. The Supreme Court has also criticised the government’s policy on development, referring to it as ‘blinkered’ (*The Times of India*, 21/07/2010), and arguing that the inequality which it promotes exposes the country to the risk of terrorist groups, such as the Naxalites (*ibid*).⁷³

⁷¹ The communists are the largest opposition party in national politics (Frankel, 2005: 210). Kohli (2009: 35) argues that the CPM are essentially ‘social democratic’ in their approach.

⁷² The concept of ideology used in this thesis is adopted in the neutral sense posited by Van Dijk (1998) and O’Mahony (2011: 167) where it does not necessarily denote false consciousness. Instead, ideologies here represent the ‘principles that form the basis of...beliefs’ (Van Dijk, 1998: 8).

⁷³ The Naxalites, Maoists, or Communist Party (Marxist-Leninist), were formed from a split in the CPM in 1969 (Brass, 1990: 299). They are strongly inspired by the ideas of Chairman Mao and the Chinese

Finally, there has also been conflict within the core itself between the competing development priorities and ideological preferences associated with different government departments. In the case of Bt technology, a Department of Biotechnology under the Ministry of Science and Technology has aggressively promoted the development and adoption of transgenic crops, in contrast to a more cautious Ministry of Environment and Forests (Gupta, 2011: 737). Thus, the debate on Bt technology is increasingly resulting in confrontation between institutions themselves as democratic praxis is called upon to transform itself in response to the demands of risk society.

The Inner Periphery as Advisors

According to Habermas (1996: 355), the *inner periphery* is comprised of institutions ‘equipped with oversight and law-making functions as delegated by the state.’ In the case of Bt technology, the inner periphery includes the regulatory authorities whose function it is to advise the government on legislation. The analysis in the current study features a member of the Review Committee for Genetic Modification (RCGM) who is also a senior research scientist at ANGRAU, the agricultural university in Andhra Pradesh.⁷⁴

revolution. Naxalites assert that the state serves only as an instrument of ‘compradore-bureaucrat capitalism’ (Mohanty, 1986: 253), and thus blocks the realisation of a true democracy of the people. They, therefore, seek the state’s violent overthrow. Naxalites are explored in more detail in Chapter Four given their presence in Telangana.

⁷⁴ India has a vast network of state agricultural universities which are regulated by the Indian Council of Agricultural Research (ICAR). As Scoones (2005: 121) notes, these were modelled on the land grant universities of the US, and their academic programmes are strongly influenced by the US system. Due to their increasing collaboration with the corporate sector, however, Raina (2006: 1622) describes them as ‘quasi-public’.

The Genetic Engineering Approval Committee (GEAC) is the apex regulatory authority for Bt technology and reports to the Ministry of Environment and Forests (MoEF). The Review Committee on Genetic Modification (RCGM) forms part of the Department of Biotechnology under the Ministry of Science and Technology and reports to the GEAC. The RCGM is mandated to oversee small-scale field trials, while the GEAC is the final point of regulatory approval for GM crops in India (Lianchawii, 2005: 4287).

The early experience of Bt cotton in India highlighted serious concerns with regard to the Indian regulatory process. As previously highlighted, though Bt cotton was ‘officially’ approved in India in 2002, the crop had, in fact, been grown illegally since 1999 (Herring, 2012: 48).⁷⁵ Since then, illegal and spurious⁷⁶ seed varieties have proliferated (Herring, 2008b: 154). This has been widely regarded as evidence of regulatory failure (Lianchawii, 2005: 4285; Kuruganti, 2006: 4246).

The idea that the challenge of regulating Bt cotton has placed an extra burden on India’s judicial institutions is clear. The legality of the field trials of Bt cotton conducted in 1998 is still pending a Supreme Court decision, given that it is argued that initial field trials were approved by the RCGM, without being passed by the

⁷⁵ As highlighted previously, Mahyco was granted permission to import one hundred grams of Bt cotton seed as part of an agreement with Monsanto as early as 1995 (Scoones, 2005: 252). However, the RCGM did not become involved in the monitoring of field trials until 1998 (ibid.). This illustrates the difficulties faced by political institutions in attempting to keep track of Bt technology, given the reach of multinationals and their potential to by-pass national processes of legitimization.

⁷⁶ Herring (2008b: 151) notes that spurious seeds are often locally referred to as ‘duplicates’. These are sold by unscrupulous dealers as Bt seeds when they do not, in fact, contain the Bt gene. Alternatively, they may be F2 second generation seeds gathered from the seed saving of a Bt cotton crop in which the genetic modification will be associated with a weaker expression (ibid.).

GEAC (Ramanjaneyulu, 2005: 5). The Research Foundation for Science, Technology and Ecology (RFSTE) also challenges the lack of biosafety procedures during these trials (Scoones, 2005: 315-323). In more recent times, the NGO reports of animal deaths are asserted by opponents as indicating serious shortcomings in the biosafety testing in India, given the failure to test the impact of Bt crops on livestock (Kuruganti, 2006: 4246).

The conflict between institutions in the core and inner periphery in terms of decision-taking on risk was highlighted in the latest controversy regarding attempts to extend Bt technology to a food crop, Bt bringal (aubergine). Bt bringal was officially approved for commercial cultivation in India by the GEAC in 2009, making it India's first food crop to receive such approval. However, the then-Minister of State for Environment and Forests, Jairam Ramesh, announced in February, 2010, that the GEAC's 'decision' should be seen as a recommendation only, and asserted the primacy of his power in the core by claiming that the ultimate authority for decision-making in this regard lay with his department in government. He then imposed an indefinite moratorium on the cultivation of Bt bringal pending the findings of future research.

The Periphery as Influencers

The *outer periphery* (referred to simply as the periphery in the current research) is comprised of India's highly politicised and diverse civil society. According to Habermas (1996: 355), these include 'public agencies and private organisations,

business associations, labour unions and interest groups' (ibid.). As discussed, actors on the periphery are so designated because they do not possess 'official' decision-making power. They are, therefore, obliged to lobby the core in order to have their interests recognised.

It is acknowledged that institutional actors vary greatly in terms of their ability to exert influence on the core. For the purposes of examining this differentiation, certain key actors have been selected to represent the polarity of views which Bt technology represents on the model's periphery. These include the multinational, Monsanto, which is associated with the development and promotion of Bt technology, and three non-governmental organisations (NGOs) who are strongly opposed to the technology.

Monsanto

Monsanto⁷⁷ has been the focus of much of the public opposition to Bt technology. In India, the distrust with which the organisation is perceived by many is heightened due to the traditional aversion to capitalists asserted by Nehru and Gandhi. As Frankel (2005: 14) highlights, Gandhi argued that the capitalist was committing 'the moral equivalent of theft.' Gandhi (as cited in Frankel, 2005: 15) also predicted the threat to democracy which capitalism presented, arguing that the 'moneyed classes would control political parties, the legislatures and the media so that democracy existed in name only.'

⁷⁷ Monsanto's headquarters are in St Louis, Missouri, in the United States. The company's net profits in 2011 were \$1.6 billion. Available at: <http://money.cnn.com/magazines/fortune/fortune500/2012/snapshots/11092.html> Accessed on 8/10/2013.

Nehru ([1946], 2004: 620), too, maintained that '[t]he competitive and acquisitive characteristics of modern capitalist society, the enthronement of wealth above everything else...add[ed] to the ill health of the mind and produce[d] neurotic states.' The hostile approach to Monsanto⁷⁸ has been heightened due to the organisation's association with scientific innovations such as Agent Orange⁷⁹ and PCBs⁸⁰ which have subsequently been linked with damage to health (Smith, 2004: 115).

The company's strategy with regard to Bt technology has been described as a 'PR disaster' (Scoones, 2005: 108). This has contributed to fears that the company is seeking to gain corporate control of the food chain in ways which will lead to the commodification of seeds, and pass the power of the world's food supply to the multinational (Shiva, 1999: 75; Weis, 2007). The lack of trust with which the company is regarded by opponents has fuelled concerns that Bt food crops will form part of a 'reforms by stealth' (Corbridge and Harriss, 2000: 121) approach. This relates to the potential for Monsanto's economic power to be used to by-pass the process of legitimisation in ways which undermine the democratic process.

⁷⁸ A 'Monsanto Quit India' day was observed in New Delhi on 9th August, 2011. Available at: <http://www.greenpeace.org/india/en/Press/Monsanto-quit-India-day-observed-across-the-nation/> Accessed on 14/4/2013.

⁷⁹ Agent Orange, a herbicide and defoliant developed by Monsanto, was used by the US military as part of a strategy of chemical warfare during the Vietnam War. Thousands of veterans and tens of thousands of Vietnamese developed health problems, which included cancer, neurological disorder and birth defects (Smith, 2004: 115).

⁸⁰ The synthetic chemicals, PCBs (poly-chlorinated biphenyls), developed by Monsanto, were adopted in a variety of ways following assurances of their safety. Uses included insulation of electrical equipment and serving as a flame-retardant in paint. The chemicals are now outlawed due to their links with cancer and birth defects (Smith, 2004: 115).

It is argued that the economic power of Monsanto, the employment which the organisation provides⁸¹ and its access to expensive research equipment and highly qualified specialists, provide it with significant influence in its lobbying of the core. This also allows the company to gain more widespread legitimation for its ideological positioning. As Glover (2002: 2736) highlights, ‘through their political influence, [transnational companies] serve as a “transmission belt” for the penetration of norms, values and practices from their home countries.’

When such a transmission belt concerns the diffusion of technologies which could potentially expose citizens to risk, however, then the legitimacy of the state itself is threatened, as is the epistemic dimension of democratic praxis. This leads to a situation where, as Beck (1992: 227) observes, ‘[b]usiness is not responsible for something it causes, while politics is responsible for something over which it has no control.’ Chapter Four will explore the ways in which the organisation has specifically challenged the Andhra Pradesh state government’s attempts to regulate its operations and contributed to conflict in centre-state relations.

The awareness of its own problems with legitimation has been a crucial factor in Monsanto’s linking up with high-profile, well-established and trusted Indian concerns (Scoones, 2005: 161). These include the affiliation with the Indian seed company, Mahyco, as well as elite public sector science institutes in India (ibid).

The company has also sought to reorient its business around sustainability (Glover,

⁸¹ The company employs twenty-one thousand staff globally.
Available at: <http://www.monsanto.com/whoweare/Pages/default.aspx> Accessed on 15/4/2013.

2007: 855). This explicitly links Bt technology with small farmers in the 'developing' world, and with an attempt to alleviate world hunger (Glover, 2007: 855). Similarly, in a 'pledge' announced in 2000, Monsanto committed to dialogue, transparency and respect in its business dealings (ibid.).

Non-Governmental Organisations (NGOs)

As has been highlighted, the NGO sector in India is a large and vibrant one. The first official estimate of the number of NGOs in the country was 3.3 million in 2009, which translated into one NGO for every four hundred Indians (Shukla, 2010).⁸² The significance of NGOs in Indian society is highlighted by Katzenstein et al. (2001: 247) who argue that 'it would be a mistake to ignore the burgeoning NGO sector in any analysis of social activism in India.'

It is recognised that NGOs are highly diverse in their activities, orientation and scale (Adeney and Wyatt, 2010: 149). They are also markedly different in their degree of political activism and their approach to the state. It is noted, too, that the sector has been the subject of much critique. This includes the argument by Deshpande (2004: 403) that NGOs serve to depoliticise society through their co-opting by the state and their enlistment in rolling out the state's development model. Similarly, Mehta (2007, as cited in Corbridge et al, 2013: 148) asserts the view that NGOs represent a type of 'post-democracy' given that they are unaccountable to the people they seek to represent. There are also concerns that Indian NGOs in receipt

⁸² Available at <http://www.indianexpress.com/news/first-official-estimate-an-ngo-for-every-400-people-in-india/643302/> Accessed on 23/3/2012.

of foreign funding are simply pursuing the interests of foreign donors (Adeney and Wyatt, 2010: 149) in ways which threaten the legitimacy of the institutions of the state. Finally, Corbridge et al. (2013: 148) note that NGOs, as 'proselytising organisations', can be 'divisive' (ibid.).

The analysis in the current study involves three NGOs who are actively engaged in the Bt technology debate in Andhra Pradesh. These are the Centre for Sustainable Agriculture (CSA), the Deccan Development Society (DDS) and Crops Jangaon (CJ). The study by no means seeks to promote an uncritical view of the activity of these NGOs. The research revealed a certain dogmatic approach with regard to the engagement of DDS with villagers in Nandanapuram and their use of NPM practices. Similarly, the involvement of Crops Jangaon with Orgampalle village was noted as being particularly controlling. Each research trip to the village had to first be cleared with the NGO, and representatives from the NGO had to be politely requested to leave research interviews so that the researcher and her translator could interact independently with villagers. Nonetheless, the analysis suggests that many of the critiques levelled against NGOs generally cannot be considered valid in terms of the functions performed by the organisations featured here.

Firstly, as Chapter Two has highlighted, far from serving to depoliticise Indian society, these NGOs are central to politicising it. This is achieved in a number of ways: through enabling the articulation of an alternative construction of risk to that propounded by power holders in Indian society; through facilitating alternative

cultivation methods which emphasise farmer choice; and through engaging villagers in wider mobilisations against the technology. In this regard, they are pivotal to problematising the mainstream model of neo-liberal development, and the power structures which support it. This activity is central at the micro level given the inadequacy of the institutionalised forum of village democracy, the *Gram Sabha* meeting, to address risk which will be explored in later chapters.

Secondly, as the analysis of this meso level indicates, these NGOs represent the ‘consciousness of crisis’ (Habermas, 1996: 357) of many cultivators, in terms of their assertion of risk. This suggests that, rather than representing a type of post-democracy, they are crucial to democratic praxis given their role in securing the representation of marginal cultivators who would otherwise fail to gain recognition as part of the democratic process.

Thirdly, while all of the NGOs involved in this study are funded by international donors, they seek neither to by-pass the Andhra Pradesh state government, nor to undermine it, but rather to transform it in ways which seek to enhance its legitimacy when assessed according to the theoretical analysis of democratic legitimacy presented here.

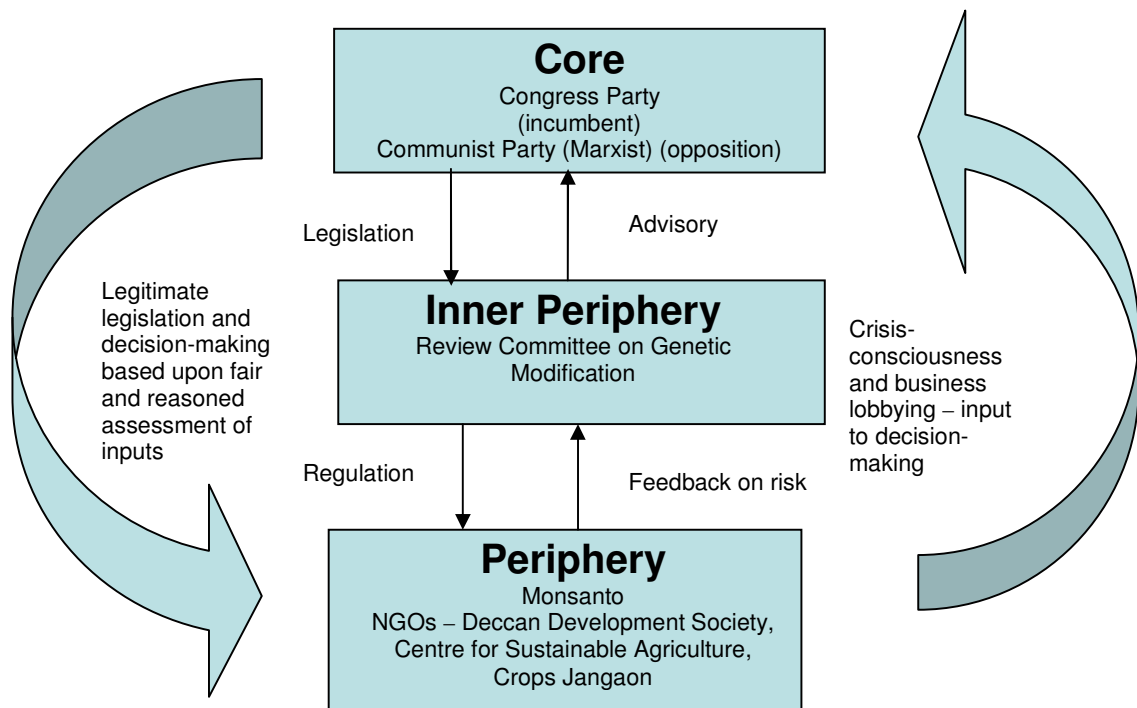
Finally, while the analysis highlights that the NGOs involved in this study are most certainly proselytising and divisive, and very much committed to their own ideological positions, it is posited that this is central to their function in confronting

the power structures in Indian society. In adopting their ideological positions, they seek to transform democratic praxis in ways which are strongly informed by the representation of the ideal of democracy as a 'circulation of power' described by Habermas (1996: 356). It is to this aspect of the activity of NGOs which this chapter now turns.

3.4 Democratic Legitimacy as a Circulation of Power in Knowledge Construction

As highlighted, the core-periphery model posits that legitimate decision-making can be regarded as a 'circulation of power' between the core and the periphery (Habermas, 1996: 356). This 'circulation of power' illustrates the ideal of democracy as self-rule (Dahl, 1989: 3) and self-determination (Bohman, 2007: 2) discussed earlier, and forms the basis of a decision-making praxis which can be regarded as democratically legitimate. According to Habermas (1996: 356), such a circulation of power is traced through the unimpeded and inclusive communication flows between the core and periphery. This is portrayed in Figure 3.1 overleaf.

Figure 3.1 The Core-Periphery Model and the Circulation of Power



Adapted from Jürgen Habermas, *Between Facts and Norms* (1996: 354-359).

Given their opposition to Bt technology, the NGOs and the CPM actor are referred to as the Non-Bt Coalition⁸³ in the current study. The Monsanto, Congress Party and ANGRAU (who sits on the Review Committee on Genetic Modification) actors form the Bt Coalition due to their support for the technology. The analysis of democracy at this level examines the way in which these actors seek to negotiate the power associated with their institutional positioning in attempts to construct knowledge with regard to defining the risk of Bt cotton.

The study highlights the way in which the selected NGOs are engaged in identifying areas where potential concentrations of power in knowledge

⁸³ This draws on the idea of Hajer's (1997: 12-13) discourse coalitions.

construction represent an illegitimate impediment to democratic praxis as informed by the idea of a circulation of power. While the opposition to Bt cotton entails rural mobilisations, this thesis argues that it stands separate to the farmers' movement given the more reformist demands which the latter entails. It is argued that opposition to Bt cotton is more revolutionary in that, while it does incorporate a concern for a more just distribution of resources, this forms part of a discourse which seeks to challenge the risk differentiation, values and rationality associated with the neo-liberal ideology, and the power structures which seek to legitimate this perspective.

Opposition to Bt technology entails a strong normative focus on the way in which power should be exercised in democratic praxis as part of a concern for the inclusion of discourses of risk asserted by cultivators in knowledge construction related to the definition of risk. NGO activism with regard to Bt technology asserts the demand for a transformation of democratic praxis. This argues for the need for a broadly inclusive, and therefore more legitimate, exercise of power in democratic praxis both in knowledge construction concerning risk, and in the material distribution of resources as a concern for risk negotiation.

While the material component to democratic legitimacy is acknowledged in relation to the links between social justice and state intervention in resource distribution, this thesis focusses more strongly on the epistemic dimension of political praxis at the meso level. This is due to the recognition that the ideological negotiation of the epistemic gap of risk at the meso level as a concern for epistemic justice has direct

implications on the way in which material resources are distributed, and risk differentiated, as part of the institutionalisation of power in democratic praxis.

The analysis of the ideological struggle in Chapter Eight highlights that the delegitimation of Bt cotton and the neo-liberal ideology in which it is embedded is incorporated within attempts to redefine the basis of Indian development in ways which are more inclusive of the indigenous, experiential knowledge of cultivators. In undertaking this activity, NGOs also seek to reinforce the need for a circulation of power in decision-making as the basis for the legitimate exercise of power through the democratic process.

This thesis argues that attempts by NGOs to secure a circulation of power problematise the potential for closure associated with the privileging of scientific expertise as a means of taking decisions on risk. Such closure, it is argued here, is associated with the illegitimate use of power, and can contribute to the ‘epistemic injustice’ identified by Fricker (2007).

Fricker (2007) argues that the closure associated with epistemic injustice can occur in two ways: firstly, prejudice can be directed against actors in ways which give rise to credibility deficits. This leads to ‘testimonial injustice’ (Fricker, 2007: 159). Or, secondly, prejudice can be structurally determined given that the ‘whole engine of social meaning can be geared towards keeping [certain world views] out of sight’ (ibid.: 153). Fricker (ibid.: 150) refers to this form of prejudice as

‘hermeneutic injustice’ given that perceptions and meanings cannot be articulated owing to the absence of discourse structures with which to do so.

Fricker’s ideas also bear a close relation to those of ‘uncomfortable knowledge’ and ‘the social construction of ignorance’ referred to by Rayner (2012). Here, certain epistemologies which do not support the power structures associated with a particular paradigm are suppressed. As the analysis highlights, the potential for epistemic injustice has significant implications for the way in which knowledge is constructed as part of attempts to negotiate the epistemic gap which risk represents and, hence, represents a significant concern for humanity’s ontological survival.

It is recognised that NGOs, like social movements, ‘can capitalise on their social power only insofar as they can advertise their interests in a language that can mobilise convincing reasons and shared value orientations’ (Habermas, 1996: 364). This has led to claims that the debate on Bt cotton has become ‘an unproductive ideological clash’ (Pearson, 2006: 314) between NGOs and multinationals. While this thesis recognises the centrality of the ideological clash to the Bt technology debate, it argues that it is far from unproductive. Instead, it asserts that the struggle regarding Bt technology serves to ensure that power is contested, and seeks to redefine democratic praxis in a bid to prevent the reduction of epistemology itself as part of the purported ‘development’ of society.

The half-hearted and uncoordinated efforts to gain greater clarity on the animal deaths which NGOs assert are linked to their having grazed on Bt cotton has led to the narrative of these deaths becoming incorporated into the ideological struggle to define risk. Within this, they are variously dismissed as scientifically impossible by Bt technology proponents, or asserted as a source of uncertainty and ‘non-knowing’ (Beck, 2009: 115-128) by farmers and NGOs. The efforts of NGOs to assert the reality of the risk of these animal deaths serves to ensure that the views of farmers are represented.⁸⁴ It also exerts pressure on the regulatory authorities to include tests on the safety of the crops for animals in trials, and raises doubt as to the certainty expressed by power holders regarding the safety of the technology.

Legitimate Decision-making in Democratic Praxis

The recognition that Indian society, despite its considerable dysfunction, remains strongly influenced by the framing of the democratic ideal as a circulation of power was highlighted in the series of public consultations undertaken by Jairam Ramesh as part of his attempt to take an informed and balanced decision on Bt brinjal (aubergine). A detailed scientific report on Bt brinjal requested by the minister to facilitate independent decision-making from India’s six premier scientific institutions ‘was revealed to have been plagiarised in parts’ (Gupta, 2011: 740). The incident led the *Times of India* (2010, as cited in Gupta, 2011: 740) to ask, ‘can science and scientists be trusted to play an arbiter’s role in society?’

⁸⁴ While Herring (2008b: 155) argues that ‘new narratives of catastrophe [ie., the reports of animal deaths] serve the interests of local NGOs’, the analysis highlights, however, that the village of Bantala is not affiliated with an NGO for agricultural purposes. Yet, villagers here also claim that buffaloes have died due to their grazing on Bt cotton.

The idea that attempts to secure a circulation of power in praxis are central to contestations with regard to the design of institutions to deal with risk is clear from the controversy triggered by the proposal from the Ministry of Science and Technology to have a 'single-window approval system' (Chaturvedi, 2004: 3696; Gupta, 2011: 739) for GM crops. The suggestion for a Biotechnology Regulatory Authority of India (referred to as the BRAI Bill 2013) formed of eminent scientists in which the government would serve in an advisory capacity only is strongly contested by NGOs and civil society activists. These actors insist that such a move would eliminate the checks and balances between various ministries which the current system involves (Gupta, 2011: 739). It would also remove decision-making on Bt technology from the process of legitimisation associated with democratic praxis. The BRAI Bill remains the subject of controversy, with ongoing protests demanding its withdrawal.

The activity of NGOs on the Indian periphery has also seen the adoption of innovative forms of deliberative and participatory democracy, such as consensus conferences and citizens' juries.⁸⁵ Such democratic innovations are increasingly highlighted by deliberative democrats as significant in the definition of the risk of new technologies associated with ambiguity and risk, such as genetically modified crops (Goodin, 2008: 11; Renn, 2008: 303; Dryzek, 2009). In terms of the current thesis, they also serve to promote the wider engagement of a wider critical public as

⁸⁵ A citizens' jury seeks to ensure that those who would normally be excluded from institutionalised democratic practice are politically engaged through serving as a 'jury' in a courtroom format. This involves a staged cross-examination of 'expert' witnesses by a 'public' (Scoones, 2005: 325). Though not observed directly during this research, citizens' juries are particularly associated with NGO activism in opposition to GM crops in Andhra Pradesh and Karnataka (ibid.: 308).

a 'third point of view' (Strydom, 1999: 13) in the struggle for the legitimization of risk and democracy and, thus, enhance democratic legitimacy.

The high degree of mobilisation on the periphery, together with the deinstitutionalisation of politics previously discussed, suggests that India's democracy could be characterised as a 'radical' (Lummis, 1996),⁸⁶ 'aversive' (Norval, 2007)⁸⁷ or 'agonistic' (Mouffe, 2000)⁸⁸ form of praxis, in which decision-making itself has become problematic. This contributes to concerns that too much politicisation, radicalisation and participation of the periphery can diminish a society's decision-making capacity (Renn, 2008: 313) and lead to stalemate. Thus, Renn (ibid.) argues that participation 'opens up the process, but does not provide closure.'

This thesis recognises that radical forms of democracy, in which conflict and ideological struggle are central, have served to open up deliberative spaces in the Bt cotton debate to those who would otherwise not have been recognised in decision-making. These 'deinstitutionalised' forms of democracy are, therefore, central to ensuring that the views of a marginalised minority which is at risk are recognised and addressed within democratic praxis as part of a concern for social and epistemic

⁸⁶ Defined by Laclau and Mouffe (1985), radical democracy challenges the hegemony of decisions, arguing instead for a politics of difference where power structures can be made visible and challenged. In light of this, radical democracy takes place 'outside the sphere of institutions' (Lummis, 1996: 116).

⁸⁷ Norval (2007: 185) asserts the need for the development of an aversive democracy which 'problematizes the given.' Here, the goal is the understanding of perspectives other than one's own as the basis for a transformation of identities and societies.

⁸⁸ Mouffe (2000: 102) proposes a form of 'agonistic' democracy in which any form of consensus should only be seen as a secondary objective, and a temporary respite, in the ongoing conflict between political adversaries.

justice. Such mobilisations also serve as a counter-weight to the economic and/or political power of power holders. Thus, non-institutionalised civil society activation is endogenous to the illustration of democratic praxis outlined by Habermas in the core-periphery model, and is crucial to securing its legitimacy.

The thesis also acknowledges, however, that radical forms of democracy need to work in conjunction with attempts to establish a legitimate institutionalised praxis in which multiple perspectives can be taken into account in decision-making. The ability to take collective decisions is central to the social transformation which democratic praxis facilitates. This recognises that a collaborative decision-making function is crucial to any form of social organisation, be it a village council or a nation-state, and serves to protect the collective from the risks to its survival. It is important, however, that such decision-making should involve a legitimate exercise of power, if the differentiation of risk, and the marginalisation of those affected by it, is to be prevented, and the best available knowledge to take decisions on risk is to be established.

The recognised dysfunction of democratic praxis in Indian society and the deinstitutionalisation of politics clearly represent serious obstacles to decision-making which NGOs themselves recognise and seek to redress through their protests. It could be argued that the failure to take a final decision on Bt brinjal illustrates the extent of the dysfunction of the epistemic function of Indian democratic praxis.

This thesis, however, argues the opposite. The moratorium on Bt bringal and the way in which the ‘decision’ was reached posits that, even in the midst of significant democratic dysfunction, the democratic ideal, as a circulation of power, remains influential.⁸⁹ Thus, even given its significant dysfunction, this thesis argues that Indian democratic praxis was functional enough to recognise that the information needed to make a legitimate case in support of Bt bringal is currently unavailable. It is argued that this absence of a final decision does not imply democratic dysfunction or a failure of participation. Instead, it indicates that power is contested, and an epistemic gap is recognised which can be ideologically debated, but cannot be bridged given the demands for legitimation instilled by the democratic ideal.

It is argued that the moratorium on Bt bringal represents a decision, even if it is one which asserts the need to postpone final decision-making given the lack of epistemic clarity. This study asserts that it is through this ongoing ideological struggle to legitimate risk both as a material and epistemic concern, in the midst of significant epistemic uncertainty, that Andhra Pradesh society is being constituted. It also argues that the crucial concern of legitimation in risk society is not the securing of a final decision; instead, it is the struggle to guard against the potential

⁸⁹ The reasoning of the minister’s statement in announcing the moratorium provides a perfect illustration of the operation of a circulation of power in legitimate decision-making, and is worth citing at length: ‘Based on all the information and when there is no clear consensus within the scientific community itself, where there is so much opposition from the state governments, when responsible civil society organizations and eminent scientists have raised many serious questions that cannot be answered satisfactorily, when the public sentiment is negative and when Bt bringal will be the very first genetically modified vegetable to be introduced anywhere in the world and when there is no overriding urgency to introduce it here, it is my duty to adopt a cautious, precautionary principle-based approach and impose a moratorium on the release of Bt bringal’ (Ramesh, 2010: 17, as cited in Gupta, 2011: 738).

emergence of an illegitimate exercise of power in the midst of the profound epistemic uncertainty and anxiety which risk represents.

The analysis also highlights that the moratorium on Bt bringal cannot be taken to indicate that the struggle to define the risk associated with Bt cotton has eased. On the contrary, this thesis asserts that the struggle associated with Bt cotton has instead intensified. The study will now turn to an exploration of the struggle to legitimate risk and democracy with regard to Bt cotton in the volatile region of Telangana where the research for this thesis is based.

In conclusion, this chapter has explored the ‘relations of definition’ (Beck, 1995: 43) with regard to Bt technology in terms of the Habermasian (1996: 356) core-periphery model. It has examined the way in which the ideological struggle to define the risk of Bt bringal has intensified the focus on Bt cotton. The chapter has highlighted the direct impact of the attempts to define the risk of Bt bringal upon the institutionalisation of the exercise of power in democratic praxis, and illustrated the way in which these attempts are contributing to the potential for ‘institutional crisis’ envisaged by Beck (1994: 8). The chapter has also examined the crucial role of the NGOs in the current study in seeking to secure the type of ‘circulation of power’ which Habermas (1996: 356) argues is illustrative of legitimate democratic praxis. This seeks to mitigate the potential for ‘epistemic injustice’ (Fricker, 2007) in decision-making on risk.

Chapter Four

Bt Cotton and the Struggle for Legitimation in Telangana and Andhra Pradesh

4.1 Introduction

This chapter explores the state of Andhra Pradesh as a site of research into Bt cotton. It examines the way in which Bt technology is embedded within a neo-liberal development model which is legitimated through claims of its contribution to poverty reduction. This is contrary to the assertions of opponents who argue that both neo-liberalism and Bt cotton are contributing to significant risks, not least those related to indebtedness and the farmer suicides with which Andhra Pradesh is particularly associated.

The particular context of the Telangana region as the location for the current research is examined. This region is characterised by its acute agrarian crisis and volatility. Here, the conflict which Bt technology represents is embedded within a wider historical struggle to legitimate risk and democracy as a concern for social and epistemic justice in the negotiation of risk. The agitation in the region led to an agreement to its secession in July, 2013, and the new state is due to be created in 2014. However, protests against the bifurcation of Andhra Pradesh are ongoing. This chapter explores the way in which the particular precariousness of the region significantly influenced the approach of the Andhra Pradesh government to the opposition to Bt cotton emanating from Telangana as a concern for its own legitimacy.

4.2 *Bt Cotton and the Legitimation of Neo-liberalism in Andhra Pradesh*

The state of Andhra Pradesh is located on the south-east coast of peninsular India. It is the fourth largest of India's twenty-eight states by area (two hundred and seventy-five thousand square kilometres), and fifth by population (eighty-four million inhabitants).⁹⁰ Andhra Pradesh is comprised of three Telugu-speaking regions – Telangana, Rayalseema and Coastal Andhra. Following decades of struggle, the government announced on 31 July, 2013, that Telangana will become India's twenty-ninth state, to be formed early in 2014.⁹¹ As highlighted previously, given that the state of Telangana had not been created at the time of writing, Andhra Pradesh continues to be referred to in the present tense for the purposes of this thesis.

Sixty-six per cent of the population of Andhra Pradesh lives in rural areas, and the state is home to 28,123 villages.⁹² It is also regularly exposed to cyclones, floods and droughts. The Disaster Management Department of the Andhra Pradesh government reported fifty-five natural disasters related to flooding, droughts and cyclones in the thirty-three years from 1977 to 2010.⁹³

⁹⁰ All population figures for Andhra Pradesh are taken from the 2011 Census data. Available at: http://www.censusindia.gov.in/2011-prov-results/paper2/data_files/AP/4-fig-6.pdf Accessed on 21/4/2013.

⁹¹ Available at: <http://www.thehindu.com/opinion/lead/a-state-that-must-fulfil-a-higher-purpose/article4971018.ece> Accessed on 31/07/2013. It will take six to eight months for the formalities to be completed. Available at: <http://www.thehindu.com/news/national/andhra-pradesh/telangana-bill-not-coming-in-monsoon-session/article4978082.ece> Accessed on 29/8/2013.

⁹² Available at: <http://states-of-india.findthedata.org/q/1/4243/How-many-districts-are-there-in-Andhra-Pradesh> Accessed on 24/4/2013.

⁹³ Available at: <http://disastermanagement.ap.gov.in/website/history.htm> Accessed on 10/8/2013

A large variety of Backward Caste *jatis* account for forty-six per cent of the population (Srinivasulu, 2002: 4). The Reddy *jati* is among the most powerful (Wade, 1994: 31). Forward Castes account for twenty-nine per cent of the population. There is only a small number of Brahmins - just three per cent of the total population (Srinivasulu, 2002: 4). Scheduled Caste *jatis* (formerly 'Untouchables') are known as Madigas and Malas in Andhra Pradesh. Malas account for 9.7 per cent of the total population of the state, while Madigas form 7.3 per cent (Srinivasulu, 2002: 4). In Telangana, however, Madigas predominate (ibid.). Omvedt (1994: 90) notes that Malas are ritually higher than Madigas, and that Madigas are poorer, and more of them are landless (ibid.). Similarly, Srinivasulu (2002: 4) highlights that the Scheduled Castes form the bulk of the agricultural labour in Andhra Pradesh.

Andhra Pradesh is renowned for its high suicide numbers. In 2010, both Andhra Pradesh and Maharashtra accounted for 11.8 per cent of the total number of suicides in India, and were second only to Tamil Nadu, in which 12.3 per cent of suicides occurred (Bhamathi, 2011: 171). In the case of Andhra Pradesh, the percentage represented 15,901 suicides (ibid.).⁹⁴ Of these, 2,525 (fifteen per cent) were suicides

⁹⁴ Available at <http://www.downtoearth.org.in/content/95-farm-suicides-month-andhra-pradesh> Accessed on 30/4/2013. It should be noted that India has one of the highest suicide rates in the world, particularly among the fifteen to twenty-nine age group. Available at <http://www.indianexpress.com/news/most-suicides-in-india-in-1529-age-group-study/965259/> Accessed on 23/9/2013. In 2010, 134,599 people committed suicide in the country (Bhamathi, 2011: 169). This was an increase of 5.9 per cent over the previous year (ibid.). A wide variety of reasons are cited including family problems (23.7 per cent), illness (twenty-one per cent), dowry abuse (2.3 per cent), poverty (2.3 per cent), bankruptcy (two per cent), exam failures (1.8 per cent), barrenness (0.5 per cent) and ideological causes (0.1 per cent) (Bhamathi, 2011: 177). While not directly the focus of this thesis, the scale of these suicides suggests wider existential problems which are not being addressed by the focus on economic growth as the basis for development.

by farmers. The state is among the top five in India with regard to farmer suicides.⁹⁵

Farmer suicides in India have typically been associated with areas of capital-intensive agriculture which have become known as 'suicide belts' (Le Mons Walker, 2008: 572). Suicides began to occur most prominently among cotton farmers in Andhra Pradesh in 1987-88. During this season, a spate of cotton farmers took their lives due to the widespread failure of the cotton crop as a result of drought and a pest attack (Reddy et al., 1998: 1; Rao and Suri, 2006: 1546).

The shift to a neo-liberal approach in the state was outlined in a document entitled '*Vision 2020*' published in 1999. This initiative was funded through a major loan, referred to as the Andhra Pradesh Economic Restructuring Project, as part of a 1996 agreement with the World Bank (Frankel, 2005: 618). The *Vision 2020* development plan included a commitment to eradicate poverty by 2020. This was to be achieved through the adoption of policies focussed on the promotion of wealth creation, globalisation and technological innovation (Bandyopadhyay, 2001: 900; Frankel, 2005: 616-617).

As part of *Vision 2020*, it was envisaged that agriculture's share of employment would be reduced from seventy to forty-five per cent by 2020 (Frankel, 2005: 623).

⁹⁵ The other states associated specifically with farmer suicides are Maharashtra, Karnataka, Madhya Pradesh and Chhattisgarh. These account for over half of all farm suicides in India. Available at <http://www.thehindu.com/opinion/columns/sainath/farmers-suicide-rates-soar-above-the-rest/article4725101.ece> Accessed on 24/5/2013.

This would occur as a result of the availability of non-farm employment in a service-led economy (ibid.). Central to the objective of poverty alleviation was the creation of the ‘twin revolutions of rising expectations and information-communications’ (Gupta, 2002: 88). The declining emphasis on agriculture was reflected in a reduction in public investment, which decreased from an average of six per cent in the 1980s, to 1.5 per cent throughout the 1990s (Galab et al., 2009: 189).

Biotechnology was emphasised as a key strategy in addressing agrarian risk. The *Vision 2020* document states: ‘We will need to be far more aggressive in acquiring and applying advanced technologies in a wide range of fields, including agriculture’ (Gupta, 2002: 12). The centrality of biotechnology to the state’s development plans was evident from the construction of a three hundred and eighty-four kilometre ‘Genome Valley’ (Rajan, 2006: 77) in and around Hyderabad. The development, which claims to be the ‘biotech hub’ of India (ibid.), aims to attract multinationals involved in research into all areas of biotechnology, including Bt crops.

As has been highlighted, the construction of Genome Valley was facilitated through aid funding from the UK government, despite the resistance to Bt crops in the UK, and their ongoing ban due to safety concerns (Harding and Vidal, 2001). The international support for the location of research into this globally controversial technology in India suggests that the potential for a ‘legitimation crisis’ (Habermas, [1973], 1976) in the political system was passed to India, along with the funding.

The increased cultivation and productivity of cotton in the state has been significant. The area under cotton in Andhra Pradesh increased by seventy per cent between 2002-03 (when Bt cotton was officially introduced) and 2007-08 (Barik, 2010: 120). The production of cotton in the same period more than trebled (ibid.). The state now accounts for fourteen per cent of India's total cotton production, and is second only to Punjab.⁹⁶ In 2010, nearly ninety per cent of the total area under cotton in Andhra Pradesh was cultivated using Bt seed varieties (Gaurav and Mishra, 2012: 2).

Proponents of the neo-liberal approach argue that the market rationale which it incorporates has significantly contributed to the alleviation of the ontological risk associated with absolute poverty in the state. In 2013, the state ranked sixth out of fifteen major states in India in terms of overall prosperity, with an average annual growth rate of 9.27 per cent.⁹⁷ Similarly, figures from the Planning Commission indicate that the average poverty level in Andhra Pradesh declined from 29.6 per cent in 2004-05 (32.3 per cent of the rural, and 23.4 per cent of the urban, population) to 21.1 per cent in 2009-10 (22.8 per cent: rural; 17.7 per cent: urban). This was below the average poverty level for India of 29.8 per cent (33.8 per cent: rural; 20.9 per cent: urban).⁹⁸

⁹⁶ Available at: <http://www.spectrumcommodities.com/education/commodity/statistics/cotton.html> Accessed on 30/4/2013.

⁹⁷ Available at: <http://www.deccanchronicle.com/130126/news-current-affairs/article/ap%E2%80%88ranks-sixth-economic-growth> Accessed on 15/5/2013.

⁹⁸ Available at: http://planningcommission.nic.in/data/datatable/0904/tab_45.pdf Accessed on 18/5/2013.

Supporters of Bt technology assert that it is scale-neutral, and that the purported benefits associated with reduced costs and higher yields are relevant for all classes of land-holder (Karihaloo and Kumar, 2009: 15; Choudhary and Gaur, 2010: 20). And, yet, the government has also faced strong resistance to the technology as opponents challenge the technology's ability to alleviate risk in an equitable and sustainable manner.⁹⁹

In the rural context, inequality is most clearly evident in the case of land ownership. The centrality of land to the negotiation of agrarian risk is highlighted by Agarwal (2003: 193) who argues that there is a well established relationship between 'the risk of rural poverty and land access.'¹⁰⁰ By 2000-01, the proportion of marginal and small holdings (ie., less than five acres) in Andhra Pradesh was eighty-three per cent, and the area under these holdings accounted for half of the total operated area (Galab et al., 2009: 172).¹⁰¹

⁹⁹ Attempts to delegitimize the neo-liberal approach in which the technology is embedded also involve challenges to the government's figures on poverty reduction. Utsa Patnaik (2007: 3132) argues that nearly half of the rural poor have been excluded from Planning Commission figures, and asserts that rural poverty in India is closer to eighty-seven per cent (ibid.). This appears to be supported by the finding from the 2011 Census that ninety-five per cent of the population of Andhra Pradesh possess white ration cards, associated with below poverty line (BPL) households, for supplies from the Public Distribution System. Available at:

<http://indiatoday.intoday.in/story/95-per-cent-below-poverty-line-andhra-pradesh/1/164651.html>

Accessed on 18/5/2013. Although there are recognised issues with PDS targeting, the profusion of ration cards in the state suggests that rural poverty is more of an issue than Planning Commission figures would indicate.

¹⁰⁰ Access to land is a significant aspect of the differentiated exposure to risk associated with caste and gender. However, it is argued that the power relations associated with caste and gender are also determined by wider socialisation and cultural factors.

¹⁰¹ This was higher than the all-India average where 81.8 per cent of cultivators operated small and marginal holdings, and owned 38.9 per cent of the land. Available at:

http://planningcommission.gov.in/sectors/agri_html/selagri/T1.3.xls Accessed on 19/5/2013.

According to Reddy et al. (2012: 57), by 2008-09, 37.72 per cent of land was owned by the top five per cent of land-owners in the state. Ramachandran et al. (2010: 4) note that, in 2003, 53.77 per cent of households did not own land other than their homesteads. Absolute landlessness in Andhra Pradesh (which generally entails residing with relatives) stood at fourteen per cent (ibid.).¹⁰²

Mitchell and Hanstad (2008: 1) highlight the extreme risk associated with landlessness in Andhra Pradesh, arguing that '[l]andless families who depend on agricultural wage labour are almost always the poorest of the poor.' These risks are highly differentiated by caste given that sixty-three per cent of Scheduled Caste households in the state own no land other than homesteads (Ramachandran et al., 2010: 4). Similarly, as Agarwal (2003: 184) notes, land reform has privileged males, and the issue of land rights for women, who have little direct access to land, remains peripheral.

The emphasis on the benefits offered by Bt technology to small and marginal land-holders (Glover, 2007; 2010) has meant that it is used to legitimate the 'existing distributional practice' (Renn, 2008: 133) associated with the current allocation of resources. As Frankel (2005: 616) highlights, 'no part of the [*Vision 2020*] plan directly addresses the structural inequalities in the state.' This has led to claims that wealth creation in Andhra Pradesh coincides with extreme rural indebtedness.

¹⁰² For India as a whole, less than one per cent of the population owned thirty-seven per cent of the land in 2000-01. Available at http://planningcommission.gov.in/sectors/agri_html/selagri/T1.3.xls Accessed on 19/5/2013. Absolute landlessness in the country stood at ten per cent in 2003 (Ramachandran et al., 2010: 4).

Galab et al. (2009: 191) argue that the situation of indebtedness of farmers in Andhra Pradesh is worse than in other states. The *Times of India* (12/10/2010) reported that ninety-three per cent of Andhra Pradesh's rural poor is in debt. It is also recognised that there is a high dependence on non-institutional sources of debt, with loans from moneylenders accounting for fifty-four per cent of debt in the state in 2003 (Galab et al., 2009: 191). Given this, many NGOs seek to promote alternative methods, such as those associated with organic¹⁰³ and Non-Pesticide Management (NPM) farming practice,¹⁰⁴ which they argue represent a more viable farming praxis than that associated with Bt cotton.

It is also noted that the cross-pollination needed to produce the high-yielding varieties of Bt cotton seeds is performed manually on seed farms in the state. As Venkateshwarlu and da Corta (2001) highlight, this laborious process is often undertaken by females between the ages of seven and fourteen in bonded conditions (ie., they are not free to leave at will). In a personal interview with Davuluri Venkateshwarlu (14/9/2010), he confirmed that companies such as Monsanto and Syngenta have begun to address this problem due to the ongoing campaigning work of NGOs, including his organisation, Glocal. Nonetheless, by 2010, there were still

¹⁰³ Eyhorn (2007: 29) claims that, by 2005, organic cotton projects in Andhra Pradesh, promoted by the NGOs, Chetna and Oxfam, had been initiated on two thousand, four hundred acres. This accounted for approximately 0.01 per cent of the cultivation area in Andhra Pradesh.

¹⁰⁴ Ramanjaneyulu (2006: 563) argues that NPM methods are being used on more than ten thousand acres across different districts in Andhra Pradesh. This accounts for just over 0.05 per cent of the total cultivated area. Misra (2009: 22) claims that, of the three thousand NPM villages in Andhra Pradesh in 2007, not a single suicide death was registered.

169,000 children below the age of fourteen working on cotton seed farms in Andhra Pradesh.¹⁰⁵

The villages involved in the current research are located in the region of Telangana, and the district of Warangal within it. The historical context of risk in Telangana and Warangal will now be explored as a basis for understanding the contemporary struggle which Bt cotton represents in the region.

4.3 *The Negotiation of Risk and the Telangana Armed Struggle*

Concerns related to the legitimization of risk and democracy are particularly prominent in Telangana, given the historical struggle with which the region is associated. Telangana has a population of thirty-five million people which accounts for forty-one per cent of the population of Andhra Pradesh.¹⁰⁶ It is distinct from the other two regions of the state - Rayalseema and Coastal Andhra – in that it was never colonised by the British, but instead remained part of the Muslim State of Hyderabad under the rule of the Nizam-ul-Mulk (Kakar, 1995: 11; Mehta, 2005: 144).¹⁰⁷

¹⁰⁵ Venkateshwarlu's (2010: 8-14) report entitled 'Seeds of Child Labour: Signs of Hope' provides details of his research into the use of child labour in Bt seed production in Andhra Pradesh. Available at: <http://www.indianet.nl/pdf/signsofhope.pdf> Accessed on 2/11/2013.

¹⁰⁶ Available at <http://www.news.nom.co/telangana-turmoil-andhra-pradesh-stares-6520289-news/> Accessed on 8/10/2013.

¹⁰⁷ Warangal city served as the capital of the Kakatiya Empire (1083-1323), when a distinctive Telugu culture began to develop in Telangana (Rao, 1988: 11-12). Hyderabad State was established in 1724, following the capture of the city of Warangal in 1687 by the Emperor Aurangzeb from Delhi. The title Nizam-ul-Mulk was granted to Chin Qulich Khan Asaf Jah, and was retained by successive members of the Asaf Jahi dynasty who ruled Hyderabad as an independent princely state until a year after India's Independence from Britain (Kakar, 1995: 11; Mehta, 2005: 144).

Hyderabad State was predominantly agrarian (Vaikuntham, 2004: 98). Exposure to risk was acute, and differentiated in accordance with the ability to access key resources, most notably land. As Srinivasulu (2002: 6) highlights, a class of landed gentry, consisting of Muslim *Jagirdars*¹⁰⁸ and Hindu *Doras*¹⁰⁹ belonging to the Reddy and Brahmin castes constituted the support base of the Nizam's rule. This landed gentry inflicted severe suffering through 'the illegal eviction of farmers, the extraction of free goods and services (known as *vetti*), and...the denial of people's dignity and self-respect' (ibid.).

Access to employment represented a significant means of negotiating risk, given the potential to escape rural poverty. *Mulki* (nativity) rules, which gave preference to the local population in accessing employment opportunities, were adopted by the Nizam as early as 1868 in response to local protests against an influx of migrants to Hyderabad State (Brass, 1990: 233).

As a semi-arid region, access to irrigation was central to the negotiation of agrarian risk. Drought and famine were common in Hyderabad State (Vaikuntham, 2004: 115), yet investment in irrigation was limited. As Roosa (2001: 58) notes, the Nizam 'squeezed taxes out of the 10,300 villages of Telangana, invested very little back into them, and gave free rein to [the state's] hereditary village-level officials to build their own fiefdoms through land-grabbing and the use of [bonded] labour.'

¹⁰⁸ *Jagirdars* were feudal lords who held administrative posts and rendered military services to the Nizam (Robinson, 1988: 49).

¹⁰⁹ As highlighted previously, '*Dora*' was the name given to landlords, particularly in the Telangana region (Omvedt, 1994: 67).

The result was a highly differentiated ability to negotiate risk. According to Barrington Moore (1966: 381), the debt slavery in Hyderabad State was worse than in other parts of India. Meanwhile, the last ruler of Hyderabad, Nizam Mir Usman Ali Khan (r. 1911-48), was one of the world's wealthiest individuals (Roosa, 2001: 58).

This explicitly illegitimate exercise of power in a context of acute risk led to the Telangana armed struggle for which the region is renowned.¹¹⁰ This was a communist-led rebellion which focussed initially on the injustices associated with *vetti* (bonded labour), and corruption in the grain levy collection (Brass, 1990: 296-297; Omvedt, 1993: 24; Roosa, 2001: 63; Frankel, 2005: 64).

The conflict later extended to a concern with securing 'land to the tiller' (Srinivasulu, 2002: 6). Landlords were violently driven out, and their lands distributed among the poor (Sundarayya, 1972: 2).¹¹¹ Barrington Moore (1966: 381) highlights that, by 1947/48, more than two thousand villages had been 'liberated' from the exploitation of the Nizam's power structures. Many of these were in the district of Warangal (Sundarayya, 1973: 4).

¹¹⁰ Roosa (2001: 60) notes three phases in the revolt: the first phase (1946-47) was an unarmed defensive struggle against large landlords; the second (August 1947 to September 1948) occurred as a result of the delegitimation of the Nizam's rule due to his refusal to accede to the Indian Union. At this point, the insurgents took up weapons. The third phase began in September 1948 and ended in 1951 when the Indian army entered Hyderabad, overthrew the Nizam and launched a counter-insurgency against the communists.

¹¹¹ Srinivasulu (2002: 6) highlights the differentiation in the distribution of lands, even during the rebellion. Powerful upper-caste Kapu-Reddys were granted the fertile lands of the *doras*, while the waste lands were distributed to the landless *Dalits* and lower castes (ibid.).

The invasion of Hyderabad State by the Indian Army in 1948 aimed not only to overthrow the Nizam; it also, as Roosa (2001: 80) notes, sought to suppress the violent attempts by communists to redistribute resources, and to define an alternative form of democratic praxis to that associated with the Indian state. As Corbridge and Harriss (2000: 65) highlight, Nehru's Congress government adopted a more conciliatory approach to land-holders, and Gandhi's principle of trusteeship was used to urge wealthy land-holders of their moral duty (*dharma*) to give up some of their lands to the poor (Frankel, 2005: 39). There was also a reversal of the distributional practice which the rebellion had secured. Whole villages where the communists had redistributed land were burned down (Roosa, 2001: 83), and the land was re-assigned to its original owners.

The clash between the communists and the Congress Party also involved competing interpretations as to the way in which the ideal of democracy could best be translated into praxis. Roosa (2001: 81) highlights that the Andhra Provincial Committee responsible for Telangana was controlled by radical communists who advocated 'prolonged civil war in the form of agrarian revolution, culminating in the capture of political power by a Democratic front.' This was in contrast to the parliamentary democracy advocated by the English-speaking elite of the Indian state (Corbridge and Harriss, 2000: 139). Here, a non-violent democratic praxis was urged as a means of promoting justice through a legitimate exercise of power. The communist rebellion was eventually suppressed and Nehru sought to secure

legitimation for the Indian state through achieving socialist land reform by peaceful means.¹¹²

Some land reform did occur in Telangana. All *jagirs* (large land-holders) were abolished, and the Nizam's *sarf-e-khas* (Crown lands claimed by the Nizam's family) were taken over by the state (Agnihotri and Subramaniam, 2002: 12). Srinivasulu (2002: 6) highlights that there was a substantial decline in *dora* dominance after the struggle, given that many large land-owners were disinclined to reside in the villages, and so disposed of their lands to former tenants. In 1950, the Hyderabad Tenancy and Agricultural Lands Act was passed with the objective of protecting the interests of tenants (Agnihotri and Subramaniam, 2002: 13; Melkote, 2010: 8).

Limited land redistribution also occurred as a result of the land ceiling legislation. A Human Development Report compiled by the Centre for Economic and Social Studies in Hyderabad (2008: 65, as cited in Ramachandran et al., 2010: 4) found that 'against an estimated surplus land of twenty lakh acres in Andhra Pradesh, only 7.9 lakh acres were declared as surplus, of which 6.47 lakh acres were taken into possession by the government and 5.82 lakh acres were distributed.'¹¹³ This represented only four per cent of the net sown area in the state. Venkateshwarlu

¹¹² There is, however, an ongoing presence of Naxalites in Telangana as is evident from headlines such as 'Maoist terror resurfaces in T' [Telangana] (*Times of India*, 3/12/2010). These radical communists not only refuse to recognise the legitimacy of the state, but also violently challenge the development model which it seeks to implement. Naxalite killings by the state police and military are common (Kohli, 2009: 399).

¹¹³ In terms more familiar to Europeans, this meant that of an estimated two million surplus acres, only 790,000 acres were declared as surplus. 647,000 acres of this were claimed by the government, of which 582,000 acres were distributed to the poor and landless.

and Srinivas (2000: 10) note that the number of large land holdings (twenty-four acres and above) decreased from 4.3 per cent to 1.3 per cent between 1970-71 and 1995-96. The percentage of the area operated by large farmers also declined during this period, from 31.1 per cent to eight per cent (Venkateshwarlu and Srinivas, 2000: 10).

Meanwhile, the proportion of small and marginal land-holders (ie., with less than five acres) rose from 66.9 per cent in 1970-71 to eighty-two per cent in 1995-96, and the proportion of land cultivated by these categories of land-owner rose from 19.8 per cent to 45.7 per cent in the same period (Venkateshwarlu and Srinivas, 2000: 10). Despite these changes, however, significant inequality remains. By 2008-09, five per cent of cultivators in Telangana owned thirty-two per cent of the land, and 44.72 per cent of the Telangana population were landless (Reddy et al., 2012: 57).¹¹⁴

This history of exploitation, together with the ongoing inequity in Telangana, raises questions regarding the ability of Bt cotton to alleviate agrarian risk for the population of the region as a whole as a concern for social and epistemic justice. This chapter will now turn to a closer examination of agrarian risk in Telangana and Warangal.

¹¹⁴ Figures cited here represent an average of the figures provided for North and South Telangana by these authors.

4.4 *Agrarian Risk in Telangana and Warangal*

In order to understand the basis for the legitimization of the adoption of Bt cotton in Warangal, it is necessary to appreciate the inherent risks of the context. The ongoing, highly differentiated exposure to risk with which Telangana continues to be characterised is evident from the disproportionately high numbers of farmer suicides with which the region is associated. Both Ramachandran et al. (2010: 8) and Galab et al. (2009: 166-167) cite data produced by the Andhra Pradesh *Rythu Sangam* (APRS) (2007), a farmers' association, which claims that Telangana accounted for 66.47 per cent of the 4,403 farmer suicides in the state between 1998 and 2006.¹¹⁵

Within Telangana, Warangal is highlighted as being one of the region's worst affected districts (Rao and Suri, 2006: 1546).¹¹⁶ Warangal has a population of 3.5 million people, of which seventy-two per cent live in rural areas.¹¹⁷ Galab et al. (2009: 166-167) claim that seven hundred and sixty-six suicides occurred in Warangal between 1998 and 2006. This was significantly higher than the next highest district, Mahabubnagar, in which four hundred and sixty-seven suicides were recorded.

¹¹⁵ The number of suicides reported from the Telangana region during this time was 2,927. For Rayalseema, the number was nine hundred and thirty-one, while for Coastal Andhra it was five hundred and forty-five.

¹¹⁶ Telangana is comprised of nine districts. See Map 1, p. xvii.

¹¹⁷ Available at: <http://www.census2011.co.in/census/district/126-warangal.html>
Accessed on 8/10/2013.

Herring (2008: 150) highlights that the risk of cotton cultivation in Warangal is high given that the district is drought-prone, and cotton is often grown on unirrigated, thin red soils.¹¹⁸ Nevertheless, Warangal is particularly dependent on cotton, and the crop is cultivated on twenty-six per cent of the cultivated area.¹¹⁹ This makes it the second largest crop after paddy (which accounts for thirty-two per cent).¹²⁰ This reliance on cotton has been linked to the high numbers of farmer suicides in the district (Stone, 2011: 390).

Herring (2008b: 148) notes that the extent of Bt cotton adoption in Warangal is contested. The Andhra Pradesh Seed Certification Agency in Hyderabad estimate that Bt cotton accounts for eighty-five to ninety per cent of cotton cultivation in the district, while Warangal's Department of Agriculture claims that the figure is closer to ninety-five per cent. Either way, it is clear that the adoption of Bt cotton is widespread. It is also evident that adoption coincides with significant opposition. This is led by a significant NGO sector in a district which, as Herring (ibid.: 155) observes, appears 'especially densely populated by NGOs'.

The region of Telangana is associated with particular risk factors with regard to cultivation, irrespective of the choice of crop. As highlighted previously, it is drought-prone; hence, access to water is a crucial factor in the negotiation of agrarian risk. Vakulabharanam (2004: 1421) highlights that the withdrawal of state

¹¹⁸ Warangal also includes thick black soils which retain moisture and are, therefore, considered ideal for the cotton crop (Stone, 2011: 390). In the current study, cotton is cultivated on both red and black soils.

¹¹⁹ Available at: http://www.sourcewatch.org/index.php/Agriculture_in_Warangal_India Accessed on 30/4/2013.

¹²⁰ Paddy refers to rice still in the husk (Wade, 1994: 40).

support for irrigation has led to the expansion of borewell irrigation in the region. This is largely being funded through credit.

In Telangana, irrigation through borewells increased by forty-four per cent between 1997 and 2002 (Reddy, 2010b: 245). It is recognised that this dependence on ground-water as a means of irrigation is unsustainable due to a declining water table (Galab et al., 2009: 175).¹²¹ A citizen's report (Centre for Environmental Studies, 1998, as cited in *ibid.*: 168) which investigated fifty households of deceased cotton farmers in the Warangal district found that, in all cases, suicides coincided with crop failure due to inadequate water supply.

Deshmukh (2010: 188) argues that agriculture has become increasingly unviable. This is not least due to rising cultivation costs, which Reddy (2010b: 246) claims increased by fifty per cent in Andhra Pradesh during the 1990s. Sridhar (2006: 1563) asserts that the prices of inputs in Andhra Pradesh are among the highest in the country due to the fact that input suppliers also provide credit to farmers, a power relation which obliges farmers to accept the higher prices charged.

It is claimed that these increasing costs are not being off-set by higher returns. Galab et al. (2009: 181) note that, while incomes and yields associated with cotton grew until the mid-1990s, these have been declining. Variations in output prices for cotton also lead to a high degree of volatility in profits (*ibid.*: 183). Deshmukh

¹²¹ Alternative forms of irrigation involve rain-water harvesting through canals and tanks, in which the ground-water table is maintained.

(2010: 182) argues that cotton brokers offer preferential prices to more influential farmers. Similarly, cultivators are exposed to the risks of a speculative global commodity market over which they have no control (Rao and Suri, 2006: 1546).¹²²

Numerous studies have found that the single most important cause of suicides among cultivators is debt (Sridhar, 2006: 1560; Galab et al., 2009: 169; Deshpande and Arora, 2010b: 24; Deshpande and Shah, 2010c: 134; Iyer and Arora, 2010: 266; Sreedhar, 2010: 227). It is noted that the risk of suicide is exacerbated through accessing credit from non-institutional sources, such as money lenders (Iyer and Arora, 2010: 279).

This was particularly evident in the controversy surrounding Micro-Finance Institutions (MFIs)¹²³ during the current study. The coercive attempts of MFIs to recover loan repayments in the midst of a catastrophic 2010/2011 season, which was associated with widespread flooding, resulted in farmer suicides (*Times of India*, 17/10/2010). It was reported that thirty farmers took their lives in forty-five days in Andhra Pradesh as a direct result of the approach adopted by MFIs (ibid.).

¹²² This lack of control over prices also applies to the local context. This was noted during a trip to Jangaon market with an Orgampalle research participant (Field note extract, 26/11/2010). The hessian sacks in which the cotton was transported by auto-rickshaw to the market were slit with a slash hook in order to check the luster and staple length of the cotton which would determine the price. Once the sack was slit, however, no other trader would offer a price on the cotton. Hence, the farmer was obliged to negotiate the price with the original trader, rather than being free to seek a better price elsewhere.

¹²³ Andhra Pradesh has been described as a 'leader in the MFI movement' (*Deccan Chronicle*, 14/10/2010). Commercialised MFIs have been associated with a credit crisis in the state given the influence of the neo-liberal rationale on these institutions (Shylendra, 2006: 1961). This has seen the charging of interest rates of between twenty-four and thirty per cent (*Times of India*, 14/10/2010). MFIs have also been associated with unethical methods of debt recovery, such as the confiscation of title deeds and the use of intimidation (Shylendra, 2006: 1959). This has led Weber (2004: 356) to argue that the micro-credit approach is strategically embedded within efforts to implement financial sector liberalisation on a global scale.

These included three farmer suicides in two months in Warangal (*Times of India*, 13/10/2010).

It should be noted that the experience of MFIs is in stark contrast to the favourable assessment of Self-Help Groups (SHGs) by many female village participants. SHGs are group savings schemes which are predominantly associated with females (Galab and Rao, 2003; Tesoriero, 2005). These have been linked to female empowerment (Tesoriero, 2005: 329). In the current study, the organisation of SHGs in the villages coincides with the presence of NGOs.

Land Ownership and the Negotiation of Risk in Telangana and Warangal

The significance of land ownership with regard to risk negotiation is highlighted by the profile of farmers who have taken their lives in Warangal. A sample survey conducted by Revathi (2007, as cited in Galab et al., 2009: 171) analysed secondary data on farmer suicides in four districts, including Warangal. This found that the overwhelming majority (91.2 per cent) of suicides in Warangal was undertaken by small and marginal farmers.

Galab et al. (2009: 193) argue that the higher incidence of suicides among small and marginal farmers is associated with their 'moving from subsistence agriculture to... high-value crops with a strong motivation to improve their social and economic status.' This has been referred to as 'the tragedy of the upwardly mobile' (Rao, 2009: 109). This thesis argues, and the analysis highlights, that this can be seen as a

result of the ‘revolution of rising aspirations’ (Gupta, 2002: 86) created by the gradual liberalisation of the state.

Galab et al. (2009: 191) note that the risk of non-institutional credit is particularly linked to small and marginal farmers given ‘an inverse relationship between the size of land-holding and access to institutional credit.’ The idea that the risks associated with the agrarian crisis are more acute for small and marginal land-holders is also asserted by Galab and Revathi (2009: 187) who found that, according to income and expenditure levels in 2002-03, agriculture was viable only for cultivators with holdings of ten acres (four hectares) or more.¹²⁴

Access to land is also associated with improved access to other assets. Wade (1994: 34) observed that tractor ownership was confined to the wealthiest land-owning castes. Similarly, the economist and anthropologist, Scarlett Epstein (1973: 99), highlighted the impact of the additional costs of hiring oxen or tractors for cultivators who lack ownership of such assets.

Access to land has also been constrained by the reduction in the net sown area in Telangana as a result of land degradation and soil erosion (Galab et al., 2009: 173).

Attempts by small farmers to enhance the viability of cultivation through leasing

¹²⁴ This found that farmers within the category of four to ten hectares (ten to twenty-four acres) earn an average monthly income level of Rs 5,479 per month, as opposed to consumption levels of Rs 4,133 per month (Galab et al., 2009: 187). It should be noted, however, that farmers receive their income in three or four instalments at the end of the agricultural season as the crop is harvested and brought to market. This makes the management of their income particularly difficult. Similarly, the extent to which the consumption levels cited here include debt repayments is not clear. Fieldwork for the current study highlighted that income from the harvest is often first used to pay some of the most pressing of debts.

land heighten their exposure to risk in the event of crop failure. This is due to the fact that the land lease charge is payable even if the crop fails. A study conducted by Reddy (2010: 250) in four districts of Andhra Pradesh, including Warangal,¹²⁵ found that twenty-five per cent of farmers who committed suicide were tenants.

Liberalisation and the Changing Nature of Risk

Rao and Suri (2006: 1546) note that, while debt in rural Andhra Pradesh is not new, suicides due to indebtedness are. They (ibid.) argue that this highlights a qualitative difference in the nature of indebtedness in contemporary times which is evident in a number of ways.

Firstly, it is claimed that there has been an increased ‘individualisation of agriculture’ (Deshpande and Arora, 2010a: 409; Vasavi, 2010: 79; 2012). This is associated with the decline in cooperation in terms of the sharing of assets, and the increased commodification of agrarian activity, which is reinforced through cultivators accessing credit as individuals (ibid.). Deshpande and Shah (2010c: 125) assert that this individualisation of rural life is contributing to the collapse of the village as an institution, given the erosion of the patron-client ties associated with the *jajmani* (occupational) relations of the caste system (ibid.: 132).¹²⁶

¹²⁵ This study featured the households of twenty-two deceased farmers, three of which were in Warangal.

¹²⁶ As Chapter Two highlighted, the patronage associated with such *jajmani* ties served to legitimate power structures and, in cases of extreme scarcity, the most vulnerable would be the first to suffer. The contested legitimacy of the caste system has also, however, contributed to a general sense of anomie as norms associated with the exercise of power are increasingly challenged (Deshpande and Shah, 2010: 132).

Secondly, as part of neo-liberal reforms, many public institutions which had previously focussed on encouraging collective behaviours have been eroded. These include state cooperatives such as the Andhra Pradesh Irrigation Development Corporation, the Andhra Pradesh Seeds Development Corporation, and the Cooperative Spinning Mills (Galab et al, 2009: 190). The reduction in government investment on extension services, and their increased privatisation, as part of neo-liberal reforms (ibid.: 189) has also reduced the social supports available to farmers in their attempts to negotiate risk.

Finally, there has been an increased impetus to take risks given the heightened aspirations of farmers (Revathi and Galab, 2010: 195). These raised expectations have led to an increase in expenditure associated with, for instance, dowries and house construction (Rao and Suri, 2006: 1552; Galab et al., 2009: 169; Deshpande and Shah, 2010c: 129). Likewise, the ongoing privatisation associated with education and health has seen increased expenditure related to these ‘public’ services (Galab et al., 2009: 170; Reddy, 2010: 257).

The Ambiguity of Bt Cotton and Agrarian Risk

Opponents of Bt cotton argue that, quite apart from the contested potential for increased wealth for cultivators, the ambiguity associated with the technology has added to the general uncertainty of an already precarious agrarian context. Gaurav and Mishra (2012: 19) note that the proliferation of Bt cotton hybrids on the market

(estimated at five hundred and twenty-two in 2009) has rendered seed choice increasingly difficult.

Pest risks have also been found to be greater in districts such as Warangal where there is a high incidence of mono-cropping and a large area under non-food crops (Revathi and Galab, 2010: 207). There is also the issue of spurious Bt cotton seeds with which Warangal is particularly associated (Revathi and Galab, 2010: 211; Sridhar, 2006: 1562). Sales of spurious seeds led to widespread suicides in the district in 1997-98 (Sridhar, 2006: 1562), and resulted in protests which involved the burning of seed outlets in Warangal city (Qayum and Sakkhari, 2005: 5).

Beck's (2009: 115) assertion that risk society is associated with an 'ineradicable non-knowing' is evident from the lack of certainty regarding farmers' claims that animals have died as a result of their grazing on Bt cotton. Anxiety in this regard was exacerbated by the advice of the former Director of Animal Husbandry in Warangal that farmers should not permit their animals to graze on the crop.¹²⁷ It is also recognised that the choice of cultivating non-Bt cotton is severely limited due to the difficulty in obtaining non-Bt seeds (Stone, 2011: 390).¹²⁸

¹²⁷ The former Director confirmed in a telephone interview (17/2/2011) that his advice was offered as a precautionary measure as a response to NGO protests and that, in his view, the sporadic reports of such deaths meant that they were more likely to be due to pesticide residues. It should be noted that all farmers in the current study asserted that the animals which died had escaped, and would not have been grazing on the cotton fields as a standard practice. The fact that pesticide use has declined since the introduction of Bt cotton suggests either that there has been a change in the strength of the pesticides which farmers are using, or that the deaths are due to a broader spectrum of toxicity in the plant than is asserted by proponents. Either way, reports of the deaths raise concern for the farming praxis associated with Bt technology in relation to food crops.

¹²⁸ This restricted supply was noted in a personal interview (22/11/2010) with a seed dealer in Warangal who asserted that he had stopped supplying Bt seeds due to reduced demand. He also noted, however, that

This thesis argues that the framing of the opposition to Bt technology in Telangana has a strong resonance with the wider discourse of injustice associated with the struggle for a separate state, and that this wider unrest also influences the response of the Andhra Pradesh government to the opposition to Bt cotton in the region.

4.5 *The Telangana Movement and Bt Cotton*

Agitations for a separate Telangana represented an attempt to gain an improved recognition for, and resolution of, the risks inherent in the Telangana context.¹²⁹ In this way, these protests illustrated Renn's (2008: 135) view that 'risk issues have become battlegrounds for substantial conflicts about resource allocation, social justice and future economic development.' They also entailed attempts to redefine democratic praxis in terms of the way in which political power was exercised.

It should be noted that the initial proposal that Telangana should form part of Andhra Pradesh was strongly resisted by many in the region. It was argued that the deprivation of Telangana as a result of its oppression under the Nizam's rule would negatively impact upon its ability to compete for resources. This concern was

the commission for a packet of Bt seeds was Rs 80 to Rs 100 depending upon the size of the order whereas, for non-Bt seeds, it was just Rs 50. This absence of non-Bt seeds in the market is highlighted in a 2011 documentary entitled *Bitter Seeds*, produced by Micha Peled. This explores the experience of Bt cotton farmers in Maharashtra. Details of this documentary are available at: <http://www.itvs.org/films/bitter-seeds> Accessed on 15/12/2013.

¹²⁹ The struggle for a separate state was associated with ongoing protests throughout the research period. These included regular *bandhs* (strikes) which involved the closure of schools, shops and cinemas (*Times of India*, 22/2/2011; 23/2/2011), a rail *roko* (blockade) (*Deccan Chronicle*, 2/3/2011), non-cooperation (*Times of India*, 17/2/2011), student agitations (*Times of India*, 10/1/2011; 25/1/2011), *gherao* (encirclement) of a minister's home in Warangal (*Deccan Chronicle*, 9/1/2011), relay hunger strikes (*Times of India*, 22/1/2011) and sporadic violence, including the burning of public transport (*Times of India*, 22/2/2011; 24/2/2011). The protests also included a number of suicides through self-immolation (*Times of India*, 12/2/2011), hanging (*Times of India*, 17/10/2010; 29/1/2011) and pesticide consumption (*Times of India*, 11/3/2011; *Deccan Chronicle*, 16/8/2010).

particularly acute due to the relative affluence of the formerly British-ruled region of Coastal Andhra, and the inability of many of those in Telangana to speak English given that Urdu had been the language of officialdom in Hyderabad State (Kannabiran et al., 2010: 72-78; Maringanti, 2010: 34).

The formation of Andhra Pradesh in 1956 took place on the basis of an informal ‘Gentleman’s Agreement’ (Brass, 1990: 234). This included stipulations that one-third of government jobs and educational places would be reserved for those from Telangana and that, after a proportional sharing of revenues among the regions, the balance would be spent on the development of Telangana (Melkote et al., 2010: 9). It is argued, however, that these safeguards have not been respected (Brass, 1990: 234; Melkote et al. 2010: 10), and that the merger has significantly impacted upon the ability of those in Telangana to access key resources in their negotiation of risk. This led to the refrain of *Maadi maaku kaavaale* (‘we want what is ours’) in the struggle for secession (Kannabiran et al., 2010: 69).

Given the centrality of irrigation to the negotiation of risk in the region, access to water represented a primary concern of the Telangana movement. A significant portion of the catchment areas of two major rivers in south India, the Krishna and Godavari, lie in Telangana (Kannabiran et al., 2010: 72). Likewise, the world’s largest stone masonry dam, the Nagarjuna Sagar dam, is located in the region. However, it was argued that Telangana received much less than its allocation, and

that this was instead diverted to the politically powerful Coastal Andhra region (Kannabiran et al., 2010: 72; Melkote et al., 2010: 9).

Similarly, a major student protest, known as the *Mulki* (nativity) agitation, occurred in 1952. Three students were killed by police during protests against the huge numbers of ‘outside people’ taking government jobs in Telangana (Melkote et al., 2010: 11). The protest began in Warangal, but soon spread to other areas (ibid: 8). It was also claimed that, even prior to the formation of Andhra Pradesh, those resident in Coastal Andhra districts had obtained false *Mulki* certificates which had allowed them to purchase large tracts of land in Telangana (Melkote et al., 2010: 8).

As Kannabiran et al. (2010: 80) claim, the appeal for a separate Telangana state came to encapsulate ‘the demand for justice and equality, for freedom from want, for security, for a meaningful life.’ In terms of this thesis, the struggle for a separate state directly illustrates the inter-connectivity of the attempts to secure the legitimization of risk and democracy given that a legitimate democratic praxis was increasingly regarded as one which would alleviate the differentiated exposure to risk, through recognising the claims for justice of those who were at risk.

Maringanti (2010: 37) describes the Andhra Pradesh government’s approach to development as ‘populism with streaks of fascism’. The state has adopted a number of populist measures in order to secure its legitimization. These have included the imposition of a moratorium on the recovery of farms debt by commercial banks and private money lenders (Rao and Suri, 2006: 1552; Sridhar, 2006: 1564). It has also

announced an ex-gratia payment of one lakh rupees,¹³⁰ and fifty thousand rupees towards the liquidation of debt associated with families of farmers who have taken their lives (Sridhar, 2006: 1564).¹³¹

In 2006, the government launched the Indiramma (Integrated Novel Development in Rural Areas and Model Municipal Areas) initiative which aimed to upgrade the houses of all of those who had ration cards and who lived in *kacha* houses (those made from mud with roofs of rice straw or other thatching material). At a national level, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) was also passed in 2006.¹³² This seeks to enhance rural food security by providing at least one hundred days of guaranteed wage employment to every household member who is willing to undertake unskilled manual work, particularly when agricultural work is limited (between April and June). The scheme has attracted criticism with claims of late payments,¹³³ and arguments that the increase in incomes in which it has resulted are leading to a rise in alcohol abuse among males in rural Andhra Pradesh (*Deccan Chronicle*, 20/10/2010).

The authoritarian approach of the government which Maringanti (2010: 37) highlights is evident in the case of the 'land seizures', particularly for 'Special

¹³⁰ One hundred thousand rupees.

¹³¹ The onus is on the family to provide evidence that the indebtedness was due to 'farm-related causes' in order to secure the compensation (Sridhar, 2006: 1564).

¹³² This is popularly referred to as NREGS, or the National Rural Employment Guarantee Scheme.

¹³³ Available at: <http://www.hindustantimes.com/india-news/nrega-benefits-are-mixed-oxford-study/article1-1146429.aspx>. Accessed on 14/12/2013.

Economic Zones’ (Le Mons Walker, 2008: 587).¹³⁴ These are often violently resisted by Naxalites and tribal populations whose source of livelihood is claimed by the state with little or no compensation (ibid.). It is estimated that two hundred thousand acres of land have been acquired for industrial development in this way in Andhra Pradesh (Balagopal, 2007: 3833).¹³⁵

The conflicting demands of legitimation with which the state in Andhra Pradesh is associated are clearly evident in the case of Bt cotton. Despite its clear support for a neo-liberal approach, the state government has been obliged to confront Monsanto and the central government in Delhi with regard to Bt cotton as a concern for its own legitimation. This has led to the Andhra Pradesh government being referred to as ‘the most troublesome’ in India (Jishnu, 2010).¹³⁶ The state has been involved in conflict with regard to Bt cotton in a number of ways.

Firstly, in 2005, the state government banned certain varieties of Bt cotton from the market due to their association with widespread crop failure.¹³⁷ In that same year,

¹³⁴ Special Economic Zones (SEZs) are duty-free enclaves for investors and are deemed to be ‘foreign territory’ within the state (Le Mons Walker, 2008: 588). Instead of attracting industry and creating employment, however, Le Mons Walker (2008: 588) argues that they have become the basis for real estate speculation, and are often unused.

¹³⁵ The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 will come into effect in 2014. This commits to increasing the compensation payable for land, and stipulates that private developers will need to gain the consent of eighty per cent of the population affected by land acquisition for private purposes. However, it also legislates for the right of the government to acquire public land for private industrial purposes. It remains to be seen how stringently its stipulations will be adhered to.

Available at http://articles.economictimes.indiatimes.com/2013-10-16/news/43107324_1_monsoon-session-jairam-ramesh-new-land-acquisition-act Accessed on 17/10/2013.

¹³⁶ Available at: <http://business.rediff.com/column/2010/apr/01/guest-bt-cotton-monsanto-is-back-in-courts-over-royalty.htm> Accessed on 27/4/2013.

¹³⁷ This related to three varieties of Mahyco-Monsanto’s Bt cotton seeds – Mech 12, Mech 162 and Mech 184.

the Andhra Pradesh Agricultural Commissioner ordered Mahyco-Monsanto to pay compensation of ten thousand rupees per acre to farmers who had lost their Bt crop in Warangal, Nalgonda and Khammam districts.¹³⁸ Monsanto challenged the order in the Andhra Pradesh High Court, claiming that the Andhra Pradesh government was 'harassing' them (Kumar, 2010: 9).¹³⁹

Nevertheless, according to Herring (2008b: 151), Mahyco-Monsanto was forced to pay Warangal farmers thirty million rupees in compensation as a result of the crop failure linked to the withdrawn varieties.¹⁴⁰ As Herring (2008b: 150) notes, Warangal remains the only district in India where compensation for crop failure has been awarded. He (2008: 154) argues that this is due to the sensitivity of the district's administration to 'rural political protest because of a history of Naxalite activity,' as well as the district's NGO sector (ibid.: 155). This thesis asserts that these factors are also relevant to the state government's response to Bt cotton protests in Warangal.

Secondly, the state was involved in a successful bid to force Monsanto to reduce its seed prices in 2006 from Rs 1,800 per 425 gram packet (sufficient for one acre) to Rs 750 per packet.¹⁴¹ Monsanto have argued that the value of the trait fee which it charges is an intellectual property right whose regulation is outside the jurisdiction

¹³⁸ Available at: <http://www.global-sisterhood-network.org/content/view/705/76/> Accessed on 27/4/2013.

¹³⁹ Available at: <http://agrariancrisis.in/wp-content/uploads/2012/08/SEED-BILL-2010-an-analytical-view.doc> Accessed on 27/4/2013.

¹⁴⁰ Herring (2008: 154) argues that these successful demands for compensation have contributed to ongoing fabricated (in his view) claims of crop failure and animal deaths.

¹⁴¹ Available at <http://business.rediff.com/column/2010/apr/01/guest-bt-cotton-monsanto-is-back-in-courts-over-royalty.htm> Accessed on 22/7/2013.

of the state government.¹⁴² However, the Andhra Pradesh government has responded through passing legislation referred to as the Andhra Pradesh Cotton Seeds (Regulation of Supply, Distribution, Sale and Fixation of Sale Price) Act, 2007, asserting its power to regulate the sale and pricing of Bt technology within the state.¹⁴³

Finally, a proposed move by the central government in Delhi to introduce an All-India Seed Bill which would involve less stringent regulation than that currently required in existing state legislation has been strongly resisted by the state government and activists alike (Kumar, 2010: 10).¹⁴⁴ This has also seen relations between the centre and the state government become increasingly fraught.

In conclusion, this chapter has highlighted the way in which science and technology have become central to the neo-liberal approach to development adopted in Andhra Pradesh. This chapter explored the way in which the emphasis on scientific knowledge as the means to development in the state has been associated with a reduced focus on the redistribution of resources, which was a central concern of the Telangana armed struggle. The ongoing agrarian crisis and inequality in Telangana

¹⁴² Available at: <http://www.thehindubusinessline.com/todays-paper/tp-agri-biz-and-commodity/monsanto-ap-govt-cross-swords-over-royalty-payment/article1731571.ece?ref=archive> Accessed on 2/5/2013.

¹⁴³ Details of the act can be found at <http://faolex.fao.org/docs/pdf/ind119055.pdf> Accessed on 27/4/2013. This legislation followed the deletion of cotton from the Essential Commodities listing by the central government in 2007. Given that commodities listed as essential require the issuing of trade licences by states, the removal of cotton from the list limited the ability of state governments to regulate the prices of Bt cotton seeds. Many states responded through the passing of their own more stringent legislation as part of their constitutional right given that agriculture is stipulated as an area which falls within their jurisdiction. A release from the Press Information Bureau of the central government announced the re-inclusion of cotton on the Essential Commodities list in 2009, following a storm of protest from NGOs. Available at: <http://pib.nic.in/newsite/erelease.aspx?relid=54255> Accessed on 27/4/2013.

¹⁴⁴ Available at: <http://pib.nic.in/newsite/erelease.aspx?relid=54255> Accessed on 27/4/2013.

is increasingly linked to farmer suicides. The chapter examined the conflicting demands for legitimacy associated with governance in Telangana, where appeals for economic growth as a means of poverty alleviation compete with protests calling for greater social and epistemic justice in the negotiation of risk.

In the next chapter, the methodological approach adopted in order to research these issues during a nine-month stay in Andhra Pradesh will be explored. This will also examine the particular ethical issues involved in studying risk within a vulnerable and volatile region such as Telangana.

Chapter Five

METHODOLOGY

The Social Construction of Research into Risk

5.1 Introduction

This chapter examines the methodology used to explore the legitimization of risk and democracy with regard to Bt cotton in Andhra Pradesh. It discusses the ontology of risk and the critical constructionist approach to the research. This recognises that efforts to construct knowledge are central to wider attempts to define the future development of society. This view is asserted by Strydom (2011: 144) who argues that '[k]nowledge production...is but a part of a much more encompassing process which includes the constitution of society.'

The research process is presented, and the impact of the 'positionality' (Pearson, 2006: 308) of the researcher upon the research is discussed. The differences in the use of discourse analysis (Fairclough, 1989; 1992; 1995, 2003; Van Dijk, 1997; 1998) between the two levels of analysis in this thesis are explored, as is the adoption of the conceptual framework of legitimization (Van Leeuwen, 2007; 2008). The chapter also explores the decision to reject, for the most part, the use of computer programmes as a means of analysing the data for the study. Finally, but importantly, the particular ethical issues related to research into risk are examined.

5.2 *The Social Construction of Knowledge and the Ontology of Risk*

The constructionist approach adopted by this thesis asserts that knowledge related to risk is a social construction (Berger and Luckmann, 1967; Osborne, 1998; Strydom, 2002: 105-122). Given that it has been highlighted that attempts to construct knowledge with regard to Bt cotton are highly polarised, the research seeks to guard against the adoption of a strongly normative position which would implicate the researcher too strongly within the struggle itself.

Instead, the approach to critique posited within Critical Theory is adopted. Critical Theory is associated with the Institute of Social Research established in Germany in 1923, and later with the Frankfurt School (Held, 1980; Agger, 1991; Strydom, 2011). As a school of thought, it is strongly informed by Marxist, Left Hegelian and Kantian influences. It is particularly concerned with critique which focusses on promoting freedom from ideology (as false consciousness) and epistemic oppression (Rasmussen, 1996), and which seeks to promote a legitimate exercise of power as part of democratic praxis (Fraser, 1989: 19-33; Habermas, 1994: 94; Young, 2000).

Critical Theory asserts that critique has both ‘a negative exposing and positive disclosing form’ (Strydom, 2011: 137). Within Critical Theory, therefore, critique not only seeks to critically check ‘the self-understanding of actors, their orientations, practices, relations and institutions’ (ibid.); it also aims to disclose

‘new possibilities, interpretations, orientations, modes of organization or protest or transformative potentials’ (Strydom, 2011: 137).

The critical, constructionist approach does not mean to imply that the research is value-free, or that the researcher’s values are not clearly in evidence throughout. Nor does it deny that certain conclusions with a normative dimension have been reached as a result of the analysis. However, the central aim is to foreground the struggle as it is occurring within Andhra Pradesh society, and to emphasise the normative positions which are being adopted by the social actors themselves. This seeks to highlight the wider sociological ramifications of the struggle with regard to the constitution of Andhra Pradesh (and, as of 2014, Telangana) society.

The focus on presenting the debate as it is occurring recognises Luhmann’s (1993: xi-xii) view that, ‘[a] sociological investigation cannot seek to take sides, let alone decide the issue. The aim can only be to find out what is going on.’ Similarly, Strydom (2000: 89) asserts that, within the constructionist approach, ‘the whole plural range of participants relevant to a given constructive context [must] be taken into account without any tendency to favour one and hence to identify with it.’

The constructionist position is a difficult one to maintain, particularly given that the discipline of sociology, and the approach of Critical Theory within it, operates with an inbuilt critique of capitalism. It could be argued, therefore, that rather than being constructionist in its approach, this thesis is more ‘legitimationist’ (Strydom, 2000:

89) given that it identifies with (and thus inherently legitimates) the normative code of NGOs.

The legitimisationist dimension to the study is acknowledged. This asserts that the contestation of power, rather than its concentration, represents the very basis of legitimacy in democratic society. However, it is also argued that, in terms of the analysis, the approach is constructionist, given that it seeks to present ‘the dynamic interplay of the normative codes of all the participants within their common setting’ (Strydom, 2000: 89). This acknowledges that the perspectives of social movements are not ‘privilege[d]’ (Giri, 2012: 191) within the wider struggle in which they are engaged in praxis.

As has been highlighted in Chapter One, ontologically, this thesis adopts a position of ‘weak naturalism’ (Strydom, 2011: 10). This posits that, while social knowledge is constructed, there is a natural reality which exists beyond the attempts of humanity to construct knowledge pertaining to it. This thesis takes the view that risk represents an epistemic gap. Risk, therefore, involves humanity in complex attempts to construct knowledge in the present which pertains to an unknown future, which will itself be determined by contemporary attempts at knowledge construction. As in the case of risk definition, attempts to construct knowledge in research into risk are mediated by power relations. This will now be explored with regard to the research process in the current study.

5.3 *Ethnographic Research and a Bi-Level Constructionist Approach*

This thesis adopts a bi-level ethnographic approach as a means of exploring the Bt cotton debate in Andhra Pradesh.

The Micro Level

The data on which this thesis is based was collected using a triangulated,¹⁴⁵ ethnographic approach adopted during nine months of fieldwork in Andhra Pradesh between June, 2010 and March, 2011. This duration was chosen to coincide with a cotton season. The district of Warangal was selected given that it has been of interest to the researcher since 2002 when an internet search on GM crops revealed the widespread protests against the official approval of Bt cotton in the district.

A ‘mixed methods’ (Johnson et al., 2007: 112) approach, which combines both quantitative and qualitative data, has been adopted at the micro level. This is given the view asserted by Miller and Fox (2004: 36) that ‘looking at an object from more than one standpoint provides researchers...with more comprehensive knowledge about the object.’ This thesis argues that the attempt in triangulation ‘to consider multiple viewpoints, perspectives, positions, and standpoints’ (ibid.) is highly conducive to a constructionist approach, and is essential for a sociological investigation into a controversial theme, such as Bt cotton.

¹⁴⁵ Triangulation involves the use of a number of methods in order to permit the corroboration of data (Hammersley and Atkinson, 1995: 214; Johnson et al., 2007: 113). Methods used in the current study included interviews, texts, questionnaires, field-notes, and observations. A significant database of newspaper clippings was also collected over the nine month period of the research.

Quantitative data is used to explore the influence of power relations on the differentiation of risk as a material concern at the micro level, as well as to provide a substantive basis for the exploration of the ideological legitimization of perspectives offered by participants at both the micro and meso levels. Selective results from a questionnaire administered as part of the research process are also presented to highlight the aggregate perspectives associated with the villages.¹⁴⁶ It is recognised that the quantitative data used in this study is also constructed given that it is derived from qualitative interviews with cultivators. However, this data has been corroborated through observations, further qualitative interviews, and academic research, as well as cross-referencing within and between villages.

The desire to have both sides of the debate represented as part of the constructionist approach entailed the selection of three villages with different perspectives on Bt cotton. These are as follows:¹⁴⁷

- **Bantala** –all cotton is cultivated using Bt varieties;
- **Orgampalle** – all cotton is organically grown using non-Bt varieties, and chemical fertilisers and pesticides are prohibited in farming praxis;
- **Nandanapuram** – cotton is cultivated using Bt varieties with chemical fertilisers and pesticides. However, a small number of villagers have also

¹⁴⁶ Interview guides used for the semi-structured interviews at the micro level are included as Appendices 5.4 (pp. 366-368) and 5.5 (pp. 369-371). Results of the questionnaire are included as Appendix 7.2 (395-398). Due to space constraints, only selective findings from this questionnaire have been featured in the analysis.

¹⁴⁷ The names of micro level participants and the villages have been changed in order to protect identities. The pseudonyms of the villages have been formulated with the aim of assisting the reader in identifying which village is associated with each cultivation method.

adopted Non-Pesticide Management (NPM) which utilises non-Bt varieties and chemical fertilisers, but prohibits the use of pesticides.

The villages of Bantala and Orgampalle were first visited by the researcher with the NGO, Crops Jangaon, as part of a seven-day pilot study conducted between March and April, 2010. During this pilot study (29/03/2010 - 05/04/2010), affiliation with Hyderabad Central University (HCU) was secured as part of the requirement for a research visa, and a local supervisor within the university's Sociology Department, Professor Purendra Prasad,¹⁴⁸ was identified.

Following discussions with Professor Prasad, a decision was taken to focus on Bantala for the micro level analysis. It was felt that the absence of NGO affiliation in the village, and the fact that it had not previously been the subject of research, would allow the researcher to gain fresh insights into the material reality of Bt cotton. Similarly, the assertion by villagers that twenty buffaloes had died in 2008 as a result of their escaping and grazing on the Bt cotton fields presented the opportunity to allow this dimension of the Bt cotton debate to be more closely explored.

Bantala was visited weekly from the end of June, 2010. As this village had not previously been the subject of research, information on the village composition had to be defined with the help of 'key informants' (LeCompte and Schensul, 1999: 86).

¹⁴⁸ Professor Prasad, who specialises in Indian development, was a key source of advice in Andhra Pradesh. The researcher met with him five times throughout the research period, and he has remained an important guide since her return to Ireland.

These included the Village Secretary (a *Panchayat* position) and the head-master of the village school. This pre-work was essential to identifying a valid cross-section of participants along the dimensions of caste, gender and land-holding. Initial visits were also spent in the fields, and allowed villagers to become accustomed to the presence of a Western researcher and her translator, as well as permitting the researcher herself to acclimatise. The researcher also included participants encountered randomly in the fields in an attempt to mitigate the potential for village power holders to define the research.

Many informal interviews were conducted with villagers in Bantala who did not subsequently become part of the formal research process because their caste, gender or land-holding were already represented. There were also further recorded interviews conducted with villagers whose animals had died (23/8/2010; 24/8/2010), the Agricultural Mediation Officer (13/9/2010), and those who had received land during land reform (5/2/2011). Interviews were also held with the village vet (12/9/2010), and the Mandal Parishad Development Officer in the wider Mandal office (4/10/2010). These have not been included as part of the formal analysis, though they inform the research.

Given the absence of opposition to Bt cotton in Bantala, however, and the lack of a basis of comparison for participants' claims of the higher yields and incomes associated with the technology, the decision was taken, following consultation with supervisors, to extend the breadth of the research. This followed three months of

fieldwork in Bantala. Orgampalle and Nandanapuram were selected given that opposition to the technology was known to exist in these villages. (Nandanapuram was first visited in July, 2010 with the NGO, the Deccan Development Society).

In Orgampalle and Nandanapuram, the task of participant selection was undertaken with the assistance of NGO employees resident in the villages. The experience gained in Bantala meant that the establishment of the research in Nandanapuram and Orgampalle was far more straightforward. The researcher was clear on the general structure of the villages, and on the information she required. She was also, by this time, more acclimatised to Indian village life. These factors, combined with the fact that information on the village composition was already available for Orgampalle and Nandanapuram, meant that formal research could commence immediately after the introductory visit.

The power of ‘gatekeepers’ who have the authority to ‘grant or refuse access’ to participants in ethnographic research is noted by Hammersley and Atkinson (1995: 64). At the micro level, consent to conduct the research was sought from the *sarpanch* (head person) of each village.¹⁴⁹ While the researcher was introduced to the villages by NGOs, care was taken to highlight to participants that she was keen to learn of the farmers’ own perspectives on Bt cotton, both positive and negative.

¹⁴⁹ The form used in this regard is attached as Appendix 5.1 (p. 363). The consent form used for village participants is also attached as Appendix 5.2 (p. 364). These were verbally translated into Telugu for micro level participants (and the Crops Jangaon actor at the meso level) prior to signing.

Given the decision to broaden the scope of the research to three villages, and the desire to avoid being positioned within village power structures, the decision was taken not to stay in any one village. Instead, the researcher spent three days per week on field trips. These involved pre-dawn journeys to the villages by bus and auto-rickshaw, as most interviews had to be completed by 10am when the villagers started work in the fields. Given the early starts, the researcher would arrive from Hyderabad the day prior to the village visits, and undertake library research at Kakatiya University in Warangal. A basic hotel close to Warangal city frequented by Indian NGO researchers served as a base during field trips. This was equidistant between Nandanapuram in north Warangal, and Bantala and Orgampalle in the south of the district.

For the remainder of the week, the researcher was based at Hyderabad Central University. Classes from the Master's Sociology syllabus were attended between July and October, 2010. These included bi-weekly seminars on 'The Sociology of India' and 'Science, Culture and Society.'¹⁵⁰ This allowed the fieldwork to be contextualised within wider academic debates occurring within Indian society itself.

Twenty-six villagers were interviewed in their homes with the help of a translator in semi-structured interviews which lasted from one to one and a half hours in length

¹⁵⁰ Research was also conducted at the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Center for Sustainable Agriculture (CSA), the National Institute for Rural Development (NIRD), and the Centre for Economic and Social Studies (CESS), all in Hyderabad. Two conferences were also attended in other states – an All-India Sociological Conference in Cuttack, Orissa (27 - 29/12/2010), and an international conference entitled 'Visions of Asia and the Challenges of Creative Social Theorizing' held in Bangalore, Karnataka (21 - 24/2/2011). The researcher also presented a paper on her work at the Madras Institute of Development Studies in Chennai, Tamil Nadu (11/11/2010).

(this includes the time taken for the translation). Most village participants were interviewed two or three times.¹⁵¹ All interviews were recorded using a digital dictaphone, and transcribed using a laptop by the researcher.

The task of transcribing was performed in Hyderabad between field trips. This took up to two or three hours per day, and was undertaken between university classes, or following evening meals. Entire interviews were transcribed verbatim. While this was often tiring, it was also crucial to ensuring that the research stayed on track. Regular transcribing between village visits meant that omissions could be identified, and addressed with participants in the following visit. It also permitted new areas of interest to emerge, and meant that the researcher was familiar with her data (and details of the participants' lives) throughout the research process. This facilitated rapport building with village participants.

Private Telugu lessons were undertaken at the university three times per week between July and September, 2010. These followed three months spent learning the language using CD tutorials prior to leaving for India. Due to the pressures associated with the research itself, the frequency of these classes gradually decreased. Hours spent transcribing translated interviews, however, meant that the researcher became adept at recognising key words. This allowed her to check for omissions when translations were being provided.

¹⁵¹ The interview schedule for the villages is attached as Appendix 7.1 (pp. 393-394).

Nothing can prepare a neophyte researcher for fieldwork in rural India, and this was undoubtedly the most challenging aspect of the study. This involved extensive travel, and hours spent at crowded railway stations awaiting delayed trains, as well as uncomfortable, often terrifying, pre-dawn trips to the villages on rickety buses travelling at breakneck speeds along uneven rural roads.

There was also the heat and repetitive questioning by strangers ('where are you from?'; 'why are you here?'), hazards related to scorpions, king cobras and floods, the inability to drink village water (and, initially, reluctance to eat village food due to health concerns), the limited availability of hygienic toilet facilities, and the constant fear of Naxalite attacks on train journeys, as well as concerns regarding the political agitation in the region. Fieldwork was often a lonely experience, given that much rural travel was undertaken in the absence of a translator and, thus, involved the researcher in a struggle to make herself understood in her limited Telugu, spoken with an Irish accent.

Despite this, the time spent in the villages represents the most special dimension of this study. The beauty of the Indian country-side, the hospitality of the villagers, as well as their sense of fun and wisdom, meant that the discomfort which field trips entailed was more than compensated for by the richness of the fieldwork experience. It was in the trips to the villages that a greater appreciation emerged of the way in which India's ancient philosophical and imperial heritage continues to inform the contemporary struggle to negotiate risk. Similarly, the heightened sense

of alertness and fear which characterised village trips was also, inexplicably, at times accompanied by a profound feeling of peace.

At the end of the research, a leaving ceremony was held in each village. This involved the presentation of a large cake to the entire village, and the presentation of a 'Certificate of Thanks' which was translated into Telugu, and which featured photographs specific to each village. A thank you speech was also made and simultaneously translated where the purpose of the research was again clarified, and humorous stories were exchanged relating to the researcher's time in the village.

In Bantala, these stories often referred to the researcher's perceived Irish eccentricity in wearing wellington boots in the midday sun, in conjunction with the elegant Indian attire of a *salwar kameez*, when walking in the cotton fields. These boots were kept at the home of the *sarpanch* and collected on the way to the fields. They were actually worn due to the researcher's fear of the king cobras which inhabited the village, the sight of which had resulted in the resignation of a translator (a business graduate). It should be highlighted that the wearing of wellington boots offers little in the way of protection against cobras. Nonetheless, their comforting weight served to instill a relatively solid, though utterly flawed, sense of security in the researcher.

The Meso Level

The impact of the meso level upon the micro level is recognised by Bolognani (2007: 281) who asserts that ‘micro-contexts [are]...deeply influenced by meso...politics’. However, this thesis also explores the way in which competing risk constructions at the micro level are represented within meso level attempts to define the risk of Bt cotton.

The meso level is again informed by the constructionist requirement to ensure the inclusion of social actors on both sides of the debate. Here, the ideological struggle between participants is explored through the grouping of participants into coalitions on the basis of the similarity of their views. At the meso level, the coalitions are as follows:

- A **Bt Coalition** formed of representatives from the Congress Party in government, the Review Committee on Genetic Modification (a scientist from ANGRAU, the agricultural university in Andhra Pradesh), and Monsanto;
- A **Non-Bt Coalition** involving representatives from the Communist Party (Marxist) in opposition, and three NGOs – the Deccan Development Society, Crops Jangaon and the Centre for Sustainable Agriculture.

Research at the meso level involved ten participants. Each participant was interviewed once, in interviews ranging from one to three hours.¹⁵² These were mainly conducted in Hyderabad.¹⁵³ Research venues at this level were in stark contrast to those at the micro level, and included hotel meeting rooms, the Secretariat in Hyderabad, and the participants' own offices in Hyderabad and Jangaon. The researcher was also accompanied by the Crops Jangaon participant on a visit to Orgampalle, and by the DDS participant on a trip to Nandanapuram. Apart from one NGO,¹⁵⁴ all of the interviews at the meso level were conducted in English. This highlights the association of the English language with definitional power in Andhra Pradesh.

Telangana protests also impacted upon the meso level of the study. The interview with the ANGRAU actor in Hyderabad was inadvertently arranged during a *bandh* (strike) for Telangana. This required that all government employees stopped work for the day. (ANGRAU is a state university). The interview was interrupted when a large group of angrily chanting protestors, patrolling campus to check that the faculty were respecting the *bandh*, could be heard approaching the building where the meeting was taking place. The researcher was quickly moved to a backroom, while some of the faculty reassured the protestors that no official work was being

¹⁵² The interview schedule for meso level participants is included as Appendix 8.1 (p. 404).

¹⁵³ One interview with a Monsanto representative was conducted in Monsanto's Bangalore office, and involved two further Monsanto employees via a teleconference link to the organisation's Mumbai office. A further interview was conducted with a Monsanto employee from Mumbai who was visiting Hyderabad for a conference. The interview with the Crops Jangaon actor was undertaken in his office in Jangaon, a town eighty kilometres from Hyderabad.

¹⁵⁴ The interview with the rural NGO, Crops Jangaon, involved the use of a translator.

undertaken. It was with some relief that the researcher heard the protestors moving on to the next building.

Other interviews conducted at the meso level included those with Dr Sharma from the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) (2/9/2010), Davuluri Venkateshwarlu from Glocal (14/9/2010), and Professor Revathi from the Centre for Economic and Social Studies (7/10/2010). While these interviews are not directly cited, they greatly added to the researcher's knowledge of the topic.

The constructionist approach informed the way in which interviews at both levels were conducted. Care was taken in the phrasing of questions to ensure that they were not biased towards a particular ideological positioning in ways which would lead to a similar bias in responses, or to defensiveness in participants with opposing views. At the micro level, translators were also instructed to avoid biased language.

5.4 Researcher Positionality in the Research Process

It is recognised that efforts to construct knowledge in research are mediated by power relations arising from the researcher's positionality, as well as by the ideological positioning of the researcher herself. These aspects must, therefore, be problematised as part of the research process itself, and will now be dealt with in turn.

Positionality and the Negotiation of Power in Fieldwork

Positionality relates to characteristics of the researcher such as gender, race, class and nation (Pearson, 2006: 308), as well as the personality of the researcher and the general approach adopted to the research process (Wolf, 1996: 17). These aspects impact upon the way researchers are positioned in power relations as part of the research process. While the positionality of the researcher cannot be changed, this thesis argues that its impact can be negotiated and reflexively monitored as part of the knowledge construction entailed in research.

Wolf (1996: 11) notes that positionality is multi-faceted, and that different aspects off-set each other. In the current study, it is acknowledged that the researcher's gender certainly represented a hindrance in certain aspects of the fieldwork, most notably in the finding of accommodation deemed safe for a lone female. It is also rare for females to travel alone in India which meant that the researcher attracted considerable attention, particularly in rural areas. However, it is also argued that her elevated status as middle-aged and 'foreign' mitigated some of the potential obstacles which her gender presented.

The observation by Pemunta (2010: 4) that 'we can either disqualify our subjectivity as a hindrance to proper research, or turn it into our main research tool' is particularly insightful. It was recognised that, as a foreign female, the researcher attracted significant attention. The heightened respect often granted to Westerners in rural India should not be under-estimated, and serves to explain the way in which

the colonial enterprise was capable of securing a high degree of legitimation within the Indian context. This appeared to be related to the initially pale (Irish) skin of the researcher, and the association of fairness with Brahmanical purity.

The respect with which the researcher was perceived in Indian society was reinforced to her when an unknown elderly male approached and touched her feet (a sign of deep respect) while she was awaiting an auto-rickshaw to take her to Bantala. Similarly, her visit to Jangaon cotton market was reported in a local newspaper where she was described as an American scientist. This elevated status, once recognised, was used to gain access to high-profile political figures, a possibility which would have been much more limited in her own society.

It also eventually became clear that there are numerous advantages associated with being a female researcher. It was felt that her gender served to ease the potential power imbalance which villagers perceived with regard to her positionality as a Westerner. The view that females are seen as 'unthreatening or not official' in fieldwork is also asserted by McDowell (1988: 85). The researcher also took obvious pleasure in, and encouraged, the growing ease with which she was treated at the micro level of the study. This was highly conducive to her desire to listen to, and learn from, the perspectives of villagers.

The enhanced access associated with being a foreign female researcher in India is also highlighted by the American anthropologist, Marguerite Robinson. She (1988:

269) notes how she was welcome ‘in both mud huts and marble mansions’ during her research in Andhra Pradesh. This, she (ibid.) argues, presents Western researchers in India with ‘an unusual opportunity to listen, to learn, and to be heard in varied environments.’

Given the strict rules which govern commensality (eating together) between castes, the taking of food with participants was particularly seen as a mark of respect by the researcher to members of different castes. This is explored in detail by Dumont (1972: 119-130; 181-194). Her sharing of food with a broad spectrum of castes, from Brahmins to Madigas, was possible only because of her status as a foreigner. Her initially gauche attempts to eat food with her fingers while sitting in lotus position, and to speak Telugu during these informal meal-times, also served to foster friendships which transcended the research process.

It became apparent that the potential disadvantages associated with working with translators could be offset by allowing the experience to inform the research itself. Mackenzie et al. (2007: 304) argue that translators can hinder ‘mutual understanding’ and ‘potentially undermin[e] the validity of the research’ (ibid.). Similarly, Jacobsen and Landau (2003: 193) highlight that there is a risk that the involvement of translators will lead to the ‘transgressing [of] political, social or economic fault-lines of which the researcher may not be aware.’

The current researcher worked with five different translators throughout the course of the research. These were all accessed through contacts at Hyderabad Central University, and were all from Telangana.¹⁵⁵ The deliberate attempt to avoid translators from Coastal Andhra was due not only to the recognised differences in Telugu dialect between the regions, but also to the concern that villagers would feel uncomfortable with a translator from Coastal Andhra as a result of the tension between the regions discussed in Chapter Four.

It is acknowledged that the experience of working with translators requires a great deal of patience, and adds an extra degree of complexity to fieldwork, not least given the practical consideration that the availability of translators must be secured before field trips can be undertaken. The involvement of translators also contributes to a significant loss of control over the research process.¹⁵⁶ It was found however that, in the current study, the positionality of translators with regard to their caste served to highlight caste power relations in ways which the researcher would otherwise have failed to capture given the strict segregation of castes within the villages.

It was noted, for instance, that Scheduled Caste Madiga and Mala translators would refer to Brahmin and Reddy participants in the polite form of Telugu, while other

¹⁵⁵ They included four males and one female who were aged between twenty and thirty years. Of the males, one was a Master's student in Anthropology, one a PhD student in Economics, one a Master's student in Sociology, and one a Business graduate. The female was a PhD student in Hindi, and a Hindi teacher. The female, the male PhD student and the Business graduate were all Backward Castes. The Anthropology and Sociology Master's students were a Scheduled Caste Mala and Madiga, respectively.

¹⁵⁶ This relates not only to the mediated rapport with participants, but also to concerns for the anonymity of villages and participants. In this regard, each translator was required to sign a confidentiality agreement which is included as Appendix 5.3 (p. 365).

participants would be addressed in the more familiar form.¹⁵⁷ There was also a marked reluctance by the Mala translator to interrupt Brahmin and Reddy participants in order to provide the translation for fear he would be ‘scolded’ (Field note extract, 15/8/2010).

Similarly, the Madiga translator mentioned that he had attempted to fool a Brahmin participant into believing he himself was a Brahmin by using Sanskrit words in his Telugu. This is redolent of the ‘Sanskritization’ described by Srinivas (1966: 6) where a ‘‘low’ Hindu caste...changes its customs, ritual, ideology and way of life in the direction of a high...caste’ (ibid.). Here, the Sanskritization of the Telugu language was ostensibly adopted as a means of manipulating caste assumptions. It also, however, signaled the deeper insecurity of the translator given that, according to the norms of the caste system, he would not normally have been welcome inside the Brahmin’s home.

The hierarchy between the Scheduled Castes themselves was reinforced by the Mala translator’s refusal to eat a meal at the home of a Madiga participant where the researcher was having lunch. This was because, he argued, ‘his mother would scold him’ (Field note extract, 6/9/2010). Further clarification established that this refusal to eat was due to the perceived potential for pollution through sharing food with a Madiga research participant.

¹⁵⁷ Like many European languages, Telugu has a polite form of ‘you’ which is used for the elderly or those deemed socially superior. In Telugu, ‘*meeru*’ is the polite form, while ‘*nuuvu*’ is used for those deemed to be at an equal or socially inferior level.

The inclusion of a meso level meant that the researcher herself was positioned differently in power relations between the two levels. Wolf (1996: 2) asserts that '[s]tudying up' is an important way of subverting the power of the researcher involving countries in the Global South. However, it is argued that working with both a micro and meso level in one study significantly enhances the researcher's sensibility for the way in which power is differentiated within a given society. It should also be recognised that the research experience is very different between the two levels, and requires a great deal of flexibility from the researcher herself.

It was noted that power holders at the meso level sought to establish a greater degree of control over the research process than other participants. This was evident in a number of ways: the careful restriction of the time allocated to the research interview (Monsanto and Congress Party actors); the refusal to allow the interview to be tape-recorded (the ANGRAU actor); the use of 'no comment' to questions related to organic farming by one Monsanto actor; and the 'vetting' of the researcher by a representative from Monsanto's Public Affairs department prior to the interview.

While these are, of course, all perfectly justifiable practices given the right to autonomy of all research participants, the point here is that there was a notable shift in the positioning of the researcher given the different demands made on her by participants. With power holders, she was more often obliged to work within

boundaries set by the participants themselves, rather than those self-imposed at the micro level as a result of her own ethical and methodological commitments.

Research as a Challenge to and Consequence of Ideological Positioning

This thesis argues that the research process should be designed in ways which will ensure that researchers are confronted with their own ideological assumptions, and challenged to alter them. In this way, researchers learn and, in doing so, transform their self-understanding. As Levi-Strauss (1963, as cited in Baszanger and Dodier, 2004: 14) observed, research should represent a genuine 'internal revolution' for the researcher.

In the current study, the attempt by the researcher to challenge her own ideological assumptions was facilitated by her removal from her own cultural context, and by her search for competing perspectives. This sought to confront the epistemic boundaries associated with her cultural positioning as an Irish European, where GM technology has been banned due to safety concerns, and to learn from the perspectives of those in a context where Bt cotton had been cultivated for some time.

One of the primary motivations for the study was the researcher's desire for epistemic certainty as to whether or not the technology was associated with ecological and epidemiological risk.¹⁵⁸ The researcher's concern for the safety of

¹⁵⁸ The researcher had undertaken a smaller-scale study for her Master's thesis in Sociology at University College Cork in 2008. This had involved a critical discourse analysis of interviews with two politicians, a

GM crop cultivation given the cultural conditioning of her European origins was immediately challenged by her visits to Warangal where Bt cotton is pervasively cultivated in an open environment.

Her ideological positioning was also challenged through early interaction with villagers in Bantala who all asserted that Bt cotton had contributed to (though was not fully accountable for) improved living standards and enhanced access to food. Thus, based upon early fieldwork, it appeared that the focus of the thesis would be an exploration of the ethical conflict arising from a technology which was associated with uncertain risk globally, but which was also contributing to the alleviation of the material risks of poverty in Warangal. It was recognised, however, that these assertions of increased wealth did not explain farmer suicides, or the opposition to the technology which was known to exist.

Her positioning changed again when the debt levels of participants in Bantala were explored, and the case of the animal deaths was more closely analysed. As the awareness of the village power structures grew, and the research was broadened to include Orgampalle and Nandanapuram, the enhanced realisation of the ideological and material complexity of the theme emerged, as did its broader sociological implications. As a result of this changed perspective, the search for epistemic certainty has been replaced with a sociological interest in the way in which societies

Monsanto representative, and two NGOs, and was entitled 'Identity, Ideology and Political Will Formation: A Case Study of GM Crops in Ireland.' Due to the fact that GM crops were banned in Ireland at the time of the research, however, it was impossible to undertake a material analysis as a substantive basis for assessing the competing ideological perspectives in the study.

are formed through the legitimisation struggle involved in the negotiation of the epistemic uncertainty associated with risk.

The researcher's initial desire for answers with regard to Bt technology was motivated by the ambiguity of her positionality as a former employee of Syngenta, one of Monsanto's major competitors in the research and development of GM technology.¹⁵⁹ The merging of competing perspectives at the meso level of this study reflects the researcher's attempts to resolve her own internal conflict regarding the technology. The research has, however, resulted in a broadening of her perspective to incorporate wider concerns related to equity, justice and the exercise of power in knowledge construction associated with attempts to define the risk of the technology.

Finally, the researcher is conscious of the Eurocentric analytical concepts and methods which she has adopted in order to explore the research data. This would appear to reinforce the argument of Sinha (1997: 177) that 'the West is perceived as the locus of theoretical and conceptual endeavours [while] the non-Western world is seen to provide empirical grounding.'

¹⁵⁹ The researcher led teams of Logistics Managers in Syngenta for seven years from 1995 to 2002, both in the UK and Switzerland. The development of GM technology was still in its infancy at the time of the researcher's leaving the organisation. However, her uncertainty regarding the technology was a factor in her loss of commitment to Syngenta's corporate ideology. This previous work experience has, nevertheless, provided her with an understanding of the way in which the ideological commitment of corporate actors to their employers informs the ethical positioning of these actors.

The choice of European authors to provide the theoretical and analytical framework is undoubtedly the result of the researcher's European academic conditioning. However, it is also recognised that there is an absence of analytical frameworks developed by Indian authors. This is highlighted by Parekh (1992, as cited in Pantham, 1995: 189) who notes that the critique of the Western ethnocentrism of political theory in India 'has not been matched by the formulation of alternative, original, non-Western political theories.'

5.5 Power and Ideology in Critical Discourse Analysis

Discourse analysis has been selected to analyse the qualitative data in this study due to the recognition of the centrality of discourse in the social construction of knowledge as part of the wider constitution of society. The choice of discourse analysis also supports the ontological position of weak naturalism and constructionism given the view highlighted by Burkitt (1998: 123) that there is 'one reality with many different epistemic and discursive positions upon it.'

It should be highlighted that the analysis incorporates two very different applications of discourse analysis. Given that the discourses at the micro level have been translated, the analysis at this level is less directly critical of the language used. The aim here is to foreground the discourse of the villagers, and to use the

concept of legitimation in order to allow the risk constructions of villagers to be presented in their own (translated) words.¹⁶⁰

It is noted that participants at the meso level are using English as a second language.¹⁶¹ However, the degree of proficiency of these actors allows the analysis to become more directly critical of the language used. Here, the use of *critical* discourse analysis permits a particular focus on the way in which power is ideologically negotiated through discourse. Fairclough (1992: 12) argues that ‘critical approaches [to discourse analysis] show...how discourse is shaped by relations of power and ideologies, and the constructive effects discourse has upon social identities, social relations and systems of knowledge and belief.’ In this way, critical discourse analysis not only permits an analysis of the ideological struggle in which social actors are engaged; it also enables a critique of the naturalised assumptions social actors adopt in their attempts to legitimate and delegitimize their ideological positioning. This recognises that, as Breeze (2012: 4) highlights, ‘legitimation is an essential aspect of the way that ideologies function through discourse.’

The focus at the meso level is, therefore, on the ‘de-structuring’ (Fairclough, 1989: 171) of ideological assumptions which have become ‘naturalized’ (ibid.: 33) as part of existing power arrangements. The discourse analysis at this level also seeks to

¹⁶⁰ The researcher’s Telugu reached a standard where she was able to engage in basic conversations, and check aspects of the translation. However, it remained inadequate to conduct research interviews without the assistance of a translator.

¹⁶¹ With the exception of the Crops Jangaon actor whose interview was translated.

examine the dual role of ideology in both ‘reproduc[ing] and challeng[ing] aspects of...institutional norms and power relations’ (Skillington, 1997: 507). Hence, theoretical concepts from critical discourse analysis are adopted far more rigorously at the meso level than at the micro level.

The discovery of the ‘categories of legitimation’ developed by Van Leeuwen (2007; 2008) represented a key turning point in the thesis, and led to the centrality of legitimation as a key analytical and theoretical concept. The adoption of the categories of legitimation as a central analytical framework is highly conducive to the constructionist approach in that it allows the normative standards immanent in the social context itself to emerge through the discourse of participants. The use of legitimation as an analytical device also importantly allows the researcher to remove herself from the struggle itself in order to gain the type of broader (though still necessarily subjective and imperfect) perspective necessary for a sociological analysis.

The categories of legitimation (Van Leeuwen, 2007; 2008: 105-123) adopted as the analytical framework for the thesis are as follows:

Authorization: legitimation by reference to persons in whom authority is vested. In the current study, this relates to an exploration of the way in which legitimation is mediated through power relations;

Moral evaluation: legitimization by reference to ‘discourses of values’ (Van Leeuwen, 2007: 91). In terms of the current research, this relates to the ‘life [which people have] reason to value’ (Sen, 1999: 74) as part of normative conceptualisations of development;

Rationalization: legitimization by reference to the ‘goals, uses and effects’ of practices (Van Leeuwen, 2008: 113). With regard to the current study, this relates to the reasons given for the legitimization and delegitimation of Bt technology;

Mythopoesis: legitimization by reference to narratives that reward legitimate actions. In terms of this thesis, democracy is explored through an examination of the narratives of participants with regard to their views on the way in which power should legitimately be exercised within democratic society.

At the meso level, the use of ‘counterframing’ (Benford and Snow, 2000: 617) supports the ‘negative exposing’ (Strydom, 2011: 137) and ‘positive disclosing’ (ibid.) approach to critique which has been discussed previously. The ‘diagnostic framing’ (Benford and Snow, 2000: 615) as ‘problem identification’ (ibid.) is part of the ‘negative exposing’ (Strydom, 2011: 137) critique undertaken by the Non-Bt Coalition as a delegitimation of the Bt Coalition. Here, the emphasis is on gaining recognition for the ‘‘victims’ of...injustice and amplify[ing] their victimization’ (Benford and Snow, 2000: 615).

The ‘prognostic framing’ which Benford and Snow (2000: 616) describe is linked to the articulation of solutions. Here, the thesis seeks to undertake the ‘positive disclosing’ (Strydom, 2011: 137) function of critique in highlighting the alternative normative and material solutions offered by the Non-Bt Coalition as part of an alternative conceptualisation of development.

As a method critical discourse analysis obliges analysts to be reflexive with regard to their own ideological assumptions. The process of ‘de-structuring’ (Fairclough, 1989: 171) ideological assumptions, and the researcher’s attempts to critique perspectives as part of this reconstruction is, of course, strongly influenced by the researcher’s own ideological positioning. As Fairclough (1989: 171) notes, ‘restructuring’ requires ‘a strategy for dealing with the problematization of one’s position to be creative, to put together familiar discourse types in novel combinations’ (ibid.).

The analysis of competing perspectives requires that researchers are flexible enough in their own thinking to gain the type of in-depth insight into a perspective which is required. As Savin-Baden (2004: 367) highlights, such a struggle for interpretation involves ‘messiness, self-critique and pain’, particularly when the research entails highly polarised perspectives. It is also, as Scheper-Hughes (1995: 147) notes, ‘necessarily flawed’ given the researcher’s imperfect self-awareness and inability to fully transcend her positionality; however, it is argued that it is ‘good enough’ (Scheper-Hughes, 1995: 147) if it seeks to push the boundaries of the researcher’s

self-awareness further, and leads to new insights, not only on the theme of the research, but also on the process of knowledge construction itself.

The current research entailed quantitative and qualitative data obtained from ninety recorded interviews. (This relates to cited interviews only. In total, the research involved over one hundred interviews). The corpus of data comprised more than seven hundred pages of single-spaced, typed material. In order to undertake the analysis of such a large volume of data, training on data analysis software (SPSS software for the quantitative work, and NVIVO for the qualitative analysis) was undertaken between January and March, 2012. Despite a further three months spent inputting and categorising the data using these programs, however, both were subsequently largely abandoned.

These programs were found to be useful in terms of gaining familiarity with, and organising, the data. However, the subsequent decision to almost totally reject them was due to the fact that their use became increasingly problematic given the depth of understanding and creativity which the analysis required. (SPSS remained crucial as a database for the easy referencing of quantitative data on individual participants). Seidel (1991: 114) notes that 'some computer programs' diminish the 'close involvement and interaction with their data' (ibid.) which many researchers value. Similarly, Bazeley (2007: 8) asserts that certain software packages can lead to a 'loss of context' and 'alienation' (ibid.) from the data. The experience with this thesis suggests that researchers should be guided by their research objectives

and their own sense of their data when taking decisions on the use of software. They should also be flexible enough to abandon such tools if they become an obstacle to gaining more in-depth access to the data later in the research process.

5.6 *Ethics and the Legitimation of Research into Risk*

Ethical principles of ‘beneficence, integrity, respect for persons, autonomy and justice’ (Mackenzie et al., 2007: 299) represent the cornerstone of legitimate research practice. However, it is also recognised that, as Mackenzie et al. (ibid.: 300) note, ‘the articulation of these principles in ethics guidelines is often highly abstract.’ This means researchers are constantly obliged to reflexively legitimate their own research and their approach to it, both in the field and away from it. It is argued that this is particularly true of research into risk, given that it explores ambiguity, and involves participants who are vulnerable. Here, the distinction between ‘procedural ethics’¹⁶² and “ethics in practice” noted by Guillemin and Gillam (2004: 261) is especially significant.

Ethical concerns are relevant from the very earliest stage of obtaining informed consent from participants (Mackenzie et al., 2007: 299) given that the ambiguity of risk and the uncertainty related to the consequences of the research. The objectives of the research were translated in Telugu to all participants in the initial interview, as was the consent form (Appendix 5.2, p. 364). Participants were then asked to

¹⁶² Procedural ethics relates to the ethical requirements of funding bodies or academic institutions. In the case of the current research, this involved seeking ethical approval for the project from the Social Research Ethics Committee as part of the ethics procedures of University College Cork, and as a requirement of the Irish Research Council funding. This approval was granted on 31/5/2010.

sign or, in the case of illiteracy, to place of thumb print on the form. The acceptance of a thumb print as consent is, in itself, ethically questionable given the potential for exploitation which it highlights. In the case of risk research, however, it is the input of these most vulnerable of participants which is of the most vital significance. Hence, the ethical concerns regarding their inclusion in this research have to be balanced with the questionable ethics entailed in their exclusion from it. Pseudonyms have been used to eliminate the possibility for any unintentional harm to the participants as a result of the research itself.

The heightened awareness of the differentiation of risk exposure between the researcher and researched is ethically problematic. The privileged position of the researcher who can simply leave the site is highlighted by Wolf (1996: 10) as evidence of the differentiated power between the researcher and the researched. It is argued, however, that researchers leave the site, but the site does not leave them. Instead, the experience continues to inform the ethical commitments which underpin all future work. In the case of the current study, this relates to an ongoing commitment to highlight the need for social and epistemic justice, and a legitimate exercise of power, in the negotiation of risk.

The concern raised by feminist researchers that research itself is exploitative (Chase, 1996: 49) is particularly heightened in research into risk. Here, the complex issue of reciprocity and how participants should be compensated for their involvement (Skeggs, 1994: 81; Wolf, 1996: 19; Pittaway et al., 2010: 238) is

particularly acute, given the poverty of many of the research participants at the micro level.

The researcher refrained from offering financial recompense for interviews given the fear that this would impact negatively upon the validity of the research. This is also highlighted by Bolognani (2007: 283) who argued that '[m]onetary reward, which has become more popular recently in social research...could have secured more interviews but not necessarily honest accounts.' However, the researcher found other ways to provide financial assistance to those who particularly required it. This involved sharing auto-rickshaws with landless participants, and passing them significantly more than her share of the fare. Similarly, gifts of cash and *sari* material were made to vulnerable participants when leaving the site.

Concerns for exploitation are also related to issues of representation and authorship (Patai, 1991: 139; Wolf, 1996: 33-34; Bolognani, 2007: 288). This is particularly true when participants are geographically distant from the researcher, and where prior representation has been limited. Here, the researcher is obliged to recognise herself as a 'definer' who is responsible for the representation of her participants. To this end, the current researcher has committed to post a summary of the conclusions of the thesis, translated into Telugu by a former translator, to the key informants and *sarpanches* in the villages for onward dissemination to research participants.¹⁶³ She has also committed to sending a summary of the conclusions

¹⁶³ The researcher maintains limited contact with the villages through the mediation of this translator.

of the thesis in English to meso level participants. (This will be translated into Telugu for the Crops Jangaon actor).

It is also recognised that researchers are questioned by research participants. As Geleta (2013: 9) highlights in his ethnographic study in Ethiopia, 'I was not only interviewing my informants, but they were actively engaged in interviewing me.' In the case of studies into risk, however, this can present particular ethical dilemmas. This was particularly evident in the questions from Bantala cultivators regarding the experience of Bt farmers in Ireland. Without wishing to add to the anxiety which these participants were already expressing, the researcher was obliged to respect their autonomy, and to respond honestly that the technology was banned in her home country due to uncertainty regarding its safety.

It is impossible for the researcher to predict the ways in which her encounter with participants impacted upon their perspectives, any more than participants could be sure of the way in which their individual contributions informed the conclusions of the research. It was noted, however, that many cultivators in Nandanapuram were notably moved to learn that it was internet reports of protests in their village which had come to the researcher's attention many years earlier in Switzerland, and which had inspired the current study. This highlights the incredible inter-connectivity of risk society, and the powerful force for collective learning which it represents.

In conclusion, this chapter has explored the use of a constructionist approach in this bi-level analysis of legitimation and Bt cotton. It has also examined the way in which attempts to construct knowledge in social research are mediated through power relations associated with the 'positionality' (Pearson, 2006: 308) of the researcher. It has illustrated, however, that reflexivity on this positionality can become part of the knowledge construction of the research itself. The differing adoption of discourse analysis between the levels of the study is highlighted. Finally, the chapter explores the particular ethical dilemmas associated with research into risk, but argues that these need to be balanced against the significant ethical repercussions of a failure to undertake such work.

Chapter Six

ANALYSIS PART I

A Comparative Analysis of the Differentiated Risk Exposure of Village Participants in the 2010/2011 Cotton Season

6.1 Introduction

In this chapter, the differentiated exposure to risk as a material concern of selected participants in three Warangal villages is explored. This entails a quantitative analysis of actual cost and income data related to the cultivation of Bt cotton, when compared with NPM and organic cultivation. Data for this analysis was collected using a structured interview guide which is provided as Appendix 5.5 (pp. 369-371). This chapter also introduces the Risk Coalitions which form the basis of the analysis of the differentiated risk exposure within and between the villages in the next three chapters.

The comparative data permits a multi-faceted analysis which explores:

- a) the relative risk exposure of the Risk Coalitions within each of the villages;
- b) the relative risk exposure of the Risk Coalitions across the villages as a means of quantitatively comparing the experience of Bt cotton cultivators with those using organic and NPM methods;
- c) the relative risk exposure of Bt cotton farmers in Nandanapuram and Bantala as a means of analysing the variability of Bt cotton farming in two dispersed villages in Warangal.

6.2 Village Overview

Full details of the village compositions are available in Appendices 6.1 to 6.3 (pp. 373-375). Key information is summarised below:

Table 6.1: The Villages at a Glance

Village	Bantala	Nandanapuram	Orgampalle
Population	2,800 people (428 households)	3,500 (971 households)	202 (52 households)
Caste composition	FC – 1 per cent; BC – 59 per cent; SC – 40 per cent	FC – 1 per cent; BC – 59 per cent SC – 40 per cent	FC – 0 BC – 100 per cent SC – 0
Dominant Caste	BC Kuruma (fifty-one per cent of land holding)	No one caste dominant. Majority of village land held by SC Madigas (thirty-seven per cent) and BC Gowdas (twenty-six per cent).	BC Mudhiraj (eighty-two per cent of land holding)
Sarpanch	BC Kuruma female	BC Gowda female (previously SC Madiga male)	BC Mannuru Kapu male (in neighbouring village)
Percentage of land allocated to cotton	61 (all Bt)	63 (90 per cent Bt; 10 per cent NPM)	17 (all organic)
Percentage of population landless	5 (21 households)	10 (97 households)	0.5 (1 household)

FC: Forward Caste; BC: Backward Caste; SC: Scheduled Caste

Pseudonyms have been used for the villages and participants in order to preserve their anonymity. Bantala and Orgampalle are located approximately ten kilometres from each other in south Warangal, while Nandanapuram is located one hundred kilometres from the other two villages in the north of the district.

Village One: Bantala

The village of Bantala is comprised of two thousand eight hundred people. This is large by Indian standards. Details of the village composition are available as Appendix 6.1 (p. 373). The majority of the village is comprised of Backward Castes (sixty per cent), with a limited number of Forward Caste Vaishyas (one per cent). The dominant caste is the Backward Caste Kuruma who own fifty-one per cent of the village land, and account for just over twenty per cent of the total number of households (see Appendix 6.1, p. 373). The current *sarpanch* is a Backward Caste Kuruma female. However, it is her husband (Pallav) who is dominant in managing village affairs.

As can be seen from Appendix 6.1 (p. 373), Bantala has a large population of Scheduled Castes (forty per cent). Of these, the majority are Madigas (eighty-eight per cent), while Malas account for twelve per cent. Despite the numerical strength of the Madigas, they own only fourteen per cent of village land, most of which is waste land allocated to them as part of land reform, and half of which is unfit for cultivation. They are not mobilised along caste lines, not least due to the control exerted by Pallav over many aspects of village life.

Cotton is the main crop cultivated in the village and accounts for just over sixty per cent of the cultivable area. Only Bt cotton varieties are cultivated. The other main crops are paddy, pulses and chilli. In the case of larger land-holders, these crops are

grown for the market, as well as for personal consumption, while many small and marginal land holders grow some paddy for personal consumption only.

All households, apart from four (which includes Pavan, the Forward Caste participant), have ration cards which entitle them to subsidised food from the Public Distribution System. There is evidence of house construction in all caste wards. A large canal has been excavated for irrigation. However, it cannot be used as the tributaries to bring water to the fields have not been completed due to lack of funding. A red Communist Party (Marxist) flag flutters aloft a flagpole in the centre of the village.

There is no direct involvement between Bantala and NGOs for agricultural purposes. In December 2008, thirty buffaloes escaped and grazed on the Bt cotton fields. By morning, more than half were dead. The villagers link the deaths with the animals having grazed on the Bt cotton fields. Although scientists, politicians and NGOs visited the village and conducted post mortems, the animal owners have not been advised of the test results. Shortly after the deaths, the Director of Animal Husbandry in Warangal issued his advice that farmers should not graze their animals on Bt cotton fields.

Nandanapuram

The village of Nandanapuram is very large, with a population of three thousand five hundred inhabitants. The village composition is provided as Appendix 6.2 (p. 374).

Like Bantala, it is comprised mainly of Backward Castes (fifty-nine per cent), with a small population (one per cent) of Forward Castes. Unlike in Bantala, the Forward Caste population in Nandanapuram includes Brahmins.

As can be seen from Appendix 6.2 (p. 374), the Scheduled Castes in Nandanapuram also comprise forty per cent of village households. Unlike in Bantala, however, the Scheduled Caste population is comprised entirely of Madigas. The Madigas in Nandanapuram are characterised by a far higher degree of caste identification and mobilisation than was the case in Bantala. Their strong position in the village is under-pinned by their ownership of thirty-seven per cent of the village land. Interviews with villagers also highlighted, however, that there is a high concentration of agricultural labourers among the Madiga population. The greater dispersal of land among a variety of castes in Nandanapuram (with a significant portion of it being in the ownership of a Scheduled Caste) means that no one caste is identified as being dominant. Instead, power is highly contested.

Cotton cultivation in Nandanapuram is slightly higher than in Bantala at sixty-three per cent of the cultivable area. The majority of the remaining land is sown to paddy. Inter-cropping, which involves the simultaneous sowing of a number of crops on the same land and is associated with enhanced soil fertility, is practised to a far greater extent than in Bantala. In the case of Nandanapuram, not all of the cotton is sown to Bt varieties. Instead, ten per cent is cultivated using Non-Pesticide Management (NPM) methods, involving non-Bt seed varieties.

Unlike Bantala, Nandanapuram has a strong association with NGOs for agricultural purposes, primarily with the Deccan Development Society. Like Bantala, there is evidence of house construction throughout the village, as well as an incomplete canal excavated for irrigation purposes. Nandanapuram is also associated with sporadic reports of sheep deaths over a number of years which, farmers argue, have been caused by their escaping to graze on Bt cotton fields.

Orgampalle

The caste composition of the organic village, Orgampalle, is included as Appendix 6.3 (p. 375). The village is small, with a population of just two hundred and two inhabitants (fifty-two households). For administrative purposes, it is a hamlet to a neighbouring village, where the *sarpanch* and *panchayat* office are also located. Unlike both Bantala and Nandanapuram, Orgampalle is characterised by its caste homogeneity and the population is comprised entirely of Backward Castes. Ninety-two per cent of households (all except four) are from the Mudhiraj caste which is the dominant caste and owns eighty-two per cent of the village land. The remaining four households are two each from the Chakali and Yadava Backward Caste *jatis*.

Crop diversity is higher in Orgampalle than in the other villages. Cotton cultivation accounts for just seventeen per cent of cultivable land. Other crops cultivated include paddy (twenty-four per cent of cultivated land), red gram¹⁶⁴ (fifteen per

¹⁶⁴ *Cajanus cajan* or pigeonpea. Red gram is a staple pulse of India where it has been cultivated for three thousand five hundred years, and is an important source of protein. It is used in the making of *dal*.

cent) and smaller areas sown to sesame,¹⁶⁵ maize,¹⁶⁶ green gram,¹⁶⁷ black gram¹⁶⁸ and vegetables. It is important to note that Orgampalle is supported not only by a local NGO, Crops Jangaon, but also international NGOs, such as Oxfam. This NGO network serves to alleviate the risks of organic cultivation for this village, providing invaluable extension services, as well as employment to some villagers, and contributing to the communal philosophy which defines Orgampalle's approach to risk negotiation.

The cultivation of Bt cotton is banned as part of the 'rules' agreed upon between Crops Jangaon, a local NGO, and the villagers. These rules are painted in Telugu on the wall of a house on entry to the village. (They have been translated and included as Appendix 6.4, p. 376). All households in the village have a ration card which entitles them to PDS rations. There is also evidence of house construction along the one main street of which Orgampalle is comprised.

The village map of Orgampalle, provided as Appendix 6.7 (p. 379), highlights that there is less caste segregation in Orgampalle than in the other two villages. Although caste *jatis* are grouped together, all participants live in greater proximity to each other than is the case in the other two villages (see Appendices 6.5 and 6.6, pp. 377-378).

¹⁶⁵ *Sesamum indicum*. Highly drought resistant, sesame is the oldest oilseed crop known to man.

¹⁶⁶ *Zea mays* or corn. Known for its ability to grow in diverse climates.

¹⁶⁷ *Vigna radiata* or mung bean is used in the making of crepes and *dal* and is a rich source of low-fat protein. Evidence indicates the crop has been cultivated in India for three thousand five hundred years.

¹⁶⁸ Known as *Vigna mungo*, black gram is used to make *dal*, and is one of the most prized pulses in India. After paddy, Andhra Pradesh is known for its cultivation of black gram, particularly Coastal Andhra.

6.3 *The Village Risk Coalitions*

The distribution of participants across the villages is as follows:

Table 6.2 Participants – Cultivators: Landless

Village	Cultivators	Landless
Bantala	6	2
Nandanapuram	8	2
Orgampalle	7	1
TOTAL	21	5

Participants were selected in order to provide a cross-section of the particular composition of each village in terms of the dimensions of caste, gender and land-holding. As highlighted in the previous chapter, the selection process was undertaken with the help of key informants in the villages, as well as through spontaneous encounters with cultivators in the fields in the case of Bantala.

The categories of land ownership used in the current study are:

Marginal: 0.1 – 2.5 acres

Small: 2.6 – 5 acres

Semi-medium: 5.1 – 10 acres

Medium: 10.1 – 20 acres¹⁶⁹

The majority of farmers cultivate cotton on marginal and small-holdings (forty-two and thirty-three per cent, respectively). As has been highlighted in Chapter Four, these categories are most at risk from suicide, and so the benefits of Bt cotton for these cultivators are central to the technology's wider legitimization.

¹⁶⁹ These categories are adapted from the land classification used by Mishra (2007: 5) and Omvedt (1994: 329), but have been converted from hectares to acres.

Twenty-eight per cent of participants operate mixed holdings (ie., partly owned and partly leased). Details of the participants who lease land can be found in Appendices 6.11 to 6.13 (pp. 383-385). In the current study, the differentiation between leased and owned land is not considered significant in terms of analysing the performance of Bt cotton in comparison with the other methods; where leasing becomes more directly relevant, however, is in the exploration of the way in which the negotiation of risk differs between the coalitions, as well as in the calculations of the profits and losses associated with individual participants.

At the village level, the power of social actors is indicated by their location within the village. The high caste and influential actors in the study are located in or around the centre of the village, where the majority of the facilities are also to be found. The Scheduled Caste participants are segregated to less well-maintained wards on the outskirts of the village. In order to provide a graphic portrayal of the relative power of participants, details of their locations are provided in the village maps included as Appendices 6.5 to 6.7 (pp. 377-379).

Based upon the dimensions of differentiation, participants have been assigned to Risk Coalitions as follows:

Bantala

Table 6.3 Bantala Risk Coalitions

Risk Coalitions	Name	Caste	Gender	Total Land-holding¹⁷⁰	Land Allocated to Cotton
Risk Coalition One (Least Vulnerable)	Pavan	Forward Caste (Vaishya)	Male	20 acres (17 leased)	20 acres
	Sudhakar	Backward Caste (Reddy)	Male	16 acres (4 acres leased)	5 acres
	Chitta	Backward Caste (Dominant)	Male	10 acres (5 acres leased)	7 acres
Risk Coalition Two (Vulnerable)	Natesh	Backward Caste (Gowda)	Male	6.5 acres (4 acres leased)	4 acres
	Ashna	Scheduled Caste (Madiga)	Female	3 acres	2 acres
	Sudeep	Scheduled Caste (Mala)	Male	1 acre	1 acre
Risk Coalition Three (At Risk)	Abani	Backward Caste (Padmashali)	Female	Landless	-
	Nipa	Scheduled Caste (Madiga)	Female	Landless	-

Risk Coalition One (Least Vulnerable)

Pavan, Sudhakar and Chitta can be regarded as the three most powerful participants in Bantala. As a Forward Caste Vaishya male, owner of the village shop and a farmer of twenty acres (seventeen of which is leased), Pavan is one of the most influential actors in the village. He was also one of the first farmers to introduce Bt cotton to the village. As a member of the powerful Reddy caste, Sudhakar is also powerful. He is a medium land-holder (sixteen acres, four of which is leased).

¹⁷⁰ References to the category of land-holding in the analysis of the cultivation methods refer to the participants' land-holding of cotton. When discussing the relative power of participants, however, their total land-holding is emphasised.

Chitta, a member of the dominant caste, is the director of the co-operative bank in the village and a farmer of ten acres (of which five are leased).

All of these actors reside near the centre of the village (see Appendix 6.5, p. 377). They are also associated with a greater access to assets than the other participants. This is evident from their ownership of oxen (Pavan owns four oxen, while Chitta owns two) and a tractor (Sudhakar). This lowers their costs of cultivation, as other actors are obliged to hire these. Similarly, actors in Risk Coalition One are the only participants in Bantala with access to irrigation (see Appendix 6.8, p. 380).

Risk Coalition Two (Vulnerable)

As a village elder, Natesh is highly influential in the village. He has a land-holding of 6.5 acres, four acres of which are leased. He is assigned to the more vulnerable coalition given that he has previously contemplated suicide due to his indebtedness, but instead chose to sell six acres of land. Over time, therefore, Natesh's exposure to risk has become more acute. As Appendix 6.17 (p. 389) highlights, this has largely arisen as a result of dowry payments for his sisters and daughter, medical expenses for his son, and high cultivation costs in conjunction with poor yields.

The two Scheduled Caste land-owners, Ashna (female) and Sudeep (male) are small and marginal land-holders (three acres and one acre, respectively). Their risk exposure is somewhat alleviated by the fact that Ashna's husband works in construction (he holds the title of the land, though Ashna is the sole cultivator in the

household), and Sudeep is also an auto-rickshaw driver. (He purchased an auto-rickshaw for one hundred and thirty thousand rupees under a hire purchase arrangement a number of years ago. It was a lucrative investment as his is the only auto-rickshaw in the village). As Appendix 6.5 (p. 377) indicates, both Ashna and Sudeep reside in the Scheduled Caste ward on the outskirts of the village. They own neither oxen nor tractors. None of the Risk Coalition Two participants in Bantala have irrigation access (see Appendix 6.8, p. 380).

Risk Coalition Three (Highly Vulnerable)

The two female landless workers (Abani and Nipa) can be regarded as the most vulnerable participants in Bantala. This is due to their lack of assets, limited social standing and reliance on daily wage labour for their livelihood. Nipa resides with her elderly husband in her sister's home in the Scheduled Caste ward. She is in poor health, which impacts upon her ability to work in the fields.

Although she is landless, Abani is from a ritually significant Backward Caste *jati* (Padmashali).¹⁷¹ This is indicated by her location close to the village centre (Appendix 6.5, p. 377). Her situation highlights the way in which dimensions of caste and land-holding intersect, with a relatively high caste status lending a certain degree of prestige, even in the absence of material access to land. Abani has a well-maintained home. Her vulnerability results from her material circumstances

¹⁷¹ The traditional occupation of the Padmashali caste *jati* is weaving. Despite being classified as an 'Other Backward Caste' due to their economic deprivation within the Backward Caste category, the *jati* is noteworthy ritually, with males of the caste wearing the sacred thread or *suta* traditionally reserved for Brahmins.

given that her husband is unable to work due to illness and, of her three children, two are still in education. Thus, the family is largely reliant on her daily wages from agricultural labour.

Nandanapuram

The Risk Coalitions associated with the village of Nandanapuram are as follows:

Table 6.4 Nandanapuram Risk Coalitions

Risk Coalitions	Name	Caste	Gender	Total Land-Holding	Land Allocated to Cotton
Risk Coalition One (Least Vulnerable)	Charan	Forward Caste (Brahmin)	Male	12 acres	8 acres
	Nikhil	Backward Caste (Reddy)	Male	10.5 acres	10.5 acres
	Nand	Backward Caste (Yadava)	Male	6 acres*	3 acres
Risk Coalition Two (Vulnerable)	Anshul	Backward Caste (Gowda)	Male	5 acres	2 acres
	Rajiv	Backward Caste (Gowda)	Male	4 acres (2 acres leased)	4 acres
	Nishok	Scheduled Caste (Madiga)	Male	3 acres*	2 acres
	Rashi	Forward Caste (Brahmin)	Female	4 acres	2 acres
	Ambu	Scheduled Caste (Madiga)	Female	4 acres	3 acres
Risk Coalition Three (At Risk)	Ranjan	Backward Caste (Chakali)	Male	Landless	-
	Salma	Scheduled Caste (Madiga)	Female	Landless	-

* NPM Farmers

Risk Coalition One (Least Vulnerable)

In Nandanapuram, Charan is powerful given his Forward Caste (Brahmin) status. He and his sons are all priests, and live directly across from the village temple in the centre of the village (see Appendix 6.6, p. 378). Charan has a total land-holding of twelve acres and owns two oxen, but does not have access to irrigation (see Appendix 6.9, p. 381). Nikhil, the Reddy participant in Nandanapuram, is a land-owner of 10.5 acres. Like Sudhakar in Bantala, he is the only participant who possesses a tractor. He also owns two oxen, has access to irrigation, and lives in a large home close to the village centre.

Nand is a softly-spoken NPM farmer of six acres. Although he is relatively young (thirty-five), he has earned significant standing in the village given his university education, comparative wealth, and success with his farming methods. For these reasons, and despite his land-holding at the lower end of the semi-medium category, he has here been assigned to the least vulnerable Risk Coalition One. He also has income from NGO employment. Nand strongly advocates the use of, and provides extension services for, NPM methods in the village. He owns neither oxen nor a tractor, and does not have access to irrigation.

Risk Coalition Two (Vulnerable)

Risk Coalition Two is comprised of two Backward Caste males, one with a total land-holding of five acres (Anshul), and the other of four acres (Rajiv). The coalition also includes Nishok, a Scheduled Caste male small-holder of three acres.

Nishok practises NPM farming using Nand's help. None of these actors own oxen or tractors. Rajiv, however, has access to irrigation (see Appendix 6.9, p. 381).

The other two members of Risk Coalition Two in Nandanapuram are females. Despite her high ritual status as a forward-caste Brahmin, Rashi has been assigned to the more vulnerable Risk Coalition Two due to her small land-holding (four acres), the fact that she is a widow, and her lack of title to the land. The remaining female, Ambu, is a Scheduled Caste small-holder of four acres who is also a widow, and does not have title to the land. She is, however, the only Scheduled Caste cultivator in the current study to have access to irrigation (which she shares with her deceased husband's brothers), and to own oxen (she has two). Both females cultivate the land with the help of hired labour only - Rashi's sons are priests, and Ambu's son is in education, while her daughters are married and live in other villages.

Risk Coalition Three (At Risk)

In Nandanapuram, Risk Coalition Three is comprised of two landless actors, one, Ranjan, a Backward Caste male (a washer-man from the Chakali *jati*), and Salma, a Scheduled Caste Madiga female. Ranjan is elderly and lives with his wife on the outskirts of the village. Both are in poor health. Salma is a young widow with three children who lives with her parents in the Scheduled Caste ward (see Appendix 6.6, p. 378).

Orgampalle: Risk Coalitions

Table 6.5 Orgampalle Risk Coalitions

Risk Coalitions	Name	Caste	Gender	Total Land-Holding	Land Allocated to Cotton
Risk Coalition One (Least Vulnerable)	Pradnesh	Backward Caste (Dominant)	Male	20 acres	4 acres
Risk Coalition Two (Vulnerable)	Akhil	Backward Caste (Dominant)	Male	5 acres	1.5 acres
	Nirmal	Backward Caste (Yadava)	Male	5 acres	3 acres
	Achanda	Backward Caste (Chakali)	Male	4 acres (all leased)	3 acres
	Prakash	Backward Caste (Yadava)	Male	1.5 acres	1.5 acres
	Aruni	Backward Caste (Dominant)	Female	4 acres	1.5 acres
	Amita	Backward Caste (Chakali)	Female	4 acres	1 acre
Risk Coalition Three (At Risk)	Ranjan	Backward Caste	Male	Landless	-

Risk Coalition One (Least Vulnerable)

In Orgampalle, Risk Coalition One is comprised of one actor, Pradnesh, a village elder and land-holder of twenty acres, and the most influential person in the village. He owns both a tractor and four oxen, but has no access to irrigation (see Appendix 6.10, p. 382). His social standing is clear from the fact that he was the ward

member of the village for more than twenty years (the ward member in Orgampalle is the political representative of the hamlet within the *panchayat* meetings in the neighbouring village). Given Pradnesh's retirement from his *panchayat* role, a young ward member has now been elected. Pradnesh remains, however, strongly influential.

Risk Coalition Two (Vulnerable)

Given the proliferation of small-holders in the Orgampalle population, the majority of villagers in Orgampalle fall within the category of Risk Coalition Two. All Risk Coalition Two research participants are Backward Castes – however, they have been selected from the three different *jatis* in the village. All, apart from one, are small-holders of between 2.6 and five acres. Two members of the coalition (Aruni and Amita) are female. Although they are both identified as farmers, neither owns the title to the land. One (Amita) is a widow, and a small-holder of four acres. The other (Aruni) is the wife of a herder, so she cultivates the family's four acres of land, while her husband tends the animals. Prakash, a male marginal land-holder of one and a half acres, also has an income from NGO employment.

Risk Coalition Three (At Risk)

Sajan, an elderly male from the dominant Mudhiraj *jati*, represents the only non-land holding household in Orgampalle. He is in ill health and does not own a home. Instead, he stays in the house of a relative who resides in Hyderabad. Both he and

his wife survive on his pension of Rs 200 per month, and the rations from the Public Distribution System, as well as on donations of rice from others in the village.

6.4 Actual Results for the 2010/2011 Season

A number of general points need to be made prior to the presentation of the results of the 2010/2011 season. Firstly, it should be noted that, due to the small sample size (twenty-one cultivating participants across the three villages), claims for wider statistical significance cannot be made. It is also recognised that there is considerable variability in cotton seasons, so these results cannot be generalised across time. Nonetheless, the quantitative analysis seeks to highlight the material impact of the differentiation of risk as a result of village power relations, and to explore the potential of NPM and organic cultivation to alleviate the material experience of risk within the Risk Coalitions, when compared with Bt cotton. Finally, results here provide a material basis for the analysis of the legitimisation struggle in the next two chapters.

Secondly, it has been highlighted that the 2010/2011 season in which this research was conducted was characterised by extensive flooding which resulted in significant crop loss.¹⁷² This led to general unrest among cotton cultivators¹⁷³ and a

¹⁷² The *Deccan Chronicle* (9/12/2010) reported that around twenty-five thousand hectares (sixty thousand acres) of cotton were damaged due to flooding. Farmers claimed that thirty per cent of the crop had been lost (*Times of India*, 7/1/2011).

¹⁷³ Farmers in Warangal were involved in an altercation with cotton traders because of the low prices which they were being offered (*Times of India*, 30/10/2010).

spate of farmer suicides.¹⁷⁴ These suicides were exacerbated by the uncompromising stance of Micro-Finance Institutes (MFIs) in their pursuit of debt repayments. The largest number of MFI-related suicides was in Warangal (*Times of India*, 23/11/2010).

Thirdly, the cost and profit/loss data is presented for Risk Coalitions One and Two only, given that Risk Coalition Three is comprised of landless participants who were not directly engaged in cultivation. As the study highlights, however, landless agricultural labourers are significant to the analysis, given that the labour costs incurred by cultivators are determined by the wage rates paid to agricultural labour.

Finally, the quantitative analysis featured in this chapter focusses on the aggregate data associated with the Risk Coalitions. Full details of the findings for individual cultivators are provided in the Appendices (6.8 to 6.19, pp. 380-391). These are frequently referred to throughout the analysis.

Cultivation Costs in the Village Risk Coalitions

A comparison of the average cultivation costs for the Risk Coalitions in each of the villages is provided in Table 6.6 overleaf.

¹⁷⁴ Following the flooding, farmer suicides were reported frequently in the media (*Deccan Chronicle*, 18/12/2010; 26/12/2010; 27/12/2010; 5/1/2011; *Times of India*, 8/10/2010; 9/12/2010; 10/12/2010; 18/12/10; 20/12/2010; 30/12/2010).

Table 6.6 Average Cultivation Costs, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Average Cultivation Costs per acre	18,600	21,150	12,800	9,100	14,866*	20,800	11,750	10,500

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

* Within Risk Coalition Two in Bantala, Ashna's entire crop was lost mid-way through the season. Her lower costs as a result of this loss have reduced the average for Bt cotton cultivation in Bantala's Risk Coalition Two by an estimated two to three thousand rupees.

As Table 6.6 shows, cultivation costs were significantly higher for Bt cotton farmers in both Bantala and Nandanapuram than those associated with NPM cultivators in Nandanapuram and organic farmers in Orgampalle. Average costs per acre are similar for both coalitions in each village, although the average for Bantala's Risk Coalition Two is reduced due to Ashna's (the female Scheduled Caste small-holder) crop loss mid-way through the season. It is acknowledged, however, that such early crop loss is a characteristic feature of the regular catastrophic seasons which characterise the agrarian crisis in Andhra Pradesh, and so are reflected in the costs here.

Bt cotton farmers in Nandanapuram incurred the highest cultivation costs in both coalitions (Rs 21,150 for Risk Coalition One, and Rs 20,800 per acre for Risk Coalition Two). The lowest cultivation costs for both coalitions were found in Orgampalle, the organic village (Rs 9,100 for Risk Coalition One, and Rs 10,500 for Risk Coalition Two). As Table 6.6 highlights, the organic farmer in Risk

Coalition One in Orgampalle (Pradnesh), spent less than half (Rs 9,100) that of Bt farmers in both Bantala (Rs 18,600) and Nandanapuram (Rs 21,150) in the same coalition.

For vulnerable cultivators in Risk Coalition Two, the costs of organic farmers were less than half (Rs 10,500) those of Bt cotton farmers in Nandanapuram (Rs 20,800). Similarly, NPM farmers in Nandanapuram's Risk Coalition Two spent almost half (Rs 11,750) the spend of Bt cotton farmers in the same village.

The total cultivation costs per acre for each participant, as well as details of individual access to irrigation, are available as Appendices 6.8 to 6.10 (pp. 380-382). It can be seen that six of the twenty-one cultivating participants (twenty-eight per cent) have access to irrigation. Two-thirds of these are Risk Coalition One participants, with a land-holding of more than ten acres. All are Bt cotton farmers. (The organic farmer, Achanda, uses irrigation for paddy only).

Break-down of Main Cultivation Costs in Village Coalitions

A break-down of the main costs associated with the cultivation methods for each of the coalitions is now provided. These are available for individual participants in Appendices 6.11 to 6.13 (pp. 383-385).

Seed Costs

Table 6.7 provides the average cost of seeds per acre for each village coalition.

Table 6.7 Average Seed Costs, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Seed costs per acre	750	1125	0	450	820	780	500	500

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

Average seed costs are higher for Bt cotton farmers, particularly in Nandanapuram's Risk Coalition One. While the 'official' rates for seeds are Rs 450 for non-Bt seed varieties, and Rs 750 for Bt varieties, costs quoted by participants showed some variance (see Appendices 6.11 and 6.12, pp. 383-384), particularly in the case of Nandanapuram's Bt cotton farmers. Participants asserted that this price variance resulted from the fact that stocks of Bt seeds at seed dealers were often bought up by wealthy land-holders early in the season, and then sold for higher prices on the 'black market' (the risk of spurious seeds is also greater on the black market, given the lack of traceability).

Both organic and NPM methods use non-Bt seed varieties which are secured through the co-ordination of seed demand across a number of villages by NGOs. Nand, the NPM cultivator in Risk Coalition One, obtains non-Bt seeds for free as a result of his NGO employment.

Input Costs

Cost differentials between the methods arose largely due to the varied input usage associated with each method. Table 6.8 shows the average input costs for each village coalition.

Table 6.8 Average Input Costs, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Pesticide Costs per acre	3,733	4,125	0	0	2,500* (N = 2)	3,875	0	0
Number of Sprays	8	5.5	0	0	5	8	0	0
Fertiliser Costs per acre	2,150	3,100	1,000	0	2,000* (N = 2)	2,500	700	0
Number of uses	4	4	2	0	4	4	1	0

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

* Due to Ashna's crop loss, she did not incur pesticide or fertiliser costs, so she has been removed from these calculations. Average pesticide and fertiliser figures for Bantala's Risk Coalition Two, therefore, relate to Natesh and Sudeep only (N=2).

As Table 6.8 highlights, the use of chemical inputs associated with Bt cotton cultivation entailed an average spend of Rs 3,500 per acre for pesticides, and Rs 2,400 per acre for fertilisers.¹⁷⁵ NPM farmers did not incur pesticide costs, while organic farmers incurred neither pesticide nor fertiliser costs.

Both Bt cotton and NPM farmers use chemical fertilisers as part of their cultivation praxis. Table 6.8 highlights that NPM cultivators used fertilisers, on average, half as

¹⁷⁵ Both figures represent the mean of the average costs for these inputs presented in Table 6.8 for both coalitions of Bt farmers in Nandanapuram and Bantala.

often as Bt cotton farmers. This was associated with a lower cost for NPM cultivators who spent an average of Rs 850 per acre on fertilisers, as compared to Rs 2,400 per acre for Bt cotton farmers.¹⁷⁶

Table 6.8 also highlights that Bt cotton farmers used pesticides an average of 6.5 times in the 2010/2011 season.¹⁷⁷ Spending on pesticides, therefore, continues to represent just over one-fifth of the total costs of Bt cotton farmers. NPM and organic farmers relied instead on solutions devised by NGOs and key farmers (Nand in Nandanapuram and Pradnesh in Orgampalle) to treat pests and diseases as they occurred.

Labour Costs

Table 6.9 presents the average labour charges for each of the village coalitions.

Table 6.9 Average Labour Charges, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Labour Costs per acre	8,433	10,587	10,200	7,300	8,133*	9,775	7,500	7,583

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

* Ashna's labour costs are included here, but do not represent those for a full season.

The analysis highlights that expenditure on labour is a significant cost for all cultivators. This is despite the fact that the majority of cultivators are assisted by

¹⁷⁶ These costs are calculated through taking a mean of the average costs in Table 6.8 for both coalitions of NPM and Bt cotton cultivators.

¹⁷⁷ This represents a mean of the average pesticide uses across both coalitions in Bantala and Nandanapuram in Table 6.8.

(mainly female) family members. Only Pavan and Ashna in Bantala, and Ambu, Charan and Rashi in Nandanapuram operate their holdings without family assistance. It is clear that, given the high labour charges associated with employing non-family farm labour, decisions related to the seeking of non-farm employment, and keeping children in education, must be balanced against the increased costs of labour which will be incurred as a result. Given the particularly high labour costs associated with the 2010/2011 season, farmers hoped (in vain) that the government would contribute to payments for agricultural labour as part of the NREGS initiative (*Times of India*, 19/11/2010).

It is recognised that labour costs are incurred independently of cultivation method. However, it is argued that higher labour costs exacerbate the risk which Bt cotton represents, given the already high inputs costs associated with Bt cotton cultivation. The official minimum wage rate in Andhra Pradesh for the 2010/2011 season was Rs 112 for agricultural labour (Kolamkar, 2010: 30).¹⁷⁸ However, as Table 6.9 shows, labour charges per acre are variable between villages.

Nandanapuram has the highest average labour costs (Rs 9,515), while Orgampalle has the lowest (Rs 7,440). The average labour costs in Bantala (Rs 8,283) are

¹⁷⁸ This was an increase from the minimum rate of Rs 35 per day in 1996. Available at: http://labourbureau.nic.in/REP_MW_2010.pdf. (Table 3). Accessed on 22/7/2013. Although this report does not differentiate between male and females, it was noted that wages for males were up to fifty per cent higher than females in the current study. It was argued by villagers (both male and female) that this was due to the generally heavier work undertaken by men, such as ploughing with oxen. Despite being back-breaking, the work undertaken by females, such as sowing and weeding, was regarded as less strenuous.

almost on a par with those in Orgampalle.¹⁷⁹ Many participants in Nandanapuram reported that they had paid daily wage rates of up to Rs 150 for females and Rs 250 for males at the peak time of harvesting, while those cited by participants in Bantala rarely went above Rs 100 for females from the village. In Orgampalle, all participants claimed to pay just Rs 70 per day for daily labour in the village. These variances in labour costs arise as a result of the differing power arrangements and approaches to risk negotiation in the villages, and will be analysed more closely as part of the discussion in Chapter Nine.

Tractor and Oxen Hire

Table 6.10 presents the costs associated with tractor and oxen hire in the village coalitions.

Table 6.10 Average Tractor and Oxen Hire, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Tractor Hire	666	1,000	1,200	0	666*	1,400	1,800	1,316
Oxen Hire	0	0	1,500	0	933*	2,400	1,560	500

* Ashna's hire costs were reduced as a result of her crop loss.

Details of tractor and oxen ownership for individual participants are available in Appendices 6.8 to 6.10 (pp. 380-382). It can be seen that only three of the twenty-one participants (fourteen per cent) own tractors, one participant in each village.

¹⁷⁹ These figures represent a mean of the average village costs for both coalitions (for both methods in the case of Nandanapuram).

All are in Risk Coalition One (one is Pradnesh in Orgampalle, and the other two are the Reddy participants, Sudhakar in Bantala and Nikhil in Nandanapuram).

Sixty-one per cent of participants (thirteen cultivators) own oxen. Of these, almost half (six) are from Orgampalle (one in Risk Coalition One and five in Risk Coalition Two). Four of the seven cultivators (fifty-seven per cent) in Bantala own oxen. Three of these are in Risk Coalition One, one in Risk Coalition Two (Natesh). Natesh was, however, obliged to sell his oxen mid-way through the season to cover cultivation costs. Only three of the eight cultivators in Nandanapuram (thirty-seven per cent) own oxen, two of whom are in Risk Coalition One.

Asset ownership is highly differentiated by caste and gender. Ambu in Nandanapuram's Risk Coalition Two is the only Scheduled Caste female to own oxen in the current study. The only other female oxen owner, Aruni in Orgampalle, is from a Backward Caste.

Table 6.10 highlights the impact of asset ownership on the costs of participants. Given the generally lower asset ownership associated with Risk Coalition Two, hire costs are particularly significant for this coalition. (Oxen are hired a variety of times to assist with sowing and weeding. Their usage was noted as being particularly high in 2010/2011 given the sodden soils, and extensive weeds, resulting from the rains). The higher oxen ownership in Orgampalle's Risk Coalition Two, however, means that costs of oxen hire are particularly low in the

village. Meanwhile, the generally low asset ownership in Nandanapuram significantly exacerbates the risk exposure of cultivators, particularly in the case of Risk Coalition Two participants.

Land Lease

Land lease is viewed as a means of increasing the viability of holdings through expanding the area which is cultivated. It is a particularly high risk strategy given that the costs of the lease are payable whether the crop fails or not. Tenants are also unable to access subsidies and credit given that the title for the land is not in their name, and owners are often reluctant to have any involvement in supporting the cultivation practice of their tenants. Land lease costs are provided for the village coalitions in Table 6.11. These are available for individual participants in Appendices 6.11 to 6.13 (pp. 383-385).

Table 6.11 Land Lease Charges, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Land Lease (total average cost)	24,666	0	0	0	3,333	2,500	0	1,083

Table 6.11 highlights that land lease is most common in Bantala, particularly among Risk Coalition One participants. These participants also lease more expensive irrigated land (see Appendix 6.11, p. 383). Natesh, the vulnerable elder in Bantala's Risk Coalition Two, leases (dry) land. In Bantala, costs of land lease

vary from between Rs 2,000 and Rs 3,000 per acre. The costs of land lease in Nandanapuram are particularly high (Rs 5,000 per acre) which no doubt explains why only one participant in the village, Rajiv, leased land (Appendix 6.12, p. 384).

There are a variety of arrangements associated with land lease. Thus, Pavan, the Risk Coalition One participant in Bantala, pays Rs 3,000 per acre, and shares half the costs and profits with the land-owner. Meanwhile, the one participant who leases land in Orgampalle, Achanda, shares half the profit, but covers all of the costs (see Appendix 6.13, p. 385).

Average Yields in Village Coalitions, 2010/2011

Table 6.12 provides details of the average yields within the village coalitions.

Table 6.12 Average Yields, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Yields per acre (quintals)¹⁸⁰	5	4.75	9	6	3.5	4.75	4.5	4.4

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

Cultivators in all villages asserted that yields were lower than had been expected as a result of the extensive flooding. Many participants reported crop loss of up to fifty per cent. The break-down of the yields obtained by individual participants is available in Appendices 6.14 to 6.16 (pp. 386-388).

¹⁸⁰ One quintal is equivalent to one hundred kilograms.

Table 6.12 shows that the average yields for NPM and organic cultivators were higher than those for Bt cotton farmers in Risk Coalition One. The highest yield of the study was obtained by the NPM farmer in Nandanapuram (Nand) who managed to secure nine quintals per acre. The yield of six quintals per acre obtained by the organic farmer (Pradnesh) was higher than the average yield of approximately five quintals obtained by Risk Coalition One Bt cotton farmers in both Bantala and Nandanapuram. The highest yield among Bt cotton farmers in Risk Coalition One was the 6.5 quintals per acre obtained by Pavan, the medium land-holder of twenty acres in Bantala (Appendix 6.14, p. 386). No Bt cotton farmer in Risk Coalition One obtained a yield of lower than four quintals (see Appendices 6.14 to 6.15, pp. 386-387).

For the more vulnerable participants in Risk Coalition Two, however, the situation was different. All methods produced similar average yields (between 4.5 and five quintals). However, among Bt cotton farmers, these were associated with significant extremes.

Rashi, the female Forward Caste Bt cotton cultivator in Nandanapuram, obtained the highest yield for Bt cotton farmers - eight quintals per acre - from a land-holding of just two acres (Appendix 6.15, p. 387). However, Ashna, the female Scheduled Caste marginal cultivator in Bantala, lost her entire crop (Appendix 6.14, p. 386), while the female Scheduled Caste small-holder in Nandanapuram, Ambu, lost her crop of Bt cotton on two acres, and managed to harvest three quintals from

her remaining acre (Appendix 6.15, p. 387). The lowest yields associated with alternative methods in Risk Coalition Two, however, were 4.5 quintals per acre for Nishok, the NPM farmer (Appendix 6.15, p. 387), and 2.5 quintals per acre for organic farmers (Appendix 6.16, p. 388).

Average Prices Obtained for Cotton, 2010/2011

The average selling prices associated with the village coalitions are presented in Table 6.13. These are provided for individual participants in Appendices 6.14 to 6.16 (pp. 386-388).

Table 6.13 Average Prices received for Cotton, 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Best Selling Price per quintal	4,600	4,600	5,300	5,600	4,725* (N=2)	4,437	4,650	4,200

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic)

*Ashna is not included due to her crop loss.

Table 6.13 indicates that the highest average prices received for cotton in Risk Coalition One were obtained by NPM and organic cotton farmers. The claim by these farmers that their cotton is of better quality than that associated with Bt cotton is not, however, supported by the higher average prices obtained for Bt cotton by Bantala's Risk Coalition Two.

Table 6.13 highlights that the prices obtained by Risk Coalition Two participants were generally lower (apart from Risk Coalition Two in Bantala) than those

obtained by farmers in Risk Coalition One. The higher prices in Risk Coalition One were due, to a large extent, to the greater capacity of these participants to store their harvest awaiting higher prices.

Pavan, the powerful Bt farmer in Bantala, managed to secure the highest price of Rs 6,000 per quintal (Appendix 6.14, p. 386). Both he and Nand (the NPM farmer) sold their entire harvest at the end of the season (February, 2011). Nand obtained Rs 5,300 (Appendix 6.15, p. 387).¹⁸¹ This strategy was less of an option for more vulnerable participants in Risk Coalition Two, many of whom had a pressing need for cash in order to pay labour, and to satisfy the more demanding of their debtors.

Average Net Profit/(loss), 2010/2011

Table 6.14 presents the average net profits and losses associated with the village coalitions. These are available for individual participants in Appendices 6.14 to 6.16 (pp. 386-388).

Table 6.14 Average Net Profit/(Loss), 2010/2011

	Risk Coalition One				Risk Coalition Two			
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR
Average Net Profit/(Loss)	33,700	(13,900)	104,500	56,600	(4,800)	(7,125)	20,300	11,530

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle (organic).

¹⁸¹ Due to the supply shortfall as a result of the flooding, prices did indeed soar later in the season, and were reported to have reached a record Rs 7,000 per quintal by February, 2011. Available at: http://vidarbhacrisis.blogspot.ie/2011_05_01_archive.html Accessed on 8/10/2013.

As Table 6.14 highlights, the higher costs associated with Bt cotton cultivation significantly exacerbated the material experience of risk of Bt cotton cultivators in the catastrophic 2010/2011 season. Almost half of the Bt cotton cultivators (five out of twelve) made a loss. These included three of the seven vulnerable participants from Risk Coalition Two (Ashna in Bantala; Rajiv and Ambu in Nandanapuram).

The highest net profit was associated with the NPM cultivator in Risk Coalition One (Nand) who managed a return of Rs 104,500 despite the catastrophic season. Similarly, the organic farmer in Risk Coalition One (Pradnesh) made a net profit of Rs 56,600. Meanwhile, Bt cotton farmers in Nandanapuram's Risk Coalition One made an average net loss (Rs 13,900), while those in Bantala's Risk Coalition One managed to make an overall profit (Rs 33,700), due largely to Pavan's net profit of Rs 102,000 (see Appendix 6.14, p. 386).

Table 6.14 indicates that Risk Coalition Two Bt cotton cultivators in both Bantala and Nandanapuram made an average net loss. The lower costs associated with NPM and organic cultivation, however, meant that Risk Coalition Two participants adopting these methods made an average net profit (Rs 20,300 and Rs 11,350, respectively), despite the catastrophic season. This was still considerably lower than the average net profits secured by their Risk Coalition One counterparts, however, due to their lower levels of land-ownership and reduced ability to off-set crop losses through awaiting higher prices.

At an individual level, not a single NPM or organic cultivator made a loss (Appendices 6.15 and 6.16, pp. 387-388). This was even in cases where yields were extremely low, such as Akhil's 2.5 quintals per acre in Risk Coalition Two (Appendix 6.16, p. 388). The generally high cotton price associated with the poor season, as well as the low cultivation costs associated with organic and NPM cultivation methods, allowed all organic and NPM farmers to at least break even, despite the low yields.

Average Debt Levels in Village Coalitions, 2010/2011

Table 6.15 presents the average debt levels associated with the village coalitions. Here, the Risk Coalition Three participants are again included given that many of these participants are also in debt, despite their landlessness and lack of assets. Details of debt levels for individual participants are provided in Appendices 6.17 to 6.19 (pp. 389-391).

Table 6.15 Average Debt Levels, 2010/2011

	Risk Coalition One				Risk Coalition Two				Risk Coalition Three		
	BT	NP (Bt)	NP (NPM)	OR	BT	NP (Bt)	NP (NPM)	OR	BT	NP	OR
Debt Level	416,000	180,000	0	0	38,333	127,500	25,000	56,500	62,000	5,000	0

BT = Bantala; NP (Bt) = Nandanapuram Bt farmers; NP (NPM) = Nandanapuram NPM farmers; OR = Orgampalle

As can be seen from Table 6.15, the average indebtedness of participants is significant. All of these debts (apart from those of Nishok, the NPM farmer in Nandanapuram, Akhil, the organic farmer in Orgampalle, and Ashna, the female Bt cotton cultivator in Bantala, all from Risk Coalition Two) have been accumulated

over a number of years. Sudeep is the only Bt cotton farmer who is not in debt (Appendices 6.17 and 6.18, pp. 389-390).

Table 6.15 highlights that debt levels are significantly higher for Bt cotton farmers than for organic and NPM farmers, particularly for Risk Coalition One participants. Bantala's average debt for Risk Coalition Two is relatively low given that, as mentioned, Sudeep is debt-free (he has income from his auto-rickshaw driving) and Ashna has incurred debt only in the 2010/2011 season (her husband earns an income from construction work). Similarly, Natesh has previously sold six acres of land in order to clear debt.

The powerful Risk Coalition One cultivators in Bantala are the most indebted of the study. The average debt levels of these participants are more than ten times higher than those associated with Risk Coalition Two participants in the same village. As Appendix 6.17 (p. 389) highlights, Sudhakar (the Reddy, Risk Coalition One participant in Bantala) is the most indebted participant of the study, with debts of Rs 700,000. In contrast, both the NPM and organic farmers in Risk Coalition One (Nand and Pradnesh, respectively) are debt-free (Appendices 6.18 and 6.19, pp. 390-391).

In the case of Bantala's Risk Coalition One, drilling for borewells and the buying of land, as well as cultivation costs (labour, inputs, seeds), are cited as the main reasons for indebtedness (Appendix 6.17, p. 389). Nandanapuram's Risk Coalition

One participants also cite cultivation costs and expenditure on education (Appendix 6.18, p. 390). From Appendices 6.17 and 6.18 (pp. 389-390), it can be seen that Risk Coalition One participants in Nandanapuram and Bantala rely on both banks and non-institutional sources of credit, such as commission agents, private money lenders, and unspecified people in the village.¹⁸²

In the case of Risk Coalition Two, exposure to debt is prevalent across the three villages. It is highest for Bt cotton farmers in Nandanapuram (Rs 127,500). As Appendices 6.17 to 6.19 (pp. 389-391) indicate, there is some limited borrowing from banks; however, there is a greater reliance upon other institutional sources, including MFIs, as well as non-institutional sources, such as family and/or members of the same caste, among Risk Coalition Two participants in all three villages. Cultivation charges, dowry payments, and healthcare are the most frequent reasons cited for debt among Bantala's Risk Coalition Two participants (Appendix 6.17, p. 389), while those in Nandanapuram's Risk Coalition Two also cite house construction costs (Appendix 6.18, p. 390).

Given the low costs of cultivation in Orgampalle, the extent of indebtedness among Risk Coalition Two participants (Rs 56,500) is surprisingly high. The most common reason cited for the indebtedness among Orgampalle participants was dowry costs. Many participants cite Rs 100,000 as a 'standard' dowry. Irrigation expenditure,

¹⁸² It was noted that, while participants were forthcoming with the amount of their debt, they were more reticent regarding the sourcing of their non-institutional debt.

house construction and healthcare costs were also mentioned (Appendix 6.19, p. 391).

In the case of Risk Coalition Three participants, the landless participants, Sajan in Orgampalle and Ranjan in Nandanapuram, are debt-free. As they assert, their lack of assets, and poor income, means that nobody would lend to them. Ranjan has previously sold his buffalo to pay for hospital care for his wife, but no longer has assets to offer as collateral for further borrowing.

The debts of the two female participants in Bantala's Risk Coalition Three have largely been incurred due to the costs of health care in private hospitals (Appendix 6.17, p. 389). Loans have been accessed from non-institutional sources described as 'landlords' in the village. The indebtedness of these females means that they must work in semi-bonded conditions – ie., they are free to work for others, but must prioritise their creditor, and work for reduced daily wage rates, until their debt is repaid.

Salma, the widowed landless participant in Nandanapuram, has borrowed from the Self-Help Group of which she is a member in order to lease land to cultivate paddy. The crop failed, however, and she is now left with debt of Rs 10,000 (Appendix 6.18, p. 390). This must be paid from a widow's pension of Rs 200 per month, and income from daily wage labour, while providing for her children.

In conclusion, this chapter has provided an analysis of the differentiation of the material risks associated with Bt cotton cultivation, when compared with organic and NPM cultivation, in the 2010/2011 season. In this catastrophic season, the higher costs related to Bt cotton were not off-set by higher yields. This meant that more than half of the Bt cotton farmers made a loss while, due to the lower costs involved, not a single NPM or organic farmer did so. Yields for the more vulnerable cultivators in Risk Coalition Two were also found to be particularly variable among Bt cotton farmers. Debt levels for Bt cotton cultivators were, on average, significantly higher than those associated with organic and NPM farmers, particularly for Bantala's Risk Coalition One participants. However, Risk Coalition Two cultivators in Orgampalle and many Risk Coalition Three participants are also exposed to high debt levels due to expenditure in non-agricultural areas such as hospital care, dowry payments and house construction.

Chapter Seven

ANALYSIS PART II

Legitimation and the Micro Level Construction of Risk in the Villages

7.1 An Overview of Perspectives on Bt Cotton by Village

In this chapter, the ideological legitimation and delegitimation of Bt cotton by cultivators themselves is explored. This is undertaken using the categories of legitimation defined by Van Leeuwen (2007: 91). The thesis argues that the legitimation of particular constructions of risk as a micro level concern of material practice is mediated through power relations in the villages. Thus, this chapter examines the impact of the Risk Coalitions upon the ‘perception of risk [as] a social process’ (Douglas, 1983: 6).

Selected results of a questionnaire administered as part of the interview process have been adopted in order to provide overviews of perspectives in each village.¹⁸³

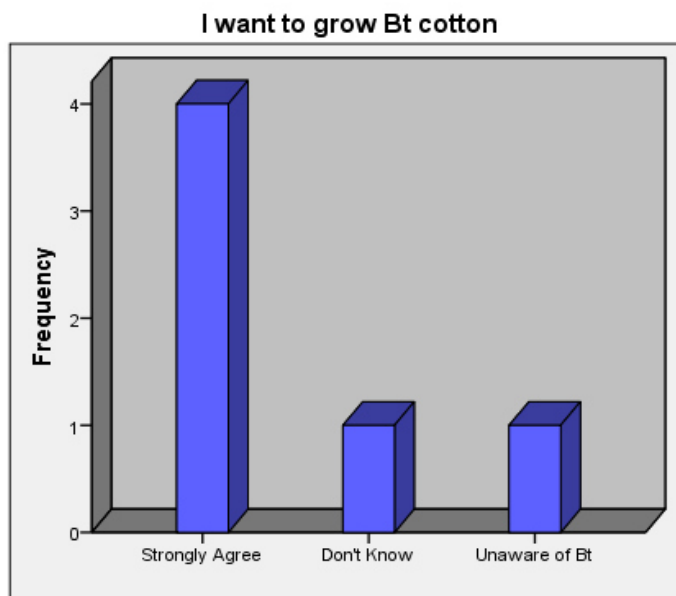
Numbers in parentheses after interview extracts relate to the interview schedule in Appendix 7.1 (p. 393-394).

¹⁸³ Participants were asked to rank statements according to a Likert scale which ranged from ‘strongly agree’, ‘agree’, ‘don’t know’, ‘disagree’, ‘strongly disagree’. The category ‘unaware of Bt’ denotes that the participant claimed to be unable to complete the questionnaire due to a lack of awareness regarding Bt cotton (and other possible names, such as Bollgard or GM cotton). The complete results of the questionnaire are available as Appendix 7.2 (pp. 395-398). As highlighted previously, due to space constraints, only excerpts of the questionnaire results have been included in the current analysis.

Bantala

As Figure 7.1 below illustrates, four of the six cultivating actors in Bantala strongly agree with the statement, 'I want to grow Bt cotton' (Appendix 7.2, Q.1, p. 395). Of the remaining cultivating actors, one claims she is unaware of what Bt cotton is (Ashna in Risk Coalition Two. Her husband confirmed that she cultivates Bt cotton), and the other is uncertain of whether he wishes to continue to grow Bt cotton or not, given the declining yields (Sudhakar in Risk Coalition One). The questionnaire was not administered to the landless participants due to the fact that they do not take decisions on which crops to cultivate, and claimed to have little knowledge of Bt cotton.

**Figure 7.1: Questionnaire Results, Q. 1
Bantala, 2010/2011**



The results of the questionnaire (Appendix 7.2, pp. 395-398) also highlight that eighty-three per cent of Bantala participants strongly agree with the statements that Bt cotton has led to an increase in crop yields (Q. 3, p. 395) and their household income (Q. 2, p. 395), and that it has led to a reduction in pesticide use (Q. 10, p. 397). However, there is also a high degree of uncertainty as to the ecological impact of the crop, with eighty-three per cent of participants claiming not to know if Bt cotton is damaging to the environment (Q. 5, p. 396).

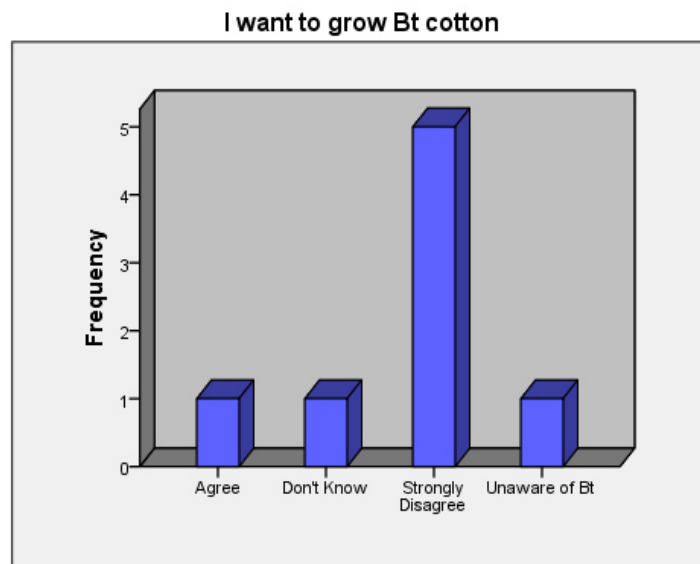
Nandanapuram

As Figure 7.2 overleaf illustrates, despite the fact that ninety per cent of Nandanapuram farmers cultivate Bt cotton, the majority of cultivating actors (five out of eight) strongly disagree with the statement ‘I want to grow Bt cotton’ (Appendix 7.2, Q.1, p. 395). This includes many farmers who currently cultivate Bt varieties.

Of the remaining actors, one (Ambu in Risk Coalition Two) agrees with the statement, though not strongly. She argues ‘I just want to have a better crop and to live a better life’ (29). Charan (Risk Coalition One) expresses uncertainty as to whether he wants to grow Bt cotton or not due to his disappointment with the season’s crop. He, too, claims, ‘we just want a crop that grows’ (38). Finally, the female who obtained the highest yield in the current study (Rashi in Risk Coalition Two) cultivates Bt cotton seed varieties, but is unaware of Bt cotton (her son confirmed they were Bt seed varieties). She claims, ‘I copy the brand names of the

seeds used by my neighbours' (23). Again, the two landless actors have not been included.

**Figure 7.2: Questionnaire Results, Q.1
Nandanapuram, 2010/2011**

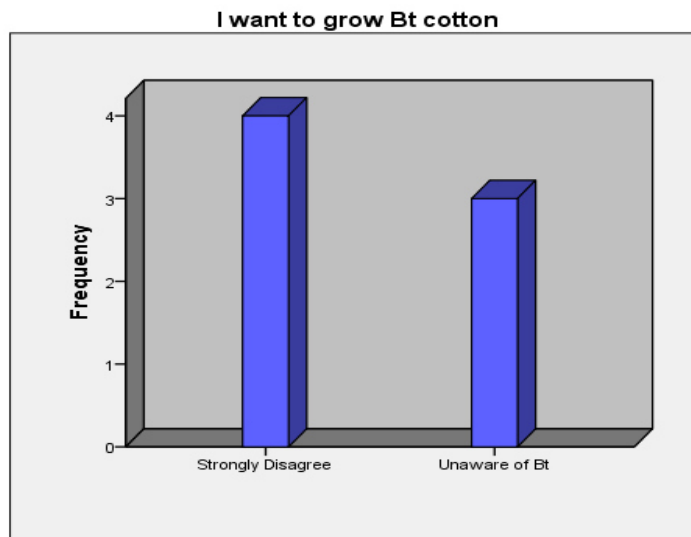


The results of the questionnaire (Appendix 7.2, pp. 395-398) reveal that perspectives on Bt cotton in Nandanapuram are almost the complete reverse of those in Bantala. Seventy-five per cent of participants strongly disagree that Bt cotton has increased their household income (Q. 2, p. 395), while sixty-three per cent strongly disagree that Bt seed varieties are associated with higher yields (Q. 3, p. 395). Fifty per cent strongly disagree with the statements that Bt cotton has resulted in reduced pesticide use (Q. 10, p. 397) and does not damage the environment (Q. 5, p. 396).

Orgampalle

As Figure 7.3 below highlights, more than half of the cultivating actors in Orgampalle (four out of seven) strongly disagree with the statement ‘I want to grow Bt cotton’ (Appendix 7.2, Q. 1, p. 395). This is not surprising given that Bt cotton cultivation is banned as part of the ‘rules’ of the village (Appendix 6.4, p. 376). Perhaps more surprising, however, given the purported ‘agreement’ to ban it, is the high level of unawareness among participants in Orgampalle as to what Bt cotton actually is. Three of the seven cultivators (forty-two per cent), including two females (Amita and Aruni), and one male (Nirmal) from Risk Coalition Two, claim to be unaware of Bt technology. The questionnaire was not administered to Sajan, the landless participant.

**Figure 7.3: Questionnaire Results, Q.1
Orgampalle, 2010/2011**



Forty-two per cent of participants in Orgampalle claimed to be unable to complete the questionnaire due to their lack of awareness of Bt cotton, hence, questionnaire results relate only to fifty-eight per cent of participants. Of these, twenty-eight per cent strongly disagree that Bt cotton increases yields and household incomes (Q. 2 and Q. 3, p. 395). Of the fifteen per cent who strongly agreed that it increased yields and incomes, it was argued that these increases decline over time. Forty-three per cent of respondents strongly disagree with the statement that Bt cotton is not damaging to the environment (Q. 5, p. 396).

There is little legitimisation for Bt bringal (aubergine) in the villages, with half the respondents in all three villages strongly disagreeing with the statement that they would have no health concerns with regard to eating Bt bringal (Appendix 7.2, Q. 7, p. 396).

7.2 Legitimation and the Construction of Risk by Village Participants

Van Leeuwen's (2007; 2008) categories of legitimisation will now be used to explore the legitimisation and delegitimation of Bt cotton by cultivators in their attempts to negotiate the risk of their context.

AUTHORISATION

According to Van Leeuwen (2007: 91), authorisation refers to legitimisation by reference to 'persons in whom institutional authority is vested.' Cultivators referred

to a variety of authorities in forming perspectives on their legitimization or delegitimation of Bt cotton. These were as follows:

Bantala

Risk Coalition One

As mentioned previously, Pavan was one of the first cultivators to introduce Bt cotton to Bantala. For this actor, the widespread adoption of the technology is evidence of its popularity. He asserts, '[n]obody is opposed to Bt cotton. Everybody is growing it' (6). He claims that he heard about Bt cotton through 'the market.' 'Market', 'market rate' and 'money' are some of the limited English words which most cultivating participants in Bantala know.

Chitta claims that he took the advice of seed dealers in opting for Bt varieties. He asserts, 'when the seeds came to the shop, the dealers told us' (1). Bt cotton is also regarded as the approach to agriculture recommended by the government. Chitta claims, '[t]he government is praising those who opt for cotton....Cotton farmers are richer farmers' (2). Sudhakar also highlights the influence of advertising. He states, 'we have seen the difference [between Bt and non-Bt yields] in newspapers and through TV advertising' (4).

Risk Coalition Two

Natesh also asserts the view that the government supports Bt cotton cultivation. He claims, 'once the government introduced Bt, we started growing it' (16). The

Scheduled Caste participants in this coalition, however, highlight their tendency to copy others. Thus, Sudeep asserts, '[b]ecause others were getting more yields with Bt, I also tried it' (9). Similarly, Ashna claims, '[e]verybody is growing Bt, so I am also growing it' (13). (This interview took place after her husband confirmed to her that she cultivated Bt varieties). She also asserts, 'I don't know Bt. I just pick up whatever the dealer sells me' (13).

Risk Coalition Three

Both female landless actors in Bantala work as daily wage labour. They have little interest in the crops which land-holders cultivate. Abani simply observes, 'many people are growing it [cotton]' (21). Nipa claims, '[i]f we get work on Bt fields, we'll work on Bt' (19). Neither reports any health issues as a result of their work on Bt cotton fields.

Nandanapuram

Risk Coalition One

Charan asserts, 'I have seen the other farmers who have grown it. It gives higher yields with lower water consumption.' The tendency to take the advice of others in deciding which seed varieties to use is highlighted in his statement, 'I would check with ten people what they are growing and then decide' (38).

Nikhil recalls that he first heard about Bt cotton from the fertiliser dealers. He claims, '[t]he farmers in the village were very concerned about the impact of Bt

cotton at the beginning. But some one or two have bought it and tried it. There was still a concern that the soil might get eroded if we grew Bt cotton. But a trend was created. Some were trying it and the yield was increasing. Now I think half of India is growing Bt cotton' (30). Nand, the NPM cotton farmer, asserts his frustration at his limited authority in persuading others to opt for non-Bt varieties. He claims, 'I insisted with farmers of the village not to use Bt cotton. Still they have used it' (33).

Risk Coalition Two

In Risk Coalition Two, the idea that Bt cotton has become something of a trend is also highlighted by Anshul who argues, 'everyone is cultivating Bt, so I am also cultivating it....We expected a higher yield with the Bt varieties so we started growing those' (24). A strong, gregarious and charismatic Gowda caste member from Risk Coalition Two, Rajiv, introduced Bt cotton to the village. He now actively campaigns against the technology along with Nand, even as he continues to cultivate Bt varieties. Rajiv recalls how the females of his household were initially concerned when he purchased Bt cotton seeds, arguing 'you can't enter the field safely if it's a Bt crop' (27).

The reliance of Nishok, the NPM farmer in Risk Coalition Two, on Nand, the NPM farmer in Risk Coalition One, is clear. He states, 'Nand gets the seeds for me....I use the solutions which Nand gives to us' (35). Nishok has never grown Bt cotton,

though he used to apply pesticides. He argues, '[b]ecause of the solutions given to us by Nand, the problem of pests has reduced' (35).

Of the two females in Risk Coalition Two, only Ambu, the Scheduled Caste Madiga, is aware that she is cultivating Bt cotton. She claims to try different varieties on each of her three acres, arguing 'I want to see which variety gives me more yield' (28). The Brahmin female, Rashi, claims, 'I'll see [the variety] the majority goes for' (22).

Risk Coalition Three

One of the landless actors, Ranjan, a washer-man (Backward Caste Chakali), relies on the availability of laundry work for his income. He notes little difference in his livelihood since the adoption of Bt cotton. A dispute with the sarpanch has led to the loss of his pension.¹⁸⁴ He claims, '[n]ow, since we lost our pension, we can't even get a proper meal' (32). The other landless actor, Salma, works as a daily wage labourer. She highlights the impact of the weather on the inherent risk of her context. She claims, '[n]ow there is heavy rainfall so we have regular work.'

Orgampalle

Risk Coalition One

Pradnesh, the influential village elder in Orgampalle, became aware of problems with Bt cotton through his interaction with farmers in other villages. He claims, 'Bt

¹⁸⁴ Pension payments for villagers are passed to the *sarpanch* for distribution. The alleged with-holding of this participant's pension by the *sarpanch* highlights the way in which village power structures continue to have a direct impact on the material experience of risk by villagers.

cotton farmers who had problems took me to the fields and showed me. Because of that, I came to know about their problems’ (55). He campaigns actively against Bt technology. He asserts, ‘I am telling farmers in meetings not to grow Bt varieties’ (55).

Risk Coalition Two

Achanda asserts his faith in the NGO, Crops Jangaon, as a reason for not growing Bt cotton. He claims, ‘we would check with Crops [Jangaon] for their advice [with regard to cultivation decisions]’ (44). He also relies heavily on the advice of the elder, Pradnesh, from Risk Coalition One. He asserts, ‘[u]ntil now, we are following Pradnesh’s wish. We follow his opinion....The people accept his seniority. They have gained so many good things from him’ (43).

The alternative methods advocated by Crops Jangaon have gained legitimacy for Akhil given their results. He claims, ‘the debt problem has eased since these Crops [Jangaon] people have started working with us’ (49). Nirmal also asserts his faith in Crops Jangaon, stating ‘I don’t grow it [Bt cotton] because I believe in Crops [Jangaon] and I do according to what they say’ (59).

Prakash claims to have witnessed the negative effects of Bt cotton in other villages. He asserts, ‘I haven’t observed it [the negative impact] directly, but I have met people and I have seen video clips....I have also witnessed the way animals died in Bantala’ (53). Prakash also claims ‘the [seed] companies, through electronic media

and advertisements, have convincingly deceived the farmer into believing that it [Bt cotton] gives a higher yield' (53).

As highlighted previously, both females in Risk Coalition Two are unaware of Bt cotton. Amita states, 'I don't know about Bt [cotton]. I'm not aware of anything to do with it' (47). Aruni claims to rely on village elders, like Pradnesh, to advise the villagers. She asserts, 'the village elders will know' (40).

Risk Coalition Three

As a landless participant who is elderly and in poor health, Sajan's sole income is a monthly pension of Rs 200 per month, and he depends upon PDS rations to survive. The inadequacy of his income to cover his food requirements for a month, however, means that he is obliged to accept rice from others. He asserts this dependency, claiming '[i]f someone obliges, I would get some rice on their ration card' (52).

These different positions with regard to legitimisation through authorisation are summarised for Bt and Non-Bt farmers across the Risk Coalitions in the villages in Appendix 7.3 (p. 399).

MORAL EVALUATION

Van Leeuwen's (2007: 91) second category of legitimisation refers to legitimisation by reference to 'discourses of values.' Here, the legitimisation and delegitimation of Bt cotton is embedded within a wider normative struggle to legitimate and delegitimize

the development model in which it is embedded. This entails the assertion of aspects of the participants' reality which are valued as evidence of development when compared to past conditions. In the case of the technology's delegitimation, however, valued aspects which are perceived as under threat as a result of the wider development model which Bt cotton represents are instead asserted.

Bantala

Risk Coalition One

Pavan asserts, 'on TV, the news and the whole world are mainly concentrating on money. Earning more money, getting work to earn more money' (6). Here, the English word 'money' is used in conjunction with Telugu's '*dabbu*' to highlight his assertion. This actor also notes the increased concentration of land, claiming 'we used to cultivate three or four acres. Now it has increased to twenty' (6). The increased emphasis on money and land is asserted by this actor as evidence of progress.

Chitta observes, 'there was scarcity of food because of drought....Now we have borewells. Earlier we used to have huts....[n]ow it has become like this [cement or *pakka* houses]' (1). Sudhakar notes the significance of land ownership as a means of gaining access to credit. He argues, 'you only get money [from banks] if you have land' (4). He also highlights that, although he receives rations from the Public Distribution System, he does not require them. He claims, 'since the government

supplies it [a ration card], we have to take it. Without a ration card, too, we can survive' (4).

Risk Coalition Two

Natesh asserts, 'it was difficult to get food to eat. Nowadays, it's easy. The government has given support' (15). However, he delegitimizes the reduced crop diversity associated with the contemporary development model claiming, '[w]e used to grow jowar,¹⁸⁵ wheat, things like that. Now we mainly grow paddy and Bt cotton' (15).

Sudeep notes tangible ways in which the village has developed. He observes, 'earlier there were no bt [bitumen or asphalt] roads, only concrete. And the school building...*gram panchayat* [office] and water plant we initiated' (9). He also highlights the contribution of government funding to local development. He claims, '[t]he government is distributing wasteland to poor people' (9). Ashna asserts, '[e]arlier we used to strive hard. Now we are living happily' (12).

Risk Coalition Three

Abani claims, 'earlier, we used to have huts. Now we have concrete houses. And...some people have become rich' (21). Both argue that there has been more work since cotton cultivation became more widespread. The landless actors also note the improved wages. Nipa claims, '[l]ast year we used to get fifty to sixty rupees per day. Now we get one hundred' (19). Her view that this has contributed

¹⁸⁵ *Sorghum bicolor*. An edible drought-resistant grain used in the making of Indian breads (*rotis*).

to an improvement in her life is asserted in her claim, '[n]ow we eat three times a day' (18).

Nandanapuram

Risk Coalition One

Charan argues, 'I have entered agriculture, but not because of profit. It's only more and more investment, more and more indebtedness' (37). However, Nikhil, the Reddy participant, asserts, '[t]here was a time when there was food scarcity in the village. Now there's a lot of development.' He claims, '[t]here has been a lot of government policies, so we are getting benefit. The other thing is crops....Earlier we used to cultivate one acre and get Rs 5,000....Now we get Rs 20,000 at times' (30). He also notes, however, that not everyone is able to benefit in this way. He observes, '[a] lot of them [farmers] can't bear the losses so...they have to sell the land in order to clear their debts' (30).

The NPM farmer, Nand, also notes the decrease in crop diversity. He claims, 'in my grandfather's time, we used to have *roti*¹⁸⁶ and *ragi*.¹⁸⁷...Now, people have changed to commercial crops' (33). He also asserts the health problems associated with pesticide use, claiming '[m]ost of the money we are earning is going to the hospitals because we are getting diseases we have never heard of before' (34).

¹⁸⁶ Bread made from wholemeal flour.

¹⁸⁷ *Eleusine coracana* or finger millet. Often inter-cropped with other crops to improve soil fertility.

Risk Coalition Two

In Risk Coalition Two, Anshul claims, '[t]here are instances of farmers being unable to carry on with agriculture because of debts. They have sold off land and turned to agricultural labour' (24). Similarly, Rajiv's concerns for the sustainability of Bt cotton cultivation lead to fatalistic fears for the future. He claims, '[t]he soil fertility will be lost so future generations will have nothing to eat' (27). Like Nand, Nishok, the NPM farmer, also argues that there has been a decrease in crop diversity in recent years. He claims, '[b]efore cotton, I used to grow green gram, maize, turmeric,¹⁸⁸ red gram and ground nut' (35).¹⁸⁹ He also notes improvements, however, arguing 'earlier we used to go for daily wage labour and live in huts.'

Rashi, the Brahmin widow in Risk Coalition Two, is concerned that labour rates have increased. She also indicates the house that she is constructing with her sister, claiming '[b]y the time I finish it, I will be four or five lakhs in debt. That will be for my life' (22). (The new house under construction is sizable). She also highlights the expenditure on private health care. She claims, 'my sister's daughter was lacking red blood corpuscles. It cost us somewhere around one lakh (22).'

Ambu, the Scheduled Caste Madiga female, is also building a home, part of the government funding for which she was obliged to spend on her daughter's health in a private hospital. She is proud of her leadership of a Self-Help Group. She claims, 'I am the leader of a women's society...It consists of fifteen members and each

¹⁸⁸ *Curcuma longa*. Has been used in Indian cooking for thousands of years and is recommended in Ayurvedic practice for its medicinal value.

¹⁸⁹ *Arachis hypogaea* or peanut. A species of legume.

woman saves fifty rupees per month....It is my duty to collect the money and deposit it in the bank' (28).

Risk Coalition Three

Ranjan notes that '[there is] a lot of implementation of policies going on. In the Indira scheme,¹⁹⁰ a lot of them have got homes. A school has been constructed and new cc [cement concrete] roads are being laid' (32). He also asserts that things have been better since the PDS was implemented. He claims, 'now we get rice and other things so we feel more comfortable than in the past' (32).

Like Ambu, Salma, too, is a leader of a women's Self-Help Group. Through it, she has learned how to write. She claims, 'I started a Self-Help Group for Scheduled Caste women so that they could receive the benefits from saving in small groups and obtain loans' (39).

Orgampalle

Risk Coalition One

Pradnesh argues that Bt technology is a short-term solution only, claiming '[i]t [Bt cotton] seems to be increasing wealth for some time, but it will deteriorate sooner or later' (56). He asserts instead the value of sustainability, arguing '[w]e have to look for long-term benefits' (56). He questions, 'what is the point of increasing yields of

¹⁹⁰ This refers to the Indiramma (Integrated Novel Development in Rural Areas and Model Municipal Areas) initiative launched to upgrade the housing of all those with ration cards.

poisonous food?’ (56), and also asserts that farmers are losing their ability to choose. He claims, ‘there is no availability of non-Bt so Bt is a compulsion’ (56).

He highlights the mutual co-operation among the villagers, claiming ‘[w]e help each other in terms of sharing water’ (55). He also values the knowledge associated with organic farming, stating ‘recognising the disease [in the plant] is an art and giving the correct solution is a different art. You need different solutions for different diseases....I have eighty-nine kinds of solutions’ (56).

Risk Coalition Two

Akhil claims, ‘it [Bt cotton] might increase returns but damage health....What is the point of having higher returns when it doesn’t help health?’ (50). Similarly, he asserts, ‘[w]ith any kind of technology, we should see the use of it. If it’s something like Bt cotton or GM food, if it’s not useful then what’s the point of developing it?’ (50). He also claims, ‘[n]ow we are able to grow crops with low costs so that helped to ease our situation’ (49).

Nirmal asserts his desire for profit as a basis for not cultivating Bt cotton. He claims, ‘[i]f I chose Bt seeds, I would have to use chemicals in crop production. It’s very expensive. That’s why I am using normal cotton seeds’ (58). He also asserts the constraint associated with water availability. He claims, ‘[b]ecause of lack of water, we are unable to improve our profit level’ (58).

Achanda values the co-operation in the village, particularly with regard to keeping labour rates low. He argues, 'We don't want to increase the rates. It's a mutual understanding' (43). Like Sudhakar in Bantala, this actor also receives PDS rations, although he claims that he does not require them. He asserts, '[t]hey [the government] are giving [PDS rations], so we are receiving them. If they do not give them, it is also not a problem' (43).

Prakash, the marginal cultivator, argues that farmers should have greater control over setting prices for their produce. He asserts, '[a]ll companies have the right to decide their own prices for their products....[W]hat kind of situation are we in, when we, as producers, don't have the right to decide the rate for our own product?' (53).

Amita highlights the improvement in the knowledge of farming methods which, she claims, has enabled them to obtain better yields. She asserts, '[e]arlier, we didn't get good crops. The crops failed often. Now the situation has improved. We know how to grow crops better, we gained in knowledge. Also, the climate has improved' (46).

Risk Coalition Three

Sajan is acutely aware of the precariousness of his situation. He claims, 'maybe tomorrow I will have to start begging for food' (52). He also notes the changes in the houses in the village, but highlights that he is excluded from accessing them.

He asserts, ‘they have shown me the land but I can’t build a house on my own, and the help the government gives won’t be sufficient’ (52).

The differing positions in terms of legitimisation through moral evaluation are summarised for Bt and Non-Bt farmers across the Risk Coalitions in the villages in Appendix 7.4 (p. 400).

RATIONALISATION

Van Leeuwen’s (2007) third category of legitimisation is rationalisation. Here, legitimisation is not primarily concerned with whether an action is morally justified – though, as Van Leeuwen (ibid.: 100) recognises, no rationalisation can be regarded as legitimate without some appeal to morality. The primary focus in legitimisation through rationalisation, however, is on whether the action (here, relating to the adoption or rejection of Bt cotton) can be justified in terms of cognitively valid reasons.

Bantala

Risk Coalition One

Pavan states, ‘[t]here has been a twenty-five per cent increase in income with Bt cotton’ (6). He also claims, ‘[b]ecause fewer pesticide sprays are required, Bt cotton is better for the land’ (6). Over time, however, Pavan’s discourse also reveals his significant uncertainty. He claims, ‘[m]any people say the land becomes

spoilt (6). And states, 'I don't know specifically [if Bt cotton damages the soils]. It is something I feel' (7).

Sudhakar claims, '[t]hough we are yielding more, labour costs have increased' (4). He also argues, '[t]he non-Bt fellow will say Bt is harmful. We listen and that's it. We don't know if it's really harmful or not' (5). Likewise, he notes the animal deaths and claims, 'once buffaloes ate Bt cotton and twenty of them died' (4). Chitta also states, 'I heard the land is getting spoiled, so in the future we may not get good yields.' (1). This has led to concerns for the future. He questions, '[e]verybody grows cotton. But tomorrow what will happen?' (1).

Risk Coalition Two

Natesh argues, '[w]e're growing Bt cotton because if we go for ground-nut or something else, insects...will attack and we'll incur loss' (15). He also notes pesticide use has declined. He claims, 'I used to spend more on pesticides' (15). Sudeep, too, notes that vegetable crops are prone to other predators. He claims, 'there are a lot of monkeys, so there is no safety in growing vegetable items [crops]' (9). Both marginal land holders assert the increased profitability of Bt cotton. Ashna claims, '[w]e are getting more yield, so we are getting more money' (12). Likewise, Sudeep asserts, '[f]inancially we benefitted. We're sending my brother to school, we've built a house and we're not relying on others for loans' (9).

Nonetheless, the discourse of these actors also highlights their profound uncertainty with regard to the viability and sustainability of the technology. Natesh claims, 'we feel that we are spending more, and it's too costly. And if we get a low price when we sell, we feel it' (15). Actors in this coalition also assert their view that yields are declining. Natesh claims, '[t]he height of the plant is reducing, so yields are declining' (15). He also highlights, 'buffaloes died from eating the cotton' (15). Similarly, Ashna asserts, 'we get more, but our expenses are more' (12). She also claims, 'people told me that it [Bt cotton] damages the environment, but I don't know if that's true or not' (13). The potential risk is rationalised, however, as a legitimate gamble. She claims, '[i]t's pure luck. If you get the crop, you benefit. Otherwise you lose' (13).

Risk Coalition Three

Nipa claims, '[i]f I can go to work, I can live. Otherwise, it's difficult' (19). She also asserts, '[t]he government does nothing....We are living day by day but there is no hope of things getting better....It has been like this for years' (20). Abani, on the other hand, claims, '[i]t's better now....Some people became rich' (21). Thus, while her own situation remains precarious, she notes the development of others as evidence of the legitimacy of the system overall. This is also due, however, to her reliance on the success of others as a means of alleviating her own exposure to risk.

Nandanapuram

Risk Coalition One

Charan notes, 'I made thirty five thousand rupees profit last year....This year, the labour rates have gone high and, after the rains, the cotton rates have dropped (37).'¹⁹¹ Charan claims he started to grow Bt cotton because he does not have access to irrigation. He asserts, 'Bt cotton needs less water [than paddy]' (37). Nikhil notes that 'in the last ten to twelve years, there has been high productivity and high rates in cotton' (30). He also argues that his ability to undertake crop rotation is limited due to lack of water. He asserts, 'I tried crop rotation in one part of my land, but I couldn't try it elsewhere because there is no water' (30). He claims, 'if everyone is growing Bt cotton and making money, then I must also do it to live. I'm just following the blind' (31).

Nand, the NPM farmer, argues, '[t]he height of the crop has been decreasing...[and] the quality of the soil is deteriorating day by day. He also claims that the bollworm has developed resistance and argues that 'sucking pests have doubled' (34). However, he asserts the constraints of cultivators, arguing 'they have actually seen the animals dying...but still they have no alternative.' This is not least due to the difficulty in obtaining non-Bt seeds. 'To get hold of non-Bt [seeds],' Nand claims, 'you have to pay [a part payment] in advance. If you're growing in June, you have to pay in February....We would pay ten to fifteen thousand rupees in February [in

¹⁹¹ This interview was conducted prior to the flooding when the plentiful rains seemed to signal a bumper harvest – hence, the rates for cotton declined.

part payment] and book one hundred packets of non-Bt seeds,¹⁹² then distribute them to whoever is interested (33).'

Risk Coalition Two

Anshul argues that yields were higher with non-Bt cotton. He claims, 'with non-Bt, we used to get ten to twelve quintals. Now with the Bt variety it has dropped to six or eight' (24). However, he argues, 'because this cotton is rain-fed, I grow cotton' (24). He also asserts, 'because of the increase in costs [with Bt], I am not able to get back my investment sometimes' (24). He states, 'when I spray pesticides, it's affecting my health' (24). He knows he should wear protective equipment, but claims, 'it's an unnecessary delay, so I just go' (24). He also states, '[b]ecause of the borewells, the [ground] water levels have come down....Now we have to dig much deeper [for water]' (24).

Similarly, Rajiv claims, 'the Bt crop yields have declined, but my expenditure keeps increasing because of pesticide use' (27). Nishok, the NPM farmer in Risk Coalition Two, asserts that yields are lower with Bt than with non-Bt cotton. He claims, '[c]ompared to non-Bt, Bt produces less' (35). He has also notes the damage to his soils from growing non-Bt cotton for twenty years consecutively. He claims, '[s]oil fertility is declining because of the consecutive cultivation of cotton. That's why I am doing crop rotation again with maize and ground nut' (35).

¹⁹² This is sufficient for one hundred acres.

Both females argue that yields are higher with Bt cotton. Rashi, the Brahmin marginal land-holder, claims, '[l]ast time I got around twenty quintals. I didn't even get fifteen quintals this time' (22). Like Ashna in Bantala, she argues '[w]hen it's luck, I get profit. When it's unfortunate, I don't get anything' (22). Ambu claims, 'I'm getting eight quintals for the Bt variety, and I used to get five or six for the non-Bt' (28). She also asserts, however, 'sometimes it is just sufficient to pay back the costs that are incurred during cultivation' (28). She also claims, '[t]he soil is totally destroyed' (29).

Risk Coalition Three

Salma contends that people in the villages are better off financially. She claims, '[o]verall, there is an improvement' (39). However, she notes that the ability to profit does not apply to everyone. She asserts, '[e]veryone is trying, but a few are getting higher returns, while others are making losses' (39).

Orgampalle

Risk Coalition One

Pradnesh claims, '[t]hey [farmers] are being cheated by the seed companies' (55). He argues that the risks associated with non-Bt cultivation are lower given the greater stability of yields. He states, 'non-Bt cotton has a constant yield. You get eight quintals and it's eight quintals every time. With Bt, initially it shows a ten quintal hike, but over time, it decreases' (56). He also claims the Bt cotton plant itself is toxic, stating, 'chemicals have poisoned the seed and that is carried in the

plant' (56). His awareness of his leadership of Orgampalle as a counter-systemic tendency in Andhra Pradesh is clear in his statement, '[c]ompared to outside [society beyond the village], we may be backward in terms of our development. But my philosophy is, let them do what they want. They may be going in circles, but let's stick to our own path' (55).

Risk Coalition Two

Akhil claims, 'I believe it [Bt cotton] affects the land so I don't grow it' (50). He also fears for human health, arguing 'it might increase returns but damage health' (50). He is aware that the village is being used as a demonstration of an alternative life-style to challenge the current development model, and claims, 'they [Crops Jangaon] want to create this village as a role model for the entire country' (49).

Akhil argues, 'soil fertility comes down [when Bt cotton is used]. After you grow Bt cotton for two consecutive years, then change to another crop, yields will be lower [for the subsequent crop]. Even if you try to grow non-Bt, it will not help you....[A]nimals die from grazing on Bt [cotton] fields' (49).

Nirmal rationalises that cotton is a less risky crop choice than others. He claims, 'depending upon the weather, there are good chances of losing chilli and maize and some other crops. Cotton is giving a good price. That's why we grow it' (58). He also claims, '[f]armers commit suicide because they are paying for chemicals....The

production cost is twenty thousand rupees per acre....It's very difficult to survive' (58).

Achanda notes the impact of the weather on the ability of villagers to live comfortably. He claims, '[t]en years ago, we faced many problems. There was no water. We moved to other villages for work....Now the rains are good. We are comfortable' (43). He notes, too, the impact of the cotton price on their livelihoods, claiming '[s]ince cropping cotton, we don't have problems. We are getting a good income' (43).

Prakash, the marginal land-holder, argues that Bt cotton does not increase yields. He claims, 'the first thing the farmer should realise is that Bt [technology] is not for increasing yields. The crop only has a higher resistance for ninety days to the American bollworm....The bollworm may not happen every time' (53). He claims the cultivation area of Bt cotton has increased because of media advertisements.¹⁹³ He also notes the helplessness of the farmers themselves in ascertaining the cause of the animal deaths. He argues, 'our [farmers'] limitation is that we can't analyse scientifically' (53).

As highlighted earlier, the two females in Risk Coalition Two are unaware of Bt cotton. For Aruni, her choice of crop is determined by water availability. She claims, 'six years back, we spent Rs 40,000 on a borewell....[N]ow we are not

¹⁹³ Brightly coloured Telugu advertisements for Bt cotton adorn trees, bus shelters, public transport and shop stalls throughout Warangal.

getting any water from that' (40). Amita notes, '[e]veryone stopped growing tobacco [and started cultivating cotton] so I also changed.' (46).

Risk Coalition Three

Sajan's priority in the legitimization of any development model is clear: 'I would look to people who can give me food, nothing else' (52).

The differing positions in terms of legitimization through moral evaluation are summarised for Bt and Non-Bt farmers across the Risk Coalitions in the villages in Appendix 7.5 (p. 401).

MYTHOPOESIS

Van Leeuwen's (2007: 105) final category of legitimization, mythopoesis, refers to legitimization which is conveyed through narratives which define 'legitimate social practices'. This category is used to explore the 'vernacularization of democratic politics' (Michelutti, 2007: 639) as narratives related to perspectives on the legitimate exercise of power as a concern of democratic praxis. At the village level, this focusses on the *Gram Sabha* meeting as the institutionalised forum of decentralised democratic praxis.

As has been highlighted, the demand for the secession of Telangana was the subject of widespread mobilisations in the villages at the time of the research. These

included mass protests and relay hunger strikes.¹⁹⁴ This meant that the issue was guaranteed to secure animated engagement from most participants in the discussion of politics, and permitted significant insight into normative views on democratic praxis.

Bantala

All participants in Bantala vote in *panchayat*, state and parliamentary elections. However, only thirty-seven per cent (three of eight) of participants attend the *Gram Sabha* meeting. Two of the five male participants claim to attend the meetings, and one of the three females. Of the two male attendees, one is from Risk Coalition One (Chitta), and the other from Risk Coalition Two (Natesh). The female Scheduled Caste attendee, Ashna, is from Risk Coalition Two.¹⁹⁵

The uncertainty with which Bt cotton is associated in Bantala has not led villagers to participate in mobilisations against the technology. Instead, the ambiguity forms the basis for its legitimisation, given the trade-off of the uncertainty with which it is

¹⁹⁴ During the research period, colourful pagodas could be seen throughout the Telangana countryside, beneath which relay hunger strikers would sit, draped in a jasmine garland to indicate their fast. The researcher spent some time sitting with male hunger strikers during one such protest organised by Pallav in Bantala (Field note extract, 4/2/2011). Villagers took turns in 'fasts' which involved eating breakfast, missing lunch, and taking an evening meal. Males and females participated on alternate days. These protests were an exciting social occasion, with protest songs and speeches in Telugu blaring from loud speakers.

¹⁹⁵ Of the participants involved in this study, only one (Natesh) was at the *Gram Sabha* meeting attended by the researcher in Bantala in October, 2010. Twenty-five males sat on benches assembled in the courtyard of the *Panchayat* office. The *sarpanch* and a representative from the Mandal were seated at a head-table (accompanied by, on this occasion, the researcher and her translator). Five females stood silently in the background. Discussion revolved around the need to remove the names of deceased villagers from the pension list, as well as the requirement for new drains, road widening and water tank. There was also heated debate from some villagers who argued that plans to widen a road would cause damage to nearby properties (Extract from Translator's Notes: 4/10/2010).

associated with the initially high yields and incomes which all participants in the village assert. The discourse of the participants also indicates, however, that the legitimization of the technology is waning due to its declining yields and higher costs. This increasing delegitimation is also evident in the claim by the Crops Jangaon actor that village elders in Bantala have expressed an interest in visiting Orgampalle in order to assess the potential of organic cultivation.

Risk Coalition One

Pavan does not participate in *Gram Sabha* meetings. He argues, '[a]ll this [*Gram Sabha* meetings] comes under politics, so since I'm a farmer I have to go for my work [in the fields]' (6). Despite his disavowal of politics, he nonetheless claims, '[w]e'll fight until we get Telangana' (6). Chitta participates in meetings and votes. He claims, '[e]verybody who has the right will cast their vote' (1). He repeatedly uses the Telugu word *desam* (meaning country) to refer to Telangana, claiming '[i]t's [Telangana] our country, *desam*, so we should get that' (1). Sudhakar asserts, 'if I cast my vote, I may get benefit' (4). He does not, however, attend *Gram Sabha* meetings.

Risk Coalition Two

Natesh claims, 'I'll participate in every activity as I'm an elder in the village' (15). He takes a cynical view of the Indian democratic process, however, arguing, '[i]f we spent the amount which is spent on elections in constructing a dam..., that

would be more beneficial' (15). He strongly supports Telangana, arguing '[i]f we get Telangana, our children will get jobs' (15).

Sudeep supports Telangana, because '[i]t [Telangana] means my place' (9). He argues, '[s]ince we are living in a democratic country, this has given us the right to ask for our rights and fight for our rights. Now I have enough freedom to go and ask what rate I'm getting [for my cotton] and why I'm getting it. I can fight for my own sustenance' (10). Ashna is one of the few females in the current study who claims to attend *Gram Sabha* meetings (though she was not present at the meeting attended by the researcher). Unlike most participants in Bantala, she takes a cynical view of Telangana, arguing '[e]verybody is saying we should get Telangana, but it won't do anything' (12).

Risk Coalition Three

Neither of the two female participants in Risk Coalition Three attends *Gram Sabha* meetings, though both vote. Abani claims 'I don't have time [to attend meetings]' (21). She is cynical about Telangana, stating '[w]hether we get Telangana or not, I'll not get anything. But my children may get something' (21). Similarly, Nipa does not attend *Gram Sabha* meetings. She argues, 'I'm too busy with my work' (19). She highlights the compulsion of voting as a social norm, however, arguing, '[i]f they say to cast my vote, I'll go and cast my vote' (19).

Nandanapuram

Nandanapuram is highly mobilised in its opposition to Bt technology. The involvement of villagers in protests against the technology is coordinated by the NGO, the Deccan Development Society (DDS).

All participants in Nandanapuram vote. However, only thirty per cent (three out of ten) of participants in the village attend *Gram Sabha* meetings. Of these, two of the seven males, and one of the three females, attend. Of the males who attend, one is from Risk Coalition One (Nand), and the other from Risk Coalition Two (Anshul). The female attendee is Salma who is the only landless Risk Coalition Three participant of the study to claim to attend the *Gram Sabha* meeting. However, given that her now deceased husband was a former *sarpanch* of Nandanapuram, she is very politically engaged.

Risk Coalition One

Charan, the elderly Brahmin, votes in *panchayat*, state and parliamentary elections. He claims, '[t]he person who gets elected may be of some use' (37). He also highlights, '[t]hey bribe me for my vote. I don't take any bribe but I vote' (37). He notes the delegitimation of the power of Brahmins, claiming '[t]hat was our time. This is not our time' (37). The Reddy participant, Nikhil, claims 'we are under a compulsion to vote....Otherwise, we wouldn't' (30). This actor, too, highlights the challenge to power structures in Nandanapuram, arguing 'during my grandfather's time, there used to be respect for Reddys as a higher caste....[N]ow no one listens

to us' (30). He argues, 'king's rule is preferable [to democracy], because the electoral system is too corrupt' (30).

As an active campaigner against Bt cotton, Nand participated in a meeting when the then Minister for Environment and Forests, Jairam Ramesh, visited Hyderabad in January, 2010, to gather views on Bt bringal. He claims, '[i]f the farmers are protesting in huge numbers [against Bt cotton], that is one kind of force. But the government uses force through *lathi*¹⁹⁶ charge...to undermine or repress the movement' (33). He argues that '[t]he government is influenced by the multinationals who produce Bt cotton' (33). He claims, 'India is trapped....It is unable to say to America that our farmers don't want Bt cotton' (34). He is in favour of Telangana because he argues, 'when we have a smaller state...the government can actually listen to people and make policies with the consensus of the people' (33).

Risk Coalition Two

Anshul votes and attends *Gram Sabha* meetings. He asserts directly to the researcher in Telugu, 'One hundred per cent *kawali*! [we one hundred per cent need Telangana!]' (24). He argues, '[i]f Telangana comes, there would be abundant opportunities' (24). Rajiv argues that the protests of farmers are ineffectual because the political system is so corrupt. He claims, 'once, some years ago, the cotton seeds didn't germinate [due to the issue of spurious seeds]...so the farmers went on

¹⁹⁶ *Lathi* is Hindi for a stick which may be topped with metal. The lathi is commonly used by the Indian police as a means of crowd control.

a...huge protest. They stopped buses and burned them....The concerned police officer...said he would do justice but he took a bribe' (27). Nishok, the NPM farmer, votes but states, '[i]f I keep attending these [*Gram Sabha*] meetings, I will not have much time to tend to my fields' (35). He is uncertain about Telangana claiming, 'I'm not sure whether they [increased employment opportunities] will really come or whether it will be the same as it is now' (35).

Rashi, the female Brahmin, votes and is a strong advocate of a separate Telangana. She argues, '[t]hough [the Nagarjuna Sagar dam] is located in Telangana, more than half of the water goes to Andhra' (22). Ambu, the Madiga female, states, 'I don't attend *panchayat* meetings. I go to the meetings held for women [self-help group meetings]' (28). She is cynical about Telangana, arguing 'those who are in politics will benefit out of a separate Telangana' (28).

Risk Coalition Three

Salma votes and, as has been noted, also attends *Gram Sabha* meetings. She supports Telangana, arguing 'I believe Telangana would bring jobs for my children' (39). Ranjan also votes. He claims, '[i]f I didn't vote, somebody would come and make me' (32). He claims he used to attend *Gram Sabha* meetings but asserts, 'I never used to understand anything. I used to just go and stand there and listen' (32). He also notes the bribery associated with voting. He claims, '[t]hey [political campaigners] offer fifty, sixty rupees for my vote....Every party bribes, usually with alcohol. I don't drink, so they give me money' (32).

Orgampalle

Villagers such as Pradnesh (Risk Coalition One) and Prakash (Risk Coalition Two) actively take part in mobilisations against Bt technology. This involvement is organised in conjunction with Crops Jangaon. Pradnesh has also voiced his opposition to the technology directly to Jairam Ramesh on his visit to Hyderabad. As the analysis has highlighted, however, almost half of the participants in the village are unaware of what Bt technology is, and simply follow the leadership of Pradnesh.

All participants in Orgampalle vote. *Gram Sabha* attendance is also higher among Orgampalle participants than in the other two villages. Sixty-two per cent (five of the eight participants) claim to attend the meeting. All of these are male. Four of the male attendees are from Risk Coalition Two. The fifth is Pradnesh from Risk Coalition One.

Risk Coalition One

As an elder, Pradnesh attends the *Gram Sabha* meetings. He also votes. He claims, '[o]nly if I vote, will I be able to ask for my rights' (55). Pradnesh asserts, 'I campaign vigorously against Bt bringal. I have even argued with Jairam Ramesh' (55). He is concerned about the civil disobedience associated with the Telangana movement, arguing '[t]he students are staging protests, they are being

jailed....There's no need for all this conflict. We have the right to vote every five years, so let's make use of that' (55).¹⁹⁷

Risk Coalition Two

Akhil votes and attends meetings. He links village democracy directly with development activities, claiming '[w]e talk about the problems in the village in the *Gram Sabha* meetings' (49). He argues, however, that money is leading to a distortion of the wider democratic process, claiming '[w]hoever is richer is stronger. The government favours them, not us' (50).

Akhil supports Telangana because he claims, 'once we get separated, we can have our own...resources' (49). Nirmal, too, votes and attends meetings. He supports Telangana, arguing 'now we are paying high prices to private hospitals. If Telangana becomes its own state, government hospitals will be improved' (58). Likewise, Achanda votes and attends the *Gram Sabha* meetings. He argues, '[e]very election is good for democracy' (43).

Prakash also campaigns against Bt technology. He questions, '[t]here are thousands of farmers fighting on the streets against Bt. Why does the government not listen to them?' (53). He also claims '[i]t [the proposed Seed Act] favours companies....[W]hen there are farmers fighting against amendments, why doesn't the government take heed?' (53).

¹⁹⁷ As highlighted in this thesis, theoretically the emphasis on democracy as voting expressed by Pradnesh represents a reductionist view of democratic praxis given the strong reliance on active mobilisation as a means of securing legitimacy in the exercise of power.

As highlighted previously, neither of the two females in Risk Coalition Two attend the *Gram Sabha* meetings. Although Aruni votes, she argues, '[t]his [attendance at the *Gram Sabha*] is not my level....Women like me never attend such meetings' (40). Similarly, Amita votes, but does not attend meetings. She highlights the compulsion of voting as a social norm, arguing '[e]veryone votes, so I also vote' (46).

Risk Coalition Three

Sajan votes. He claims, 'I have the right to vote so I exercise that right' (52). He links the vote to the obtaining of benefits, arguing 'we get benefits like ration cards, and pensions have come of late' (52).

The differing positions with regard to legitimation through mythopoesis are summarised in Appendix 7.6 (p. 402). In conclusion, this chapter has explored the way in which perspectives on Bt cotton are embedded within differing evaluations of development. These are strongly informed by the influence of village power-holders. The chapter has also highlighted that the *Gram Sabha* meeting as the primary locus for village democracy, is poorly legitimated, and largely male-dominated. The meeting is primarily regarded as a means of securing access to resources, a concern which is also central to the framing of the demand for a separate state of Telangana. There is also, however, evidence of a rights discourse which serves as a precursor to the mobilisations which are an integral part of village democracy. (While Bantala villagers were not mobilised in opposition to Bt

technology, they were highly mobilised with regard to the need for a separate Telangana). These protests seek reform of the institutionalisation of democratic praxis as a concern for social justice in the negotiation of risk.

Chapter Eight

ANALYSIS PART III

Legitimation and the Meso Level Struggle to Define Risk in Andhra Pradesh State Politics

8.1 Introduction

This chapter adopts the Habermasian (1996: 356-359) core-periphery model to explore the legitimation struggle to define risk as a concern of the meso institutional level. Democratic praxis is here examined through an exploration of the negotiation of the decision-making power of actors arising from their core-periphery model positioning. This also highlights the way in which the political process is itself being re-defined through competing narratives related to ideas on development, knowledge construction, and the way in which the exercise of power should legitimately be institutionalised within democratic society.

8.2 The Discourse Coalitions

At this level, participants have been grouped into ‘discourse coalitions’ (Hajer, 1997: 12-13) based upon the commonality of their positioning with regard to Bt cotton. Although participants at this level agreed that their identities could be disclosed, names have not been used. This is due to the fact that the focus here is on the institutional positions which these actors occupy, rather than on the individuals themselves. In light of this agreement to disclosure, however, the

identities of actors at this level are less closely guarded than was the case with participants at the micro level.

As highlighted, the selection of participants at the meso level has been informed by the desire to have both sides of the debate represented in line with the constructionist approach. The Bt Coalition has a favourable view of the technology and is comprised of a Congress Party actor from the core, a research scientist from the state agricultural university, ANGRAU (who is also a member of the Review Committee for Genetic Modification (RCGM) here representing the inner periphery,¹⁹⁸ and four employees from Monsanto. Their functions include a Sales and Marketing Manager for Bt crops, the Lead for Regulatory Affairs, a Lead Scientist in Bt technology research, and the Technology Development Lead in vegetable seeds. Monsanto are located on the periphery of the Habermasian model.¹⁹⁹ For the purposes of the analysis, the Monsanto actors are often treated as a group. The majority of this coalition is male (five Indian males, and one American female) and all, except the American female, are agricultural scientists. She is a toxicologist.

The Non-Bt Coalition is so described due to the opposition of its members to Bt technology. This coalition is comprised entirely of male agricultural scientists.

¹⁹⁸ Permission was not granted to record the interview with this actor, so the analysis features extracts from shorthand notes taken during the meeting.

¹⁹⁹ This should not be taken to indicate that Monsanto is in any way a peripheral actor in the sense of being socially marginalised. In fact, as this thesis has highlighted, it is Monsanto's undue influence which is the subject of scrutiny. The term 'periphery' is used here in the very specific sense adopted within the Habermasian model, where it refers to the positioning of actors relative to the core of government.

Participants have again been selected to represent the core and periphery of the Habermasian model. Here, the core is represented by the Communist Party India (Marxist) or CPM actor as an opposition party in the Andhra Pradesh core, while the periphery of the model is represented by three NGOs. These include the Centre for Sustainable Agriculture (CSA), the Deccan Development Society (DDS), both based in Hyderabad, and Crops Jangaon (CJ), based in Jangaon. Given the similarity of their positions, the NGO actors are often analysed as a group within the Non-Bt Coalition. The DDS and CSA actors are both ANGRAU graduates.

In the current study, the definition struggle is, therefore, being waged between scientists who could be regarded as epistemic equals, but who are positioned differently – the Bt Coalition are power-holders (either by virtue of their political or economic positioning), and the Non-Bt Coalition are challenging the legitimacy of this power through their framing of risk. The analysis explores the way in which the different positioning of these actors within the core-periphery model contributes to different normative perspectives on the knowledge construction, values and exercise of power which should inform risk definition in the future development of Andhra Pradesh society.

8.3 *Legitimation in the Meso Level Definition of Risk*

At this level, Van Leeuwen's (2007; 2008) categories of legitimation are adopted as a means of exploring the attempts by actors to secure legitimation for their ideological positions as part of the struggle to define risk. Figures in parentheses

after interview excerpts relate to the interview schedule included as Appendix 8.1 (p. 400). Summaries of the critical discourse analysis associated with each category of legitimisation, as well as an overall summary of the meso level analysis, are presented in Appendices 8.2 to 8.6 (pp. 405-409).

AUTHORISATION

As Fairclough (2003: 124) notes, '[d]ifferent discourses are different perspectives on the world, and they are associated with the different relations people have to the world, which in turn depends on their positions in the world.' According to Van Leeuwen (2007: 94), 'legitimate authority is vested in a person because of their status or role in a particular institution.'

In critical discourse analysis, the use of pronouns is an important indicator of the way in which social actors orientate themselves in relation to others (Fairclough, 2003: 150). With regard to risk definition, this involves the assertion by actors of their epistemic authority in order to establish the relative legitimacy of their ideological positioning when compared to those with alternative perspectives.

The Bt Coalition

The Congress Party actor emphasises his particular epistemic standing by asserting his authority within the core. This is highlighted through his ability to speak on the government's behalf – as in, for instance, '[t]he government has endorsed Bt

cotton' (5) or 'the government feels that the PDS²⁰⁰ is a social obligation' (5). He also seeks to establish solidarity for his support of biotechnology with his use of the 'you' pronoun, as in his claim, '[s]uppose you want to scale up the protein levels [in food], maybe you can use intervention.' This seeks to secure legitimation for the potential of Bt technology through highlighting the benefits of innovations associated with the broader field of biotechnology, which are unrelated to Bt technology itself.

The 'we' position is frequently used to emphasise this actor's inclusion in the decision-making core; for instance, '[w]e have to make farming profitable' (5) or '[w]e want to give all tenant farmers in this state a loan eligibility card' (5). This establishes his position as a power-holder with responsibility for alleviating the risk exposure of others. His rare use of the first position asserts his personal commitment to the government's pledges as in, for instance, the use of the first position possessive pronoun in, '[m]y vision is to have the farmer net realising [ie., making a net profit] from agriculture' (5).

A 'they' position which seeks to establish distance from, and a delegitimation of, alternative ideological positions, is used to highlight this actor's view that NGOs exaggerate the risk of Bt cotton. He claims, '[i]t's [Bt cotton] not as damaging as they [NGOs] advocate, and it helps the farmer to cut costs' (5). This latter 'benefit' of reducing farmer costs is important to this actor's legitimation within the core, particularly given the links of farmer suicides to indebtedness.

²⁰⁰ The Public Distribution System.

The ANGRAU actor's dual roles as a 'government scientist' in a state university, and a regulator with the RCGM, are regularly emphasised as an indication of his ability to secure a broader, more balanced perspective than others involved in the debate. His use of the 'we' position frequently extends to the whole of humanity in as in his view that 'we can't control pests and save the environment simultaneously' (7).

His desire to be seen as epistemically neutral is asserted in his claim '[i]f I say certain facts, I'm considered as belonging to a group either opposing or promoting it [Bt cotton]' (7). Here, the rare use of the 'I' position is highlighted to emphasise this actor's belief in his personal ability to establish 'facts' which transcend group interests, and his frustration at those in wider society for failing to recognise this capacity for neutrality.

The 'you' position is frequently used in metaphors. According to Fairclough (1989: 119), 'different metaphors have different ideological attachments' and 'imply different ways of dealing with things' (ibid.: 120). This actor asserts, 'when you are taking a driving test, you don't ask everyone to watch' (7). This seeks solidarity for the legitimacy of his position as a regulator, and emphasises his view that, by virtue of his role, he should be trusted to conduct trials in the absence of widespread participation. The value he places on his own ostensible objectivity lends itself to a dismissal of NGOs. He argues, '[i]t was too difficult to find an unbiased NGO' [to sit on the RCGM] (7).

In the case of the Monsanto actors, their epistemic standing is strongly reinforced by their identification with their employer. This is highlighted by the use of the exclusive corporate 'we' position as in, 'we operate as per the regulations of the country' (4) or 'we're a global company with global obligations' (8). The 'I' position is far more frequently used by these actors than the others in the Bt Coalition. This highlights that, despite the significant economic power of their organisation, its positioning on the periphery of the Habermasian model means that these actors cannot rely on the authority of 'their office' to assert their epistemic standing. It is also likely to be related to the awareness of these actors of Monsanto's wider delegitimation in many sections of Indian society, and the uncertainty regarding the researcher's own positioning in this regard.

The sales and marketing actor claims, 'I'm working fourteen years on Bt cotton' (8) and 'I spend almost a week every month in farmers' fields' (8). This close contact with cultivators is used as a means of asserting the legitimacy of this actor to represent their views. The epistemic authority of the Monsanto actors is also emphasised by the purportedly widespread legitimisation for Bt technology, as in the claim by the Lead for Regulatory Affairs that 'we get lots of invitations to talk to scientists, as well as farmers, on our technology' (8). The use of the possessive pronoun with reference to Bt technology emphasises the degree of personal ownership which these actors feel for the company's product.

The use of the ‘you’ position by the Lead for Regulatory Affairs in her statement ‘as you can probably tell, I have varied experience on safety being a toxicologist’ seeks to establish solidarity with her own assertion of her epistemic authority in the definition of the risk of Bt technology. The ‘they’ position is used by these actors to highlight their closure to the ideological positions of NGOs. One actor claims, ‘[g]enerally those people [NGOs] don’t do dialogue. They have their own agenda’ (4).

The Non-Bt Coalition

As spokesperson for the Communist Party (Marxist) in Andhra Pradesh, the CPM actor is accustomed to speaking on behalf of the party. This is evident in his use of the ‘we’ position to refer to the CPM as in, ‘we are not against any technological improvement’ (3) and ‘we want technology, but technology in the interests of people and the environment’ (3). His use of the ‘I’ position seeks to establish his authority on agrarian issues given his rural origins in his assertion, ‘I belong to a rich peasant family’ (3).

This actor uses the ‘they’ position to refer to the government, multinational corporations and NGOs. He asserts, ‘they [the government] are making this technology an instrument of profit-making for MNCs’ (3). Similarly, with regard to NGOs, he claims, ‘[s]ometimes we may not agree with them [NGOs], especially the extreme environmental positions’ (3).

As in the case of the ANGRAU actor, the 'you' position is used in metaphors such as, '[y]ou can use a knife to cut a bringal and you can use the knife, that same knife, to cut a throat' (3). The metaphor is stark and seeks solidarity with this actor's ideological position as a Marxist that technology itself is neutral, and that it is the differing interests of people which render its use problematic. (The Marxist position is belied, however, by this actor's insistence on the need for more adequate testing of Bt technology which will be discussed later).

The 'we' position is used by NGO actors to refer to their organisations, '[w]e found there were trials happening with Bt cotton in 1998. No information, no regulation', (CSA) (6); '[w]e don't want them spraying [pesticides] at all. We are offering them an alternative with the NPM programme' (DDS) (1); and '[w]e organise NPM programs in the villages' (Crops Jangaon) (2). The rare use of the 'I' position is, like the Monsanto actors, used to emphasise their ethical commitment to their work, as in the assertion by the Crops Jangaon actor: 'I felt if I worked for farmers that would be best.'

The greater frequency of the use of the 'you' position in the discourse of the DDS and CSA actors, in particular, indicates their central concern with seeking solidarity for their alternative positioning in order to establish its legitimacy. Thus, the CSA actor uses the 'you' position to highlight the framing of responsibility which serves as his main challenge to the prevailing neo-liberal ideology. He questions, 'if you are faced with a problem, no-one is responsible? What is this?' (6).

He also seeks solidarity for his view of the irrationality of providing biosafety data conducted in the United States for the approval of a technology which is to be used in India. He asserts, 'you submit data which says that since animals are not dying in America, they will not die in India' (6). These actors also use the 'you' position to emphasise their concern for the narrowing of epistemology as in, 'if you are giving ninety per cent of your research funds only for genetic engineering, that's what people will do' (CSA) (6).

The 'adversarial framing' (Gamson, 1992: 178) of NGOs is conducted through their use of the 'they' position. Such positioning highlights a number of 'injustice frames' (ibid.) which directly challenge the legitimacy of their opponents in the Bt technology debate. The CSA actor identifies Monsanto as an adversary given the injustice of their assertion of their epistemic standing over that of farmers and NGOs. He argues that Monsanto responded to claims of animal deaths due to Bt technology with a simple categorical denial, claiming '[t]hey [Monsanto] said animals will not die' (6).

The DDS actor highlights the government as an adversary given the perceived injustice with which their lack of transparency is framed. He asserts, 'government here is not very open. What they are doing is deciding somewhere in closed meetings' (1). The CSA actor challenges the unjust partiality of the Genetic Engineering Approval Committee (GEAC), arguing '[t]he GEAC allowed them

[multinationals] to do the field trials whereas the local monitoring system was not established' (6).

A summary of the critical discourse analysis of legitimisation through authorisation is provided in Appendix 8.2 (p. 405).

In order to analyse the next three categories of legitimisation, the study seeks to destructure the ideological positioning of the actors. The use of modality as described by Fairclough (1989: 126-127) is significant in this regard. As Reyes (2011: 796) notes, modality signals the degree to which speakers commit themselves to the validity of what they are saying.

According to Fairclough (1989: 126), 'expressive modality' indicates a speaker's evaluation of truth. '[C]ategorical modality' (Fairclough, 1992: 159), expressed in a simple present tense form, signifies the speaker's commitment to the truth of the proposition as a 'fact' (Fairclough, 1989: 129) and, thus, represents a claim to knowledge (ibid.). This can relate to an epistemic or moral 'truth' depending upon the context. Moral statements are often expressed using 'deontic modality' (Fairclough, 2003: 170) to highlight obligation. This is indicated through the use of modal auxiliary verbs, such as 'must', 'should', 'have to', 'cannot', etc. These highlight assumed values (ibid.: 173), and express the actor's normative belief in how things should be (ibid.: 176-177).

MORAL EVALUATION

According to Van Leeuwen (2008: 109), ‘legitimation through moral evaluation is based on values, rather than imposed by some kind of authority.’ It also refers to the relation of actors to themselves as ‘moral subjects’ (Fairclough, 2003: 29). In the current study, a concern for cultivators and self-sufficiency are two common values asserted by actors in both coalitions. The markedly different normative approaches to these values, however, form the basis of the struggle for legitimation through moral evaluation between the coalitions.

Bt Coalition

In the case of the Congress Party actor, his village origins are asserted in order to provide a validation of his desire to represent farmers (though as a member of the Reddy caste and from a prominent medical family, he is unlikely to have been among the poorest in his community). For this actor, his concern for farmers is interpreted as a desire to facilitate access to credit, particularly for tenant farmers, to cut costs and to secure the ‘best possible prices’ (5) for agricultural produce. His strong commitment to this position is highlighted in successive deontic modality as in, ‘[f]armers cannot be neglected. They have to be supported’ (5); ‘we should help tenant farmers to avail of loans’ (5); ‘farmers are to be given the best possible price for their produce (5).

The Congress Party actor emphasises the importance of self-sufficiency in order to eliminate a reliance on others in the negotiation of risk. This lends itself to a favourable view of the Green Revolution. He argues,

But for the Green Revolution, we would not have produced this [surplus] food. Earlier, when the population of this country was thirty crores,²⁰¹ we used to import wheat from America (5).

The ANGRAU actor also asserts the need to support farmers. However, in his view, this can best be achieved through providing farmers with information which they can trust. He asserts, ‘information should be put before the farmer and he should decide’ (7). The use of deontic modality highlights an evaluative statement which prioritises information, and the freedom of the farmer to choose. Given the passive construction, however, agency is obfuscated (Fairclough, 1989: 125) and it is not clear who should provide the information and by what means. This actor is unique in this coalition in emphasising the importance of the self-sufficiency of farmers themselves in their negotiation of risk. He argues, ‘[f]armers should be able to produce their own seed and be self-sufficient in inputs’ (7).

Like the other actors in the Bt Coalition, the Monsanto actors assert their concern for farmers. This is highlighted in the deontic modality of the sales and marketing actor’s claim that, ‘he [the farmer] is the one who bears all the risk...so he must receive the maximum benefit’ (4). The linking of Bt cotton with farmer suicides is taken as a personal affront by this actor who claims, ‘it cannot be more lies that people would link Bt cotton and farmer suicides. I feel very strongly on that’ (4).

²⁰¹ Three hundred million. India now has a population of 1.2 billion people.

The affective language and the use of the 'I' position ('I feel') highlights this actor's ethical commitment to the technology, and his anger at attempts by opponents to unfairly, in his view, delegitimize it through linking it with farmer suicides.

For the Monsanto actors, the needs of farmers can best be met through the operation of the market mechanism. These actors use an injustice frame to delegitimize the intervention of the Andhra Pradesh government in the pricing of Bt cotton seeds, arguing 'why should the Indian farmer pay a tenth of the costs of the rest? Because they're competing in the same market [as other cotton farmers globally] at the end of the day.'

Their concern for farmers is also adopted as a means of seeking legitimation for the neo-liberal market rationale as in the sales and marketing actor's claim:

Seed companies develop cold feet in terms of putting in more money in developing new genetics [if the government enforces lower prices]....So, in the long run, it is the farmer who will suffer (8).

For these actors, self-sufficiency is viewed as an economic concern which can best be achieved through a macro economic focus on globalised trade. As the Technology Development Lead observes, 'if you look at 2002, India was a net importer of cotton. Now we are an exporter' (4).

The Non-Bt Coalition

The Non-Bt Coalition delegitimizes the means by which the purported concern for farmers and self-sufficiency expressed by the Bt Coalition is being translated into practice. In doing so, they assert an alternative normative perspective as the basis for future development. Here, Benford and Snow's (2000) concepts of 'diagnostic' and 'prognostic' (ibid.) framing are used as a means of giving structure to the 'negative exposing and positive disclosing' (Strydom, 2011: 137) critique which is being conducted by the Non-Bt Coalition.

Diagnostic Counter-framing of the Non-Bt Coalition

The diagnostic counter-framing of the Non-Bt Coalition involves them in identifying the problems of, and attributing blame for, the current situation with regard to the agrarian crisis. Here, the emphasis on the provision of credit and the reduction in costs as the basis for the Congress Party actor's concern for farmers is delegitimized.

The strategy of a focus on credit is, firstly, challenged on the grounds of its viability. Hence, the CSA actor asserts, 'if indebtedness is the problem, credit cannot be the solution' (6). Similarly, the emphasis on costs is counter-framed with a concern for safety. This is clear in the use of deontic modality by the CSA's assertion of his moral commitment to safety as a primary consideration. He argues, '[w]hy do you need it [the technology] first? Second, whether it suits clear situations. And then inform people properly....Apart from all these things, it should

be safe' (6). Despite the fact that cotton oil is widely used for cooking in India, the CSA actor asserts, '[i]t was never tested for human safety. What is this?' (6). He also highlights the animal deaths which remain unresolved, arguing '[i]f the tests are unable to explain the disease, then it should be an emergency' (6). Similarly, the general lack of transparency and regulatory stringency with regard to field trials is asserted in his claim, 'in 2006, we accidentally stepped into a Bt field trial.'

The CPM actor argues, '[i]t [technology] should not subjugate or it should not make us dependant on outside forces. It should not be left to the kindness of those forces' (3). This directly challenges the legitimacy of a dependence on a technology marketed by a US multinational as a means to achieving self-sufficiency. In the CPM actor's discourse, the technology is nominalised in a declarative sentence structure which attributes the technology itself with agency (Fairclough, 1989: 125-126) – here, a potentially malevolent force capable of constricting freedom.

The discourse of freedom is further used to delegitimize the Indian government's alliance with the United States. The CPM actor asserts 'our government is forcing these [Indian research] institutes to have tie-ups with multinational companies [through the Indo-US Knowledge Initiative]. Why should it?' (3). The use of the verb 'forcing' highlights this actor's view that the government is compelling research institutes into an alliance with private businesses with an implied threat to epistemology. The actor's discourse also raises the question of which forces are at work in compelling the government itself to take such a step.

The DDS actor asserts his concern that current agricultural praxis directly threatens food self-sufficiency. He claims, ‘if the trend of cotton – any cotton, Bt or non-Bt – continues like this, within five to six years India will go around the world with a bowl begging for food’ (1). Here, the country of India is nominalised and takes on the persona of a beggar. The rhetorical device seeks to gain resonance through an emotive reference to India’s historic struggle for freedom from poverty.

Prognostic Counter-framing as Articulation of an Alternative World View

The prognostic aspect of counter-framing involves an articulation of proposed solutions. The CPM actor asserts, ‘science and technology should be used for the good of the community and humanity and the environment’ (3). He argues, ‘[i]f a certain technology is only useful to a certain community or to a certain section of the people, then we should make it equitable or we should abandon it’ (3). This concern for equity leads him to argue that India should build alliances with states such as China who are regarded as prioritising equity as a value. He asserts, ‘[w]e can have tie-ups with Chinese agricultural research institutes. Why is it a US initiative only?’ (3).

The CSA actor was directly involved in challenging the composition of an expert committee formed to look into the safety of Bt brinjal. He claims, ‘the chairman of the expert committee was a crop developer himself....We said you are beneficiaries of the process so you cannot test it’ (6). The use of direct speech to highlight the role of this actor in asserting his own values within Indian society indicates his

sense of empowerment as a watchdog of institutional praxis. He asserts the need for greater regulation, arguing '[w]e should have price regulation, we should have a compensation mechanism, [for crop failure], we should also have an increased fine [for illicit trading practices].

The Crops Jangaon actor challenges the Congress Party actor's solution to the problem of high costs, claiming 'they [farmers] should stop using fertilisers and pesticides' (2). He also claims, '[i]f they [farmers] grouped together, their choices would be freer. They could grow non-Bt if they wanted to' (2). This relates to the need for NGOs to co-ordinate demand for non-Bt cotton seeds across a number of villages in order to secure supply.

The DDS actor urges the need for greater intervention by the government in planning agriculture. He claims, '[w]hy should we not give equal importance to the [cultivation of] food grains? For crop planning, the government should take up something like a kanban²⁰² in the villages' (1). That such a move would potentially be opposed on the grounds of being totalitarian indicates the tension which exists between discourses of development and democracy at state level.

A summary of the critical discourse analysis of legitimisation through moral evaluation is provided in Appendix 8.3 (p. 406).

²⁰² Kanban is a Japanese system aimed at identifying areas in a production process where bottlenecks are occurring, and where greater management attention should be focussed. This actor is suggesting that agricultural praxis could be improved through state planning aimed at ensuring greater balance in crop cultivation.

RATIONALISATION

In legitimation through rationalisation, Van Leeuwen (2008: 113) distinguishes between ‘instrumental rationality’ which legitimates practices by ‘reference to their goals, uses and effects’ (ibid.), and ‘theoretical rationality’ which legitimates practices by ‘reference to a natural order of things.’ For the purposes of this thesis, both aspects are explored together in order to analyse the way in which ideological assumptions related to the concept of development provide the basis for the struggle for legitimation through rationalisation with regard to Bt cotton.

Bt Coalition

The Congress Party actor’s over-arching concern for Indian development is that agriculture should be profitable. This is clear from his statement, ‘farming...has to be a profitable enterprise, like any other business’ (5). This assertion indicates the ‘marketization of language’ (Chouliaraki, 1999: 83), and the fusion of a neo-liberal world view with a development discourse. The use of deontic modality signals the purported obligation of such a form of development.

Within this, the Congress Party actor is categorical in his support for Bt technology. He claims, ‘I don’t have any limitations [with regard to Bt technology], but if it is a food crop generally people may have a lot of apprehensions. We have to sort those out’ (5). Here, his use of the ‘I’ position separates him from the ‘people’ with ‘apprehensions’. The perceived obligation ‘to sort out’ apprehensions as indicated

by the deontic modality ('have to') indicates his assessment of the centrality of Bt technology within his perspective of development.

The obligation imposed by the rationalisation of a development model in which science and technology are central is clear from the deontic modality in his assertion, 'science and technology should and will help society and farmers' (5). This universalised view of 'development' is legitimated by virtue of its very inevitability, as highlighted in the assertion, '[g]lobalisation, because it has to happen, is happening' (5).

The ANGRAU actor is clear in his factual assertion, 'I support Bt transgenic technology as it has reduced the need for pesticides' (7).²⁰³ The centrality of scientific knowledge for this actor is evident in his claim that 'things are logical which are scientifically decided' (7). Despite this assertion of the logic of science, however, this actor's 'rationalisation' of Bt technology often tends towards irrationality. This is evident in statements such as, '[t]echnically Bt [technology] is safe. But if mutation happens, no-one can foretell' (7), and '[s]o far, it [Bt technology] is not killing us. Tomorrow if it kills us, let us find out' (7).

His faith in science is, nonetheless, asserted through 'factual', categorical statements such as, '[t]hese are the facts, you decide' (7), and 'it [Bt technology] is not toxic to humans or to animals' (7). This actor again makes use of metaphor to

²⁰³ This is despite this actor's preference that farmers should be self-sufficient in inputs. This indicates that Bt technology is only partially legitimated by this actor due to its contribution to the reduction in pesticide use within the existing development paradigm.

highlight the centrality of risk-taking in modern society, asserting '[a]ir travel is risky, but people still fly. They are intelligent so they prioritise' (7). There is no suggestion that intelligent people can be manipulated by those who seek legitimisation of their power as a primary concern.

Monsanto actors use categorical statements to support their unambiguous assertions of the benefits of Bt cotton in claims such as, 'farmers' income has...more than doubled [as a result of Bt technology]' (8), '[e]very farmer benefits' (8), '[t]he technology is scale-neutral' (8). It is also clear that this commitment to Bt cotton is embedded within a particular rationalisation of human development. This is highlighted in the Sales and Marketing actor's assertion:

most of this money made by the farmers [through Bt cotton cultivation] has been used...[for] buying more land, putting...land under irrigation, buying more [agricultural] implements....Farmers have...either married their children [relating to the payment of dowry] or paid for their school education or maybe started another venture....Or buil[t] a...concrete house (8).

The knowledge construction which legitimates Bt technology is clear in the Lead Scientist's assertion that, '[g]enes to a scientist are just DNA' (8). This actor also recognises, however, that this view lacks more widespread legitimisation in his assertion, '[t]here are people in this world who have difficulty with an animal gene in a plant product. So we [Monsanto] have pledged not to use animal genes in any of our plant products' (8).

The awareness of their delegitimation by sections of the public leads to an emphasis on the need for scientific education as a means of enhancing the legitimisation of

their world view. This is clear from the discourse of the female Regulatory Affairs

Lead who claims:

People have realised that public education is going to be important. There's the Indian Council of Agricultural Research and the state agricultural universities where we try very hard to help with all kinds of symposium workshops. Many of our technologies we have applied through government research institutes (8).

The idea that the form of epistemology associated with biotechnology has been rationalised as central to the future development of Indian society is highlighted in her claim, '[t]he amount of research that is going on [in India] in the development of biotech crops is just mind-boggling. Six hundred million dollars (8).' The amount signals not only the government's commitment to biotechnology as central to Indian 'development'; it also indicates its commodification, here notably calculated in dollars.

Non-Bt Coalition

The Non-Bt Coalition assert their counter-framing of the Bt Coalition in order to delegitimize not only Bt cotton, but also the wider development model in which it is embedded.

Diagnostic Counter-framing of the Development Rationale

The CPM actor challenges the farming praxis which the neo-liberal development model promotes. He questions, '[w]hy should you cultivate cotton every year.... You can change. It is not the fault of the technology; it's the fault of the whole system' (3). He also challenges the epistemic authority asserted by Monsanto and

ANGRAU scientists, claiming '[a]ll the knowledge gained by the farmers is equally important as science and technology' (3).

The implicit legitimization of capitalism within classical Marxism as a necessary step in the teleological progression to socialism is evident in the discourse of the CPM actor. He argues:

it [the Green Revolution] transformed the farmers' community into a modern community, a modern consumer....Now if you go to any village you can see the motorcycles, cars, TVs, even computers. Everybody will have a cell phone and everybody is sending their children to schools, English medium....These are the good things (3).

Here, the farmer as a consumer is linked unproblematically to the farmer as 'modern,' a 'transformation' which is categorically assessed by this actor as a social good.

The CPM actor also, however, delegitimizes the provision of credit advocated by his Congress Party counterpart, claiming 'a major problem is it [the Green Revolution] made the farmers dependant on credit institutions in a big way....That's why the suicides are taking place' (3) and '[t]hese small farmers who are forced to take credit, I think they are mainly the losers, not beneficiaries' (3). Nonetheless, his commitment to Marxism precludes him from making the link between the farmers' compulsion to seek credit, and the encouragement of a consumer society as part of a development model which he himself partially legitimates.

The counter-framing adopted by NGOs picks up on this contradiction to launch a far more damning critique of the rationalisation of the neo-liberal development model. The CSA actor questions,

You want to fix farmers into some boxes so you are eligible for a ten foot by ten foot house,²⁰⁴ you are eligible for thirty-five kilos of rice²⁰⁵ and you are eligible for one hundred days employment.²⁰⁶ That's it....You cannot aspire for anything else? And if you are faced with a problem, no-one is responsible. What is this? (6).

Here, the 'you' position is used to gain solidarity for a counter-framing which challenges the restriction of freedom ('you want to fix farmers') and the use of patronage to gain political legitimacy for a development model which, this actor argues, constrains human flourishing and homogenises human needs. This directly undermines the Bt Coalition's rationalisation of development through asserting its reductive nature. It also challenges the meaning of 'development' itself.

The CSA actor continually emphasises the need for responsibility, arguing '[w]hen there are two lakh²⁰⁷ farmer suicides in this country, no-one takes responsibility, no-one feels responsible' (6). The two clauses at the end of this assertion highlight the distinction between responsibility as a procedural concern and as a moral one, both of which are currently lacking in Indian society in this actor's view. He challenges the linking of the technology with higher yields, arguing 'the yield increase is not because of Bt cotton. It is because of increased irrigation facilities [and]...hybrids' (6). He also argues it is lower than the company has claimed.

²⁰⁴ A reference to the stipulated size of houses within the Indiramma Housing Scheme.

²⁰⁵ This relates to the food subsidies associated with the Public Distribution System.

²⁰⁶ This refers to the National Rural Employment Guarantee Scheme (NREGS).

²⁰⁷ Two hundred thousand.

The DDS actor asserts that Bt cotton is contributing to farmer indebtedness, claiming '[i]t is not because of Bt cotton they [farmers] are committing suicide. The only thing is the quantity of the loan has increased' (1). Similarly, the CSA actor challenges the centrality of Bt cotton as part of the development model, arguing '[i]f Bt cotton can solve all the problems, why do cotton farmers in the US need so many subsidies?'(6).

The NGOs also problematise the 'science' of the technology. The CSA actor argues that 'gene transfer is imprecise' (6) and that there is no 'testing for other changes happening in the plant' (6). Likewise, the DDS actor argues that the plant itself is toxic. He claims, '[e]verybody is saying there are types of cancer because of the toxins and pesticides' (1). The 'everybody' is unspecified and the statement seeks to mobilise others through appealing to the emotion of fear (Reyes, 2011: 790).

Prognostic Counter-framing as an Alternative View of Development

As part of the counter-framing involved in the delegitimation of the Bt Coalition's rationalisation of the current development model, the Non-Bt Coalition frame solutions in which an alternative model for development is articulated. The CPM actor argues against the commodification of knowledge which Bt technology exemplifies, claiming 'if you have joint agreements with other research institutes where they share their knowledge and we share our knowledge with them, they are not going to demand any royalties or any proprietary rights' (3).

The CPM actor asserts the requirement for a longer-term focus in development planning. He claims, ‘you [need to] realise the problem that may come in twenty years and take remedial action in the present. This is one type of visionary development’ (3). He also urges that technologies need to be tested in the environmental conditions in which they will be adopted, arguing ‘[y]ou have to research seed suitable for different soils and environmental conditions’ (3). The CSA actor asserts the requirement for animal testing, claiming ‘[n]one of the tests conclusively say it [Bt technology] is safe for animals’ (6).

The CSA actor urges the need for greater attention to power relations in the communication regarding new technologies. He argues,

why do you need it [a given technology] first....Second, [does] it suit clear situations? Then inform people properly about the whole dynamics of the technology, who has the control and how serious is the control? What would be its impact? (6).

The NGOs also challenge the rationality of commercial farming through emphasising collective farming measures – notably, through the co-ordination of the supply of non-Bt seeds for farmers across villages. They also assert NPM cultivation as a more viable alternative to Bt cotton. The DDS actor claims, ‘[w]e are giving them [farmers] an alternative with NPM [methods]’ and asserts, ‘our objective is to create awareness [of NPM practices] in the villages’ (1).

The influence of the Gandhian ideology on the discourse of NGOs is clear from their assertion of village self-sufficiency as central to India's development. The CSA actor claims,

[w]e established a cotton processing unit where cotton can be spun in the village. The entire value chain of ginning, spinning, weaving, from seed production to cloth, will be done in the village itself (6).

The strong delegitimation of globalisation and multinationals within this approach is clear in the CSA actor's further assertion, '[i]nstead of so many big companies, we'll have villages' (6).

A summary of the discourse analysis of legitimisation through rationalisation is presented in Appendix 8.4 (p. 407).

MYTHOPOESIS

According to Van Leeuwen (2007: 91), the category of legitimisation which he describes as 'mythopoesis' refers to 'legitimation conveyed through narratives whose outcomes reward legitimate actions and punish non-legitimate actions.' This thesis argues that interpretations of the democratic ideal serve as culture-specific narratives which relate to normative perspectives on the way in which power should legitimately be exercised, and democratic praxis defined, within a given society.

These narratives will now be explored through the diagnostic and prognostic framing (Benford and Snow, 2000: 615-616) of the actors themselves within their Habermasian core-periphery model positioning. This examines their normative

problematization of, and preferences for, the way in which power should be exercised as part of democratic praxis.

The Bt Coalition

The Congress Party actor is clearly concerned at the increasing mobilisation of Indian civil society which he fears is contributing to a general state of lawlessness and disorder. He argues, 'we have to respect society, we have to respect civic responsibilities, we have to be more rule-abiding....We need to improve upon that' (5). The successive deontic modality of these statements suggests a series of normative evaluations as to how democratic society should operate.

The Congress Party actor further claims, '[p]eople complain we have excess democracy' (5). While the 'people' who complain of such 'excess democracy' are left unspecified, it is clear that this actor has some sympathy with their view. He also recognises a need to negotiate with NGOs in their ongoing assertion of risk with regard to Bt cotton. He claims, 'I do hear about some NGOs still talking [about the risks of Bt cotton]...but we have to have some sort of compromise' (5).

In the struggle to legitimate his own position as a regulator and decision-maker, the ANGRAU actor's discourse highlights a much stronger preference for closure than that expressed by the Congress Party actor. He emphasises his decision-making power in the inner-periphery in a series of categorical statements, '[w]e [regulators] are policy-makers. We decide. Farmers need us to decide' (7) and claims '[w]here

confidentiality is required, we cannot be democratic' (7). He asserts that his legitimacy as a decision-maker is a direct result of his formal education given that he claims '[t]he average illiterate may not worry about the environment or future generations' (7). This actor's preference for closure is asserted in his view that not all aspects of government activity can be made public. This includes the location of field trials which, he argues, is a matter for 'the government and private companies' (7). In a categorical statement of truth, he also asserts, 'regulation is the most democratic way' (7).

This actor's views on NGOs are divided. He, firstly, recognises the value of their grassroots connections, claiming 'NGOs are nearer to the farmers so we take their help for [agricultural] extension' (7). However, with regard to his role as a regulator, he also clearly views NGOs as unnecessarily interfering. This is evident in his claim, '[t]here was a hue and cry that companies were using data from their own labs. Although these labs are authorised by the government, the government has asked for independent tests to satisfy NGOs' (7).

As a multinational located on the periphery of the Habermasian model, Monsanto is, despite its economic power, legally obliged to abide by the decisions of the Andhra Pradesh government. In the view of the actors in this study, however, the state government used its power illegitimately in order to force the company to reduce Bt seed prices. The Sales and Marketing actor claims that this was 'a very arbitrary decision by some of the stakeholders, very political' (8).

The use of the phrase ‘very political’ is strongly negative, and implies that the government’s responsiveness to the demands of civil society is associated with a populism which renders its decisions unpredictable and illogical. These actors argue that the legitimacy of the state should instead be secured through policies which incentivise private research in scientific innovation. This is asserted in his claim, ‘[g]overnment can always, through policies, help the development of new technologies’ (4).

Despite their assertions of openness, the discourse of the Monsanto actors indicates a strong degree of closure. This is clear from statements such as, ‘[a]s a company, we are willing to answer questions scientifically’ (4). Their dismissal of NGOs is evident from one actor’s claim, ‘[w]e have people who are there to answer their [NGO’s] questions [a Public Affairs Department]’ (4).

Non-Bt Coalition

Actors in the Non-Bt Coalition problematise the interpretations of democracy asserted by the Bt Coalition through asserting the illegitimacy of the exercise of power with which their framing of democracy is associated. Through the emphasis on social and epistemic justice in the counter-framing of the Non-Bt Coalition, these actors seek to define a more legitimate exercise of power in democratic praxis.

Diagnostic Counter-framing of Democratic Praxis

The CPM actor claims, 'because there are inequalities in society, these are being imposed on democracy' (3). He also recognises, however, that the power of the CPM to organise mass mobilisations secures the party's ability to influence policy making. He claims, '[o]ur grassroots mobilisation is very strong. And because of that we are able to influence many decisions of the government and institutions' (3). He asserts the pressure which the CPM exerted on the government to force Monsanto to reduce the price of seeds. He claims, 'our experience reducing the price of the cotton seed...[was] because of the pressure of the mass movement on the state government, and the state government's interest in providing seeds at an affordable price' (3).

The increased politicisation of civil society is highlighted as the primary basis for the legitimisation of democracy by the CPM actor given the increased opportunities for more inclusive deliberation which such politicisation provides. He claims, '[t]here are public hearings. People are realising the importance of public hearings....At times, government is forced to return to the table' (3). He notes the role of NGOs in this regard, arguing '[s]ome of the mass organisations and NGOs hold their own public hearings in contrast to the officially secret government hearings. In these public hearings, many people are participating and that contrast is being shown in the media' (3).²⁰⁸ In a series of categorical statements, he argues, 'NGOs raise crucial questions. They raise public awareness, they bring important questions to the notice of the public' (3).

²⁰⁸ This relates to the citizens juries referred to by Scoones (2005: 325).

Decision-making in the core is delegitimated by NGOs on the grounds that it lacks transparency. The CSA actor claims, '[t]here should be a transparent process of decision-making' (6). He also asserts the need for responsibility in his claim, '[i]f I have a problem with your product, you should be responsible' (6). Similarly, he problematises the reduction of alternatives through the absence of non-Bt seeds as a negation of democratic rights, claiming 'I should have a right to say no' (6).

Despite these concerns, however, NGOs do not regard the core as completely closed to the periphery. Like the CPM actor, the DDS actor notes the role of the core in supporting the work of NGOs in seeking the price reduction of Bt cotton seeds. Both the DDS and Crops Jangam actors also emphasise the visit of Jairam Ramesh to Andhra Pradesh. The DDS actor asserts, '[h]e [Jairam Ramesh] was in Hyderabad collecting peoples' opinions' (1). This actor uses direct speech to highlight an excerpt of his conversation with the Minister. He claims, '[w]e told him, sir, it is not that we are against better production. What we are worried about is that you eliminate the toxin' (1).

Prognostic Counter-framing of an Alternative View of Democratic Praxis

In terms of their framing of solutions to the problems associated with the Indian democratic process, the CPM actor asserts, '[i]f you want democracy to work, you have to eliminate inequity in society, or at least control it through the democratic process' (3). He, therefore, supports aspects such as proportional representation and more extensive reservations which seek to minimise the impact of the inequity

of Indian society on the political process. He also supports widespread inclusion in decision-making, arguing ‘if the government and the peoples’ representatives want to take advantage of Bt technology, one of the important ways it should be done is involvement of the people.’ This directly challenges the Monsanto and ANGRAU actors’ desire for closure.

The NGO actors all assert their commitment to the cause of promoting an alternative world view within Indian society. The Crops Jangaon actor claims, ‘[w]e [NGOs] will convince the farmers...the agricultural department and the political leaders also. We want to show the government our field experiences and case studies’ (2). The DDS actor asserts, ‘[w]e are definitely showing them [the government]. They are not responding, but they are conscious of it’ (1).

The assertion of the legitimization of the world view of NGOs in wider society is asserted by the CSA actor who argues, ‘[t]here are movements building up across the country. That’s what stopped Bt bringal’ (6). The legitimization of the federal state by NGOs as the relevant core for political decision-making is clear in the CSA actor’s assertion, ‘[t]here cannot be a uniform policy at the national level. It should be localised. Every state should be in a position to decide’ (6).

A summary of these views can be found as Appendix 8.5 (p. 408). An overall summary of the discourse analysis presented in this chapter is provided in Appendix 8.6 (p. 409). In conclusion, this chapter has highlighted the way in which the

debate regarding Bt cotton represents a power struggle which is at the core of attempts to define development itself. This centres on the way in which knowledge should be constructed, and power legitimated and institutionalised as part of democratic praxis, as a concern for the ongoing constitution of society.

Monsanto and ANGRAU actors valorise scientific knowledge, and Monsanto actors urge globalised trade, as the basis for reinforcing their own epistemic and economic positions of power. However, scientists in the Non-Bt Coalition argue instead that the basis of knowledge construction in risk definition needs to incorporate the experiential knowledge of cultivators, and to be informed by values associated with equity and the localised negotiation of risk. These competing world views must be carefully negotiated by the Congress Party actor as a concern not only for the legitimacy of his own power, but also for the legitimacy of the state itself.

Chapter Nine

DISCUSSION

Power Relations and the Legitimation of Risk and Democracy

9.1 Introduction

In this chapter, the micro and meso level analysis undertaken in the preceding three chapters is discussed. This highlights that, within the struggle to secure the legitimation of risk and democracy with regard to Bt cotton, the normative concern with the exercise of power is central.

The relative performance of Bt cotton cultivation when compared with NPM and organic methods is explored in terms of the differentiation in the material experience of risk arising from power relations. The chapter then examines the influence of micro level power structures on the legitimation of the different constructions of risk in the villages. The variations in power arrangements arising from differences in the village compositions are found to contribute significantly to the way in which agrarian risk is negotiated and in the villages. The activity of NGOs in seeking to mediate between the micro and meso levels in asserting the risk discourse of cultivators is also explored.

Finally, the chapter examines the impact of power relations on the attempts to define risk as a meso level concern of state politics. This pertains to struggles regarding the way in which knowledge concerning risk should be constructed, and

democratic praxis institutionalised, as part of the concern for social and epistemic justice within the definition of the future development of society.

9.2 *Differentiated Risk Exposure: A Comparative Analysis of Bt Cotton*

The analysis in Chapter Six highlights that Bt cotton cultivation is a high-cost strategy for risk negotiation when compared with organic and NPM methods. The average costs associated with Bt cotton cultivation across the coalitions (N = 12) were Rs 18,854 per acre.²⁰⁹ These costs were higher than the average of Rs 16,975 per acre cited by Dev and Rao (2007: 2) in their 2004-05 study in Andhra Pradesh.²¹⁰ This tends to support the assertion by cultivators that costs were particularly high for the 2010/2011 season due to the extra labour required for weeding as a result of the rains. The higher costs may also indicate support for the widespread view that cultivation costs in Andhra Pradesh are rising (Sridhar, 2006; Galab et al., 2009: 177; Reddy, 2010b: 243), though this would require further longitudinal research.

The costs associated with Bt cotton cultivation were significantly higher than those associated with alternative methods. As Table 6.6 (p. 185) shows, the average costs for NPM farmers in both coalitions were Rs 12,275 per acre. Organic farming was

²⁰⁹ All figures cited in the discussion relate to a mean of the averages for each method taken from the relevant tables in Chapter Six.

²¹⁰ This involved a random sample of six hundred and twenty-three farmers, seventy per cent of whom were Bt cotton cultivators, and thirty per cent non-Bt cultivators. The study covered four districts of Andhra Pradesh, including Warangal. It should be borne in mind that this cost comparison has not been adjusted for inflation. Between 2002 and 2005, inflation in Andhra Pradesh was particularly low at 2.2 per cent. This was compared to average inflation rates in the state of between seven to nine per cent. Available at: http://www.aponline.gov.in/Appendix/HumanDevelopmentReport2007/APHDR_2007_Chapter4.pdf Accessed on 14/12/2013.

the lowest cost method with an average cost of just Rs 9,800 per acre. These variances were largely due to differences in the input usage associated with each method.

As Table 6.8 (p. 188) highlights, Bt cotton cultivation entailed an average spend of Rs 3,500 per acre for pesticides, and Rs 2,400 per acre for fertilisers. These costs accounted for almost a third of the total cultivation costs of Bt cotton farmers. NPM cultivators did not incur pesticide costs, while organic farmers incurred neither pesticide nor fertiliser costs. NPM cultivators also used fertilisers only half as often as Bt cotton farmers, so minimising their input spend, as well as limiting the potential for soil infertility.

Table 6.8 (p. 188) highlights that Bt cotton farmers used pesticides an average of 6.5 times in the 2010/2011 season. All Bt cotton farmers asserted this was a significant decrease on the fifteen to twenty sprays which they claimed had been necessary with non-Bt cotton. This reduction supports the finding by Stone (2011: 391) which showed that pesticide use had decreased by fifty-four per cent in Warangal between 2003 and 2007 as a result of Bt technology, from an average of ten to five sprays per season (ibid.: Table 3).

The analysis also highlights that pesticide use is again increasing due to the prevalence of sucking pests²¹¹ and bollworm resistance. This is also supported by Stone (2011: 391) who argues that the introduction of Bt cotton in Warangal has

²¹¹ Sucking pests include thrips, whiteflies, aphids, mites and bugs.

been associated with a change in insect ecology. The analysis of the discourse of cultivators in Chapter Seven highlights that the increasing need for pesticides is weakening the basis for the technology's legitimization, as is the reduced capacity of cultivators to absorb these increasing costs due to declining yields.

It is noted that all farmers reported significant crop loss as a result of the widespread flooding which occurred in the 2010/2011 season. However, as Chapter Four highlighted, erratic monsoons are a characteristic feature of the Indian agrarian crisis. Indeed, Glover (2010: 482) argues that 'the strenuous effort to rule out the effect of 'externalities'' in seeking to 'scientifically' ascertain the performance of Bt cotton represents a serious methodological flaw in many studies given the 'importance of [these] contextual factors in a complex socio-technical system' (ibid.).

The analysis highlights that in the catastrophic 2010/2011 season Bt cotton did not offer any particular yield advantage when compared to the alternative methods. This was despite the higher costs which were incurred in its cultivation. The reasonable performance of the alternative methods within a catastrophic year provides some support for the view of Ramasundaram et al. (2007, as cited by Glover, 2010: 494) that non-Bt cotton hybrids 'perform...better in rainfed conditions and so produce...a more dependable, albeit less spectacular, yield.' As Table 6.12 (p. 194) highlights, average yields were higher for NPM and organic

farmers in Risk Coalition One, while Risk Coalition Two cultivators for all methods obtained an average yield of approximately four quintals per acre.²¹²

While it is clear from the experience of individual participants (Appendices 6.14 to 6.16, pp. 386-388) that yields were variable for all methods, the analysis also indicates that the variance was highest among Bt cotton farmers in the more vulnerable Risk Coalition Two. The standard deviation for Bt cotton cultivators in this coalition across both Bantala and Nandanapuram (N = 7) was eight quintals (where yields ranged from zero to eight quintals). This compared with a variance of two quintals (N = 5) for Risk Coalition One Bt cotton farmers in the two villages (where yields ranged from 4.5 to 6.5 quintals), and 3.5 quintals (N = 6) for Risk Coalition Two organic farmers in Orgampalle (with yields ranging from 2.5 to six quintals).²¹³

The study, therefore, appears to suggest that the yields associated with Bt cotton cultivation are more variable for the vulnerable Risk Coalition Two participants than they are for Risk Coalition One Bt cotton cultivators or for organic cultivators in Risk Coalition Two. However, this would require further comparative research with a larger sample.

The analysis provides some evidence of the scale-neutrality of Bt technology which is asserted by proponents (Subramaniam and Qaim, 2009: 256; Choudhary and

²¹² The average for Bantala is just below four quintals given Ashna's crop loss.

²¹³ The study involved only one NPM farmer in both Risk Coalitions One and Two, and one organic farmer in Risk Coalition One, so variances within these coalitions are not available for these methods.

Gaur, 2010: 20). Rashi, the female high-caste (Brahmin) from Nandanapuram's Risk Coalition Two, secured a yield of eight quintals per acre from a holding of just two (dry) acres. This was the highest yield obtained by a Bt cotton cultivator in the current research. The next highest yield for a Bt cotton farmer was that obtained by Pavan, the high-caste (Vaishya) Risk Coalition One participant in Bantala, who secured 6.5 quintals per acre from twenty acres of irrigated land (Appendices 6.14 to 6.15, pp, 386-387).

A focus on this potential for scale neutrality with regard to Bt technology, however, would fail to recognise the risks associated with the higher cultivation costs, particularly for Risk Coalition Two participants. Ashna, the female Scheduled Caste (Madiga) participant in Bantala's Risk Coalition Two, lost her entire crop on her two acres. It could be argued that, apart from the seed costs associated with Bt cotton, Ashna's total loss of Rs 19,600 (Appendix 6.14, p. 386), would have been incurred regardless of method, given that it arose as a result of labour costs, and oxen and tractor hire for two acres (Appendix 6.11, p. 383).

The same is not true, however, of Ambu, the Scheduled Caste (Madiga) widow in Nandanapuram's Risk Coalition Two. Ambu lost her crop on two acres and managed to obtain three quintals from her third. This was after an expenditure of almost Rs 21,000 (Rs 7,000 per acre) on pesticides and fertilisers, leading to a total loss of Rs 49,000 (see Appendix 6.12, p. 384 and 6.15, p. 387). Thus, despite

obtaining a small harvest, Ambu's risk exposure was significantly greater than Ashna's due to her additional spend on inputs.

The finding that both Bt cultivators who obtained the highest yields were high-caste participants, while those who obtained the lowest were Scheduled Caste (Madiga) females may also suggest that there is differentiation in the land quality (soil fertility, proximity to irrigation, gradient, etc.) associated with the participants.²¹⁴ This would require closer analysis in conjunction with an agricultural scientist in order to ascertain the way in which land quality itself may be differentiated in line with power structures in the villages, and so contribute to a differentiated exposure to risk. Such differentials would, of course, be relevant regardless of method, but would be particularly pertinent in the case of Bt cotton given the significantly higher costs with which it is associated, and the exacerbated exposure to risk in the event of crop loss.

The mutual dependence between Risk Coalitions Two and Three in their risk negotiation is highlighted in relation to labour costs. While Subramaniam and Qaim (2010: 295) claim that Bt cotton leads to higher returns for labour, this fails to acknowledge the impact of increased wage rates on vulnerable cultivators. This is also highlighted by Frankel (2005: 577) who notes the 'conflicting interests

²¹⁴ Participants used a number of different Bt seed varieties: Rashi used Rocket and Niraja varieties, Ashna cultivated Brahma and Tulasi, Ambu adopted Brahma, Niraja and Marvel, while Pavan used a large range which included Brahma, Rocket, Niraja, Mallika, Agit and Jackpot. All were farming on black soil which is considered ideal for cotton, and Pavan and Ambu had access to irrigation.

between agricultural laborers pressing for higher wages and owners of small and marginal holdings who [are] not able to absorb such increases.’

The analysis highlights that, while higher wage rates served to somewhat alleviate the risk of agricultural wage labourers in Risk Coalition Three, they also significantly exacerbated the risks of marginal and small cultivators in Risk Coalition Two. Thus, Ashna, the Bt cotton cultivator in Bantala’s Risk Coalition Two, was obliged to take a loan for labour charges, as was Nishok, the NPM cultivator in Risk Coalition Two in Nandanapuram. Meanwhile, Natesh, the Risk Coalition Two Bt cotton cultivator in Bantala, was obliged to sell his oxen in order to cover his labour costs.

The heightened exposure to risk associated with Bt cotton cultivation is evident from the finding that almost half of the Bt cotton cultivators in the current study (five out of twelve) made a loss. Despite the catastrophic season, however, not a single NPM or organic cultivator made a loss due to their significantly lower cultivation costs.

It could be argued that these findings relate to one poor season and so cannot be generalised. The analysis of the significant debt exposure of Bt cotton cultivators in both Bantala and Nandanapuram highlights, however, that the debt levels of most Bt cotton farmers have been accumulating over a number of years. In the current study, the average debt level for Bt cotton farmers across the two villages (N = 12)

is Rs 209,500. This is higher than the average loan of Rs 127,300 cited by Reddy (2010b: 257) in his study on farmer suicides in four districts in Andhra Pradesh, including Warangal.²¹⁵

This suggests that Bt cotton farmers have been failing to off-set their expenditure with incomes from cultivation for some time. The effect of this accumulated risk exposure is asserted by Rao and Suri (2006: 1552) who argue that '[i]t is not the crop loss in one year but recurrent losses that ruin the economic conditions of farmers.' While the analysis of the reasons for indebtedness (Appendices 6.17 to 6.19, pp. 389-391) suggests that the additional cultivation costs associated with Bt cotton are not the only reasons for debt, the significantly higher debt levels of Bt cotton cultivators suggest that the additional risk-taking associated with this form of cultivation praxis exacerbates their exposure to the risks of indebtedness.

Herring (2008b: 146) observes that 'it is hard to imagine farmers spreading a technology that is literally killing them.' This thesis asserts, however, that such a simplistic view fails to take account of the trade offs associated with risk-taking in an agrarian crisis, the impact of wider ideological influences, and the way in which the ecological consequences and debt exposure associated with such risk-taking become more acute over time. It also neglects the impact of power structures not

²¹⁵ This involved an analysis conducted in 2002-03 on twenty-two households (three from Warangal) where cultivators had taken their lives. Farmers in the study cultivated cotton, chillies and tomatoes as commercial crops (Reddy, 2010: 248). This debt level was against an average annual return per cultivator household in Andhra Pradesh of approximately Rs 39,300 in 2002-03 (derived from monthly income figures provided by Galab et al., 2009: 187).

only on the way in which the risks of the technology are differentiated which has been explored, but also on its ideological legitimation as part of risk construction which will now be examined.

9.3 *Village Power Arrangements in the Differentiation and Construction of Risk*

Wade (1994: 1) argues that ‘variations in scarcity and risk in the vital agricultural sphere explain much of the variation to be found in village organization.’ The analysis of the three villages suggests, however, that variations in the villages are not due to the variation of risk *per se*, but to differences associated with power arrangements arising from the village compositions (see Appendices 6.1 to 6.3, pp. 373-375). The analysis highlights that the representation of castes and land-holding patterns in the villages give rise to the ‘social risk positions’ (Beck, 1992: 23) which are central to the way in which the meso level ideological struggle is mediated in risk constructions in the villages.

The importance of micro level power relations in the legitimation of wider ideologies is emphasised by Pattenden (2005: 1975) who argues that ‘[t]otalising views of neo-liberal globalisation and its opponents tend to overlook how processes of ‘globalisation’ and ‘anti-globalisation’ are refracted through specific social, political and material relations.’ This thesis asserts that this refraction of wider ideologies in the construction of risk in the villages is associated with varying degrees of legitimacy with regard to the way in which power is exercised and this will now be explored.

Bantala

The village of Bantala is characterised by its highly concentrated power structure. This is due to the presence of a small number of high-caste land owners, such as Pavan, and a powerful dominant caste which owns fifty-one per cent of the village land (Table 6.1, p. 167). Five per cent of the population is landless. Bt cotton is central to risk negotiation in the village, with sixty-one per cent of village land allocated to the crop.

The concentration of power in Bantala coincides with a high degree of risk differentiation. The ownership of tractors and oxen, as well as access to irrigation, are restricted to Risk Coalition One participants. Sudhakar, the Reddy cultivator in Risk Coalition One, is the only Bantala participant to own a tractor. Likewise, the fifty per cent of participants who own oxen and have irrigation access all belong to Risk Coalition One (Appendix 6.8, p. 380). (As noted, while Natesh from Risk Coalition Two owned oxen at the beginning of the 2010/2011 season, he was obliged to sell these to pay his labour costs). The prevalence of land leasing among Risk Coalition One participants also suggests the greater legitimization of risk-taking among this coalition as part of cultivation praxis.

Labour costs are kept to a minimum, given the low degree of caste mobilisation among the Scheduled Castes from which the majority of agricultural labour is derived, and their suppression by a dominant caste. While the minimal labour rates paid to agricultural labourers in the village (one hundred rupees) are of benefit to

Risk Coalition One and Two cultivators, they serve to heighten the risk exposure of Risk Coalition Three participants, many of whom rely on daily wage labour for their survival.

Pavan, the high-caste land-holder of twenty acres, was one of the first cultivators to introduce Bt cotton to the village (in 2002). This highlights the ‘prestige bias’ identified by Stone (2007: 71) where the adoption of Bt technology by influential farmers was unreflexively emulated by other cultivators. There is also evidence of the ‘conformist bias’ which Stone (2007: 71) notes, particularly among low caste cultivators in Risk Coalition Two. Thus, Ashna in Risk Coalition Two claims, ‘[e]verybody is growing Bt, so I am also growing it’ (13)

The study of Bantala highlights the diffusion of the neo-liberal ideology in the village. Here, the regular use of English words such as ‘money’ and ‘market rate’ by participants suggests evidence of the ‘economic hegemonization’ of the Bt cotton discourse identified by Yamaguchi and Harris (2004). This is notably associated with the English language. While all participants assert the improved access to food, housing, roads and schools associated with the current development model, their discourse is also marked by significant uncertainty with regard to their adoption of Bt cotton. This relates to their concerns for animal deaths, declining yields, soil degradation, and escalating costs.

The differentiation in risk exposure arising from the ideological construction of risk supported by power structures in Bantala is clear from the experience of the 2010/2011 season. Here, Risk Coalition One participants made an average profit, while those in Risk Coalition Two made an average loss (Table 6.14, p. 197). Similarly, while all participants asserted the increased wealth to which Bt cotton has contributed, the average debt in the village was the highest in the current study, particularly for the more ‘enterprising’ Risk Coalition One participants.

Nandanapuram

The power structure in Nandanapuram is highly fragmented, and no one caste is dominant. While the Scheduled Caste Madigas are numerically in the majority, and own the highest proportion of village land (thirty-seven per cent), they are not regarded as dominant due to their low caste status and reliance on others for wage labour. Land-holding is also dispersed among a number of other castes (see Appendix 6.2, p. 374), with the Backward Caste Gowdas being the next most powerful *jati*, owning twenty-six per cent of the land. Again, cotton cultivation is central to risk negotiation in the village, with sixty-three per cent of village land allocated to the crop, ninety per cent of which is Bt cotton.

Nandanapuram is associated with a more evenly distributed, if generally heightened, exposure to risk. Only thirty-seven per cent of participants own oxen. These include two participants from Risk Coalition One and one, Ambu, from Risk Coalition Two. Tractor ownership is again restricted to one Reddy participant

(Nikhil) in Risk Coalition One. The low asset ownership contributes to the generally high costs of cultivation given that these must be hired at additional expense. As in Bantala, fifty per cent of participants in Nandanapuram have access to irrigation. However, this access is not restricted to Risk Coalition One participants. Instead, one participant from Risk Coalition One (Nikhil) and two from Risk Coalition Two (Rajiv and Ambu) have their own borewells (see Appendix 6.9, p. 381).

As Table 6.9 (p. 189) indicates, Bt cotton farmers in Nandanapuram have the highest labour costs in the current study, with some participants claiming they had paid up to one hundred and fifty rupees for daily wages (for females). These high wage rates were due to the relative bargaining power of the Scheduled Caste Madiga *jati* in the village from which the bulk of the agricultural labour is drawn, as well as the high degree of landlessness (ten per cent) in the village (Table 6.1, p. 167). While the higher labour rates in Nandanapuram serve to somewhat alleviate the risk exposure of Risk Coalition Three participants, they also significantly exacerbate the risk exposure of cultivators.²¹⁶

Land lease is rare, with Rajiv in Risk Coalition Two being the only participant in Nandanapuram to lease a small area (two acres) of land (Appendix 6.19, p. 391).

While this could indicate that participants in this village are more risk-averse than

²¹⁶ Varshney (1998: 131) and Robinson (1988: 125) note that many marginal and small farmers supplement their income by working as wage labour in the fields of others. However, where this occurred in the current study, it was associated with female cultivators who often used this income to pay the wage labour on their own land, as well as household costs.

in Bantala, it could also be associated with the higher costs of land lease in the village (Table 6.11, p. 193).

Bt technology was introduced to Nandanapuram by Rajiv, a gregarious Backward Caste Gowda small-holder in Risk Coalition Two. This was against the advice of Nand, the university-educated NPM cultivator in Risk Coalition One. Although Nand is accorded a high degree of respect in the village as a result of his education and farming success, his lower caste (Yadava) status (see Appendix 6.2, p. 374), and the higher yields which were initially obtained with Bt cotton varieties, meant that it was Rajiv's approach which was more widely legitimated.

Stone (2011: 388) argues that Bt cotton adoption is generally associated with better educated, larger land-owners. However, the findings in Nandanapuram suggest that the way in which the choice of cultivation praxis is ideologically legitimated relies upon the power arrangements arising from the particular composition of the village. This means that power holders may not always be those who are better educated or who have larger land-holdings.²¹⁷

As in Bantala, the level of debt in Nandanapuram is high. In fact, Bt cotton farmers in the vulnerable Risk Coalition Two in Nandanapuram are the most exposed to debt of all Risk Coalition Two participants (Table 6.15, p. 199). Bt cotton is being adopted in the village, in conjunction with its ideological delegitimation related to

²¹⁷ Kumbamu (2007: 891) criticises the lack of caste analysis in Stone's study of Bt cotton in Warangal. The inclusion of caste in the current research highlights that this dimension needs to be carefully contextualised within the composition of particular villages.

concerns regarding soil degradation, animal deaths, high costs and indebtedness. Here, Bt cotton adoption continues due to the material constraints associated with the wider agrarian crisis, such as water scarcity, the absence of non-Bt cotton seeds, the high debt levels, and the *potential* for the technology to deliver higher yields which could alleviate the risks associated with these. The sense of entrapment which characterises cultivation in Nandanapuram is noted by Kumbamu (2007: 891) who argues that '[m]any desperate Warangal farmers continue cultivating Bt cotton (so-called white gold) in the hope that one good crop may help them out of the debt trap and the death trap.'

The impact of the more widespread diffusion of risk in Nandanapuram is evident from the finding of the 2010/2011 season that both coalitions cultivating Bt cotton made an average loss. Meanwhile, however, despite the generally high costs of cultivation in the village, and due largely to their savings on pesticides, both NPM farmers made an average profit. Their returns were the highest in the study for both coalitions.

Orgampalle

The village of Orgampalle is marked by its caste homogeneity, with the dominant Backward Caste Mudhiraj *jati* accounting for ninety-two per cent of the population, and owning eighty-two per cent of the village land. Orgampalle is associated with the cultivation of a diversity of crops in an attempt to enhance sustainability, and spread the risk of crop failure. There is also a strong reliance on inter-cropping in

order to promote soil fertility. Cotton accounts for just seventeen per cent of the cultivated land, and Bt seed varieties are banned.

The strategy of organic cultivation as a means of risk negotiation in Orgampalle is supported by the affiliation with Crops Jangaon. While there is an emphasis on profit-making as a means of negotiating risk, this is tempered with the 'post-materialistic values' described by Renn (2008: 120). These assert the need for 'harmony, social responsibility and environmental quality' (ibid.).

The strong emphasis on the collective of the village is supported by the influential village elder, Pradnesh. This is clear from the way in which the risks associated with water scarcity and labour charges, in particular, are negotiated. In an attempt to guard against the lowering of the water table which would heighten the risk exposure for all, the drilling for new borewells is banned in the village (see Appendix 6.4, p. 376).²¹⁸ Instead, rainwater is harvested, and ground water levels are closely monitored. This ensures that the soil moisture content for the village land as a whole is protected, rather than differentiating the risk of drought between those who can afford (or can gain access to credit for) borewells, and those who cannot.

Similarly, all participants assert their collaboration in charging each other wages lower than the minimum rate (seventy rupees per day) on the basis that they all help on each other's fields. This strategy meant that Orgampalle had the lowest average

²¹⁸ Achanda's borewell precedes the ruling, so he still uses it for paddy cultivation.

labour costs in the study (Table 6.9, p. 189), and was facilitated by the fact that there is only one landless household in the village (Sajan's) which does not rely on wage labour.

Asset ownership is higher and more evenly distributed in Orgampalle than in the other villages. While tractor ownership is again restricted to Risk Coalition One (Pradnesh), eighty-five per cent of the participants in Orgampalle own oxen. This significantly reduces the costs associated with oxen hire for participants (Table 6.10, p. 191). Participants are also risk-averse with regard to land leasing, with only one participant in Risk Coalition Two (Achanda) leasing a small area of land (three acres).

The benefits associated with this collective response are highlighted by the fact that not one organic cultivator in Orgampalle made a loss, despite the catastrophic season. Thus, while the average yields for organic farmers in Risk Coalition Two are on a par with those associated with Bt cotton farmers (Table 6.7, p. 187), villagers were better able to withstand the crop loss of the 2010/2011 season due to the lower cultivation costs which they incurred.

It is noted that, despite these lower cultivation costs and the evidence of post-materialistic values in the village, the level of debt among Risk Coalition Two participants in Orgampalle is surprisingly high. Table 6.15 (p. 199) highlights that this debt is associated exclusively with Risk Coalition Two participants, and is

mainly linked to dowry expenditure, and borrowing to supplement government grants for house construction (Appendix 6.19, p. 391). This suggests that indebtedness is endemic to the neo-liberal development model given its ideological legitimisation of aspirations linked to consumerism as the basis for development. In Orgampalle, this indebtedness is nonetheless considerably lower than for Bantala and Nandanapuram given that cultivation costs, at least, are minimised.

This overview of the approach to risk negotiation in the three villages highlights the impact of the way in which power is exercised on the material experience of risk as a concern of the wider village collective. The concentrated and fragmented power structures in Bantala and Nandanapuram, respectively, means that risk negotiation is perceived as a power struggle between groups based upon their land-holding and numerical dominance. In both villages, powerful groups (Risk Coalition One in Bantala, and the Scheduled Caste Madigas in Nandanapuram) seek to mitigate their risk exposure at the expense of others. While NPM farmers in Nandanapuram assert the value of a more co-operative approach, their less powerful status within the village hierarchy contributes to the delegitimation of their construction of risk.

The emphasis on social justice and the safety of the village as a collective in Orgampalle represents a more legitimate (if still imperfect) exercise of power. This is facilitated by the presence of a charismatic leader (Pradnesh) who promotes such values, as well as the smaller scale of the village, its significant caste homogeneity, and the absence of agricultural labourers who rely on daily wages for their survival.

The benefits of this more collective approach mean that a longer-term, more equitable and sustainable approach to risk negotiation is supported. This alleviates the risk for the village collective, rather than supporting its differentiation between groups. This chapter will now explore village democratic praxis as the link between the villages and wider meso level attempts to define risk.

9.4 *Village Democracy and the Elevation of the Risk Discourse*

As the primary focus of democratic praxis in the villages, the *Gram Sabha* meeting is expected to perform the dual functions of administering top-down funding for development programmes, and permitting deliberation and decision-making on issues relevant to the village collective (Beteille, [1965], 2002: 231-236). Discourses concerning risk would, therefore, be expected to elevate from the grass roots of the *Gram Sabha* through the institutional tiers to inform meso level decision-making.

The analysis highlights, however, that the *Gram Sabha* meeting is more commonly seen as a forum for accessing top-down development funds, rather than as a means by which the risks of such development could be elevated. Kumar (2006: 236) also asserts the view, supported by the current study, that villagers attend *Gram Sabha* meetings ‘demanding or expecting some personal benefit.’ Government policies, such as the PDS and Indiramma Housing Scheme, are also emphasised by all villagers, and have a direct impact on the legitimisation of the state for many. This

lends support for the view of Indian democracy as a 'patronage democracy' (Corbridge et al., 2013: 176).

The analysis also highlights that there is a general absence of legitimation for the *Gram Sabha* meeting. In the current study, the meeting was most strongly legitimated by participants in Orgampalle. This higher degree of legitimacy was associated with the more legitimate exercise of power in the village, and the greater potential for consensus on issues related to social justice due to its smaller scale and caste homogeneity. There is also evidence of a deliberative component to the meeting in Orgampalle, with Akhil asserting, 'We talk about the problems in the village in the *Gram Sabha* meetings' (49).

It is also noted, however, that *Gram Sabha* attendance is restricted to male participants. This was due to a perception expressed by the two female participants in the study that the meeting was not their 'level'. This view of the *Gram Sabha* meeting as a male domain is also supported by Powis (2003: 2619) and Kumar (2006: 228). The study also highlights that the Scheduled Castes, females and landless who are often most in need of patronage are unable to attend the *Gram Sabha* meeting due to their obligation to engage in daily wage labour. Thus, the analysis highlights that attendance at *Gram Sabha* meetings largely reflects village power structures.

The limited political power of females in the villages is indicated by the way in which female reservations for the role of *sarpanch* are negotiated. As Powis (2003: 2619) notes, the '*sarpanch* post is the prime locus of village power.' However, despite the fact that both Nandanapuram and Bantala have female *sarpanches*, their presence in the role appears to support the argument of Buch (2009: 9) that 'women in the reserved seats are there by proxy and...their husbands and male relatives exercise power...on their behalf.' This was particularly evident in Bantala where it was Pallav, the *sarpanch*'s husband, who commanded the power associated with the *sarpanch* role. This involved the coercive management of the *Gram Sabha* meeting, as well as his orchestration of village protests. Villagers themselves also used the male pronoun to refer to the *sarpanch* position.

There is also evidence of a well developed culture of 'money politics' (Powis, 2003: 2620) in the current study, with many of the villagers asserting that they were offered cash and alcohol in return for votes. This is a finding also made by Robinson (1988: 174) in her study of politics in Andhra Pradesh. Given the links of village democracy to the accessing of patronage, the finding that '[t]he poor and deprived defend democracy more vigorously than the elite' (Nandy, 1996: 28-39, as cited in Gershman, 2007: 32) is, therefore, hardly surprising.

The study highlights, however, that the 'vernacularization of democracy' (Michelutti, 2007: 639) in the villages refers to more than opportunities for patronage. There is also a strong discourse of rights, and the linking of these rights

to an ability to have one's exposure to ontological risk recognised and addressed as part of the concern for social and epistemic justice within a democratic society. Thus, Sudeep, the Scheduled Caste (Mala) participant in Bantala's Risk Coalition Two claims, '[s]ince we are living in a democratic country, this has given us the right to...fight for our rights. Now I have enough freedom to go and ask what rate I'm getting [for my cotton] and why I'm getting it. I can fight for my own sustenance' (10). Here, democracy is interpreted as the means by which the purported economic 'freedom' of a globalised market can be brought within the remit of a local process of legitimisation in the negotiation of risk.

It could be argued that the funding for government initiatives, and its associated contribution to the alleviation of poverty, would have been impossible without the state's adoption of neo-liberal policies, and the economic growth which these policies have secured. This thesis asserts, however, that such a view does not take account of the ontological risk associated with micro level indebtedness in the neo-liberal development model, as well as the inadequacy of the technocratic approach to address the wider social and institutional factors contributing to the agrarian crisis. It also fails to recognise the anxiety associated with a development model which emphasises the adoption of ambiguous technologies as part of a compulsive drive to modernise.

Omvedt (1993: 291) argues that the 'dispensing of patronage function[s] mainly to demobilize the oppressed.' This depoliticisation can be seen most clearly in the

tolerance for the uncertainty and debt levels associated with most Bt cotton cultivators in Bantala. This thesis argues, however, that NGOs combat this tendency towards depoliticisation through the assertion of risk as a micro level phenomenon. This function of NGOs is also noted by Echeverri-Gent (1993, as cited in Corbridge and Harriss, 2000: 226) who argues that ‘NGOs and social movements can play an important role in enabling the poor to articulate and act on their interests.’

The translation which NGOs perform in the current study is, on the one hand, literal given that, as Brass (1990: 145) notes, English is the ‘dominant language of elites’ in India. Cultivators in the current study are unable to participate in risk definition given that their sole language is Telugu (some, such as Pradnesh, also speak limited Hindi). Thus, NGO actors ensure that the risk discourse of micro level participants is translated into English at the meso level.

Similarly, however, as scientists and researchers, NGO actors translate the micro level experiential knowledge of cultivators into a scientific discourse as a means of challenging the potential for closure associated with the use of scientific knowledge by power holders. Here, as Beck (1992: 155) highlights, the ‘inherent foundations and external consequences of science’ are challenged. This thesis asserts that efforts by NGOs to secure openness in the core guards against the potential for ‘epistemic injustice’ (Fricker, 2007), and seeks to mitigate the potential for the risk discourse of the otherwise politically marginalised to become suppressed.

Omvedt (1993: 192) argues that NGOs play an intermediary role in linking the micro level discourses of risk to global discourses of resistance to neo-liberalism. The influence of such global discourses on the framing of opposition to Bt cotton is evident from the fact that all the NGOs who participated in the current study are funded by international donors. This funding is asserted by Herring (2010: 614) as the basis for the delegitimation of their risk discourse given that, he argues, NGOs have become ‘epistemic brokers’ in the global coalition against biotechnology.

The material analysis of the current study suggests, however, that contrary to Herring’s (2008b: 155) view, NGOs and global opponents of Bt technology have not simply constructed ‘narratives of catastrophe’ for which there is no basis in reality. Instead, the analysis highlights that NGOs are asserting a dimension of material reality which is not being adequately recognised. This relates to the recurrent failure of Bt cotton for many cultivators, the rising debt levels and the non-viability of agriculture to which Bt technology is now contributing for all but a ‘lucky’ few. This discourse of risk also seeks to highlight the anxiety of cultivators with regard to the animal deaths and the future sustainability of the cultivation praxis which the Andhra Pradesh government is perceived as supporting.

It is recognised that village participants who are highly mobilised against the technology in the current study are all Backward Caste males from a variety of land holding categories.²¹⁹ This suggests that these mobilisations are not fully

²¹⁹ These are Pradnesh (a medium land-holder) and Prakash (a marginal land-holder) in Orgampalle, and Nand (a semi-medium land-holder) and Rajiv (a small-holder) in Nandanapuram.

inclusive.²²⁰ Nonetheless, the study also highlights that Pradnesh, a cultivator from a small village in Andhra Pradesh, has spoken directly to the (then) Minister for the Environment and Forests from Delhi, Jairam Ramesh, about his opposition to Bt crops. This is no inconsiderable feat of an Indian democracy charged with the representation of 1.2 billion people. It also provides evidence of the ‘circulation of power’ (Habermas, 1996: 356) as the basis for legitimate decision-making in democratic praxis.²²¹

This thesis argues that the inclusion of risk discourses at the micro level is extending micro level democratic praxis beyond the village. It also asserts that it is the obligation of the core to remain responsive to risk as a result of these mass mobilisations which leads to the glimpses of legitimacy within an otherwise highly dysfunctional and seemingly impossible democratic praxis. These glimpses of functionality are the real paradox of India’s democracy, and represent the basis of its legitimacy. The impact of power relations upon the meso level analysis of risk definition as part of the wider constitution of society will now be discussed.

9.5 Political Power Arrangements and Knowledge Construction in Risk Definition

This section explores the impact of meso level power relations on attempts to construct knowledge with regard to risk definition. This focusses on the ‘relations

²²⁰ It is recognised, however, that mobilisations against Bt cotton involving five thousand Scheduled Caste females from seventy-five villages in the state were coordinated by the Deccan Development Society in 2012. Available at: <http://www.gmwatch.org/index.php/news/archive/2012/13848-women-march-for-total-ban-on-bt-cotton> Accessed on 29/10/2013.

²²¹ Although it is also recognised that Pradnesh is a power holder within this small village, and has been highly influential in formulating the risk construction which he is ostensibly representing.

of definition' described by Beck (1995: 43). At this level, social actors are differentiated in terms of the decision-making power associated with the institutions which they represent. This is illustrated by the Habermasian (1996: 356) core-periphery model. The normative theoretical assumption is that legitimate democratic decision-making can be illustrated as an inclusive 'circulation of power' (ibid.) in deliberations between actors in the core and the periphery.

As the analysis highlights, the discourse of risk is asserted by the Non-Bt Coalition as a means of delegitimizing the ideological positioning of power holders in the Bt Coalition. This not only seeks to undermine the legitimacy of the framing of development asserted by actors in the Bt Coalition; it also challenges the legitimacy of the exercise of power proposed by the Bt Coalition as their interpretation of the way in which democratic praxis should operate with regard to knowledge construction in risk definition.

Through the struggle to legitimate the exercise of power, this thesis argues that democratic praxis is itself being (re-)defined. This struggle is also relevant for micro level democratic praxis where changing power relations at the micro level will contribute to an ongoing redefinition of village democracy, and an altered distribution of resources and differentiation of risk. The degree to which these changes will enhance or undermine democratic legitimacy in terms of their contribution to social and epistemic justice is a contingent outcome of the ongoing struggle for the legitimation of risk and democracy at both levels.

It is clear that definitional power is central in the context of ‘non-knowing’ (Beck, 2009: 115) which characterises risk society. The recognition of the significance of knowledge in the conflict which Bt cotton represents has led Herring (2010: 614) to conclude that the debate is more about ‘alternative epistemologies’ than ultimate values. This is given his view that the ‘[i]mprovement of farmer welfare and enhanced sustainability of agriculture are universally valued goals. However, the means to those ends are politically disputed’ (ibid.).

This thesis supports the view that contested perspectives on knowledge construction are central to the legitimisation struggle which Bt technology represents at the meso level. However, it argues that this struggle is inextricable from normative judgments as to the way in which power should be exercised as part of such knowledge construction. This supports Foucault’s (1977: 27) assertion that ‘power and knowledge directly imply one another.’ The immanent struggle to legitimate power in knowledge construction involves appeals to transcendent principles such as justice and equality as part of the legitimisation of democracy itself. This relates to the view of Douglas and Wildavsky (1982: 8) that the ‘choice of risk and choices of how to live are taken together.’

The analysis indicates that the discourse of the ANGRAU and Monsanto actors seeks to secure legitimisation for an expertocracy of scientists as part of a globalised, commodified form of scientific knowledge construction which would support economic growth as part of a neo-liberal development model. Such attempts are

contested by NGOs and the CPM actor who, as scientists themselves, assert the epistemic significance of values related to justice and equity. The need for the inclusion of experiential perspectives in scientific knowledge construction is asserted as the basis for an alternative development model whose legitimation is secured through normative appeals to transcendent principles in the negotiation of risk in particular contexts. This simultaneously, however, calls for scientific knowledge which is 'shaped by real felt needs of local/relevant actors' (Raina, 2006: 1623), as opposed to a universalised, commodified form of scientific knowledge which serves simply to reinforce existing power relations. Thus, the dialectical relation between the immanent and transcendent dimensions of social conflict is highlighted, as is the contestation involved in the legitimation of globalised forms of knowledge construction in local contexts.

The bi-level analysis allows an illustration of the distinction between the types of knowledge construction which are at stake in the legitimation of democracy. Thus, the Monsanto research scientist claims: 'genes to a scientist are just DNA. You know, the basic blocks that make the DNA are the same whether it's plant or animal' (8). This form of knowledge construction emphasises a decontextualised, universalising simplification as the basis for the negotiation of risk as a global concern.

This is contrasted with the assertion of Pradnesh, the Risk Coalition One organic farmer in Orgampalle, who attended school for six years, but has been a cultivator for more than fifty. He describes organic cultivation as follows:

It's like a doctor's job, the way a doctor recognises the disease of a person and treats it with a certain medicine. It's similar with organic farming....[R]ecognising the disease is an art, and giving the suitable solution for that disease is a different art (56).

Here, the construction of knowledge is qualitatively different to the Monsanto actor's assertion of simplicity. The discourse of the organic cultivator instead emphasises the intricacy of nature, and his obligation to carefully negotiate this complexity in order to secure his ontological survival within his context.

Pieterse (2001: 89) argues that, in countries in the Global South, 'indigenous knowledge' is a 'countervailing position to Western science' (ibid.). The current analysis highlights that the struggle for legitimation associated with these competing forms of knowledge construction is mediated by power relations between institutional actors in their attempts to define Bt technology's role within the future development of the state.

Attempts by power-holders in the Bt Coalition (the Congress Party actor, the ANGRAU regulator and representatives from Monsanto) to legitimate a form of development which centres on the commodification of scientific knowledge are challenged by the Non-Bt Coalition actors (the NGO and CPM actors). These actors delegitimize such an approach to knowledge construction, and the development model within which it is incorporated, on the basis of the irrationality,

unsustainability and homogenisation of human needs which such a universalising view entails. This leads them to assert alternative methods, which valorise the experiential knowledge of cultivators as the basis for alleviating agrarian risk within the local context of the village (Ramanjaneyulu, 2006).

NGOs and the CPM actor seek to secure the type of 'epistemological decentralization' described by Pieterse (2001: 89) through asserting the need for the inclusion of micro level experiential knowledge on risk as part of the legitimization of democracy. In doing so, they seek to transform the basis of legitimization of scientific knowledge itself. Thus, Lidskog (2008: 75) notes the emergent need for scientific knowledge which is more 'richly contextualised, socially robust, and epistemologically eclectic'. Swaminathan (2011: 25) also asserts the need for a broader approach to research into biotechnology, arguing that it should not only be explored from the 'economic angle, but also...the ecological, equity and ethical perspectives.' This is also asserted by Giri (2012: 193) who claims there is a need for an epistemology which is capable of incorporating a 'multi-valued logic.'

The analysis indicates that meso level perspectives on the way in which power should normatively be exercised as part of democratic praxis are mediated by the positioning of the institutions which the actors represent within the core-periphery model. The inextricable nature of knowledge and power, and the recognised influence of both on the values which contribute to a society's future development, leads the CPM actor to emphasise his preference for closer links with Chinese

research institutions as opposed to US multinationals. This is informed by his ideological commitment to communism, a perspective which contributes to his view of communist China as a more equitable, less profit-driven society than the United States.

Actors in the Bt Coalition express a strong preference for varying degrees of closure in the democratic process. Both the Monsanto and ANGRAU actors assert their support for a form of democracy in which responsibility for the definition of risk is confined to scientists. The attempt to institutionalise such a perspective is highlighted in the BRAI proposal in which scientists would become the pre-eminent authority on risk definition. As highlighted, according to the core-periphery model (Habermas, 1996: 356), this would be democratically illegitimate given its removal of the state as the central locus for decision-making in the theoretical illustration of the ideal of democracy as self-rule.

The Congress Party actor, while legitimating the role of science and technology within the contemporary development model, is nonetheless obliged to guard against the threat to the legitimacy of the state arising from mass mobilisations and the risk discourse of NGOs. As highlighted in Chapter Three, the core must also, however, defend its legitimacy against attempts by Monsanto and ANGRAU actors to usurp it.

Thus, the analysis highlights that the Andhra Pradesh core is engaged in a complex power struggle through which the legitimization of democratic praxis, as both a normative and institutional concern, is itself being challenged and (re)defined. The attempts by the state to secure its own legitimization present opportunities for the inclusion of micro level discourses in the definition of risk. However, these opportunities themselves represent attempts by the state to maintain its legitimacy within the ‘profound institutional crisis’ (Beck, 1994: 8) of risk society.

The analysis suggests that the activity of NGOs in the current study mitigates, to some degree, the tendency for ‘[d]emocratic authoritarianism’ which Jalal (1995, as cited in Varshney, 2000: 14) asserts is a characteristic of Indian political practice. This study highlights that their function is crucial for ensuring that power is contested within attempts to legitimate risk and democracy as part of the macro constitution of society itself.

The conclusion will now explore the implications of the struggle to secure the legitimization of risk and democracy which Bt cotton represents for the constitution of the new state of Telangana, as well as for an emergent global society.

Chapter Ten

CONCLUSION

Legitimation and the Macro Constitution of Telangana and Global Society

10.1 Thesis Objectives and Limitations

This thesis has explored the struggle to legitimate risk and democracy which Bt cotton represents within Andhra Pradesh society. This has highlighted the way in which attempts to secure the legitimation of risk and democracy as material and ideological concerns are mediated through power relations at both the micro (village) and meso (institutional) levels.

This thesis also asserts, however, that society itself is being formed through attempts to secure the legitimation of risk and democracy. This relates to the role of the public as a 'third point of view' (Strydom, 1999: 13) in discerning legitimacy from illegitimacy. This critical judgment of wider society has a direct bearing on the exercise of power in terms of the way in which resources are distributed, and access to them differentiated, as well as the way in which ambiguous technologies are adopted in the legitimation of risk. It is also crucial to determining the way in which power is exercised in knowledge construction and the institutionalisation of democratic praxis as part of the legitimation of democracy. This, it is argued, has direct implications for informing the way in which transcendent principles, such as justice and equity, are translated into praxis as part of a given society's development.

As a form of knowledge construction, this thesis seeks to contribute to, and assist a critical public in, this wider process of legitimation through highlighting the relevance of its findings to the macro constitution of both Telangana and global society. It is acknowledged that, in reaching these conclusions, the study has a number of limitations. These relate to its small sample size, the initial unfamiliarity of the researcher with the Indian context, the fact that she did not reside in a village full-time, her limited knowledge of Telugu, and the study's focus on one season.

Nonetheless, it is suggested that the analysis offers an in-depth insight into the legitimation of risk and democracy with regard to Bt technology in three villages in the Telangana region, and into the centrality of Bt technology to a wider concern for epistemology and the legitimation of political praxis in Andhra Pradesh. As such, it is argued that the study highlights some key dilemmas which will confront the new government of Telangana. It is also proposed that the conflict explored in Telangana can be seen as a microcosm of the wider struggle for the legitimation of risk and democracy in the constitution of global society. Both of these aspects will now be explored.

10.2 The Negotiation of Agrarian Risk in the New State of Telangana

The struggle to secure a more equitable access to resources as a means of negotiating risk has been, as Chapter Four explored, a central concern of the movement for a separate state of Telangana. It is also relevant to the Bt cotton

debate given that, as the analysis has highlighted, access to resources is a key factor in the differentiation of the risks (and potential benefits) of the technology.

The analysis of the villages highlighted that the exercise of power was associated with varying degrees of legitimacy with regard to risk negotiation. The analysis indicated that the more cooperative response to risk in Orgampalle, which entailed considerations of the risk exposure of the collective of the village over time, was associated with a reduced exposure to risk in terms of exposure to debt, and the longer-term sustainability of agricultural praxis. It was recognised that the exercise of power in Orgampalle was imperfect; nonetheless, the analysis suggests that the more legitimate the exercise of power, the lower the overall exposure to risk for the collective.

Kannabiran et al. (2010: 79) questions whether '[the] vision of a democratic Telangana [as formulated by the movement for a separate state] [would] be centred on a different model of development?' This thesis suggests that the potential for the new state of Telangana to undertake a qualitatively different form of development relies crucially upon the values which will inform the way in which power is exercised as part of the legitimisation of risk in the state. The analysis highlights that the viability of agriculture as a concern of the collective is strongly connected to the way in which power is exercised. This relates to whether a wider collective is prioritised, as opposed to certain powerful groups within it, as the basis for a general alleviation of risk. It is recognised, however, that a more widespread

diffusion of such a cooperative approach would entail significant changes in the conceptualisation of development.

The current study highlights that the widespread adoption of Bt technology cannot be assumed to equate with its widespread legitimisation among cultivators. Instead, the current analysis supports Glover's (2010: 482) view that 'the performance and impacts of GM crops have...been highly variable, socio-economically differentiated and contingent on a range of agronomic, socio-economic and institutional factors.' The technology's ongoing adoption is, it is argued, the result of wider constraints associated with the agrarian crisis, and coincides with anxiety for the future (in the case of Bantala) or active opposition (in the case of Nandanapuram). The study also indicates that power holders in the villages are themselves questioning the technology's viability, as indicated by Rajiv's active opposition in Nandanapuram, and the proposed visit to Orgampalle by village elders from Bantala.

This thesis asserts that, if the new state of Telangana wishes to promote a form of development which more adequately addresses agrarian risk in the region as a concern for its own legitimacy, then it will be required to deconstruct the rationalisation of development in which 'certain modes of development [are constructed] as rational and others as regressive' (Lacy, 2002: 52). This relates not only to cultivation methods, but also to the perceived ideological obligations incorporated within the *Vision 2020* initiative. These include the assumption that the universal path to development entails a drastic reduction of the agricultural

work-force (Frankel, 2005: 623). As Rajivlochan and Rajivlochan (2010: 400) argue, ‘it would be neither immediately possible nor desirable to relocate [farmers] to the factory shop-floor.’

This thesis has highlighted that it was the historical absence of investment in agriculture in Telangana, and the inability of significant sections of the population to gain access to resources such as land and water, as well as jobs, which contributed to the delegitimation of the state of Andhra Pradesh. This would suggest that the Telangana government needs to support agriculture and industry in equal measures. The analysis of Bt cotton in Andhra Pradesh also highlights the fallacy of assuming that macro level increases in agricultural productivity are equated with an unproblematic legitimization of the risk of ambiguous technologies at the micro level.

Telangana continues to be associated with a highly differentiated access to resources, particularly land. The new government’s management of this inequity will be particularly central to its legitimization, due to the presence of radical Naxalites, and a strong NGO sector, who assert the need for social justice in risk negotiation. Given that the inequity in land distribution is supported by local power structures, however, the government’s ability to undertake non-violent land reform is likely to be limited.

The experience of Orgampalle highlights that equality in access to resources is not a pre-condition for the legitimate exercise of power. However, the analysis also suggests that a legitimate negotiation of risk not only needs to entail a concern for achieving greater equality in the access to key resources in the future, but also to respect the equal right of individuals within a collective, especially those who currently lack access to resources, to be safeguarded from ontological risk as the basis for an immediate concern with social justice.

Attempts to promote greater equality in the access to resources may include expanding the area of land under cultivation to secure greater land access for the landless, as well as efforts to create opportunities for off-farm employment in ways which do not negatively impact upon cultivators. This could involve employment in areas which are focussed on the improvement of agriculture such as extension services, the maintenance of irrigation tanks, the completion of unfinished canals, and the clearing of new land for cultivation. The analysis also highlights that state pensions for widows and the elderly are insufficient to cover their rations from the Public Distribution System, and this needs to be addressed.

The simultaneous need to protect the wider collective from ontological risk given the existing unequal access to land, however, suggests that it will be necessary to consider ways in which cultivation risks can be alleviated through a greater focus on the collective. Reddy and Mishra (2010a: 47) note that '[s]mall [farm] size is not a constraint on efficiency. It has been theoretically well established that small

farms are more efficient in factor productivity than large.’ The current study highlights, however, that agricultural viability is significantly impacted by the costs associated with particular cultivation methods, especially for the small and marginal cultivators who are most at risk of suicides. The analysis indicates that viability is also influenced by the values which inform the exercise of power in local contexts as a concern for the legitimization of risk.

The study suggests that the government’s legitimization of Bt technology as a strategy for alleviating agrarian risk within a neo-liberal development ideology needs to be carefully reconsidered, in collaboration with Telangana’s rural population. The comparative analysis of the 2010/2011 season highlights that Bt technology cannot be assumed to represent the most viable option for the alleviation of agrarian risk. On the contrary, the study suggests that the performance of organic and NPM methods may hold greater potential for reducing debt levels and, subsequently, farmer suicides, in the region, due not least to the lower costs involved in a context characterised by its climatic variability.

There are strong demands for greater state support in the promotion of organic and NPM methods in the literature (Ramanjaneyulu, 2006; Eyhorn, 2007; Santhanam, 2010: 361). These methods are labour-intensive (there was not a notable difference in the numbers of labourers employed by Bt cotton farmers and NPM and organic cultivators in the current study), and were not found to negatively impact on yields in the current study, particularly in the far from atypical catastrophic 2010/2011

season. It is noted, however, that similar findings have been contested.²²² The particular role of NGOs in alleviating risk in Orgampalle has been previously highlighted. Similarly, Reddy and Mishra (2010a: 49) assert, that ‘shifts towards organic farming and crop rotation are not easy options, particularly for small farmers, unless accompanied by appropriate institutional support systems.’ Such a change would require significant investment in agricultural extension services.

The analysis suggests that a form of development which supports a more holistic consideration of risk, and which avoids privileging the mitigation of the risk of certain groups at the expense of others, alleviates the risk exposure for society as a whole. Rao (2009: 123) also asserts the need for ‘collective action to undertake activities such as planning of crops, water use, management of pests and diseases, choice of varieties and seeds.’ It is clear, however, that village power structures play a key role in determining the viability of such a collective approach.

The current study highlights that the potential for a more collective approach to risk is likely to be limited in Bantala and Nandanapuram, given the way in which power is currently exercised in these villages, as well as the caste heterogeneity and scale with which they are characterised. However, the new Telangana government could support more cooperative initiatives associated with, for instance, watershed management and non-Bt seed procurement across a number of villages. This would

²²² Badgley et al.’s (2007) response to critiques of their claims that organic and conventional yields were statistically indistinguishable based upon an analysis of yield ratios comparing organic and non-organic production across the world highlights the difficulty in making generalisations on yields based upon comparative studies. Here, the definition of ‘organic’ used in the study was itself called into question, as was the way in which yield data was selected and analysed.

allow farmers a greater choice in the crops which they cultivated, and in the methods which they adopted. Such inter-village cooperation may also contribute to a more critical view of village power structures and support an enlarged perspective of the village collective as the key to negotiating risk.

The research also highlights the need for an inclusion of indebtedness in poverty estimates, and indicates that the focus on the provision of credit as a solution to indebtedness is highly problematic. The behaviour of MFIs, and their contribution to farmer suicides in Warangal during the research period, suggests greater need for regulation of the micro-finance sector. Similarly, although Self-Help Groups are associated with female empowerment (Tesoriero, 2005; Reddy and Mishra, 2010a: 66), the research highlights that the indebtedness of Salma, the landless female in Nandanapuram, arose as a result of borrowing supported by Self-Help Group membership. It is recognised that, in contrast to the landless females in Bantala, the sourcing of Salma's debt means that she is not working for landlords in semi-bonded conditions; however, it is also suggested that encouraging vulnerable individuals who are at risk to take additional risks in order to secure their ontological survival is not the most legitimate approach to risk in a high-risk context.

The study indicates the need for the greater targeting of government initiatives, such as the Public Distribution System. This is a finding also noted in the literature (Indrakanth, 1997; Deb, 2009). The cost of rations for pensioners surviving on Rs

200 per month is too high, while many cultivators asserted that they do not need rations. Similarly, the Indiramma Housing Scheme has led many participants to access debt in order to construct more elaborate housing than the funding allowed. Meanwhile, many homeless Risk Coalition Three participants were unable to construct houses given the unavailability of assistance with the building work. In a smaller state, it should be possible to undertake greater targeting of such initiatives to ensure that they more adequately address the differentiation of micro level risk.

It is clear that the indebtedness of participants is not only due to cultivation costs. Exposure to debt also results from the values associated with the ‘revolution of rising expectations’ (Gupta, 2002: 86) created by the *Vision 2020* endorsement of neo-liberal policies in Andhra Pradesh. This has seen modernisation become associated with consumerism as part of a universalised measure of development. The analysis of this thesis suggests that farmer suicides are a direct result of the systemic ideological legitimisation of risk differentiation, social aspiration and individualisation associated with this approach to risk in the Telangana agrarian context.

The pervasive legitimisation of neo-liberal values suggests the need for inclusive public deliberation to encourage reflexivity on the meaning of development itself. This could involve the greater engagement of politicians in public forums where such themes are articulated, and visits to villages to speak to agricultural labourers at work in the fields. This more direct approach was used to good effect by Jairam

Ramesh with regard to Bt bringal. The need for this type of approach to politics is also asserted by Bryld (2001: 170) who argues that governments have to ‘move beyond generalized delegation schemes...to play a more proactive role, through increased awareness of the social context.’

10.3 Knowledge Construction and Democratic Legitimacy in Telangana State

This thesis has argued that the legitimization of democracy relates to attempts to secure a legitimate exercise of power as part of efforts to institutionalise democratic praxis and to construct knowledge related to risk definition. The analysis indicates that the conflict regarding knowledge construction is predominantly a normative one, which refers to values related to inclusion, autonomy, justice and equity in the exercise of power in risk definition. These values also form the basis for the legitimization of democracy. The study highlights that meso level narratives related to the way in which power should be exercised within democratic societies are associated with varying degrees of legitimacy when assessed using the Habermasian (1996: 356) core-periphery model as a normative reference point.

Kannabiran et al. (2010: 79) note that the movement for a separate state of Telangana raised questions regarding ‘participation, equity, power, inclusiveness, representation, democratic values [and] accountability’. This led the authors to wonder whether a new state would result in ‘a new politics’ (ibid.). Given the deeply embedded power structures in Indian politics, Maringanti (2010: 37) speculated whether the ‘capture of state power or redrawing of state boundaries [in

Telangana would] by itself accomplish anything other than a change of actors – keeping the scripts [as existing power relations] intact?’

This thesis argues that the ongoing power struggle to secure the legitimization of risk and democracy in Telangana will now become central to the constitution of the state itself. This supports the view of Kohli (2009: 4) that ‘Indian democracy is best understood by focusing not mainly on its socio-economic determinants, but on how power distribution...is negotiated and renegotiated.’

As highlighted in the case of Bt cotton in Andhra Pradesh, the responsiveness of the new Telangana government to its citizens will be of crucial significance to its ability to secure its own legitimization. Telangana is historically volatile, and is characterised by a high degree of deinstitutionalised politicisation, in conjunction with significant expectations for risk alleviation. The pressure on the new state will be exacerbated by the presence of radical Naxalites who will seek to highlight social injustice as a means of undermining the state’s legitimacy. Finally, and importantly, as Herring (2008b: 155) asserts, there is a strong NGO network, many of whom serve as ever-alert overseers on government practice. To this end, the new state will be obliged to pay careful attention to the way in which agrarian risk is approached as an epistemic, as well as a material, concern as the basis for its own legitimacy.

This analysis of Bt cotton indicates that the incorporation of science and technology within the contemporary development model is associated, as Beck (1992: 19) also highlights, with both the creation of wealth, and of risk. It is also clear from the research that a technocratic approach to the agrarian crisis does not address the differentiation of risk associated with power relations; instead, the study has shown that the adoption of Bt technology is legitimated through existing power structures at both the micro and the meso levels.

This study of Bt cotton highlights both legitimate and illegitimate tendencies in relation to the exercise of power in democratic praxis in Andhra Pradesh. This is in line with Fraser's (2008: 140) assertion that contemporary democracies are characterised by their 'quasi-totalitarian' tendencies. This thesis argues that it is this struggle to legitimate power at the meso level which is central not only to the definition of risk, but also to the definition (and redefinition) of democratic praxis as part of the macro constitution of society. It is also highlighted, however, that the potential for the institutionalisation of illegitimate power as part of the struggle to legitimate democracy represents a threat to the legitimacy of the democratic state itself.

This study suggests, therefore, that the struggle to ensure the institutionalisation of a legitimate exercise of power capable of addressing the risk exposure of the region will be of vital significance not only for the legitimisation of democracy, but for the future legitimisation of Telangana state itself. This is due not least to the centrality of

the struggle for social and epistemic justice in the region's history, and its manifestation in contemporary Telangana as the fight to secure the legitimization of risk and democracy with regard to Bt cotton. It is argued that the conflict relating to Bt cotton forms part of a wider concern for the alleviation of risk within the region's quest for development, and the fears of its citizens for their ongoing exploitation as a result of an illegitimate exercise of power.

Gupta (2011: 736) argues that there are opposing sources of legitimacy in the governance of risk, namely 'legitimacy deriving from a privileging of scientific expertise and an objective science removed from politics; versus legitimacy deriving from innovative experiments in direct, participatory democracy.' The analysis highlights that both of these aspects form part of the same legitimization process, and represent a tension in the legitimization of democracy as an epistemic concern.

The current study suggests that the 'legitimation crisis' (Habermas, [1973], 1976) which Bt technology represents at a political level relates crucially to the tension concerning the potential for an institutionalisation of an illegitimate exercise of power. This would represent an unaccountable concentration of power with the potential to support a highly differentiated exposure to risk through the assertion of an elitist form of knowledge construction which would constrain the ability of cultivators to gain recognition for the risks associated with their local contexts.

The potential institutionalisation of an illegitimate exercise of power presents concerns not only for epistemology, but also for the legitimacy of democratic praxis itself. This is evident in the controversy surrounding the legislation associated with the BRAI and Seed Bills, both of which would limit the new state's capacity to respond to the demands of its people as part of its own concern to secure its democratic legitimacy. This legislation also has the potential to threaten the state's position as the apex decision-making body as the basis for the self-rule or *swaraj* of the democratic ideal.

The analysis highlights the significance of the inclusion of the knowledge of cultivators in the attempts to bridge the epistemic gap which risk represents. Bohman (2006: 187) argues that the 'epistemic benefits of diversity' should become the basis of democratic legitimacy itself. He (ibid.) asserts that '[r]obust solutions [should be seen as] as those that can be accepted from a variety of different perspectives.' This thesis asserts that such an inclusion of a variety of perspectives is not only crucial to the legitimisation of democracy given the need to combat the potential for the type of 'epistemic injustice' described by Fricker (2007); it also represents humanity's best opportunity for negotiating the epistemic gap associated with the risk of ambiguous technologies, such as Bt crops.

The analysis has explored the complex struggle for legitimisation in which the state of Andhra Pradesh is engaged. The new state of Telangana will be obliged to negotiate these potential threats to its own legitimisation immediately upon its

formation. The current study highlights that NGOs seek to reinforce the state's democratic legitimacy through asserting the need for inclusion as the basis for epistemic justice, and through supporting the state's position as the legitimate apex of decision-making with regard to agrarian risk.

The deinstitutionalisation of democratic praxis in Telangana, and the potential for mass mobilisations, suggests the ongoing need for the enhanced inclusion of NGOs and cultivators in meso level attempts to define risk as a concern of institutionalised democratic decision-making. This is particularly relevant in the case of the animal deaths and their links to Bt cotton in all three of the villages studied. The anxiety of villagers in this regard clearly indicates the need for the greater inclusion of cultivators in deliberations with regard to these deaths. These should be aimed at undertaking a methodical assessment of cultivators' claims (in Telugu), and involve independent testing approved by NGOs, the results of which are clearly communicated to cultivators.

Establishing closer links with civil society activists is, it is argued, not only crucial to addressing risk as a micro level concern, but also represents the new state's best chance for gaining legitimation in a region associated with a historic struggle for social and epistemic justice. As highlighted, however, the ability of the state to represent the needs of its people as a concern for its own legitimation relies crucially upon its ability to negotiate the wider power struggles in which it is embedded.

This thesis has asserted that the way in which financing for development projects is secured significantly influences the approach to development, given the conditionalities which are linked to such funding. It has been highlighted that the establishment of Genome Valley in Hyderabad in 2001 was supported by aid funding from the UK government. While acceptance of this funding supported the trend for the unregulated widespread adoption of the technology which was already occurring at this time, it also led to a general weakening of the state's ability to take charge of the technology as a concern for its own legitimisation.

The new state of Telangana will be obliged to pay particular attention to the regulation of Bt technology given the potential for 'legitimation crisis' (Habermas, [1973], 1976) which it represents, and the potential for an institutionalisation of a democratically illegitimate exercise of power which will represent a threat to the legitimacy of the state itself.

The emphasis on self-sufficiency asserted by Bt cotton opponents as a resistance to the loss of autonomy associated with neo-liberal globalisation bears a strong resonance to Gandhi's emphasis on *swadeshi* (self-sufficiency) and homespun cotton (*khadi*) as a means of confronting colonial exploitation. The study highlights that cotton remains central to the contemporary struggle to resist exploitation as a concern for India's autonomy. This refers to competing normative perspectives as to the benefits of a form of self-sufficiency secured through an enhanced macro positioning in a globalised market, as opposed to a micro level emphasis on self-

sufficient villages in which the need for global trade, and the negotiation of global power structures, is minimised.

The current study suggests that the new state of Telangana will be required to serve as a mediator between power relations in both global and local contexts. Here, epistemology on risk will need to be negotiated as both a local contextualised concern, and as part of a wider negotiation of decontextualised power related to the global commodification of knowledge associated with initiatives such as the TRIPs agreement and the Indo-US Knowledge Initiative (Raina, 2006).

The analysis also indicates, however, that the discourse of risk is contributing to a heightened awareness of democratic principles, such as equity and justice, as the basis not only for democratic legitimacy, but for development itself. Thus, risk represents the potential for a form of development which involves, through a process of legitimation, a 'transformation towards justice, inclusiveness and sustainability' (Korten, 1990, as cited in Pieterse, 2001: 82). This thesis argues that, while such a transformation is contingent upon the power struggle entailed in the legitimation of risk and democracy in local contexts, it is also informed by, and has significant implications, for the wider struggle to legitimate risk and democracy as a global concern.

10.4 Legitimation and the Constitution of Global Society in a World at Risk

This thesis argues that the issue of risk will become increasingly prominent in global society. This relates to the predicted scarcity of resources, and the differentiated impacts of climate change, in conjunction with a growing global population. Agoramoorthy (2008: 505) estimates that, by 2050, humanity will require resources at double the rate that it can produce them. Tuteja and Tuteja (2009: 282) argue that, in the case of India, land constraints and water shortage will form the basis of the differentiation of risk associated with climate change. These authors (*ibid.*) also argue that India's best opportunity for confronting the risk of climate change will be through the development of 'eco-friendly, indigenous technologies'.

The current analysis indicates that risk will continue to be differentiated, regardless of the technologies which are introduced, as long as land and water resources are differentially allocated within a neo-liberal economic system which legitimates a highly atomised response to risk. This thesis has previously highlighted the legitimisation of food left to rot in *godowns* (warehouses) in a country in which millions are hungry (*Deccan Chronicle*, 7/9/2010) as part of the neo-liberal market rationale. This highlights that the central risk in risk society is in the power relations which legitimate it.

This thesis asserts that its central finding that a cooperative response to risk supported by a more legitimate exercise of power will alleviate the risk exposure of

the collective generally can be extrapolated to a global context. This would suggest that the most legitimate response to securing ontological survival in a world at risk would be to seek to minimise the risk exposure of the collective of humanity. This is not simply a moral concern, but also a pragmatic one. Beck (1992: 23), too, highlights that the current differentiated approach to risk is associated with a 'boomerang effect' which will eventually endanger humanity as a whole.

Beck (2009: 188) notes that the global nature of contemporary risks opens up 'a complex moral and political space of responsibility' as 'meanings of proximity, reciprocity, dignity, justice and trust' (ibid.) are transformed. This thesis argues that such a concern for the global collective requires that local legitimisation processes are perceived as part of a wider, decontextualised, struggle for the legitimisation of risk and democracy globally. Thus, it is argued that attempts to legitimate risk and democracy are contextualised, but also informed by a wider decontextualised ideological struggle. This is noted by Scoones (2008: 339) who argues that, although local protests against GM crops have 'taken on very distinct characters', they are also globally informed. Here, the discourse of risk concerning GM crops serves as a framework for the articulation of the struggle for social and epistemic justice as part of the global concern for the legitimisation of risk and democracy.

This thesis has asserted that local protests are determined by the specificities of power relations involved in local processes of legitimisation. However, it has also

indicated that these local protests are ideologically supported through wider global discourses of resistance both to Bt technology and neoliberalism. This is highlighted by the fact that all of the NGOs involved in the current study are funded by international NGOs and civil society organisations. Herring (2010: 614) claims that discourses of risk related to Bt technology 'have diffused to and from India in global networks.' He (ibid.) also argues that the 'claims [of the global network of opposition] have proved either false or inconsistent with dynamics on the ground.' This is not the finding of this study where it is argued that the global discourse of risk not only informs, but is also inspired by, local struggles to legitimate risk and democracy as a direct concern of the material reality of risk in those contexts.

It is argued that this global struggle for the legitimisation of risk and democracy is being spear-headed by international NGOs, in much the same way as many NGOs drive protests in local contexts. Kuper (2004: 175) asserts the growing power of international NGOs in global deliberations, arguing that 'one thousand six hundred NGOs have consultative status [in the United Nations]', and 'twenty NGOs meet with the UN Security Council' (ibid.: 176).

The emergence of this global process of legitimisation is, it is argued, associated with the constitution of a global society, contextualised as a concern for the planet and informed by the concern for social and epistemic justice on behalf of the collective of humanity. This is also asserted by Clark (2007: 210) who claims there is an 'emerging reality of world society. We feel its presence through the alternative

normative principles that it enshrines, however embryonic and unsettled these might remain.’ He (ibid.) also asserts that ‘[n]ew norms will emerge from this process of negotiation as power-holders are obliged to accommodate some of the demands as a concern for their own legitimacy.’ Similarly, Strydom (2002: 43) asserts that the ‘dynamics involving both power exertion and conflict...constitute a process of construction of both national and global society...which is more fundamental than regular political competition and economic conflict’. This thesis argues that Bt technology is central to this wider legitimisation struggle which is serving to contribute to the constitution of global society.

Strydom (2008: 8) asserts that attempts to construct and define risk are not simply about ‘problem-solving.’ They are also about ‘creating and bringing a new world into being’ (ibid.). As part of this, Glover (2002: 2738) argues that political decision-makers ‘need to be able to scrutinise seductive development narratives critically and invite other perspectives and interests to propose their own critique.’ This thesis asserts, however, that the ability of political actors to make critical judgments on development narratives depends upon the way in which risk is mediated through power relations globally. This is due to the inherent inequality in risk exposure between states, and the unequal access to resources globally. Thus, Beck (2009: 178) highlights, the ‘unequal exposure to risk...must be treated as largely an expression and product of power relations at the national and global levels.’

Pieterse (2001: 159) questions, '[w]ouldn't it be more appropriate to make contingency part of the understanding of development? It would mean redefining development as a collective learning experience.' It is clear from the current analysis, however, that such collective learning needs to entail an awareness of the power struggle associated with knowledge construction, and the ability to distinguish legitimacy from illegitimacy in the exercise of power with regard to attempts to secure the legitimization of risk and democracy. The full implications of such illegitimate uses of power also need to be recognised in terms of their potential to expose the wider collective to risk.

This thesis argues that management of power relations entails the ability to recognise legitimate power through its contribution to promoting a cooperative response to risk alleviation as a concern for social and epistemic justice at local, national and global levels. This forms the basis of the struggle in the legitimization of risk and democracy with regard to Bt technology.

The current study suggests that ongoing attempts to construct knowledge on the risks of GM crops will continue to raise the need for transparent and inclusive global deliberation to support national legitimization processes. In terms of Bt technology, it is argued that global attempts at knowledge construction need to be inclusive of discourses of risk asserted in local contexts, not only as a concern for epistemology, but also for the legitimacy of an emergent democratic praxis at a global level. Within this, the struggle of international NGOs to broaden the basis

for knowledge construction will continue to serve as a counter-weight to attempts by global power holders at closure through the dismissal of local discourses of risk and the institutionalisation of democratically illegitimate bodies at a global level. These would seek to establish an authoritarian form of governance beneath the guise of an ostensibly legitimate democratic praxis as a global concern.

Giri and Van Ufford (2004: 28) argue for the need for 'development as responsibility', and a new morality focussed on our 'acknowledged dependence' as part of the negotiation of risk. This is particularly pertinent in risk society given the profound inter-connectivity of local and global contexts. This thesis argues, however, that responsibility in risk society must entail a critical re-evaluation of needs. This would involve a legitimisation of the needs relevant to local contexts, and the identification of ways in which these can be fulfilled through sustainable means with consideration for the safety of the collective of humanity.

Strydom (2009: 77) argues that 'the question of authentic needs...can be answered neither by science nor by the political institutions since it concerns what we really want, how we really want to live, what kind of a society we really desire [and] what we would really find good.' This current study suggests that the question of legitimate needs forms the basis for the 'critical re-evaluation of both Western and non-Western cultures, and the encounter between them' which Marglin (1990: 26, as cited in Ziai, 2004: 1051) argues is crucial to a fundamental re-definition of the concept of development.

Within the attempt to draw attention to ‘the manifold, real, self-critical voices’ of a country in the Global South which Beck (2009: 211) asserts is central to understanding risk society, this thesis has revealed a clear critique of neo-liberal values. These are formulated on the basis of constructed needs which emphasise consumerism, acquisition and differentiation as the basis for human development. The impact of these values on the struggle to legitimate risk and democracy within the local context of Telangana has been highlighted, where they contribute to indebtedness, and lead the state into a legitimisation trap which involves it in taking risks as a trade off for economic growth.

The study highlights that greater awareness is required by those in the West of the way in which the legitimisation of values associated with conspicuous consumption and competition is serving to exacerbate the risk exposure of the collective of humanity, and to threaten democratic legitimacy world-wide. This recognition has led Pleyers (2010: 176) to argue that ‘[w]hat we need are struggles, constructive actions and a change of values.’ Here, citizens of less directly vulnerable Western states, are called upon to take responsibility for their part in exacerbating the risk of humanity as a whole through the values which they are contributing to legitimating within their local contexts.

Frankl (1967: 117 as cited in Giri, 2012: 195) argues that ‘deep down man is dominated neither by the will to pleasure nor by the will to power but by the will to meaning: his deep-seated striving and struggling for a higher and ultimate meaning

to his existence.’ This thesis has sought to highlight that the struggle for legitimisation with regard to Bt cotton represents a profoundly normative one in which the meaning of our relations to each other, as the basis for our ontological survival, are being challenged. Thus, as Banerjee (2007: 170) notes, ‘[t]he questions that need to be asked are...how do we understand ourselves and our world and how should we negotiate our relationships with ourselves?’

This thesis recognises that, as Joshi (as cited in Omvedt, 1993: 318) highlights, ‘there is no utopia; we only move from one flawed society to another.’ However, it has also attempted to highlight that distinctions with regard to legitimacy can, and must be, made as a concern not only for the normative direction of a given society, but also for the ontological survival of humanity as a whole.

It is recognised that a perfectly legitimate exercise of power will never be possible. However, it is argued that the closer the approximation to such a legitimate exercise of power in local, national and global contexts, the lower the potential for an unjust differentiation of risk and a reductionist construction of knowledge which will exacerbate the risk exposure for the collective. As such, it is argued that the ongoing struggle for the legitimisation of risk and democracy is central to the negotiation of risk society, not only as a concern for social and epistemic justice, but for the ontological survival of humanity as a whole.

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DC Correspondent: ‘Farmer ends life over debt’ 18/12/2010

DC Correspondents: ‘Five farmers die over debt, crop losses’ 26/12/2010

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APPENDICES

CHAPTER FIVE:

Methodology

Appendix 5.1

Consent Form: Village Sarpanch

RESEARCH APPROVAL
(for verbal translation into Telugu)

I _____ (sarpanch of ...) confirm that I agree that the village of ... can be used as a research location for the PhD project of Elaine Desmond from University College Cork, Ireland.

I understand this project will look at Bt cotton, and will involve interviews with selected villagers in order to discover the different impact of the crop for various households within the village.

It has been explained that the identities of the village and the participants in the research will be protected.

It has also been explained that information gathered will be used for the purposes of the PhD research, academic papers and creative projects and that the anonymity of the participants will be respected throughout.

SIGNED: _____

DATE: _____

RESEARCHER: _____

DATE: _____

WITNESS: _____

DATE: _____

Appendix 5.2

Consent Form: Participants

CONSENT FORM

(verbally translated into Telugu)

I _____ agree to participate in Elaine Desmond's research study on GM crops.

The purpose and nature of the study has been explained to me in writing.

I am participating voluntarily.

I give permission for my interviews with Elaine Desmond to be tape-recorded

I understand that I can withdraw permission to use the data within two weeks of the start of the research, in which case any material collected will be destroyed.

I understand that anonymity will be ensured in the write-up by disguising my identity.

I understand that disguised extracts from my interview may be quoted in the thesis and any subsequent publications if I give permission below:

(Please tick one box:)

I agree to quotation/publication of extracts from my interview ☐

I do not agree to quotation/publication of extracts from my interview ☐

Signed _____

Date _____

Appendix 5.3

Confidentiality Agreement with Translator

CONFIDENTIALITY AGREEMENT

I confirm that the identities of research participants to whom I am introduced as part of my work as translator for Elaine Desmond will be respected.

I confirm that the identity of the village(s) where this research is based will be kept confidential.

I confirm that information which is disclosed to me as part of this work will remain confidential, and that the anonymity of research participants will be respected.

SIGNED: _____

DATE: _____

Appendix 5.4

Interview Guide for Qualitative Village Interviews

How long have you lived in ...?
What is your age?
Where did you live before/what caused you to move?
What changes have you seen in ... in that time?
What do you like/dislike about living in ...?
How many are in your family?
How many brothers/sisters do you have?
Are your parents alive?
How many children do you have? Nieces/nephews?
Do they all live in the village?
Are your brothers/sisters at school? What age did they leave?
Are your children at school? What age did they leave?
Where do they work? In the village, etc. What do they do for work?

Ownership of assets

Do you own land?
If yes, how much?
How did you come to own the land?
Do you have animals?
Is your land irrigated?

Bt cotton

What caused you to start growing Bt cotton?
Are you pleased with it?
Do you like growing Bt crops? If yes, why? If not, why don't you change to non-Bt cotton or other crops?
Have you seen good yields? What did you grow before?
Does the seed dealer give loans?
How do you know you are getting genuine GM seeds and not second generation hybrids or non-Bt seeds?
What are the main differences between growing Bt and non-Bt cotton?
Have you experienced any problems in growing Bt cotton? What are they?
How has life changed for you since the introduction of Bt cotton?
Is pesticide use more or less with Bt cotton?
Is there a higher yield with Bt cotton?
How is the price for the harvest set?
How are you paid?
Do you employ others?
Has the need for labour increased with Bt cotton?
Are you finding new pests?
Are you better off since growing Bt cotton?
Has there been any impact on the environment as you've seen it?

Are you in favour of Bt aubergine?

Have you heard of any problems that others have had with Bt cotton?

Non-landed

Do you always work for the same farmer?

Do you get advanced payment before the season starts?

How long have you been working for others?

How much are you paid per day?

Has Bt cotton changed things for you?

Was there land redistribution? Why did you not get land as part of that?

Do you receive a share of the crop at the end of the season? How much?

How is that divided at the end of the season?

Do you always work for the same farmer?

Do you have employment opportunities outside of farming?

Can you go to other villages to work?

How many people in the household work on the land?

Diet

What is your daily diet?

Do you buy most of your food? Where?

Do you get PDS help? Does it work well? Do you have enough food?

Has your diet changed since Bt cotton?

Do you buy all your food?

Health

Are you and your family in good health?

Who do you see if you have a health problem? Is it free?

Have there been health issues with regard to Bt cotton?

Household income

Talk me through the income of the household – who works, for how long and how much would they bring in?

Are you paid in advance of the season for your work on the cotton fields? What are your outgoings other than food?

How often would natural disasters such as floods or famines occur? How do you survive these poor seasons?

Do you receive help from the government – subsidies, etc?

Are you in debt?

How did the debt arise?

Who do you owe the money to?

How much do you owe?

How will you repay it?

What happens if you do not repay the debt?

Are you less/more in debt since the introduction of Bt cotton? Why?

Democracy

Are you active in the *Panchayat*?

Do you attend *Gram Sabha* meetings?

Do you feel the Panchayat does a good job for village development? How?

Do you feel the Indian political system works?

Why/why not?

Do you vote in sarpanch/MLA elections?

Do you feel voting makes a difference?

Which has the most influence in your life – the sarpanch or MLA?

Do you feel represented at a political level?

Do you feel politicians listen to you/are interested in you?

Are the government/industry interested in the concerns of farmers regarding Bt crops?

Do they visit farms/talk to farmers?

What does Telangana mean to you?

Caste

Is caste still important in the village? In what way?

Are the traditional occupations still carried out by particular castes in the village?

Suicides

What is causing farmers to take their own lives in Warangal? Have there been any suicides in this village?

How do you feel about the suicides? What should be done to stop them?

Do you feel the government cares? Does it do enough?

Appendix 5.5

Interview Guide for Quantitative Village Interviews

Income/expenditure account for Bt/non-Bt cotton:

Name _____

Village _____

Number of acres planted _____

Seed Varieties _____

Soil Type _____

End of Season Income:

Quintals per acre _____

Price per quintal Rs _____

Total Income Rs _____

Expenditure:

Purchases

Seeds Rs _____

Machinery Rs _____

Oxen Hire Rs _____

Tractor Hire Rs _____

Land lease Rs _____

Fertilisers Rs _____ Number of uses _____

Pesticides Rs _____ Number of sprays _____

Seasonal break-down of Costs

Ploughing

Number of workers _____

Daily rate Rs _____

Number of days _____

Other costs _____

Sowing

Number of workers _____

Daily rate Rs _____

Number of days _____

Seeds Rs _____

Other costs _____

Weeding

Number of times _____

Number of workers _____

Daily rate Rs _____

Number of days _____

Other costs _____

Harvesting

Number of times _____

Number of workers _____

Daily rate Rs _____

Number of days _____

Other costs _____

APPENDICES:

CHAPTER SIX

Differentiated Risk Exposure in the Villages

Appendix 6.1

Village Composition Bantala, 2010/2011

Caste	Traditional Occupation	Number of households	Land-holding in acres per caste ¹
Forward Castes			
Vaishya	Merchants, land-owners, money-lenders	4	40
Backward Castes			
Kuruma ²	Shepherds	90	1,100
Gowda	Cattle breeders/toddy tappers	80	250
Are	Agriculture	10	100
Vadrangi	Carpenters	10	90
Chakali	Washermen	20	80
Kapu/Munnuru Kapu	Land owners	10	70
Reddy	Land-owners	8	70
Kumari	Potter	5	25
Kamari	Blacksmith	8	20
Mangali	Barber	5	20
Padmashali	Weavers	8	15
Scheduled Castes			
Madiga ³	Leather workers	150	300 (of which only 150 acres cultivated) ⁴
Mala	Weaving, watchmen, agricultural labourers	20	50
Total		428	2,120

¹ Ranked according to land holding within caste categories.

² Dominant caste and Kuruma sarpanch.

³ Majority population

⁴ This includes uncleared land from land redistribution which has here been allocated to the Madigas, but is unfit for cultivation.

Appendix 6.2

Village Composition Nandanapuram, 2010/2011

Caste	Traditional Occupation	Number of households	Land-holding in acres per caste ¹
Forward Castes			
Vaishya	Merchants, land-owners, money-lenders	5	15
Brahmins	Priests, teachers, administrators	2	14
Backward Castes			
Gowda ²	Cattle breeders/toddy tappers	200	496
Boya	Hunters	250	300
Kumari	Potter	40	200
Reddy	Land-owners**	20	100
Yadava	Cattle Herding	22	50
Vadla	Carpenters	20	20
Chakali (dhobi)	Washermen	10	5
Darji	Tailors	2	2
Scheduled Castes			
Madiga	Leather workers	400*	700
Total		971	1,902

¹ Ranked according to land holding within caste categories.

² The sarpanch is a female BC Gowda.

* Scheduled Caste Madigas are numerically in the majority in Nandanapuram, but are not identified as dominant given their low caste ranking and high degree of landlessness. Instead, power is negotiated between Backward Caste Gowdas, Boyas and Reddys, as well as Scheduled Caste Madigas.

** Although the land-holding of Reddys in Nandanapuram is comparatively small compared to Gowdas, Boyas, Kumaris and Madigas, they are nonetheless identified by villagers as being powerful (though less so than previously). This relates to the wider power with which the *jati* is associated in Andhra Pradesh, and highlights the way in which power relations within wider society serve to intersect with village power structures.

Appendix 6.3

Village Composition Orgampalle, 2010/2011

Caste	Traditional Occupation	Number of households	Land-holding in acres per caste
Backward Castes			
Mudhiraj ¹	Agriculture	48	236
Yadava	Cattle Herding	2	25
Chakali	Washermen	2	25
Total		52	286

¹ Dominant Caste.

The sarpanch (a male BC Mannuru Kappu) is located in a neighbouring village.

Appendix 6.4

'Rules' of Orgampalle Village (Translation from Telugu)

1. *We farmers follow organic cultivation methods.*
2. *We prepare our own seeds.*
3. *We grow mixed crops.*
4. *Every household grows trees.*
5. *We grow vegetables in the backyard of every house.*
6. *We will develop the dairy industry.*
7. *In every family, the farmer will be a member of the self-help group.¹*
8. *Every farmer will maintain a register giving details of how their crops are cultivated.*
9. *Farmers will abide by the conditions agreed upon by the village society and Crops [Jangaon].*
10. *We ban GM crops.*
11. *We will make other farmers aware of organic methods.*
12. *We will dig no more borewells.*
13. *Every farmer who has sufficient water will share it with others.*

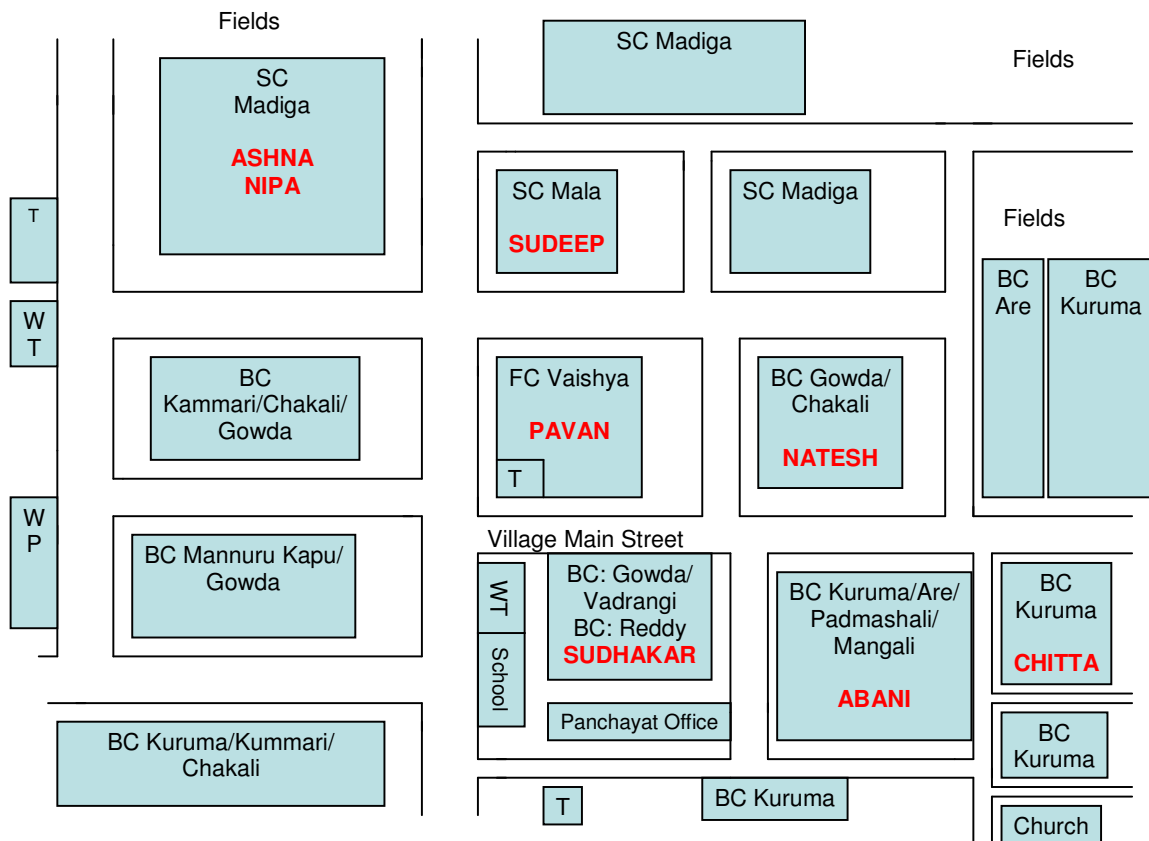
Sky water (rain) is sacred, river water is more sacred, ground water is the most sacred. We will conserve rain water, and increase ground water.

¹ Organised by Crops Jangaon

Appendix 6.5

Caste Wards and Locations of Participants

BANTALA 2010/2011



FC: Forward (upper) caste;

BC: Backward Caste;

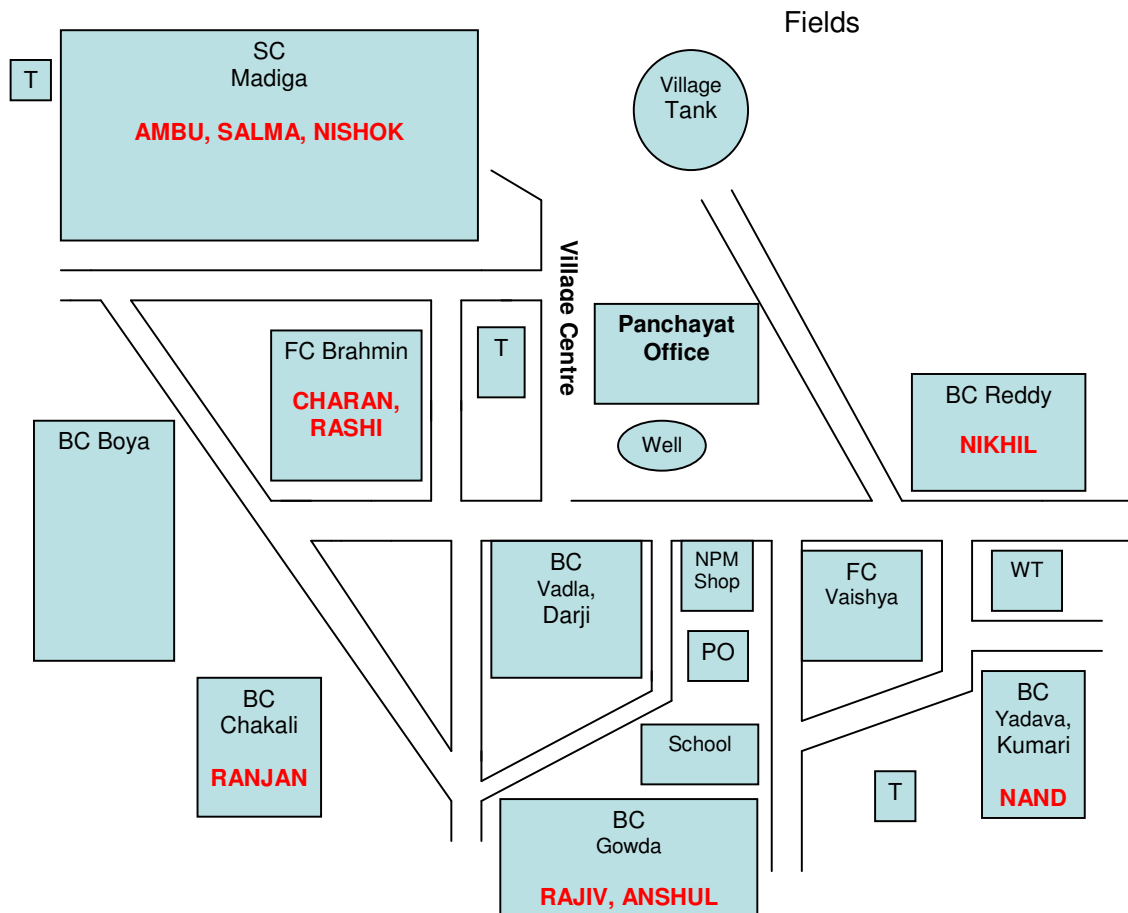
SC: Scheduled Caste;

T – Temple; WP – Water Purifier; WT – Water Tank; Church for small Christian minority.

Appendix 6.6

Caste Wards and Locations of Participants

NANDANAPURAM 2010/2011

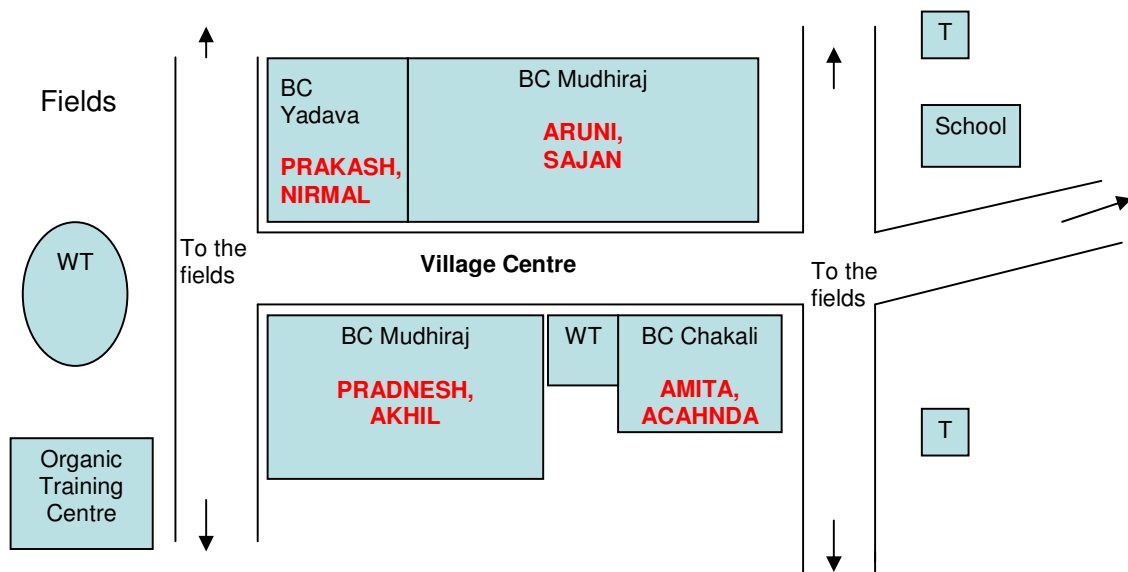


FC: Forward (upper) caste;
 BC: Backward Caste;
 SC: Scheduled Caste;
 T – Temple; WT – Water Tank; PO – Post Office

Appendix 6.7

Caste Wards and Locations of Participants

ORGAMPALLE 2010/2011



FC: Forward (upper) caste;
 BC: Backward Caste;
 SC: Scheduled Caste;
 T – Temple; WT – Water Tank;
 * The Panchayat Office is located in neighbouring village.

Appendix 6.8

Total Cultivation Costs per Participant, Bantala Risk Coalitions, 2010/2011

Risk Coalitions	Name	Land-holding of cotton	Tractor Ownership (%)	Oxen Ownership (%)	Irrigation (%)	Cultivation Costs per acre
	Average BT		16	50	50	16,733
Risk Coalition One (Least Vulnerable)	Pavan (FC)	20 acres (17 leased)	No	Yes	Wet	17,000
	Sudhakar (BC)	5 acres (4 leased)	Yes	No	Wet	19,000
	Chitta (BC)	7 acres (5 leased)	No	Yes	Wet	19,800
Average: Risk Coalition One		10.6 acres				18,600
Risk Coalition Two (Vulnerable)	Natesh (BC)	4 acres (all leased)	No	Yes**	Dry	20,000
	Ashna (SC)	2 acres	No	No	Dry	9,800*
	Sudeep (SC)	1 acre	No	No	Dry	14,800
Average: Risk Coalition Two		2 acres				14,866

* Crop lost mid-way through season.

** Sold mid-way through season.

Appendix 6.9

Total Cultivation Costs per Participant, Nandanapuram Risk Coalitions, 2010/2011

Risk Coalitions	Name	Land-holding of cotton	Tractor Ownership (%)	Oxen Ownership (%)	Irrigation (%)	Cultivation Costs per acre
	Average NP		12.5	37.5	37.5	18,625
Risk Coalition One (Least Vulnerable)	Charan (FC)	8 acres	No	Yes	Dry	19,300
	Nikhil (BC)	10 acres	Yes	Yes	Wet	23,000
	Nand (BC) (NPM)	3 acres	No	No	Dry	12,800
Average: Risk Coalition One		9 acres (Bt) 3 acres (NPM)				18,366 21,250 Bt 12,800 NPM
Risk Coalition Two (Vulnerable)	Anshul (BC)	2 acres	No	No	Dry	15,700
	Rajiv (BC)	4 acres (2 acres leased)	No	No	Wet	27,000
	Nishok (SC) (NPM)	2 acres	No	No	Dry	10,700
	Rashi (FC)	2 acres	No	No	Dry	20,000
	Ambu (SC)	3 acres	No	Yes	Wet	20,500
Average: Risk Coalition Two		2.75 (Bt) 2 (NPM)				18,780 20,800 Bt 10,700 NPM

Appendix 6.10

**Total Cultivation Costs per Participant,
Orgampalle Risk Coalitions, 2010/2011**

Risk Coalitions	Name	Land-holding of cotton	Tractor Ownership (%)	Oxen Ownership (%)	Irrigation (%)	Cultivation Costs per acre
	Average OR		14	85	14	10,300
Risk Coalition One (Least Vulnerable)	Pradnesh (BC)	4 acres	Yes	Yes	Dry	9,100
Average: Cost Coalition One		4 acres				9,100
Risk Coalition Two (Vulnerable)	Akhil (BC)	1.5 acres	No	Yes	Dry	6,700
	Nirmal (BC)	3 acres	No	Yes	Dry	8,300
	Achanda (BC)	3 acres (all leased)	No	Yes	Wet*	16,200
	Prakash (BC)	1.5 acres	No	Yes	Dry	8,400
	Aruni (BC)	1.5 acres	No	Yes	Dry	8,000
	Amita (BC)	1 acre	No	No	Dry	15,400
Average: Cost Coalition Two		1.9 acres				10,500

* Not used for cotton cultivation

Appendix 6.11

Break-down of Cultivation Costs per Participant, Bantala Risk Coalitions, 2010/2011

Risk Coalitions	Name	Seed Cost per acre (Rs)	Pesticide Costs per acre (Rs)	Number of pesticide sprays	Fertiliser Costs per acre (Rs)	Number of fertiliser uses	Labour Costs per acre (Rs)	Tractor Hire per acre (Rs)	Oxen Hire per acre (Rs)	Total Cost of Land Lease
	Average (BT)		2,700 (N=5)	7 (N=5)	2,090 (N=5)	4 (N=5)	8,200			21,000 (N=4)
Risk Coalition One (Least Vulnerable)	Pavan (FC)	750	3,200	8	2,250	3	6,100	0	0	51,000 Rs 3,000 per acre 50:50 share of profits/costs 8,000
	Sudhakar (BC)	750	3,000	6	2,500	5	10,000	0	0	Rs 2,000 per acre
	Chitta (BC)	750	5,000	10	1,700	4	9,200	2,000	0	15,000 Rs 3,000 per acre
Average: Risk Coalition One		750	3,733	8	2,150	4	8,433	666	0	74,000
Risk Coalition Two (Vulnerable)	Natesh (BC)	750	3,500	7	2,500	5	8,300	0	0	10,000 Rs 2,500 per acre
	Ashna (SC)	950	0	0	0	0	8,800	2,000	1,300	0
	Sudeep (SC)	750	1,500	3	1,500	3	7,300	0	1,500	0
Average: Risk Coalition Two		820	2,500	5	2,000	4	8,133	666	933	10,000

Appendix 6.12

Break-down of Cultivation Costs per Participant, Nandanapuram Risk Coalition, 2010/2011

Risk Coalitions	Name	Seed Cost per acre (Rs)	Pesticide Costs per acre (Rs)	Number of Pesticide Sprays	Fertiliser Costs per acre (Rs)	Number of Fertiliser Uses	Labour Costs per acre (Rs)	Tractor Hire per acre (Rs)	Oxen Hire per acre (Rs)	Total Cost of Land Lease (Rs)
	Mean (NP)	800	3,958 (N=6)	7.1 (N=6)	2,272 (N=8)	3.5 (N=8)	9,746	1,325	1,957	10,000 (N=1)
Risk Coalition One (Least Vulnerable)	Charan (FC)	1250	3,000	4	3,200	4	10,275	2,000	0	0
	Nikhil (BC)	1000	5,250	7	3,000	4	10,900	0	0	0
	Nand (BC) (NPM)	0	0	0	1,000	2	10,200	1,200	4,500	0
Average: Risk Coalition One		1125	4,125 (N=2)	5.5 (N=2)	3,100 (Bt) 1,000 (NPM)	4 (Bt) 2 (NPM)	10,458	1,066	1,500	0
Risk Coalition Two (Vulnerable)	Anshul (BC)	850	3,000	6	1,680	3	8,000	1,600	2,000	0
	Rajiv (BC)	750	5,600	10	3,000	5	10,700	1,600	4,000	10,000 (Rs 5,000 per acre)
	Nishok (SC) (NPM)	500	0	0	700	1	7,500	1,800	1,560	0
	Rashi (FC)	750	2,700	9	3,000	5	8,500	1,200	3,600	0
	Ambu (SC)	800	4,200	7	2,600	4	11,900	1,200	0	0
Average: Risk Coalition Two		780 (Bt) 500 (NPM)	3,875 (N = 4)	8 (N=4)	Rs 2,570 (Bt) Rs 700 (NPM)	4.25 (Bt) 1 (NPM)	9,320	1,480	2,232	2,500 (Bt) 0 (NPM)

Appendix 6.13

Break-down of Cultivation Costs per Participant, Orgampalle Risk Coalitions, 2010/2011

Risk Coalitions	Name	Cost of seeds per acre (Rs)	Pesticide Costs per acre (Rs)	Number of pesticide sprays	Fertiliser Costs per acre (Rs)	Number of Fertiliser Uses	Labour Costs per acre (Rs)	Tractor Hire per acre (Rs)	Oxen Hire per acre (Rs)	Total Cost of Land Lease (Rs)
	Mean (OR)		0	0	0	0	7,542	2,633 (N=3)	3,000 (N=1)	6,500 (N=1)
Risk Coalition One	Pradnesh (BC)	450	0	0	0	0	7,300	0	0	0
Average: Risk Coalition One		450	0	0	0	0	7,300	0	0	0
Risk Coalition Two (Vulnerable)	Akhil (BC)	500	0	0	0	0	5,400	0	0	0
	Nirmal (BC)	475	0	0	0	0	6,600	1,300	0	0
	Achanda (BC)	475	0	0	0	0	7,800	600	0	6,500 (Half profit share)
	Prakash (BC)	475	0	0	0	0	5,800	0	0	0
	Aruni (BC)	600	0	0	0	0	6,500	0	0	0
	Amita (BC)	475	0	0	0	0	13,400	6,000	3,000	0
Average: Risk Coalition Two		500	0	0	0	0	7,583	1,316	500	1,083

Appendix 6.14

***Yields, Selling Price and Profit and Loss per Participant,
Bantala Risk Coalitions, 2010/2011***

Risk Coalitions		Yields per acre (quintals)	Best price per quintal (Rs)	Total Profit/ (Loss) (Rs)
Average BT		4.3	4,725	15,250
Risk Coalition One (Least Vulnerable)	Pavan (FC)	6.5	6,000	102,000
	Sudhakar (BC)	4	3,800	(20,000)
	Chitta (BC)	5	4,250	19,100
Average: Risk Coalition One		5	4,600	33,700
Risk Coalition Two (Vulnerable)	Natesh (BC)	5.5	5,100	10,200
	Ashna (SC)	0 (entire crop lost)	0	(19,600)
	Sudeep (SC)	5	4,600	4,600
Average: Risk Coalition Two		3.5	4,850	(4,800)

Appendix 6.15

Yields, Selling Price and Profit and Loss per Participant, Nandanapuram Risk Coalitions, 2010/2011

Risk Coalitions		Yields per acre (quintals)	Best price per quintal (Rs)	Total Profit/ (Loss) (Rs)
Average NP		5.25	4,612	68,500 (including NPM farmers); (9,350) for Bt farmers
Risk Coalition One (Least Vulnerable)	Charan (FC)	4.5	5,000	11,400
	Nikhil (BC)	5	4,200	(39,200)
	Nand (BC) (NPM)	9	5,300	104,500
Average: Risk Coalition One		6.1 4.75 Bt 9 NPM	4,833 Rs 4,600 Bt Rs 5,300 NPM	25,566 (Rs 13,900) Bt Rs 104,500 NPM
Risk Coalition Two (Vulnerable)	Anshul (BC)	4.5	4,500	8,900
	Rajiv (BC)	5.5	5,000	(13,200)
	Nishok (SC) (NPM)	4.5	4,650	20,300
	Rashi (FC)	8	4,050	24,800
	Ambu (SC)	1	4,200	(49,000)
Average: Risk Coalition Two		4.7 4.75 Bt 4.5 NPM	4,480 Rs 4,437 Bt Rs 4,650 NPM	(1,640) (Rs 7,125) Bt Rs 20,300 NPM
Risk Coalition Three (At Risk)	Ranjan (BC)	0	0	0
	Salma (SC)	0	0	0

Appendix 6.16

***Yields, Selling Price and Profit and Loss per Participant,
Orgampalle Risk Coalitions, 2010/2011***

Risk Coalitions		Yields per acre (quintals)	Best price per quintal (Rs)	Total Profit/ (Loss) (Rs)
Average OR		4.6	3,838	17,968
Risk Coalition One (Least Vulnerable)	Pradnesh (BC)	6	5,600	56,600
Average: Risk Coalition One		6	5,600	56,600
Risk Coalition Two (Vulnerable)	Akhil (BC)	2.5	4,000	5,600
	Nirmal (BC)	5.5	5,200	37,900
	Achanda (BC)	5	4,000	16,000
	Prakash (BC)	4.5	4,000	880
	Aruni (BC)	3	4,000	5,100
	Amita (BC)	6	4,000	3,700
Average: Risk Coalition Two		4.4	4,200	11,530

Appendix 6.17

***Debt Levels per Participant,
Bantala Risk Coalitions, 2010/2011***

Risk Coalitions		Debt Level	Main Reasons Given	Sources of Debt
Average BT		186,125		
Risk Coalition One (Least Vulnerable)	Pavan (FC)	400,000	Cultivation costs (seeds, inputs, labour);	Banks; People in other village.
	Sudhakar (BC)	700,000	Buying land; Borewell; Tractor; Cattleshed.	Bank; People in own village.
	Chitta (BC)	150,000	Borewell; Cultivation costs (seeds, inputs, labour).	Banks; Private money lender in another village.
Average: Risk Coalition One		416,000		
Risk Coalition Two (Vulnerable)	Natesh (BC)	65,000	Dowry for sisters and daughter; Cultivation costs; Son's private hospital treatment.	Bank; People in own village and other villages.
	Ashna (SC)	50,000	Labour charges (incurred this season); Daughter's treatment in private hospital.	Bank; Micro-Finance Institution
	Sudeep (SC)	0		
Average: Risk Coalition Two		36,000		
Risk Coalition Three (At Risk)	Abani (BC)	100,000	Private hospital – husband's surgery.	Others in own village.
	Nipa (SC)	24,000	Private hospital – own health problems; Payment for Andhra Pradesh Rural Poverty Reduction Project – training to work as a cobbler.	Bank (land owner as guarantor); 'Landlords' in the village
Average: Risk Coalition Three		62,000		

Appendix 6.18

Debt Levels per Participant, Nandanapuram Risk Coalitions, 2010/2011

Risk Coalitions		Debt Level	Main Reasons Given	Sources of Debt
Average NP		118,500		
Risk Coalition One (Least Vulnerable)	Charan (FC)	110,000	Input and labour costs.	Bank; Person in the village. Commission agent in Warangal; Bank.
	Nikhil (BC)	250,000	Cultivation costs; Education of children.	
	Nand (BC) (NPM)	0		
Average: Debt Coalition One		120,000 Rs 180,000 Bt 0 NPM		
Risk Coalition Two (Vulnerable)	Anshul (BC)	80,000	Input and labour costs.	Trader in another village.
	Rajiv (BC)	250,000	Dowry; cultivation costs (inputs, seeds, labour).	Own village.
	Nishok (SC) (NPM)	25,000	Labour costs (current season).	Own village.
	Rashi (FC)	350,000	House construction; Dowry (of sister's daughters).	Bank; People in own village (own caste).
	Ambu (SC)	110,000	Dowry; Education of children; Hospital bills; Input and labour costs.	Own village; (Gowda caste) and people from other villages; Sister.
Average: Debt Coalition Two		163,000 Rs 197,500 Bt Rs 25,000 NPM		
Risk Coalition Three (At Risk)	Ranjan (BC)	0	Previous debt due to health costs.	Family. Sold buffalo to repay.
	Salma (SC)	10,000	Lease of land for paddy cultivation and crop failure.	Self-help group.
Average: Debt Coalition Three		5,000		

Appendix 6.19

**Debt Levels per Participant,
Orgampalle Risk Coalitions, 2010/2011**

Risk Coalitions		Debt Level	Main Reasons Given	Sources of Debt
Average OR		42,375		
Risk Coalition One (Least Vulnerable)	Pradnesh (BC)	0		
Average: Risk Coalition One		0		
Risk Coalition Two (Vulnerable)	Akhil (BC)	4,000	Labour costs (2010/2011 season).	People in nearby village.
	Nirmal (BC)	100,000	House construction.	Cross-cousin and people in other villages.
	Achanda (BC)	50,000	Labour charges in the 2010/2011 season. Dowry for daughters (1 lakh for one daughter and Rs 50,000 for another).	Banks. People in own and other villages.
	Prakash (BC)	35,000	House construction.	Bank and Crops Jangaon society.
	Aruni (BC)	50,000	Dowry of two daughters. Borewell (years ago).	Bank; MFI in Jangaon.
	Amita (BC)	100,000	Dowry of four daughters; Health.	People from nearby villages.
Average: Risk Coalition Two		56,500		
Risk Coalition Three (At Risk)	Sajan (BC)	0		
Average: Risk Coalition Three		0		

DISCOURSE ANALYSIS TABLES FOR
CHAPTER SEVEN:
Risk Construction in the Villages

Appendix 7.1

Interview Schedule for Cited Participants Micro Level: The Villages

Interview Number	Participant Pseudonym	Date
Bantala		
1	Chitta	23/08/2010
2	Chitta	23/11/2010
3	Chitta	05/02/2011
4	Sudhakar	15/08/2010
5	Sudhakar	24/11/2010
6	Pavan	15/08/2010
7	Pavan	23/11/2010
8	Pavan	05/02/2011
9	Sudeep	29/08/2010
10	Sudeep	24/11/2010
11	Ashna	08/08/2010
12	Ashna	24/08/2010
13	Ashna	24/11/2010
14	Ashna	05/02/2011
15	Natesh	14/08/2010
16	Natesh	23/11/2010
17	Natesh	05/02/2011
18	Nipa	22/08/2010
19	Nipa	23/08/2010
20	Nipa	23/11/2010
21	Abani	15/08/2010
Nandanapuram		
22	Rashi	21/11/2010
23	Rashi	22/01/2011
24	Anshul	26/09/2010
25	Anshul	23/01/2011
26	Rajiv	26/09/2010
27	Rajiv	23/01/2011
28	Ambu	27/09/2010
29	Ambu	22/01/2011
30	Nikhil	22/11/2010
31	Nikhil	22/01/2011
32	Ranjan	21/11/2010
33	Nand	22/11/2010
34	Nand	22/01/2011
35	Nishok	27/09/2010
36	Nishok	23/01/2011
37	Charan	22/11/2010
38	Charan	23/01/2011
39	Salma	21/11/2010

Interview Schedule with Cited Participants
Micro Level: The Villages

Interview Number	Participant Pseudonym	Date
Orgampalle		
40	Aruni	23/10/2010
41	Aruni	26/11/2010
42	Aruni	13/02/2011
43	Achanda	22/10/2010
44	Achanda	25/11/2010
45	Achanda	13/02/2011
46	Amita	19/09/2010
47	Amita	25/11/2010
48	Amita	12/02/2011
49	Akhil	19/09/2011
50	Akhil	25/11/2010
51	Akhil	12/02/2011
52	Sajan	20/09/2010
53	Prakash	26/11/2010
54	Prakash	13/02/2010
55	Pradnesh	30/09/2010
56	Pradnesh	26/11/2010
57	Pradnesh	12/02/2011
58	Nirmal	22/10/2010
59	Nirmal	26/11/2010
60	Nirmal	13/02/2010

Appendix 7.2

Questionnaire Results (Administered as Part of Interview Process), 2010/2011

1. I want to grow Bt cotton.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	66		
Agree	17	12	
Don't Know	17	14	
Disagree			
Strongly Disagree		62	58
Unaware of Bt Cotton		12	42

2. Growing Bt cotton has increased my household income.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83		15
Agree	17	13	
Don't Know			15
Disagree			
Strongly Disagree		75	28
Unaware of Bt Cotton		12	42

3. Growing Bt cotton has led to increased crop yields.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	25	15
Agree	17		
Don't Know			15
Disagree			
Strongly Disagree		63	28
Unaware of Bt Cotton		12	42

4. I have complete control of whether I grow Bt cotton or not.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	100	50	43
Agree			
Don't Know			
Disagree		25	15
Strongly Disagree		13	
Unaware of Bt Cotton		12	42

5. Bt cotton is not damaging to the environment.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree		12	
Agree			
Don't Know	83	13	15
Disagree		13	
Strongly Disagree	17	50	43
Unaware of Bt Cotton		12	42

6. I believe Bt crops will make more food available to those who need it.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	13	15
Agree			15
Don't Know	17	13	14
Disagree			
Strongly Disagree		62	14
Unaware of Bt Cotton		12	42

7. I would have no health concerns about eating Bt bringal (aubergine).

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	16		
Agree			
Don't Know	17	13	15
Disagree	17	25	
Strongly Disagree	50	50	43
Unaware of Bt Cotton		12	42

8. Growing Bt cotton has allowed myself and my family easier access to food.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	33	12	15
Agree	33	13	
Don't Know			15
Disagree	17	25	14
Strongly Disagree	17	38	14
Unaware of Bt Cotton		12	42

9. Growing Bt cotton has made my life easier.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	50	13	
Agree	16	13	28
Don't Know	17		15
Disagree	17	12	
Strongly Disagree		50	15
Unaware of Bt Cotton		12	42

10. Fewer pesticide sprays are required on Bt cotton.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	38	15
Agree			15
Don't Know			14
Disagree			
Strongly Disagree	17	50	14
Unaware of Bt Cotton		12	42

11. The government is interested in the experience of farmers who grow Bt cotton.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	50	12	
Agree		13	15
Don't Know			15
Disagree	16	13	14
Strongly Disagree	34	50	14
Unaware of Bt Cotton		12	42

12. Economic development, through science and technology, is essential for reducing poverty.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	75	
Agree	17	13	
Don't Know			15
Disagree			28
Strongly Disagree			15
Unaware of Bt Cotton		12	42

13. India must compete on the global economic market in order to deal with poverty.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	50	28
Agree		25	
Don't Know	17	13	15
Disagree			
Strongly Disagree			15
Unaware of Bt Cotton		12	42

14. The democratic process has led to greater equality in terms of access to opportunities in Indian society.

	Bantala (%) (N=6)	Nandanapuram (%) (N=8)	Orgampalle (%) (N=7)
Strongly Agree	83	25	
Agree		25	
Don't Know			16
Disagree		13	
Strongly Disagree	17	25	42
Unaware of Bt Cotton		12	42

Appendix 7.3

Discourse Analysis: Legitimation through Authorisation

(BT = Bantala; NP = Nandanapuram; OR = Orgampalle)

		Bt Farmers	Non-Bt Farmers
Risk Coalition One (Least Vulnerable)	BT	‘When the seeds came to the shop, the dealers told us [about them]. So, because of that, everybody knows.’ ‘The government is praising those who opt for cotton.’ ‘We have seen the difference [between Bt and non-Bt yields] in newspapers and through TV advertising.’	
	NP	‘I have seen the other farmers who have grown it. It gives higher yields with lower water consumption.’ ‘Some, one or two in the village, have bought it and tried it.’ ‘There was still a concern that the soil might get eroded if we grew Bt cotton. But a trend was created.’	‘I insisted with farmers of the village not to use Bt cotton. Still they have used it.’
	OR		‘I am telling farmers in meetings not to grow Bt varieties.’
Risk Coalition Two (Vulnerable)	BT	‘Once the government introduced Bt, we started growing it.’ ‘Because others were getting more yields with Bt, I also tried it.’ ‘I don’t know Bt. I just pick up whatever the dealer sells me.’	
	NP	‘Everyone is cultivating Bt, so I am also cultivating Bt....We expected a higher yield with the Bt varieties.’ ‘I want to see which variety gives me more yield.’ ‘I’ll see [the variety] the majority goes for.’	‘Nand [Risk Coalition One NPM farmer and employee of the NGO, SEED] gets the [non-Bt] seeds for me....I use the solutions which Nand gives to us.’ ‘Because of the solutions given to us by Nand, the problem of pests has reduced.’
	OR		‘I don’t grow it [Bt cotton] because I believe in Crops [Jangaon] and I do according to what they say.’ ‘Until now, we are following Pradnesh’s wish. We follow his opinion....’ ‘I have met people and I have seen video clips....I have also witnessed the way animals died in Bantala.’
Risk Coalition Three (At Risk)	SP		‘many people are growing it [cotton].’
	NP		‘now, since we lost our pension, we can’t even get a proper meal’
	OR		‘if someone obliges, I would get some rice on their ration card’

Appendix 7.4

Discourse Analysis: Legitimation through Moral Evaluation

(BT = Bantala; NP = Nandanapuram; OR = Orgampalle)

		Bt Farmers	Non-Bt Farmers
Risk Coalition One (Least Vulnerable)	BT	‘On TV, the news and the whole world are mainly concentrating on money.’ ‘Since the government supplies it [a ration card], we have to take it. Without a ration card, too, we can survive.’	
	NP	‘I have entered agriculture, but not because of profit. It’s only more and more investment, more and more indebtedness’ ‘[t]here have been a lot of government policies so we are getting benefit.’ ‘[a] lot of them [farmers] can’t bear the losses so...they have to sell the land in order to clear their debts’	‘In my grandfather’s time, we used to have roti and ragi....Now people have changed to commercial crops.’ ‘[m]ost of the money we are earning is going to the hospitals because we are getting diseases we have never heard of before’
	OR		‘We have to look for long-term benefits.’ ‘Recognising the disease [in the plant] is an art and giving the correct solution is a different art.’
Risk Coalition Two (Vulnerable)	BT	‘we used to strive hard. Now we are living happily’ ‘We used to grow jowar, wheat, things like that. Now we mainly grow paddy and Bt cotton.’ ‘Earlier, there were no bt [bitumen] roads, only concrete. And the school building...gram panchayat [office] and water plant we initiated.’	
	NP	‘The soil fertility will be lost so future generations will have nothing to eat.’ ‘By the time I finish it [house construction], I will be four or five lakhs in debt. That will be for my life.’ ‘I am the leader of a woman’s society [self help group]’	‘earlier we used to go for daily wage labour and live in huts.’ ‘[b]efore cotton, I used to grow green gram, maize, turmeric, red gram and ground nut’
	OR		‘What is the point of having higher returns when it doesn’t help health?’ ‘If I chose Bt seeds, I would have to use chemicals in crop production. It’s very expensive.’ ‘We don’t want to increase the [labour] rates. It’s a mutual understanding.’
Risk Coalition Three (At Risk)	BT		‘Now we eat three times a day.’
	NP		‘Now there is heavy rainfall so we have regular work.’
	OR		‘Maybe tomorrow I will have to start begging for food.’

Appendix 7.5

Discourse Analysis: Legitimation through Rationalisation

(BT = Bantala; NP = Nandanapuram; OR = Orgampalle)

		Bt Farmers	Non-Bt Farmers
Risk Coalition One (Least Vulnerable)	BT	‘There has been a twenty-five per cent increase in income with Bt cotton....I don’t know specifically [if Bt cotton damages the soils]. It is something I feel.’ ‘[t]he non-Bt fellow will say Bt is harmful. We listen and that’s it. We don’t know if it’s really harmful or not’ ‘Everybody grows cotton. But tomorrow what will happen?’	
	NP	‘I made Rs 35,000 profit last year.’ ‘I tried crop rotation in one part of my land but I couldn’t try it elsewhere because there is no water.’ ‘If everyone is growing Bt cotton and making money, then I must also do it to live. I’m just following the blind.’	‘The height of the crop has been decreasing...[and] the quality of the soil is deteriorating day by day.’ ‘sucking pests have doubled’ ‘They [farmers] have seen animals dying....But still the farmer has no alternative.’
	OR		‘They [farmers] are being cheated by the seed companies.’ ‘Chemicals have poisoned the seed.’ ‘Non-Bt cotton has a constant yield.’
Risk Coalition Two (Vulnerable)	BT	‘There are a lot of monkeys, so there is no safety in growing vegetable items.’ ‘People told me that it [Bt cotton] damages the environment, but I don’t know if that’s true or not.’ ‘[w]e are getting more yield, so we are getting more money...we get more, but our expenses are more’	
	NP	‘Because this cotton is rain-fed, I grow cotton.’ ‘When it’s luck, I get profit. When it’s unfortunate, I don’t get anything. It’s only luck.’ ‘The Bt crop yields have declined but my expenditure keeps increasing because of pesticide use.’	‘Soil fertility is declining because of consecutive cultivation of cotton. That’s why I’m doing crop rotation with maize and groundnut.’ ‘Compared to non-Bt, Bt produces less.’
	OR		‘I believe it [Bt cotton] affects the land, so I don’t grow it.’ ‘It [Bt cotton] might increase returns but damage health.’ ‘Farmers commit suicide because they are paying for chemicals.’
Risk Coalition Three	BT		‘If I can work, I can live. Otherwise, it is difficult.’
	NP		‘A few are getting higher returns, while others are making losses.’
	OR		‘I would look to people who can give me food, nothing else.’

Appendix 7.6
Legitimation through Mythopoesis

(BT = Bantala; NP = Nandanapuram; OR = Orgampalle)

		Bt Farmers	Non-Bt Farmers
Risk Coalition One (Least Vulnerable)	BT	‘All this [<i>Gram Sabha</i> meetings] comes under politics, so since I’m a farmer, I have to go for my work.’ ‘if I cast my vote, I may get benefit.’ ‘[e]verybody who has the right will cast their vote’	
	NP	‘They bribe me for my vote.’ ‘we are under a compulsion to vote....Otherwise, we wouldn’t.’ ‘King’s rule is preferable [to democracy] because the electoral system is too corrupt.’	‘If the farmers are protesting in huge numbers, that is one kind of force. But the government uses force by lathi charge...to undermine or repress the movement.’ ‘India is trapped... It is unable to say to America that our farmers don’t want Bt cotton.’
	OR		‘I campaign vigorously against Bt bringal. I have even argued with Jairam Ramesh.’ ‘The students are staging protests [for Telangana], they are being jailed....There’s no need for all this conflict. We have the right to vote every five years, so let’s make use of that.’
Risk Coalition Two (Vulnerable)	BT	‘I’ll participate in every activity as I’m an elder in the village.’ ‘Since we are living in a democratic country, this has given us the right to...fight for our rights.’	
	NP	‘I don’t attend <i>panchayat</i> meetings. I go to the meetings held for women [self-help group meetings]’ ‘farmers went on a...huge protest [after the failure of Bt cotton seeds]....The police officer...said he would do justice [to the farmers] but he took a bribe.’	‘If I keep attending these [<i>Gram Sabha</i>] meetings, I’ll not have much time to tend to my fields.’
	OR		‘[t]his [attendance at the <i>Gram Sabha</i>] is not my level....Women like me never attend such meetings.’ ‘There are thousands of farmers fighting on the streets against Bt. Why does the government not listen to them?’ ‘[e]veryone votes, so I also vote.’
Risk Coalition Three	BT		‘I don’t have time [to attend meetings]’
	NP		‘Every party bribes, usually with alcohol. I don’t drink, so they give me money.’
	OR		‘we get benefits like ration cards, and pensions have come of late’

DISCOURSE ANALYSIS TABLES FOR
CHAPTER EIGHT:
Risk Definition in State Politics

Appendix 8.1

Interview Schedule with Cited Participants: Macro Level

Interview Number	Institution	Date of Interview
1	Deccan Development Society (DDS)	18/08/2010
2	Crops Jangaon	30/08/2010
3	Communist Party (Marxist)	16/11/2010
4	Monsanto (Hyderabad)*	15/12/2010
5	Congress Party	18/01/2011
6	Centre for Sustainable Agriculture (CSA)	10/02/2011
7	ANGRAU Agricultural University	17/02/2011
8	Monsanto x 3 participants (Bangalore: involving teleconference with two Mumbai employees)	25/02/2011

* This Monsanto employee was based in Monsanto's Mumbai office, but was interviewed in Hyderabad.

Appendix 8.2

Legitimation through Authorisation and Core-Periphery Positioning

	Actor	Use of 'I' position and possessive pronoun	Use of 'you' position and possessive pronoun	Use of 'we' position and possessive pronoun	Use of 'they' position as delegitimation of alternative ideological positions
Bt Coalition	Congress Party (core)	'[m]y vision is to have the farmer net realizing from agriculture.'	'Suppose <u>you</u> want to scale up the protein levels [in food], maybe <u>you</u> can use intervention.'	<u>Government</u> : '[w]e have to make farming profitable'	'It's not as damaging as <u>they</u> [NGOs] advocate, and it helps the farmer to cut costs.'
	ANGRAU and RCGM Regulator (inner periphery)	'[i]f I say certain facts, I'm considered as belonging to a group either opposing or promoting it [Bt cotton].'	'[w]hen <u>you</u> are taking a driving test, <u>you</u> don't ask everyone to watch.'	<u>Regulators</u> : '[w]e can't control pests and save the environment simultaneously'	'It was too difficult to find an <u>unbiased NGO</u> ' (to sit on the Review Committee of Genetic Modification).
	Monsanto (periphery)	'I spend almost a week every month in farmers' fields.'	'as <u>you</u> can probably tell I have varied experience on safety being a toxicologist'	<u>Monsanto</u> ' <u>we</u> get lots of invitations to talk to scientists, as well as farmers, on our technology.'	'Generally those people [NGOs] don't do dialogue. <u>They</u> have their own agenda.'
Non-Bt Coalition	Communist Party – Marxist (CPM) (core)	'I belong to a rich peasant family'	' <u>You</u> can use a knife to cut a bringal and <u>you</u> can use the knife, that same knife, to cut a throat.'	<u>CPM</u> 'We want technology, but technology in the interests of people and the environment.'	'... <u>they</u> [the government] are making this technology an instrument of profit-making for MNCs.' 'Sometimes we may not agree with <u>them</u> [NGOs], especially the extreme environmental positions.'
	NGOs (periphery)	'I felt if I worked for farmers that would be best.' (CJ)	'... if <u>you</u> are faced with a problem, no-one is responsible? What is this?' (CSA) ' <u>you</u> submit data which says that since animals are not dying in America, they will not die in India' 'if <u>you</u> are giving ninety per cent of <u>your</u> research funds only for genetic engineering, that's what people will do.' (CSA)	<u>CSA</u> 'We found there were trials happening with Bt cotton in 1998. No information, no regulation.' (CSA) <u>CJ</u> 'We organise NPM programs in the villages.' (CJ)	'Government here is not very open. What <u>they</u> are doing is deciding somewhere in closed meetings.' (DDS) ' <u>They</u> [Monsanto] said animals will not die.' (CSA) 'the <u>GEAC</u> allowed <u>them</u> to do the field trials whereas the local monitoring system was not established.' (CSA)

Appendix 8.3

Legitimation through Moral Evaluation and Core-Periphery Positioning

	Legitimation through Moral Evaluation: Framing of Values	Diagnostic (Counter-framing as Delegitimation through problem identification)		Prognostic (Counter-framing as solutions through alternative interpretations of values)	
		CPM (periphery)	NGOs (periphery)	CPM (periphery)	NGOs (periphery)
Congress (core)	‘farmers <u>cannot</u> be neglected. They <u>have to</u> be supported’ ‘farmers <u>are to be</u> given the best possible price for their produce.’ ‘we <u>should</u>...help tenant farmers to avail of loans from the bank.’ Earlier, when the population of this country was thirty crores, we used to import wheat from America.	‘[i]t [technology] <u>should not</u> subjugate or it <u>should not</u> make us dependant on outside forces. It <u>should not</u> be left to the kindness of those forces.’	if indebtedness is the problem, credit <u>cannot</u> be the solution.’ (CSA) ‘if the trend of cotton...continues like this,...India will go around the world with a bowl begging for food.’ (DDS)	‘[i]f a certain technology is only useful to a certain community or to a certain section of the people, then we <u>should</u> make it equitable or we <u>should</u> abandon it’	‘... they [farmers] <u>should</u> stop using fertilisers and pesticides.’ (CJ) ‘Why <u>should</u> we not give equal importance to the [cultivation of] food grains?’ (DDS)
ANGRAU (inner periphery)	‘information <u>should be</u> put before the farmer and <u>he should</u> decide.’ ‘[f]armers <u>should be</u> able to produce their own seed and be self-sufficient in inputs.’	‘[i]f the tests are unable to explain the disease [which caused the animal deaths], then it <u>should be</u> an emergency.’ (CSA)	‘It was never tested for human safety. What is this?’ (CSA) ‘in 2006, again we accidentally stepped into a Bt field trial.’ (CSA)	‘science and technology <u>should</u> be used for the good of the community and humanity and the environment’	‘... the chairman of the expert committee was a crop developer himself. ... We said you are beneficiaries of the process so you <u>cannot</u> test it.’ (CSA)
Monsanto (periphery)	‘the farmer is the one who bears all the risk...so he <u>must</u> receive the maximum benefit.’ ‘it <u>cannot</u> be more lies that people would link Bt cotton and farmer suicides.’ ‘why <u>should</u> the Indian farmer pay a tenth of the costs of the rest?’ ‘[i]f you look at 2002, India was a net importer of cotton. Now we are an exporter.’	‘our government is forcing these [Indian research] institutes to have tie-ups with multinational companies. Why <u>should</u> it?’	‘Why do you need it [the technology] first? Second, whether it suits clear situations. And then inform people properly. ... Apart from all these things, it <u>should</u> be safe.’ (CSA).	‘[w]e <u>can</u> have tie-ups with Chinese agricultural research institutes. Why is it a US initiative only?’	‘[i]f they [farmers] grouped together, their choices <u>would</u> be freer. They <u>could</u> grow non-Bt if they wanted to.’ (CJ). We <u>should</u> have price regulation, we <u>should</u> have a compensation mechanism, we <u>should</u> also have an increased fine.

Appendix 8.4

Legitimation through Rationalisation and Core-Periphery Positioning

	Legitimation through Rationalisation: Framing of Development	Diagnostic (Counter-framing as Delegitimation of Bt Coalition)		Prognostic (Counter-framing as rationalisation of alternative world view)	
		CPM (periphery)	NGOs (periphery)	CPM (periphery)	NGOs (periphery)
Non-Bt / Bt Coalition					
Congress (core)	‘farming ... <u>has to</u> be a <u>profitable enterprise</u>, like any other <u>business</u>.’ ‘science and technology <u>should</u> and <u>will</u> help society and farmers’ ‘I don’t have any limitations [with regard to Bt technology] but if it is a food crop generally people may have a lot of apprehensions. We <u>have to</u> sort those out.’	‘It is not the fault of the technology; it’s the fault of the whole system’ ‘all the knowledge gained by the farmers is equally important as science and technology’ ‘It made the farmers dependent on credit institutions in a big way.’	‘If Bt cotton can solve all the problems, why do cotton farmers in the US need so many subsidies?’ (CSA) ‘if indebtedness is the problem, credit <u>cannot</u> be the solution.’ (CSA) ‘[w]hen there are 2 lakh farmer suicides in this country, no-one takes responsibility, no-one feels responsible.’ (CSA)	‘you realise the problem that may come in twenty years and take remedial action in the present. This is one type of visionary development.’	‘We are giving them [farmers] an alternative with NPM.’ (DDS) ‘Our objective is to create awareness in the villages.’ (DDS)
ANGRAU (inner periphery)	‘I support Bt transgenic technology as it has reduced the need for pesticides’ ‘things are logical which are scientifically decided.’ ‘[s]o far, it [Bt technology] is not killing us. Tomorrow if it kills us, let us find out.’	‘[w]ithout testing, without trials, they are approving.’	‘gene transfer is imprecise’ (CSA) ‘there is no testing for other changes happening in the plant.’ (CSA) ‘[e]verybody is saying there are types of cancer because of the toxins and pesticides’ (DDS)	‘You <u>have to</u> research seed suitable for different soils and environmental conditions.’	‘None of the tests conclusively say it is safe for animals.’ (CSA)
Monsanto (periphery)	‘[e]very farmer benefits’ ‘[g]enes to a scientist are just DNA.’ ‘this money made by the farmers [through Bt cotton cultivation] has been used for various purposes.’ ‘People have realised that public education is going to be important.’	‘there was not as much yield as they were claiming.’ (CSA)	‘yield increase is not because of Bt cotton. It is because of increased irrigation facilities [and]...hybrids.’ (CSA)	‘if you have agreements with other research institutes...they are not going to demand royalties or proprietary rights.’	‘We established a cotton processing unit where cotton can be spun in the village itself.’ (CSA) ‘Instead of so many big companies, we’ll have villages.’ (CSA)

Appendix 8.5

Legitimation through Mythopoesis and Core-Periphery Positioning

		Diagnostic Framing	Prognostic Framing	Framing of NGOs	Framing of Democratic Legitimacy
Core	Congress Party	‘we <u>have to</u> respect society, <u>we have to</u> respect civic responsibilities, <u>we have to</u> be more rule-abiding.’	‘People complain <u>we have excess democracy.</u> ’	It’s [Bt cotton] not as damaging as they [NGOs] advocate ... we <u>have to</u> have some sort of compromise.’	Strong state; Law and order; Profitable agriculture
	Communist Party – Marxist (CPM)	‘because there are inequalities in society, these are being imposed on democracy’	‘If you want real democracy, you <u>have to</u> eliminate inequity or at least control inequities through the democratic process.’	‘NGOs raise crucial questions. They raise public awareness, they bring important questions to the notice of the public.’	Equity; Participation
Inner Periphery	ANGRAU	‘Where confidentiality is required, we <u>cannot</u> be democratic.’	‘We are policy-makers. We decide. Farmers need us to decide.’ ‘Regulation is the most democratic way.’	‘[t]here was a hue and cry that companies were using data from their own labs. Although these labs are authorised by the government, the government has asked for independent tests to satisfy NGOs.’	Trust in expertise of decision-makers;
Periphery	Monsanto	‘the price [of Bt seeds] was reduced which we believe was a very arbitrary decision by some of the stakeholders, very political.’	‘Government <u>can</u> always, through policies, help the development of new technologies.’	‘Generally those people [NGOs] don’t do dialogue. They have their own agenda.’	Incentivisation of private investment in research; Removal of intervention in pricing decisions
	NGOs	‘If I have a problem with your product, you <u>should</u> be responsible. ... There <u>should</u> be a transparent process of decision-making.’ (CSA)	‘There <u>cannot</u> be a uniform policy at the national level. It <u>should</u> be localised. Every state <u>would</u> be in a position to decide.’ (CSA)	‘[w]e are definitely showing them [the government]. They are not responding, but they are conscious of it’ (DDS)	Transparency; Responsibility; Participation; Concern for the future.

Appendix 8.6

Bt Cotton and the Definition of Risk and Democracy: A Meso Level Summary

Categories of Legitimation/ Positioning of Actors		Authorisation	Moral Evaluation	Rationalisation	Mythopoesis	Basis of state legitimacy
Core	Congress Party	'We have to make farming profitable.'	'Farmers cannot be neglected. They have to be supported.'	'Farming has to be a profitable enterprise like any other business.'	'We have to be more rule-abiding.'	Profitable agriculture. Self-sufficiency in food. Law and order.
	Communist Party (Marxist)	'We want technology, but technology in the interests of people and the environment.'	'science and technology should be used for the good of humanity and the environment.'	'All the knowledge gained by the farmers is equally as important as science and technology.'	'If you want real democracy, you have to...control inequities through the democratic process.'	Equity. Participation. Self-sufficiency as sovereignty. Safety. Testing.
Inner Periphery	ANGRAU	'When you are taking a driving test, you don't ask everyone to watch.'	'Farmers should be able to produce their own seed and be self-sufficient in inputs.'	'So far it [Bt cotton] is not killing us. Tomorrow if it kills us, let us find out.'	'Where confidentiality is required, we cannot be democratic.' 'We are policy makers. We decide.'	Trust in experts. Choice. Regulation. Information. Farmer as self-sufficient. Testing.
Periphery	Monsanto	'I feel really proud that we played a small role in improving the lives of farmers.'	'Why should the Indian farmer pay a tenth of the costs of the rest?'	'Genes to a scientist are just DNA.' 'People have realized that public education is going to be important.'	'As a company, we are willing to answer questions scientifically.' 'Government can always, through policies, help the development of new technologies.'	Scientific education. Self-sufficiency through global trade. Limited state intervention in pricing. Incentivisation of private investment in research.
	NGOs	'We found there were trials happening with Bt cotton in 1998. No information, no regulation.' (CSA)	'We are not against technology. Why do you need it first? Second, whether it suits clear situations. And then inform people properly....Apart from all these things, it should be safe.' (CSA)	'If Bt cotton can solve all the problems, why do cotton farmers in the US need so many subsidies?' (CSA) 'We are giving them an alternative with NPM.' (DDS)	'There should be a transparent process of decision-making.' (CSA) 'I should have the right to say no.' (CSA) 'We are definitely showing them [the government]. They are not responding, but they are conscious of it.' (DDS)	Self sufficiency as sovereignty. Transparent decision-making. Responsibility. Safety. Testing.

