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Risk Definition and the Struggle for Legitimation:
A Case Study of Bt Cotton in Andhra Pradesh, India

Abstract

This article explores the struggle for legitimation associated with the attempt to define the risk of Bt cotton, a genetically modified crop, in Andhra Pradesh, India. Beck (1992: 185) asserts that, given the uncertainty associated with risk society, efforts to define risk are creating the need for a 'new political culture'. This article argues that this political culture emerges from attempts to legitimate power within risk definition. This is examined using critical discourse analysis (Fairclough, 1989; 1992; 1995) on interview excerpts with key figures in the Bt cotton debate. Legitimation is explored using the 'categories of legitimation' developed by Van Leeuwen (2007; 2008). These are a) authorization; b) moral evaluation; c) rationalization; and d) mythopoesis. The analysis highlights that the political culture which emerges in response to risk society is in a state of constant flux, and contingent upon the ongoing struggle for legitimation with regard to the definition of risk.

Key words: risk, legitimation, democracy, development, India, genetically modified crops, critical discourse analysis.

Introduction

According to Beck (1992: 19), the 'social production of wealth [which technological innovation entails] is systematically accompanied by the social production of risks'. In his theory of risk society, he (1999; 2009) argues that contemporary risks are generated as a result of technological innovation. Beck (2009: 115) also asserts that 'risk society'

can best be described as a 'non-knowledge' society as the risks associated with technological innovation become increasingly pervasive and unmanageable.

The extensive critiques of Beck's seminal theorisation of risk society are beyond the remit of this paper. However, one critique which is relevant here refers to the 'striking absence of empirical research' (Campbell and Currie, 2006: 162) in Beck's work. This paper seeks to address this through applying Beck's theory to an empirical context. In doing so, however, it identifies a further lacuna in Beck's work – namely, his neglect of the concept of legitimation in relation to risk society.

Giddens (2003: 22) defines risk as relating to 'hazards that are actively assessed in relation to future possibilities.' This paper takes the view that risk represents an epistemic gap - in Beck's (2009: 115) terms, an 'ineradicable non-knowing' - which must be negotiated ideologically in the present. Beck (1992: 23) argues that because of the uncertainty which risks represent, they are 'particularly open to social definition'. This paper posits, however, that the attempt to define risk is subject to a process of legitimation in which the 'relations of definition' which Beck (1995: 43) identifies, as well as the institutionalization of definitional power, are themselves contested.

Genetically modified (GM) crops are noted by Beck (2009: 74-76) as being highly symbolic of risk society. Renn (2008: 247) claims that GM technology falls within the category of risk classified as highly ambiguous given that it is associated with uncertain consequences. These include health concerns related to immune system dysfunctions,

organ abnormalities, allergies and cancers (Smith, 2004: 15-31).[1] There have also been reports of sheep deaths, and the potential for other, as yet, undetected changes within the wider environment (Smith, 2007). Concern is heightened given the inability to contain the technology's potential side effects amid fears for pollen drift, gene drift, 'superweeds', and Bt resistance (Buttel, 2005: 313). This paper contends that, because of this uncertainty, GM crops are at the centre of a worldwide legitimation struggle. It also argues that the stakes of this struggle extend far beyond GM technology.

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.' As Mackerron and Berkhout (2009: 991) note, Weber and Habermas argue that legitimation depends on the rational exchange of arguments in which 'both the normative validity of values (the acceptability of what ought to be) and factual validity (the defensibility of truth claims) are tested in a fair and transparent way.' These authors claim that '[l]egitimacy is therefore a place in which facts and values merge.' This paper will now explore the legitimation struggle with regard to Bt cotton, a GM crop, in Andhra Pradesh, India.[2]

Legitimation and Risk Definition in Andhra Pradesh

As a site for research into the legitimation of risk, India is highly significant. The country is predicted to become the world's second largest economy by 2050 (*Times of India*, 8/1/2011).[3] Meanwhile, however, fifty-five per cent of its population is classified as poor (*Times of India*, 16/7/2010).[4] Despite concerns for its risks worldwide, Bt cotton was

approved for commercial cultivation in India in 2002. The crop is 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 a variety of cotton pests, the most destructive of which is the American bollworm *(Helicoverpa armigera)*. By 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).

The state of Andhra Pradesh, like much of India, is characterised by an acute agrarian crisis. This is associated with water scarcity, soil degradation, escalating cultivation and food costs, erratic monsoon rains, and the unequal distribution of key resources, such as land and political influence (Le Mons Walker, 2008: 557; Rao, 2009; Deshpande and Shah, 2010; Singhal, 2010). In many areas, this has resulted in high numbers of farmer suicides. These have been strongly linked to indebtedness (Sridhar, 2006: 1560; Deshpande and Shah, 2010: 134; Iyer and Arora, 2010: 266; Sreedhar, 2010: 227). Andhra Pradesh ranks among the top five states in India with regard to such suicides.[5]

This research explores the legitimation struggle which attempts to define the risk of Bt cotton in Andhra Pradesh involve. This is undertaken using the categories of legitimation defined by Van Leeuwen as a) authorization; b) moral evaluation; c) rationalization; d) mythopoesis. Each of these categories will now be examined in turn in relation to the Bt cotton debate in Andhra Pradesh.

a) Authorization

According to Van Leeuwen (2008: 106-109), authorization refers to legitimation by reference to persons in whom authority is vested. The Bt cotton debate can be seen as a struggle between competing authorities to gain wider legitimation of their ideological positions in the absence of factual certainty.

The participants in the current research represent the main authorities who struggle for the legitimation of their definitional authority in the debate in Andhra Pradesh. The US multinational, Monsanto, seeks legitimation of its authority as the primary seller of the technology in India.

The state government (the Congress Party was in power in the state at the time of the research) supports the technology's cultivation as part of a drive to modernize Indian agriculture. Given this, Bt cotton often serves as a key issue used by political opponents in their attempts to delegitimate government policy.

India's regulatory bodies represent a further authority competing for the legitimation of their power to define the risk of Bt technology. The current Indian regulatory system involves a Review Committee for Genetic Modification (RCGM), and an apex regulatory authority, the Genetic Engineering Approval Committee (GEAC). The GEAC serves in an advisory capacity to the government. In 2010, civil society pressure led to a moratorium being placed on Bt bringal (aubergine) in India, despite the crop's approval

by the GEAC (Gupta, 2011). This was seen as an assertion by the central government of its over-riding authority in risk definition.

Despite its widespread adoption, Andhra Pradesh is noted for the strength of civil society protests against Bt technology. Mass demonstrations are spearheaded by a vibrant NGO sector which has, as Stone (2011: 387) observes, 'contested the new technological regime at every step.' Opponents argue that the widespread adoption does not indicate the technology's legitimation; instead they assert it is due to the absence of non-Bt cotton seeds on the market. While protests contributed to the moratorium on Bt bringal, protests against Bt cotton continue.

b) Moral Evaluation

The moral evaluation aspect of legitimation relates to 'discourses of values' (Van Leeuwen, 2007: 91) This involves societies in attempts to define moral positions according to abstract ideals such as justice, equality and liberty. In terms of risk, moral evaluation often involves judgements on the 'trade-offs' which Renn (2008: 147) asserts risk assessment involves.

Supporters of Bt technology claim that, since its adoption, poverty has been reduced for all classes of cultivator due to the increased yields and incomes, as well as the reduced pesticide use, which they assert the technology has enabled (Subramaniam and Qaim, 2009: 256; Choudhary and Gaur, 2010: 20). Protestors argue, however, that Bt cotton is a high-cost cultivation method which, over time, exposes cultivators, particularly small

and marginal land-holders, to the risks of indebtedness and ecological degradation in the attempt to secure its erratic benefits (Shiva, 1999; Kuruganti, 2009). This view is supported by an article in the *Times of India* (12/10/2010) which claimed that ninety-three per cent of the state's rural poor is in debt.[6]

The early experience of Bt cotton in India also highlighted serious concerns with regard to the efficacy of the Indian regulatory process in safeguarding the population. Although not officially approved until 2002, Bt cotton was cultivated illegally since 1999 (Herring, 2012: 48).[7] Critics argue that this unchecked planting has meant that the technology has never been adequately tested in India. Similarly, they claim that Bt cotton poses serious risks to animals which graze on the crop (Kuruganti, 2006: 4246).[8]

c) <u>Rationalization</u>

Legitimation through rationalization refers to the 'goals, uses and effects' of practices (Van Leeuwen, 2008: 113). With regard to risk research, this relates to the struggle for factual validity to support the wider ideological struggle in which risk definition is embedded. The legitimation of Bt cotton is strongly linked to the legitimation of the neoliberal view that poverty alleviation and the quest to modernize necessitates an element of risk-taking.[9]

The embrace of technology as part of a wider ideological shift to neoliberalism was outlined in the Vision 2020 initiative launched by the Andhra Pradesh government in 1999. This vowed to eradicate poverty in the state by 2020 through a greater emphasis on

economic liberalization and globalization. The centrality of technology to this plan was clear in the Vision 2020 document's statement that: '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).

Those who support the neoliberal approach to development argue that it has reduced poverty, and allowed India to strengthen its position among global powers (Sharma, 2004). This is challenged by opponents who argue that neoliberalism has exacerbated inequality, and heightened the risk exposure of the most vulnerable (Le Mons Walker, 2008). Bt cotton has become symbolic of this wider ideological debate.

d) <u>Mythopoesis</u>

The concept of mythopoesis is used by Van Leeuwen (2008: 117) to illustrate the idea that legitimation involves reference to 'narratives that reward legitimate actions'. With reference to risk, it is argued that competing narratives of democracy are incorporated into the struggle for legitimation, the outcome of which is pivotal to determining the type of democratic process, institutional structure and, ultimately, society which emerges. As in the case of authorization, legitimation through mythopoesis focusses attention on the 'relations of definition' (Beck, 1995: 43). However, legitimation through mythopoesis more directly relates to the way in which the 'new political culture' which Beck (1992: 185) describes takes shape.

The material impact of the legitimation struggle can be seen in way competing narratives of democracy are utilised to support or to challenge attempts to institutionalise definitional power with regard to Bt cotton. A Bill referred to as the Biotechnology Regulatory Authority of India (BRAI Bill) was passed in 2013. This authorises the establishment of an independent authority formed of eminent scientists in which the government itself would serve in an advisory capacity only. The Bill is being strongly contested by NGOs who argue that its implementation would curtail the ability of the wider public to contribute to decision-making on Bt technology (Chaturvedi, 2004: 3696; Gupta, 2011: 739).

The struggle to define the risk of Bt cotton has also seen Monsanto increasingly come into conflict with the state government. Given the scale of civil society protests, the Andhra Pradesh government was obliged to take an active role in regulating trading practices related to Bt cotton as a concern for its own legitimacy. In 2006, the state government won a ruling which obliged Monsanto to reduce its seed prices.[10] It is also recognised, however, that a proposed All-India Seed Bill, if passed, would severely limit the power of states to regulate the activity of multinationals, such as Monsanto (Kumar, 2010: 10). This would also limit the state's ability to negotiate its own legitimacy, and is being challenged by a number of state governments.

Methods and Methodology

The research for this paper is extracted from a doctoral thesis in Sociology submitted at University College Cork, Ireland, in 2013. It is based upon nine months of ethnographic

fieldwork conducted in Andhra Pradesh between June, 2010 and March, 2011. The duration of the study was chosen to coincide with a cotton season. The central objective of the research was to explore the struggle associated with attempts to legitimate the risks of ambiguous technologies, such as GM crops, within a context of the Global South. The need for this is highlighted by Beck (2009: 211) who argues that 'we must become alert to the manifold, real self-critical voices of the developing world risk society'.

Fieldwork involved alternate trips to three villages with a translator for half of each week. The remainder of the week was spent at the University of Hyderabad, where the author attended classes offered as part of the Master's degree in Sociology. She also studied Telugu (the state language of Andhra Pradesh), and conducted the interviews which are featured here.

The featured research involved ten participants selected from the industrial, political, regulatory and NGO sectors. It is noted that this is a small-scale study, and that the researcher was obliged to divide her time between the wider analysis of legitimation and the village fieldwork. Nonetheless, it is hoped that the current paper demonstrates the potential fruitfulness of larger and more sustained analyses of legitimation in relation to risk.

For the purposes of analysis, the participants have been grouped into 'discourse coalitions' (Hajer, 1997: 12-13) as follows:

- A **Bt Coalition** comprised of representatives from the Congress Party in government, and the Review Committee of Genetic Modification (a scientist from ANGRAU, a state agricultural university), as well as four employees from the multinational, Monsanto;

- A **Non-Bt Coalition** involving representatives from the Communist Party (Marxist) (CPM) in opposition, and three NGOs – the Deccan Development Society (DDS), Crops Jangaon (CJ) and the Centre for Sustainable Agriculture (CSA).

Apart from the interview with the participant from Crops Jangaon, all of the interviews were conducted in English.[11] This highlights the association of the English language with the power to define risk in Andhra Pradesh. All interviews, except that with the ANGRAU participant, were recorded, and transcribed *verbatim* by the researcher. The participant from ANGRAU did not agree to be recorded, so shorthand notes were taken with the participant's consent. The corpus of data involved just over one hundred pages of single-spaced, type-written material.

Categories of Legitimation in a Critical Discourse Analysis of the Bt Cotton Debate

The struggle for legitimation with regard to Bt cotton will now be explored using critical discourse analysis on excerpts of interviews with participants in both coalitions. This is structured using Van Leeuwen's (2007; 2008) categories of legitimation.

a) Authorization in risk definition

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.' In critical discourse analysis, the use of pronouns is significant in this respect (Fairclough, 2003: 150).

The Bt Coalition - legitimation of authority by supporters of Bt cotton

The Congress Party participant asserts the legitimacy of his own support for Bt cotton through highlighting the government's position. He claims, '[t]he government has endorsed Bt cotton'. The exclusive 'we' position is frequently used by this participant to emphasise his power as a decision-maker in government as in, '[w]e want to give all tenant farmers in this state a loan eligibility card.'

The ANGRAU participant's dual roles as a 'government scientist' in a state university, and a regulator with the RCGM, contribute to a strong desire to be seen as epistemically neutral. He claims: '[i]f I say certain facts, I'm considered as belonging to a group either opposing or promoting it [Bt cotton]'. This is clearly frustrating given his belief in his own objectivity. He asserts the particular authority associated with his education, claiming: '[t]he average illiterate may not worry about the environment or future generations.' This leads him to argue that, as a regulator, his authority to take decisions on Bt cotton, in the absence of public involvement, should be respected. He claims, 'when you are taking a driving test, you don't ask everyone to watch'. The use of the 'you' position seeks to gain solidarity with this proposition (Fairclough, 1989: 205).

The epistemic standing of the Monsanto participants is asserted through their use of the exclusive 'we' position to highlight their identification with their globally powerful employer. This is clear in the statement: 'we're a global company with global obligations'. There are also assertions of personal epistemic authority with regard to Bt cotton. The sales and marketing participant claims, 'I'm working fourteen years on Bt cotton' and 'I spend almost a week every month in farmers' fields'. The use of the 'you' position is adopted by the Lead for Regulatory Affairs to establish solidarity with her own assertion of her epistemic authority as in: 'as you can probably tell, I have varied experience on safety being a toxicologist.'

Non-Bt Coalition – legitimation of authority by opponents of Bt cotton

The CPM participant uses the exclusive 'we' position to highlight his identification with his party's position: 'we want technology, but technology in the interests of people and the environment'. His use of the 'I' position seeks to establish his authority on agrarian issues given his rural origins. He claims, 'I belong to a rich peasant family'.

The exclusive 'we' position is used by NGO participants to refer to their organisations as in '[w]e found there were trials happening with Bt cotton in 1998. No information, no regulation' (CSA). These participants also seek to assert their personal moral authority as representatives of farmers, as in the claim: 'I felt if I worked for farmers that would be best' (CJ).

In summary, participants in both coalitions assert their personal authority through their institutional affiliation. All except the ANGRAU participant seek legitimation of their authority based upon their strong links with farmers. As a regulator, the ANGRAU participant instead emphasizes his purported neutrality. Monsanto participants also emphasize the global power of their employer. While the Bt Coalition stress their scientific education (ANGRAU and Monsanto), or their position of power in government (the Congress Party) as the basis for the legitimation of their authority, the Non-Bt Coalition instead seek to derive authority from their representation of the voice of the people (CPM) or the interests of farmers (CJ).

b) Moral Evaluation – legitimation through discourses of values in risk definition

The use of modality in the discourse of participants serves as the basis for exploring the remaining three categories. As Reyes (2011: 796) notes, modality signals the degree to which speakers commit themselves to the validity of what they are saying. Categorical modality, expressed in a simple present tense form, signifies the speaker's commitment to the proposition as a 'fact' (Fairclough, 1989: 129). This can relate to an epistemic or moral 'truth' depending upon the context (ibid.). Moral statements often use 'deontic modality' (Fairclough, 2003: 170). This expresses the participant's normative belief in how things should be (ibid.: 176-177). It is indicated through the use of modal auxiliary verbs, such as 'must', 'should', 'have to', 'cannot', etc.

Given the extent of farmer suicides in Andhra Pradesh, participants in both coalitions emphasise their concern for farmers as a means of establishing their moral legitimacy.

The strategy of altruism is highlighted by Reyes (2011: 787) who argues that, in seeking moral legitimation, people focus on convincing others that 'their proposals do not appear driven only by personal interests.'

Bt Coalition – legitimation through moral evaluation: Bt cotton supporters

The Congress Party participant asserts his concern for farmers through the use of successive deontic modality: '[f]armers cannot be neglected. They have to be supported'; 'we should help tenant farmers to avail of loans'; 'farmers are to be given the best possible price for their produce'.

The ANGRAU participant argues that farmers should be supported through the provision of information. He claims, 'information should be put before the farmer and he should decide'. The use of deontic modality highlights a belief that farmers should be empowered to choose; however, he later contradicts this, arguing instead that the role of the regulator involves taking decisions on farmers' behalf: '[w]e [regulators] are policy-makers. We decide. Farmers need us to decide'

The Monsanto participants' concern for farmers is highlighted in the modality of the sales and marketing participant's claim that, 'he [the farmer] is the one who bears all the risk…so he must receive the maximum benefit'. The strategy of altruism is also, paradoxically, used by this participant to delegitimate the state government's intervention in lowering Bt cotton seed prices. He argues, '[s]eed companies develop cold feet in

terms of developing new genetics [if seed prices are reduced]….So, in the long run, it is the farmer who will suffer.'

Non-Bt Coalition – delegitimation of the moral evaluation of Bt cotton supporters

The CPM participant uses categorical modality to delegitimate the Congress Party's strategy of providing credit to farmers to access Bt technology. He claims, '[t]hese small farmers who are forced to take credit, I think they are mainly the losers, not beneficiaries'.

The provision of credit is also delegitimated by the CSA participant, who argues 'if indebtedness is the problem, credit cannot be the solution'. This participant asserts the failure of regulation and testing as part of a more general concern for public welfare. Despite the fact that cotton oil is widely used for cooking in India, the CSA participant asserts, '[i]t [Bt cotton] was never tested for human safety.' 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'. Similarly, the lack of transparency and regulatory stringency with regard to field trials is problematized: 'in 2006, we accidentally stepped into a Bt field trial.'

In summary, the welfare of farmers is central to the attempts by participants in both coalitions to gain moral legitimation. However, there are markedly different perspectives as to how this should be achieved. The Congress Party emphasizes the provision of loans and price supports, while the Monsanto participants assert the neoliberal belief in a global

free market non-interventionist approach. Meanwhile, the ANGRAU participant argues that farmers can best be supported through allowing regulators to take decisions on their behalf. The Non-Bt Coalition challenges the moral legitimacy of the provision of credit to address poverty in a context where indebtedness is linked to farmer suicides. This coalition seeks moral legitimacy through its assertion of risks, including the fears for human and animal safety associated with the purported failure to adequately test and regulate Bt technology.

c) Rationalization – neoliberal development and Bt cotton

The legitimation of Bt cotton through rationalization involves the assertion of certain ideological assumptions concerning the project of 'development' which have become 'naturalized' (Fairclough, 1989: 33) as part of existing power arrangements. The analysis highlights that opposition to Bt cotton involves a 'de-structuring' (Fairclough, 1989: 171), not only of assumptions regarding neoliberal development, but also of the power structures which reinforce them.

Bt Coalition – legitimation of neoliberalism and Bt cotton support

Deontic modality is used by the Congress Party participant to express the obligation associated with his ideological legitimation of neoliberalism. Thus, he claims, 'farming…has to be a profitable enterprise, like any other business'. His unproblematized belief in technology is clear from his claim, 'science and technology should and will help society and farmers'. Globalized development is legitimated by virtue of its inevitability: '[g]lobalization, because it has to happen, is happening'.

The centrality of scientific knowledge for the ANGRAU participant is evident in his categorical claim that 'things are logical which are scientifically decided'. Despite this, the ANGRAU participant's 'rationalization' of Bt technology often tends towards irrationality in categorical statements such as, '[t]echnically Bt [cotton] is safe. But if mutation happens, no-one can foretell', and '[s]o far, it [Bt cotton] is not killing us. Tomorrow if it kills us, let us find out'.

The form of knowledge construction associated with Bt technology is clear in the assertion of a Lead Scientist in Monsanto that, '[g]enes to a scientist are just DNA'. The recognition that such a view is strongly delegitimated by many members of the public, however, leads these participants to emphasise the need for greater state support in biotechnology education as a means of securing the technology's more widespread legitimation. The Lead for Regulatory Affairs claims: 'People have realised that public education is going to be important….Many of our technologies we have applied through government research institutes'.

Non-Bt Coalition – delegitimation of neoliberalism and Bt cotton opposition

The CPM participant challenges attempts by the Bt Coalition to secure epistemic authority on the basis of their scientific education, claiming categorically '[a]ll the knowledge gained by the farmers is equally important as science and technology'. He also objects to the commodification of knowledge, arguing '[w]e <u>can</u> have tie-ups with Chinese agricultural research institutes. Why is it a US initiative only?' Here, deontic modality is used to highlight his preference for stronger alliances with Chinese, as

opposed to US, research institutes, given his belief that this would lead to greater equity in the way knowledge is developed, and remove research from the remit of profit-driven multinationals.

The CSA participant claims that the knowledge construction associated with Bt technology is reductionist, arguing that there is no 'testing for other changes happening in the plant'. He also challenges the legitimacy of Bt cotton and the free market ideology as a means to alleviating poverty, arguing '[i]f Bt cotton can solve all the problems, why do cotton farmers in the US need so many subsidies?' Finally, he emphasizes the need for responsibility, arguing '[w]hen there are two lakh [two hundred thousand] farmer suicides in this country, no-one takes responsibility, no-one feels responsible'. The statement highlights the distinction between responsibility as a procedural concern and as a moral one, both of which are lacking in Indian society in this participant's view.

In summary, the Bt Coalition emphasizes their support for science and technology as the basis for development. This provides the ideological basis for their legitimation of Bt cotton. The Non-Bt Coalition rejects the neoliberal privileging of science, arguing that it is a commodified and reductionist form of knowledge. Instead, these participants emphasize the experiential knowledge of cultivators in risk definition. The CPM participant argues for a separation of research activities from profit-making enterprises, while the CSA participant questions the ideology of Bt cotton and a 'free market' as a response to poverty. The latter also emphasizes the need for responsibility which he asserts is lacking within the neoliberal approach to development.

d) Mythopoesis – legitimation through narratives of democracy

Within the category of mythopoesis, the issue of Bt cotton provides a focus for debating the way in which power should legitimately be exercised in democratic societies. Here, the legitimation struggle involves attempts to either reinforce or challenge power relations using narratives of democracy with which to do so.

Bt Coalition – legitimation of the power structure in risk definition

The Congress Party participant is concerned at the increasing mobilization of Indian civil society. He fears this is contributing to a general state of lawlessness and disorder. Using successive deontic modality, 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'. The statements provide a series of normative evaluations as to the way in which democratic society should operate. They fail to address, however, the issue of how institutionalized power should be challenged within democratic societies.

The ANGRAU participant uses deontic modality to assert his view that the regulator should have the right to withhold information, claiming: '[w]here confidentiality is required, we cannot be democratic'. This includes the location of field trials which, he asserts, is a matter for 'the government and private companies'. Interestingly, he adopts a narrative of democracy to gain legitimation for this view arguing, 'regulation is the most democratic way'.

The Monsanto participants argue that the intervention of the Andhra Pradesh government in compelling the company to reduce Bt seed prices was 'a very arbitrary decision by some of the stakeholders, very political'. These participants believe that the legitimacy of the state should be restricted to incentivizing private research in scientific innovation. This is asserted in the deontic modality of the Sales and Marketing participant's claim that, '[g]overnment can always, through policies, help the development of new technologies'.

Non-Bt Coalition – delegitimation of the power structure in risk definition

The CPM participant states categorically, 'because there are inequalities in society, these are being imposed on democracy'. He also recognises, however, the efficacy of mass mobilisations claiming, '[o]ur grassroots mobilisation is very strong. And because of that we are able to influence many decisions of the government and institutions'. He notes the importance of NGO activism, arguing 'NGOs raise crucial questions. They raise public awareness, they bring important questions to the notice of the public'.

The CSA participant uses deontic modality to assert the centrality of transparency within his narrative of democracy arguing, '[t]here should be a transparent process of decision-making'. Like the CPM participant, the DDS participant asserts that NGO activism is having an effect. He claims, '[w]e are definitely showing them [the government]. They are not responding, but they are conscious of [our views]'. This belief is also supported by the CSA participant who states, '[t]here are movements building up across the country. That's what stopped Bt bringal'.

In summary, the Congress Party participant urges restraint in civil society protests, and a more law-abiding society as the basis for democracy. The ANGRAU participant, meanwhile, uses the narrative of democracy to legitimate a power structure in which he, as a regulator, is permitted to take decisions on behalf of an uninvolved public. Monsanto participants express their desire for a non-interventionist state which actively facilitates neoliberal policies. The Non-Bt Coalition directly challenges the Bt Coalition's narratives of the way in which power should be exercised in democratic society. Participants in this coalition assert a perceived democratic right to transparency. They also highlight the inequality of Andhra Pradesh society, and urge civil society mobilisations as a democratically legitimate means of combating this.

Discussion

In his analysis of Bt cotton in Andhra Pradesh, the US political scientist, Ronald Herring (2010: 614), argues that the conflict it represents 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.).

Herring's perspective is somewhat supported by the current study given that a concern for farmer welfare is asserted as the basis for securing moral legitimacy by both coalitions. However, the research also strongly challenges the view that values can be unproblematically extricated from epistemology with regard to risk definition in the way Herring suggests. Instead, the analysis highlights the way in which a concern for values

(moral evaluation) and different approaches to knowledge construction (rationalization) form part of the same legitimation struggle.

In the current analysis, all of the participants are English-speaking scientists; however, there is a marked differentiation between the coalitions as to the way in which this epistemic standing is negotiated as a means of gaining legitimation. Given the ambiguity of risk, the struggle thus becomes about the moral and factual validity of the discourse of the combatants in the struggle.

The differing approaches to farmer welfare adopted by the coalitions serve as the basis not only for legitimating fundamentally different approaches to epistemology, but also the prioritization of very different values in risk definition. This relates to the values associated with a scientific approach where knowledge becomes simplified as a means of establishing certainty ('genes to a scientist are just DNA') as opposed to the value placed on securing a form of knowledge construction which incorporates recognition of complexity and uncertainty. The demand for greater inclusion is not simply a concern for epistemology, nor for values, such as equality and social justice – it is an amalgamation of both. Thus, epistemology and values are inseparable.

The analysis of the legitimation struggle also highlights the interconnection between knowledge construction in risk definition and the exercise of power in democratic society. The study illustrates the way in which attempts to define the risk of Bt cotton are embedded within a wider challenge to the relations of definition themselves, both in

terms of the individual authority of participants in the debate, but also with regard to narratives related to the way in which power should be exercised in democratic society. The analysis provides insight into the different 'political and intellectual strategies' (Lacy, 2002: 47) adopted by those seeking to legitimate their definitions of risk within this struggle.

As power-holders, participants in the Bt Coalition assert their education, local and global prestige, and concern for farmers as a means of maintaining legitimation for their positions of power. Each of the participants in the Bt Coalition can be seen to adopt an ideological stance on the plight of cultivators which best ensures that the legitimacy of their own positions of power is reinforced.

It is worth noting that the power holders in the current study are also engaged in a struggle for legitimation with each other. The responsiveness of the state to civil society protests is dismissed by power-holders such as Monsanto, given that they were obliged to reduce their Bt cotton prices as a result of such pressure. Likewise, the RCGM participant argues that regulators, and not the state, should represent the over-riding authority in risk definition. The state government is, therefore, obliged to carefully negotiate its power as part of a concern for its own legitimation. The Congress Party participant is also aware of the potential of mass protests to destabilise the government.

Participants in the Non-Bt Coalition, on the other hand, assert their lack of institutional power and ostentatious monetary gain as the basis for claiming that they more

legitimately represent the farmers' interests. The power of the Non-Bt Coalition derives from its ability to command mass mobilizations, to which the state government is obliged to respond as a concern for its own legitimacy. The research, therefore, supports Strydom's (2002: 109) view that, 'there are different types of power' and those who 'attack dominant meanings are by no means powerless' (ibid.).

The study also highlights the way in which the legitimation struggle incorporates competing narratives of democracy in order to gain legitimation for very different views on the way in which power should be exercised in democratic society. The Monsanto and ANGRAU participants utilise narratives of democracy which seek to legitimate an exercise of power in which scientists, private corporate interests and regulators predominate in risk definition. The Congress Party participant asserts, instead, the centrality of the government in this regard, and expresses a preference for a less fraught, more law-abiding society. The narratives of democracy asserted by the Non-Bt Coalition urge mass mobilisations as the basis for challenging authoritarian tendencies within the democratic process.

In seeking grass-roots mobilisations as the basis for their legitimation, the Non-Bt Coalition not only secure recognition for their perspectives among decision-makers in government; they also serve to legitimate democratic praxis through spreading awareness of the Bt cotton debate, and broadening the base from which discourses of risk are derived. This greater involvement of traditionally marginalized sectors of the population could be seen as a more legitimate basis for democratic politics. This is also noted by

Haunss (2007: 161) who argues that 'while challenging the legitimacy of their opponents, [NGOs] may, at the same time, strengthen the legitimacy of the system as a whole.'

As the current analysis suggests, however, the struggle for legitimation is highly contingent. Competing narratives of both risk and democracy fluctuate in their ability to gain legitimacy with a wider public as social, political, economic and environmental realities change. In this sense, the political culture emerging from risk society is, like risk itself, characterised by its contingency.

Conclusion

The analysis explores the way in which the 'new political culture' which Beck (1992: 185) describes as a response to risk society emerges organically due to legitimation struggles related to the definition of risk in particular contexts. The resulting political culture is, therefore, highly contingent upon the existing relations of definition in those contexts, and the ability of those challenging existing power structures to secure mass mobilisations as a means of gaining recognition for discourses of risk. It is argued that this analytical framework of legitimation could be extrapolated onto a global context as the basis for examining the mass mobilizations undertaken by global social movements, and their use of discourses of risk to challenge the legitimacy of global power structures, such as the World Economic Forum.

It is clear from this study of Bt cotton that the 'relations of definition' (Beck, 1995: 43) in risk society are fraught. They rely upon mass mobilisations to redress the inequality of

democratic societies, and to challenge the legitimacy of existing power structures. These protests also serve to highlight authoritarian tendencies which parade as democratic narratives, and seek to ensure that these are kept in check.

The study highlights that the legitimation struggle which these mobilisations support has implications not only for the institutionalization of power as a concern for democratic praxis; it is also central to the way in which risk definition is normatively and epistemically negotiated as part of a given society's ongoing constitution. This paper argues that it is on these highly contingent struggles for legitimation in local, regional and global contexts that humanity's future approach to the negotiation of risk depends.

Notes:

[1] 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). Full details of the main concerns related to GM crops are available in Smith (2007).

[2] Andhra Pradesh is located on the south-eastern coast of peninsular India. The state was bifurcated in 2014, and the Telangana region became a separate state. Because the research was conducted prior to bifurcation, Andhra Pradesh remains the subject of analysis, and is referred to in the present tense. Prior to bifurcation, it was the fourth largest of India's twenty-eight states by area (275,000 square kilometres), and fifth by population (eighty-four million inhabitants).

[3] Ray, A., (2011), 'India will be 2nd biggest economy by 2050: PWC', *Times of India*, 8/1/2011

[4] Shrinivasan, R. (2010), '55% of India's population poor', *Times of India*, 16/7/2010

[5] Along with Andhra Pradesh, the states of Maharashtra, Karnataka, Madhya Pradesh and Chhattisgarrh 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 May 2013.

[6] Srivastava, R., 'AP's poor groaning under debt trap' *Times of India*, 12/10/2010

[7] It would appear that the wider diffusion of the technology arose as a result of a failure to adequately regulate field trials which began in 1995, and were conducted by Monsanto's Indian affiliate, the seed company, Mahyco (Scoones, 2005: 252-253).

[8] Bt cotton is purportedly toxic only to organisms which contain receptors to Bt proteins – namely, the *Lepidoptera* and *Phthiraptera* classes of insects (Karihaloo and Kumar, 2009: 3). Nonetheless, cultivators and NGOs in Andhra Pradesh claim that sheep and buffalo have died as a result of grazing on the crop. It is argued that safety reports on Bt cotton have been developed in the United States where animals would not graze on the crop. In India, animals are often permitted to graze on the leaves and stalks left in the fields post-harvest. Animal deaths were reported in two of the villages featured in the wider study. In one of these, a number of buffalo were reported to have escaped and grazed on the Bt cotton fields. Villagers assert that, the next morning, half of the animals were dead. It is my own view that these deaths did occur, but were more likely due to the stronger pesticides used by some farmers as a result of insect resistance and new pests (sucking pests). This would, however, require further research.

[9] Emerging from the Chicago School and students of Friedrich von Hayek, neoliberalism, as an economic philosophy, has developed increasing influence globally. Supported by the World Bank, it asserts a belief in individual freedom, the withdrawal of state intervention and a globalized free market as the basis for economic development. This has involved countries throughout the world in structural adjustment requiring currency devaluation, deregulation, privatisation and trade liberalisation. It has been widely critiqued for its contribution to increasing risk exposure worldwide (Stiglitz, 2002; Klein, 2007; Le Mons Walker, 2008).

[10] 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.

[11] The interview with the rural NGO, Crops Jangaon, involved the use of a translator.

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