

Truth and Truth-Telling in the Agricultural Biotechnology Debate in India

Natasha S. K.¹

Abstract

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The debate on agricultural biotechnology has largely been characterised in the literature as being polarised between the "triumph narrative" (Stone, 2012) of biotechnology and the "hazy romanticism" (Irwin, 1995) of the so-called neo-Luddites. This seeming polarisation has been made possible in part by the obscuring of the term agricultural biotechnology, which has lent itself to many interpretations and significations. Drawing from academic literature, publicly available government and private reports as well as popular media accounts, I argue that pro and anti-biotechnology groups in India often employ similar language and appeal to similar sentiments and principles, but to different and contradictory ends in the public meaning making process. Further, I examine the manner in which regimes of truth(s) about agricultural biotechnology in India have been discursively constituted in keeping with perceived public interests to privilege particular characterisations of the term and consequently some discourses of agricultural biotechnology over others. Unravelling how some narratives gain prominence over others requires however, that we turn towards the politics of their production: who are the truth-tellers, what do they say, and how do they try to speak the loudest? And what does this mean for transformative public deliberation?

Keywords

agriculture, biotechnology, discourse, India, truth

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¹ Syracuse University, Maxwell School of Citizenship and Public Affairs, koshy.natasha@gmail.com

Introduction

“Dichotomous distinctions can be convincing only as long as they are enforced by a strong asymmetrical bias that treats the two sides of the divide or border very differently. As soon as this prejudice loses hold, cognitive abilities jump in all directions: sorcerers become Popperian falsificationists; scientists become naive believers; engineers become standard 'bricoleurs'; as to the tinkers, they may seem quite rational.” (Latour, 1986: 1).

Article 2 of the UN Convention on Biological Diversity defines biotechnology as “any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use” (United Nations, 1992). Though seemingly straightforward in definitional terms, in practice the term defies clear interpretation, resulting in it having come to signify a number of concepts and processes other than the genetically engineered organism that is supposedly at the centre of debate. In the Indian context the term bio-technology, and specifically agricultural bio-technology, has come to occupy a very contested position, with advocates (most notably scientists and policy makers) and those who oppose it (largely environmentalists activists located within networks of non-profit organisations, some non-science academics, etc.) voicing very stringent opinions of it and each other. The choice of discourse then appears to be between what Stone (2012) describes as the “triumph narrative” of biotechnology versus the vague romanticism of the so-called neo-Luddites, many of whom advocate for a return to agro-ecological or traditional methods of cultivation. The claims of agricultural biotechnology have not lent themselves to unambiguous interpretation. Overlaps between the ostensibly independent and polarised discourses of pro and anti-biotechnology groups point towards realms of the production of truth that are not limited solely to the field of language, but the field of relations between actors, as further sections will demonstrate.

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Despite the controversy surrounding them, the introduction of the genetically engineered seeds Bt Cotton and the (so far) failed introduction of Bt Brinjal, (claimed to allow for greater yields because of their ability to reduce damage through specific pest attacks) have galvanised public debate in the context of what appears to now be an inevitable march towards its widespread adoption, shaped and contained by intensive efforts within different institutions; a process Marcuse would identify as “a trend toward consummation of technological rationality” (Marcuse, 1964: 19). In this paper, I will attempt to examine the manner in which regimes of (opposing) truth(s) (Foucault, 1980) about agricultural bio-technology in India have been discursively constituted to privilege some discourses of agricultural biotechnology over others, deriving traction more from relations of force rather than language. Characterisations of the biotechnology regime in agriculture have been extreme in most instances, with representations of modern and traditional technologies pitted directly against each other. Opponents of biotechnology associate it with increased ecological, health and economic risks. Those in favour of it pose it as an alternative to backward traditional technologies that offer low yields and employ unscientific methods. Perceptions of it have tended to be polarising, with most participants in debates being unequivocal in their advocacy or denunciation of it. And yet, opposing camps have created discourses of the technology in such a manner that they are contradictory and yet they overlap, a confusing medley of voices that at times appear to echo the same sentiments and goals but different roads to them. These representations are often the prerogative of institutions, even if only initially.

Based on an analysis of media reports, activist literature, blogs, etc., this paper argues that supporters and dissenters of biotechnology while appearing to be mutually exclusive in their

arguments for and against it, demonstrate significant overlap in their discursive articulation of concerns about biotechnology. The “dichotomous distinctions” (Latour, 1986: 1) of the agricultural biotechnology debate are less pronounced than they might seem. While a commonality in discourses would seem to predict or at the very least facilitate constructive, lively and engaged public deliberation, the machinations of state power limit these possibilities. This in turn has implications for the manner in which public deliberation may be constituted. *Italic is used for emphasis of given points.*

1. The Discursive Production of Bio-technology in Agriculture

“Discourse is...the object of desire...discourse is the power which is to be seized”
(Foucault, 1981: 52).

Discourses take place at different levels. In the context of transgenic seeds, they are most evident in their functioning at the policy and public levels, given the wide proliferation of discourse through media (Yamaguchi et al., 2003). Discourses are arguably however constructed differently in different spaces, and to different ends. As Marglin notes, “a particular way of knowing may go along with different power relationships among the people who share knowledge and between insiders and outsiders” (Marglin, 2006). An analysis of discourse cannot therefore assume a constancy or uniformity in discourse across different settings and levels of debate. Instead, different practices in different domains allow for different faces of the same truth to be showcased as needed - whether truth as understood by bio-technology promoters or dissenters.

Before I attempt to analyse the discourse of the agricultural biotechnology (henceforth agbiotech) debate in India, it is important to clarify what I mean by discourse. Foucault treats discourse as “the general domain of all statements, sometimes as an individualisable group of statements, and sometimes as a regulated practice that accounts for a number of statements” (Foucault, 1972: 80). Language is implicated in any analysis; but language is not just a set of words, but language is also a “social action... (and a) situated performance...tied to social relations and identities, power, inequality and social struggle...(and) a matter of 'practices' rather than just 'structures', etc.” (Slembrouck, 2004: 1). While statements in and of themselves are of interest, also pertinent are the power relations that govern these statements, and the power relations that govern *opposing* statements, to cause them to be co-constituted (Foucault, 1980: 112).

Consequently, the function of discourse is to achieve dominance and make relevant its own voice (or truth') while subjecting competing discourses to its logic. Those discourses that are taboo are suppressed by the expanding frame of the dominant discourse, by making it difficult to think outside of them (Hook, 2001: 2). But discourse does not achieve this dominance on the basis of the truth' itself. Instead, it does so through the frameworks of knowledge, institutions and qualifications of the discourse-providers that shape the form and context within which truth is produced (Foucault, 1981). The will to truth of discourse has roots in the material (Foucault, 1981; 1980). At the same time, it is also enhanced in the way in which knowledge is valorised, made use of and linked with society (ibid).

Analysis of discourse requires an examination of how a discourse achieves its ends through specific means and practices in a specific context, by paying attention to the “material structure of ideology” and the “material basis that is at stake in the struggle between social class (and other) forces” (Morton, 2007). In the absence of such an exercise, seemingly static and

concentrated power would appear to operate with absolute autonomy in a unidirectional manner that prevents counter-discourses from surfacing (Dreyfus & Rabinow, 1982).

One of the foremost points of contention in the media-led public debate on agricultural biotechnology hinges on the “triumph narrative” of Bt Cotton, a view attributed largely to scientists, their “academic allies” (Stone, 2012) as well as spokespersons of governments; claims sometimes but not always substantiated by peer-reviewed research. Counter-claims of failure are put forward by those broadly lumped into the categories of non-government organizations (NGOs), journalists, academics, etc., many of whose claims are rooted in peer-reviewed research but also derive from field-based work. It is important to note that the categories of actors listed are not exclusive to either side of the argument, and instead as we shall see, the location of rebel actors in opposing camps has implications for how discourses shift. In addition, as the following sections will show, though debates on agricultural biotechnology tend to be constructed in oppositional terms, analyses of discourses and practices indicate a more mixed picture. The task of this project is to empty the seeds themselves of meaning, and conceptualise instead how these meanings are produced in the context of discursive regimes. Unravelling how some narratives gain prominence over others and under what conditions requires that we turn towards the politics of their production: who says what, to whom and for whom?

For this analysis I draw from the debates on agricultural biotechnology as they appear in a number of sources. Newspaper articles were accessed through LexisNexis Academic. I created a database of news articles on the topic using LexisNexis Academic, limiting the search to articles printed between January 1st 2011 and April 2014 for manageability of data, using the key words “genetically modified” and “biotechnology”. The results were filtered to show only newspaper results and within those, results for India. In the next step, publications with high circulation rates were selectively sampled. This left a sample of 49 news articles from newspapers including *The Times of India* (25), *The Economic Times* (11), *The Indian Express* (11) and *The Financial Express* (2). Alternative media sources such as *Down to Earth* and *Tehelka* were also accessed through their own websites and included in the sample to incorporate non-mainstream media sources given that their views often differ from those expressed in the mainstream. In addition, public speeches, publicly available reports of state-mandated committees set up to investigate specific aspects of the debate (specifically the Technical Expert Committee Report, the Inter-Academy Report, and the various centre and state commissioned Genetic Engineering Approval Committee reports), and academic writing on the topic including but not limited to prominent actors in the discourse. The data was then analysed through labour-intensive textual-analysis, accounting for inter-textuality while cognisant of the social structures that shaped their formulation and the orders of discourse they tend to represent (especially in the case of alternative media sources or media sources such as the *Times of India* which tend to be pro-establishment). This was complemented by a quantitative appraisal of frequent themes and keywords in sources to observe what aspects of the debate are highlighted in different kinds of sources.

Because of the nature of the material available in the public domain, much of what is discussed in this paper is largely limited to discourses at the macro level. In the second half of this paper, I will briefly lay out the manner in which the agricultural biotechnology debate in India is constructed. India is a useful case study to analyse given that in addition to the safety concerns European countries have had about the consumption of foods grown from genetically modified seeds, India’s situation is unique given the alarming number of farmer suicides attributed to the increase in usage of GM cotton seeds in states like Maharashtra and Andhra Pradesh, which

catalysed the debate on biotechnology usage. This debate was later carried forward by a more expanded group of actors when Bt Brinjal came up for consideration, given that it constitutes an important part of people's daily diets in many parts of the country, unlike cotton which is not a food crop. The biotechnology debate in India is one of livelihoods and consequently politics, given that much of its population is largely rural and dependent to various degrees on agriculture.

In the sections that follow, I present the results of my analysis, focussing on three main themes: the narratives that are deployed and the slippages between them, the role of different actors in the debate and how they gain legitimacy, and finally the politics of truth/knowledge production,

4.1. (In)Congruent Narratives

The technological rationality that characterises much of the dominant pro-biotechnology discourse in India must first be contextualised within the larger bracket of the scientific rationality that has formed the underlying basis for the governmentality that has shaped state functioning since the early days of Indian independence (Raina, 1990). This rationale was reinforced by the then Prime Minister Dr. Manmohan Singh in a speech to the 101st Indian Science Congress in 2014 who invoked the role of science in nation building, a sentiment that still informs much of state policy. The notion of science as progress has also permeated widely into the public imagination through public discourse and education (Visvanathan and Parmar, 2002) and is linked to a wider discourse of efficiency and growth, that has broadly characterised the rationale of governance of the state since economic liberalisation in the early nineties (Chandrasekhar & Ghosh, 2002).

Douglas points out that institutions that are successful create identities, and function as vehicles of memory and forgetting (Douglas, 1986). Institutions do not only function as repositories of memory and forgetting, but are also its creators and channels. In the instance of institutions engaged in the propagation of agricultural techniques such as research institutions, regional and local agriculture offices, extension agencies, etc., they may (re)create particular memories of actors, society and/or farming practice, and hold it to be the truth that informs their overarching goals and strategy.

In addition to the role of state-backed science institutions such as agricultural research institutes, of particular relevance to the biotechnology debate in India is the role of social movements and public engagements with science. The perceived role of the public in shaping science policy has evolved from the science literacy paradigm in the 1960s – 1980s, to the public understanding of science paradigm in the 1980s – 1990s and finally to the current day science-in-society one (Bauer, 2009). The science-in-society formulation of citizen engagement in science policy has allowed for activists to also don the role of action researchers and vice versa. This allowed for the gap between researchers and the laypeople to be blurred to some extent, while still privileging certain groups of activist-researchers (ibid), most notably those associated in some ways with non-governmental organisations and those groupings that identify as social movements.

Social movements have greater engagements with publics than scientific organisations, and at the same time acquire their own sets of “knowledge-practices” (Casas-Cortes et al., 2008: 19), making the need to engage with activist knowledge crucial to understanding how science is perceived and enacted in the public sphere. More significantly, social movements make similar claims to truth-making, challenging the seeming sanctified domain of hard scientists.

Environment oriented social movements mobilise particular imaginaries of nature and society (Delgado & Rommetveit, 2012). This is important, given that what constitutes an environmental issue itself is a political act. NGOs – and social movements – play no small role in framing environmental issues (Princen et al., 1994). “Discourse coalitions” (Hajer, 1995) play no small part in the negotiations around what constitute environmental facts, a number of which are represented in this paper. These discourses run up against “public bioethics” Kelly (2003: 340), that play no small part in setting boundaries in terms of who speaks with legitimacy.

Claims and allegiance to science and the scientific paradigm become important because they shape claims to the validity of truths represented. Despite the seeming disconnect between the so-called 'modern' and 'ecological' approaches to agriculture then, actors on both sides characterise themselves as being rooted in some formulation of science - whether they be seed industry giants Monsanto or the prominent oppositional NGO Deccan Development Society (Pearson, 2006). However, science is believed to take on a specific image in the wider public imagination, an image of cutting edge innovations and technology. The claims of those who fall outside this specific imaginary of science (such as prominent anti-biotechnology campaigner Vandana Shiva's appeal that agro-ecology *also* be considered to be “cutting-edge science” (Shiva and Lynas, 2013) are not held to be relevant insofar as they are claims to science. Their isolation from the mainstream scientific paradigm in turn relegates them to the realm of the traditional or unscientific. Claims to science do not work alone independently of the relationships of framers with their audience – whether farmers or consumers – but may be constituted by what Gramsci terms “inter-subjective forms of consciousness” (Gramsci, 1971: 235) between farmers, consumers and the framers of discourse who co-produce frames on agricultural biotechnologies to different degrees.

4.2. Representing the Farmer

Common to both sides has also been a stated interest in the well-being of the farming class, whether this is characterised in terms of “pro-poor development” through the employment of advanced technologies that increase yields (Glover, 2009) or in terms of promoting biodiversity and ecological sustainability leading consequently to farmer welfare (Shiva, 1993). In her analysis of her interviews of prominent elite actors involved in the biotechnology in India Yamaguchi notes the legitimacy they accorded to their own views through their relationships with farmers (Yamaguchi, 2007). The director of the genetically modified seed distributing company Monsanto responded to a question about Monsanto's vision for India in an interview stating “when farmers succeed, we succeed” (Chaudhury, 2010a). Yamaguchi attributes this to the primacy accorded to farming as a rhetorical tool employed widely by political and religious leaders (Yamaguchi, 2007) but also by activists and those in the development sector. Similar claims were also made by actors strongly opposed to the dissemination of these seeds. The claim of co-production of a discourse with its subject (here, the farmer) allows for the validation of normative statements about the seed/technology. The continued presence of over 50 per cent of the Indian population in the agrarian sector gives this ascribed relationship much traction, especially when employed in the rural context.

Farmer choices of seed then become important events on which to hinge narratives, even if narratives diverge. In arguments for greater technology adoption in agriculture, farmers are characterised as rational, utility maximising individuals, who choose to adopt particular farming practices (Marglin, 1996). The framing of the agbiotech debate as being concerned with “farmer choice” (Shiva and Lynas, 2013; Herring, 2013) for example, constitutes farmers

as savvy, profit-maximising autonomous individuals, acting to maximise their gains in the context of the pro-transgenic seed group and de facto exercising agency when they choose to plant transgenic seeds even at the risk of prosecution (Herring, 2009). Attempts on the part of activists to ban Bt seeds and consequently deny them agency is then construed as being paternalistic and self-interested. Opponents of biotechnology characterise farmers as contextually situated actors trying to adhere to diverse, traditionally tried and true methods that not only maximise gain but allow for relationships with farming. The focus of these frames is on that of farming as an inter-related activity, circumscribed by or production in conjunction with the environment as well as (more often than not) 'local' rather than universal farming practices. Many opponents also pay attention to the socio-political environment within which farming practices and choices' are made. At the same time, while the violence of GM technology is held to be its homogenising nature, the discourse of alternatives swings between particularism ("The seed is the embodiment of culture because culture shaped the seed with careful selection" (Gelder, 2013)) and the homogenisation of the (woman) farmer's experiences, motivations and practices ("women picked the best...diversified (seeds)" (ibidem). Frequent characterisations of unchanging traditional farmers and societies following local, indigenous farming practices elide the hybrid nature of villages (Gupta, 2005) as well as farming practices of most farmers not yet fully integrated into capitalistic agriculture (Gupta, 1998), resulting in what Appadurai describes as the spatial incarceration of the native (Appadurai, 1988), held to be bound by a geographically de-limited set of traditional practices.

In both framings of the farmer, the discourses (and the practices attached to their framers) attempt to create specific subjectivations and representations of the farmer that limit or constrain the scope of the discourse. In doing so, the farmer herself becomes a "docile body" (Foucault, 1991) whose preferences are depicted in the public arena as those of the authors of discourse. This docility reflects both the effect as well as the limits of discourse. Though seeming to privilege farmer interests, both framings tend to create static images of her which are then communicated in the public domain of the consumer.

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4.3. Representing the Seed

Obscured here in representations of farmers is an understanding of how farmers themselves conceive the seed. The representation of the seed is inextricably bound up in the representation of farmers by the framers themselves, making the need to understand the processes by which farmers are constituted (and actively incorporated into the discourse making arena, if so) important.

Similarly, characterisations of "the seed" in the public realm obscure the processes through which the seed acquires meaning. For advocates of transgenic seeds, the seed is claimed to represent the potential to increase the productivity of the crop through the acquisition of new and desirable traits, such as reduced susceptibility to pests for example (Qaim, 2003; Herring, 2013). The claims of enhanced productivity of the seed and the higher yields predicted to follow from this has allowed for a broader spectrum of benefits of the adoption of this technology to be suggested. These include environmental sustainability from reduced pesticide use, greater food production and food security, farmer prosperity, etc. (ibid).

For those opposed to it, the use of transgenic seeds has been equated with monoculture cropping patterns, capitalist control over agriculture, increased pesticide use, higher input costs, sickness, falling yields, a focus on the seed in opposition to a focus on the system, and most notably, farmer suicides (Shiva, 1993; Shiva et al., 2000; Qayyum & Sakhari, 2005). In

contrast indigenous seeds and agro-ecological practices are equated with freedom and life, farmer autonomy, ecological biodiversity, lower cost of production and autonomy (Shiva et al., 2000; Parrott & Marsden, 2002; Gelder, 2013).

The term GMO clearly serves as a powerful signifying force, even when, or perhaps because it is constructed in oppositional terms. The fixation on the seed – by both groups – is somewhat curious, given that the term genetically modified organism or 'GMO' as it is deployed in the debate, obscures more than it reveals. Herring suggests that much of the campaign against transgenic seeds is located in the usage of the term 'Genetically Modified Organism' (GMO) which has come to signify a specific 'unnatural' process of genetic mutation of seeds in agriculture – the use of recombinant DNA technology (also known as genetic engineering) – but obscures the usage of rDNA in the pharmaceutical industry, with 22 rDNA constituted drugs in India having already been approved for manufacture (Ghosh, 2008) in addition to non rDNA processes of genetic mutation in plants practiced prior to the introduction of the 'GMO'. The wide acceptance of technologies with broadly similar underlying bases – that of genetic modification – coupled with the denunciation of a specific kind of technology in agriculture is held to be a frame that therefore obfuscates this similarity between accepted and unaccepted practices and technologies – a topic on which little debate has emerged in the public domain even amongst the biotechnology dissenters.

4.4. Drawing Boundaries around Knowledge

Aspects of the discourse (characterised as being largely technical) remain outside the purview of public discussion. For example, an analysis of media reports on agbiotech indicates that little discussion is included of the technology itself in the mainstream media, and what makes it different from previous forms of breeding, and why this may be un/safe. As mentioned previously, Herring argues that this has made it possible for a specific form of genetic mutation (that employed in transgenic seeds) to become demonised, to the exclusion of other forms. This has also allowed the technical aspects of the discussion to remain outside public consideration, within the realm of power struggles for the production of truth. Consequently, science, the farmer the seed have all increasingly been emptied of meaning in the course of the public meaning making process, and have come to signify static and yet constructed concepts. While these concepts themselves may not be static, and may be continuously co-produced behind the scenes, there is little evidence of this in the public sphere. This results in a simplification of the discourse, ostensibly to a form that the non-expert public can absorb. The simplification of discourse also allows for greater manoeuvrability since mobilisation of public opinion is believed by some to be made easier by appeals to emotion (Motion & Doolin, 2007) or fears (Viswanathan & Parmar, 2002) rather than appeals to scientific facts' - a tool that works for both sides. The science and interpretation of this science is left then to scientists and science-writers (from across the spectrum of believers), causing what Foucault calls a “finitude of discourse” (Hook, 2001).

For example, not many members of the general public will read the state-mandated Technical Expert Committee's (TEC) report on agricultural biotechnology in India, and commentary on it in the public domain is largely limited to its broad prescriptions. Much of the technical discussion on transgenic seeds is assumed to be esoteric, and consequently outside the scope of understanding of the general public *because* it is technical. Environmental activist Sunita Narain suggests that scientists do not want to engage in discussions of science with the general populace because of their presumed scientific illiteracy (Business Standard, 2011). It remains up to the scientists and science writers to decipher science then, and interpret it for others

(Raina, 1993). The focus of truth-telling speech becomes the interpretation of science with an unequivocal voice. For the majority then, the object of discourse – transgenic seeds – is received as signified through commonly used words – food security, unsafe, scientific, etc. – rather than as concepts to be examined independently. This in turn limits the possibility that the discourse of biotechnology can be reshaped to push its existing boundaries in different directions - or that the processes through which discourse itself is created be examined.

The rhetorical practices of framers of the biotechnology debate function to constrain not just the judgements, but the judgement making abilities of their audiences. This gives rise to the need to bring into prominence the representation and meaning making processes that underlie public discourse. In the absence of this, between seemingly oppositional groups, it is the louder voice that is heard, a voice amplified by the media. Print media that disseminate particular viewpoints on the debate acquire what Bourdieu terms “symbolic power” (Bourdieu, 1991: 167) when they enjoy wide readership (Dittmer, 2010). In the English speaking media in India for example, much of the opposition to transgenic seeds is found in left-wing journals such as *Down to Earth* and *Tehelka*, with far less readership than mainstream newspapers such as *the Times of India* and *the Indian Express*. On the other hand, mainstream newspapers themselves are also characterised very often by a wide range of opinions, further muddying the waters of public meaning making amongst consumers.

The challenge for both sides is to break the boundaries between the aspects of discourse that were previously considered alien to them: for the traditional scientists to speak of non-science interests and for the 'others' to speak of science. While according to Cook et al. (2014), this may result in a hybridity of discourse, with potential for misunderstanding, in the absence of overlapping discourses, a stalemate is often reached. If frames remain static, impervious to new ideas, they may not succeed in recruiting more participants. Frames may also fail to have an impact if they do not attend to the concerns of those they are intended for. People do not receive frames simply as they are, but make meaning of frames subjectively. I suspect that while a discourse that appeals to feeling and emotion may have great traction in the case of Bt Cotton, a crop that is not directly consumed as food, Bt Brinjal, a food crop appears to be more easily co-opted into discourses that voice fears about bio-safety and human health (consumers and producers) even if other aspects of the discourse resonate less. This is evident in the increased public participation that took place when GM technology came to be associated with a crop that was consumed by eating it rather than wearing it. Even here however, the frames are themselves constraining in terms of what they allow to be imagined. The challenge for framers is to re-invent frames, co-producing them with their intended audience. This co-production of the frame has been in some evidence in the context of the biotechnology debate. For example, the introduction and rapid proliferation of the indigenously developed stealth Bt cotton seed Navbharat gave impetus to a belief that farmers themselves prefer Bt seeds (despite the monetary loss to themselves).

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5. The Construction of Truth by the Truth-Tellers: Actors in the Debate on Biotechnology

Truth-telling in this debate is usually the prerogative of designated truth-tellers: most often than not, the scientists. Two questions are relevant here. One relates to the constitution and role of the discourse-makers or truth-tellers. Who is an appropriate source of knowledge, and what makes her a trustworthy truth-teller? Second, what are the processes through which these interpretations of truth framed?

The legitimacy of the truth-teller derives from constructed rules that govern who can speak truth. Consequently, those who speak within accepted frameworks of knowledge have less legitimacy-building work to do than outliers. Like truth, truth-tellers themselves are subjects, constructed within normative frameworks that constrain. Scientists for example, employ the language within which they are rooted. In India, clear disciplinary divisions between scientists and non-scientists are perpetuated through the higher education system and are introduced as early as in the years preceding an undergraduate degree. This often ensures that the language and the perspective employed by academics and other actors are over-determined by the institutions and/or surroundings in which science-based (and other) intellectuals find themselves. The language of expanding food production for example is one that is very specific to a particular mode of thinking and imagining, and a specific rationale of governmentality. Attendant is the kind of knowledge or the knowledge formation process that is privileged in the production of truth. For example, after the introduction of the Green Revolution, agricultural research in India moved decisively in the direction of plant breeding, chemical inputs, irrigation etc. to the near exclusion of alternative cultivation practices – a trend that is in evidence today as well. Academic disciplines tend to privilege some kinds of knowledge over others and some kinds of theoretical frameworks (very often the dominant ones that inform the rationale of governance). The legitimacy of truth is often restricted to these dominant frameworks. Pre-existing conventions of particular fields of science circumscribe the introduction of new traditions (Prelli, 1989). Disputing facts – and especially those derived from particular kinds of scientific methodologies – is in itself held to be symbolic of non-science – or nonsense. What is argued to make these facts true and untainted is their claimed autonomy from politics and morality (Shuji, 2005; Tallacchini, 2009).

In the context of the GM debate, how the statements of the anti and pro groups (and those who hold various positions in the continuum) govern each other to validate themselves scientifically and also do or do not become “capable of being verified or falsified by scientific procedures” is consequently of interest (Foucault, 1980: 112). Herring for example dismisses what he calls “extreme scepticism” about his own triumph narrative about Bt Cotton because it is born of “postmodernist and constructivist” critiques of “facticity” (Herring, 2013: page) or an alleged distrust of statistics pertaining to transgenic crops. This facticity is not held to be displayed in statistics produced by other actors however, and dissenters are argued to be unattached to empirical constraints (Herring, 2013. Also see Chaturvedi, 2003; Das, 2006; Swaminathan & Rawal, 2011; Kuruganthi, 2009; Rao, 2013). Research conducted by “self-interested NGOs” and activists holding “faith-based” and “unscientific” views (Shiva and Lynas, 2013) is viewed with suspicion, and held to be anecdotal and lacking in rigour (Shiva and Lynas, 2013; Herring, 2013) irrespective of who conducts the research and their credentials. The constitution and legitimacy of the intellectual is clearly linked to her rootedness in a specific context. This legitimacy may not be permanently fixed however, but may be continuously re-inscribed through struggle. Actors (including scientists) may also attach a sense of legitimacy to themselves based on their own identity constructions as well as their identity constructions in relation to others as Polyani points out: “The authority of scientific opinion remains essentially mutual; it is established *between* scientists, not above them” (Polyani, 1962: 59). Similarly, when ministers, policy makers and the public invoke the opinions of scientists to make the final statement about GM technology there is a reinforcement of the legitimacy of the identity of the scientist as a truth teller as well as the minister by extension. Legitimacy becomes a relational concept then, making powerful those in relationships that can exert dominance.

But not all relationships are valid. Shiva and others who travel to countries around the world in connection with protest and advocacy work have been both valorised and questioned for

activities argued not to be in keeping with their focus on grassroots mobilisation. While actors such as Shiva are widely commended in international spaces for their work, the act of soliciting support from outside India, and physically being outside the realm considered appropriate for those advocating the interests of the marginalised is also considered to be a violation of received perceptions of genuineness. The act of soliciting support from outside India is constructed as a threat to national sovereignty and interests. When Planning Commission Chairperson M.S. Ahluwalia and Union Minister for Agriculture Sharad Pawar attributed anti-GM protests to being closely associated with and funded by European organisations (*India Today*, 2011) implicit in their denunciation of anti-GM protests was a characterisation of discourses evolved outside the physical boundaries of India as illegitimate and detrimental to national interests. The characterisation of opposition to transgenic seeds as being superstitious, ideological, anti-people, anti-choice or neo-Luddite (*Shiva and Lynas*, 2013; *Indian Express*, 2013) and consequently anti-Indian for example, is a powerful argument that fits within a broad nationalistic public orientation towards progress and development. Whether the act of soliciting external support (if this is in fact a reality) is really a point of contention is debatable. Even if it isn't, denunciation of foreign influence works discursively to achieve its aim of destabilising alternative goals. Legitimacy springs in this instance from identification with the national cause – but again, the cause as defined as that falling within the dominant discourse.

The question of legitimacy born of identity becomes tricky however when scientists constitute the ranks of both sides. High-profile dissenting scientists from both universities and public research institutions in and outside India have gone on record (including in a public statement presented to the Prime Minister of India) to voice their opposition to transgenic seeds whether on the basis of the seed itself or its presumed larger social and political effects. The counter of bio-technology supporting scientists has been to label them 'maverick' and 'irresponsible' (Sahai, nd) who attempt to unsettle the “scientific consensus” (Herring, 2009). Deepak Pental, Professor of Genetics conducting research on transgenic crops also characterised scientists opposing transgenic seeds as being unqualified to speak of non-science issues, noting, “(The) TEC report is ideological not scientific. They were to comment on bio-safety. They are scientists assuming the role of socio-political guardians though they have no expertise on the latter” (*Indian Express*, 2013). Discrediting a discourse entails discrediting its author.

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Significant in the debate is the cautious dissent put forward by M.S. Swaminathan, often described as the Father of the Green Revolution in India. Many of the ill-effects of the Green Revolution have been widely noted in the academic literature. Despite this, there is a general public belief in the narrative of the success of it. Swaminathan is a publicly acclaimed figure, and barring those who contest the fundamental premises underlying the Green Revolution, commands respect in many spaces. Swaminathan opposed the introduction of Bt Brinjal when the debate took place in 2010. At the same time, Swaminathan is firmly rooted in the scientific paradigm that is disparaged by those who hold the Green Revolution to be another example of a reductionist approach to agriculture. He therefore enjoys the status of being an 'index of truthfulness' (Foucault, 2001), his voice against Bt. Brinjal then lending credence to the stance. Swaminathan is not the 'mad' man of the clinic, precisely because though his voice appears to echo that of dissidents, his position does not. Viswanathan and Parmar depict this as a means to co-opt new concepts into old ones (specifically, the Green Revolution), allowing for a 'continuity of narratives' (Viswanathan & Parmar, 2002: 2716). These sorts of ruptures in otherwise fixed discourses create spaces for new discourses that in this instance, may not be as polarising. None of these discourses - or intellectuals - works in isolation however. The truths they produce - of whatever kind - are ultimately circumscribed by and produced with the power relations in which they are embedded.

6. The Politics of Truth/Knowledge Production: Power and the Apparatuses of the State, Industry and Activists

Agricultural bio-technology is often characterised by its opponents as being wielded by hegemonic forces – that of capital embedded in industry and the state – against its powerless dissidents: a characterisation described by Scoones as the “David and Goliath narrative” (Scoones, 2008: 162). Big capital is argued to be in the service of imperial forces, driving the promotion of the technology, and flattening all opposition to it. Hapless farmers committing suicide are inextricably linked to Monsanto through a political narrative of the killer seed (Viswanathan & Parmar, 2002). On the other hand, anti-biotechnology protestors have been criticised for inhabiting spaces closed to those without substantial means (most notably those such as Shiva and founder-member of the Karnataka Rajya Ryota Sangha (KRRS), Prof. Nanjudaswamy, who participated in protests outside India in connection with anti-biotechnology protests) and consequently wielding considerable power themselves. Herring draws our attention to well-funded 'technocratic NGOs' that incentivise the creation of and allow for the existence of oppositional networks to counter the claims of the pro-transgenic networks (Herring, 2009: 10). Though Shiva has been castigated for giving “lucrative speeches” to “sympathetic left-wing audiences in western countries” (Shiva and Lynas, 2013), relative but stark inequality in funding between actors like Shiva and organisations like Monsanto has implications for the kinds of spaces that actors can enter into, and the actors co-opted into these spaces through the attachments their (less) privileged positions allow them.

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Different actors amongst those opposed to bio-technology have attempted to create counter-discourses to challenge what is perceived to be the hegemony of the dominant one. While this has been at the level of statements (most notably those of organisations such as Greenpeace and Vandana Shiva’s Navdanya), it has also been operationalised in the practices of more scattered groups such as the KRRS and the Bharti Kisan Union (BKU) (both farmers groups) which have countered the spread of transgenic crops through the public burning of fields on which trials are conducted. Protests are often very public and spectacular, aimed at directly threatening both the state and seed companies. These protests while being dramatic, have been limited in scope, and have not found support amongst those directly involved in the creation of regulatory policy.

In the case of the pro-biotechnology groups however, activism has extended into spaces where they enjoy considerable influence in decision-making through the overlap of actors who hold formal and informal positions in both spaces - as members of industry and members of high-level committees and regulatory groups (alleged to receive benefits for providing support to industry) (Scoones, 2003). For many, the appearance of a state push for the introduction of transgenic seeds is indication of the “corporate agenda” of the government (Nayar, 2011). The seeming congruence between the rationale of governance as well as the interests of industry – alongside the opportunities for rent-making - has been widely alleged to have led to the imposition of a hegemonic or directly coercive regime of agricultural bio-technology (Scoones, 2003). And yet this congruence cannot be assumed to function without impediment. A glance at the various ways in which different state institutions have functioned in a less than coherent manner – vis-à-vis each other or even within the institutions themselves – points towards a heterogeneity rather than consistency in practices.

While speaking of the state, Foucault cautions his audience against reifying concepts and consequently essentialising them (Foucault, 2008). This anti-essentialist conception of the state

can be extended to other institutions as well. Rather than viewing the apparatus of seed industry giants Monsanto and Mahyco in India as monolithic and exerting overwhelming power over dissenting voices then, it is useful to focus on the relations of force that shape the field of knowledge (Morton, 2007).

6.1. Identifying Relations of Force: The Apparatuses of the Central and State Governments

Relations of force are evident in the manner in which the biotechnology debate and practice is shaped. These relations extend from international sources to domestic ones. A part of the impetus for biotechnology in India itself derives from the Indo-US Knowledge Initiative on Agriculture, that has found enthusiastic advocates in high-level state officials in India as well as American politicians such as Hillary Clinton and George Bush when it was announced in 2005 (*Analytical Monthly Review*, 2010). Given that India's seed industry commands a revenue of \$1 billion a year and its seed market is the 8th largest in the world, the KIA has been taken up enthusiastically in policy networks despite the conflict of interest that characterises it: agro-industry giants Monsanto and Archer Daniel Midlands (amongst others) have representatives on the KIA Board, with implications for the shape decision making processes will take (ibid) The role of industry is not limited to the KIA however. Instead, the seed industry is represented in other spheres as well, including those of the state and research and design networks. Part of this influence is evidenced in the changing nature of public research and evaluation in the country, which is increasingly being conducted in conjunction with or solely by private industry. Bt Brinjal itself was developed by a consortium of seed company Mahyco and the University of Agricultural Sciences, Dharwad and Tamil Nadu Agricultural University, Coimbatore, resulting in the stakes of all three institutions being co-constituted. The alleged incapacity of the state to evaluate claims independently is also a point of debate. T.V.Jagadisan, former Managing Director of Monsanto South Asia admitted that when Monsanto introduced a variety of herbicides to the Central Insecticides Board for approval, lacking the capacity, the Board turned towards Monsanto itself for testing (Chaudhury, 2010b). This reliance on the private sector to approve and consequently regulate its own activities is evident in the present context as well, as a number of reports on agricultural bio-technology have indicated.

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For example, after the introduction of Bt Brinjal was approved in 2009, public caused the Ministry of Environment and Forests to impose a moratorium on Bt Brinjal and commission a report on its suitability to be written by members of 6 prominent state-run academies in India. The report unequivocally recommended the re-instatement of Bt Brinjal. However, the advocacy group Coalition for GM Free India found that parts of the report were plagiarised from promotional material generated by industry, an occurrence attributed to the presence of pro-biotechnology academics in the committee with linkages to industry. This caused the minister of the MOEF Jairam Ramesh to reject the report. Though Ramesh has limited popularity with the broadly defined left groups because of his support for nuclear power plants, seen as being imposed through coercive state will (Kaur, 2011), in the context of agricultural bio-technology his stance is more ambiguous. Similar contradictory practices are evident in the functioning of the Genetic Engineering Approval Committee (GEAC), a body set up to approve the introduction of transgenic crops. The GEAC comprises some government representatives and a number of scientists from prominent agricultural research institutes. The seemingly appropriate composition of the GEAC is detracted from by the composition of its funding of its reports – all the annual reports drawn up by the GEAC since its inception in 2002 were funded by Mahyco and/or Monsanto, whose seeds were the object of investigation. That there are dissonances in the versions of truth put forward by the GEAC and other organisations

appears evident in the dissonance between the findings of the GEAC Monitoring Committees and the reports of the state governments with respect to the performance of Bt Cotton in different states. While for the most part the GEAC reports were positive about the prospects of Bt Cotton, the reports of state governments were far more critical. These contradictions themselves raise questions about the politics of knowledge production, and the positions of various actors in decision making. The disparities in the views of two state-mandated institutions points towards a wider prevalence of slippages in a coherent state policy. Centre-state relationships, intra and inter Ministry relationships as well as relationships between differently located research institutions betray the cleavages in state perspectives and policy-making processes.

Though the Indian state is widely characterised as being oriented towards a governmentality focussed on production and efficiency, and by extension being pro-transgenic seeds, the MOEF functions in a manner contradictory to this stand as evident in the imposing of a moratorium. Other state-run institutions when called upon for inputs have also presented mixed feedback. For example, when asked to consider the possibility of the transfer of anti-biotic resistance from Bt Brinjal to humans, The Department of Health Research suggested that the transfer of antibiotic resistant genes from plants to bacteria had so far not been successful, and therefore did not believe the genes could be transferred to humans. The Council for Scientific and Industrial Research (CSIR) voiced a preference for molecular breeding over the adoption of transgenic seeds with antibiotic resistance genes. The complexity of voices within closely related institutions points towards a plurality of voices in the sphere of the state.

On the other hand, the Ministry of Agriculture is seen to have a very strong preference for the introduction of transgenic crops leading to conflict in the stand of the Central Government as a unity, leading to conflict between both ministries (*Indian Express*, 2013). The tussle between ministries is also replicated in intra-Ministry and centre-state relations.

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State governments to date enjoy a prerogative in determining their own agricultural policies because agriculture is constitutionally defined to be a state subject. Some states have consequently refused to entertain transgenic seeds within their territorial boundaries, events argued by former Minister of Environment Jairam Ramesh as having been prime considerations in the imposing of a moratorium on Bt Brinjal. While the moratorium was placed after a series of public consultations that spoke to economic, social and health considerations, Ramesh offered a pragmatic justification for the decision as well when he went on to say that “there are political questions involved” (*Outlook*, 2010), such as the unwillingness of state governments to allow agricultural bio-technology within their state boundaries and the implications of this for coalition politics in the national government. The introduction of federal politics/state-centre relationships widens the discursive field to include aspects of the practice of the technology not included in the discussions prior to this. The greater the number of actors involved in this instance, the larger the variation in voices, since state governments are bound by the specific considerations and interests of their own constituencies.

6.2. The Biotechnology Regulation Authority of India (BRAI) Bill

This is not to argue that certain apparatuses of the state do not attempt to exert dominance. The introduction of the Biotechnology Regulation Authority of India (BRAI) Bill in the Parliament is one such example of state dominance – or the dominance of the highest powers in the centre, the Prime Minister’s Office (PMO). The BRAI Bill was introduced in the Parliament in 2013 to

regulate the introduction and practice of biotechnology in India. Some aspects of its introduction and text point towards the aspirations of its introducers. The Bill was introduced ostensibly on the behest of the PMO by the Ministry of Science and Technology (side-stepping other ministries) in the Lower House of the Parliament in early 2013 in what has been described as a hasty manner by some members of the Opposition, amidst a period of general chaos in the Parliament and with insufficient public input. The Bill performed specific functions as excerpts from its text indicate. One, it allowed for a single window for the clearance of new technologies, and therefore allowed for greater unevenness in the exercise of power, as opposed to previous regulatory mechanisms wherein a number of actors from different domains would be responsible for the combined evaluation of new technologies. At the same time, the right to make decisions regarding biotechnology was vested in the BRAI, thereby presumably stripping the ministries of health and agriculture - seen sometimes to have contradictory views to that of the Department of Science and Technology - of rights constitutionally accorded to them.

Second, though the Bill made provisions for the setting up of a State Biotechnology Regulatory Advisory Committee, its function and scope remained ambiguous, and appeared to leave state governments little say in decisions. If this were the case, the Bill would have functioned to change the field of discourse by limiting the voices of previously legitimate actors. It was not just state governments, but the public as well that was edged out from decision making. Article 28 (2) of the Bill stated that, "If the Authority is satisfied that the public interest outweighs the disclosure of confidential commercial information or such disclosure shall not cause harm to any person, it may refuse to retain that information as confidential commercial information" with implications for transparency in the functioning of the Bill. This opacity of knowledge in the case of BRAI is characteristic of some of the functioning of the practice of transparency in the debate. The international environmental organisation Greenpeace was engaged in a battle to get a copy of the bio-safety dossier submitted by Mahyco to the Department of Biotechnology that lasted over 30 months and finally ended in it approaching the Supreme Court, despite the Department being bound to provide it under the Right to Information Act. A further clause of the Bill in Article 62 stated that any person found guilty of providing information that was deemed to be 'false and misleading' can be fined and imprisoned. In the absence of clear guidelines as to how information may be deemed so, this Article could have been used to prosecute actors who voiced any kind of dissent. These developments point towards an attempt to unify discourse into an overarching dominant one. If the Bill had been passed, it could have functioned as a technique or method of coercion, attempting to narrow the debate and bind discourses into a coherent whole, while excluding the possibilities of aberrant alternatives.

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The Authority is required to "inform" the public (Section 18) about the mandate, programmes and policies of the authority and can also invite their "objections and suggestions" (Section 27). However, the Bill also classed some information as being 'confidential commercial information' (Section 28), severely limiting the decision-making processes and abilities of deliberative publics. Kinchy and Kleinman suggest that very often a shift of the emphasis from social regulation to risk and scientised regulation in science policy is one assisted by industry and its interests (Kinchy & Kleinman, 2003). On the other hand, Marres (2007) draws from Lippman (2002) and Dewey (1991) to point out that public involvement is needed precisely in the case of such intractable debates when institutions cannot resolve issues. The new BRAI Bill firmly attempted to reinforce dominant understandings of truth-telling and truth-tellers, further precluding the possibility as demonstrated above, that resolution of the debate would take place in a manner that excludes relations of force. Though the Bill has currently lapsed, it remains to be seen how its future form will address these concerns.

Conclusion

In this paper we have seen how the biotechnology debate in India has been carried out by different actors, state, non-state and the public, undergirded by different logics and strengthened by different identities. Both groups, spanning from agricultural research institutes to Vandana Shiva’s organisation Navdanya have appealed overwhelmingly to science in their validation or critique of it: whether by positing Bt technology as or agro-ecological technologies as constituting scientific methods of production. Despite this seeming congruity in narratives, it is state actors that have enjoyed discursive success through their deployment of uneven relations of force, especially through legislation. Arguably, discursive success is not an end-state, but a temporally limited phenomenon. As new actors and new developments emerge, the relations of force and language will be reformulated to reflect these changes.

Even so, when the BRAI Bill came up for consideration, it became clear that despite the plurality of voices exhibited in different spheres, the *practice* of the agricultural biotechnology debate is beginning to tend towards totalitarianism as defined by Marcuse:

“not only a “terroristic political coordination of society”, but also a “non-terroristic economic-technical coordination which operates through the manipulation of needs by vested interests”...which may be compatible with a ‘pluralism’ of parties, newspapers, ‘countervailing powers,’ etc.” (Marcuse, 1964: 5).

While the debate is characterised by a multiplicity of voices and consequently a multiplicity of truths, the expanding practices of domination by the state will attempt to function to not just exclude, but to silence non-compliant truths - even *within* the space of the state. Debates about what agricultural bio-technology is and how it affects and is affected by social and economic relationships - however limited in scope they currently are even if characterised by the pluralism Marcuse refers to - will become less and less relevant as the perceived need for debate itself by policy makers diminishes. Deliberation may more and more take the form of overt resistance, unless the discourse shifts to produce new narratives.

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