TECHNOPOLITICS, AGRARIAN WORK AND RESISTANCE IN POST-GREEN REVOLUTION INDIAN PUNJAB

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Divya Sharma
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Divya Sharma, Ph.D.

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This dissertation provides a historically informed examination of the emergent politics of agro-ecological sustainability in the Malwa region, the cotton-belt of Indian Punjab. I revisit the period of agro-chemical agricultural intensification, known as the "Green Revolution' since the 1960s, through subjective histories of the transformation of agrarian work that are inflected through the lived experiences of the present. Punjabi farmers, once perceived as the favoured beneficiaries of state-led development practices are now in the midst of a social and ecological crisis with falling incomes, high levels of indebtedness, frequent crop failures, polluted environment and increasing incidence of diseases. Using qualitative methods, I examine how this experience of precariousness and downward mobility among capitalist farmers has fostered an alternative imaginary that seeks to revalue agrarian work and enact sustainable agroecological farming, as well as the constraints on the realisation of this imaginary. For Punjabi farmers, the struggle is not one of preservation but of forging new practices of food production and consumption in a degraded material and social landscape. While sustainable agroecological farming is incipient and much less vibrant than in many other regions of India, it is precisely its emergence in Punjab that is instructive for understanding the exclusions structured through postcolonial developmental politics. The Green Revolution exemplifies the spatial, temporal and social displacement of ecological costs through regional division of labour, and through in-situ capitalist transformation of agrarian work. I argue that this historically situated prefigurative mobilisation, its ongoing

internal negotiations and structural limitations, is a critical vantage point for understanding the political implications of the unevenness of postcolonial development practices.

BIOGRAPHICAL SKETCH

Divya Sharma received her B. A. with Honours from Lady Shri Ram College, University of Delhi and her M.A. in Sociology from Delhi School of Economics. She subsequently received her M.Phil. in Development Studies at Cambridge University. From 2008-2010, she worked at the Institute of Social Studies Trust, Delhi, where she conducted research with civil society organisations broadly focussing on gender and work. The organisations and people she encountered during this period inspired her to study rural and agrarian socio-political movements in India. In 2010, Divya started graduate studies at the Department of Development Sociology, Cornell University. Currently, she is a postdoctoral research fellow at the Science Policy Research Unit, University of Sussex.

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INTRODUCTION

The Malwa region of the Indian state of Punjab has become the site of an endemic agrarian crisis since the 1990s. Stories of rural economic distress, farmers' committing suicides, rising incidence of cancer in rural households, and the opioid epidemic among youth abound in the local and regional media. The physical landscape of the countryside though at first glance belies this narrative of crisis. Large swathes of green farmland are visible with wheat in the winter (*Rabi* season), and cotton, which is increasingly being replaced by paddy in the summer (*Kharif* season). Farmers on motorcycles and tractors dot the landscape along with some workers spraying agrochemicals using small tanks on their backs, or standing in flooded fields during paddy transplanting season. The large bungalow styled houses that are built on farm land, often with creative water tanks on their roofs shaped like a pair of bullocks, an aero plane, a tractor, a military tank with a Punjabi soldier, among others, stand apart from the much more modest houses clustered together inside villages. Unlike, many other parts of rural India, a dense network of concrete roads connects farm land with villages, nearby towns and cities. This imagery of prosperity has been associated with rural Punjab since the 1960s when it became one of the epicentres of the so-called 'Green Revolution', a government-led program of agricultural intensification for achieving national sufficiency in food grain production.

This rapid transformation of production was enacted through the commodification of farming inputs – adoption of HYV seeds, agrochemicals, and the institution of irrigation infrastructure, inputs subsidies, state procurement of crops at minimum support prices and aggressive persuasion through extension agencies. Within three decades (the 1960s - 1980s)

the mixed cropping farming system in Punjab was transformed into a mono-cropped landscape, with the majority of farmers practising wheat-rice, or wheat-cotton rotation. Monetization of everyday consumption practices and deepening of the credit economy accompanied the institution of monocultural cropping. The chronic indebtedness that is pervasive now can be traced to the mid-1970s and 1980s when farmers began to buy farm machinery, particularly tractors, and invest in private tube wells for groundwater extraction.[1]

The state-supported Punjabi yeoman-farmers occupied an anomalous position within the postcolonial development narrative. Their economic gains, occupational pride and status were associated with land ownership and capital-intensive agriculture. Increasing food productivity through regionally concentrated intesnfication was critical to the realisation of the Nehruvian socialist project of industrial expansion. The Nehruvian socialist project though was also underpinned by the assumption of an agrarian transition – the promise of urban, non-farm secure jobs in the future that also became the normative definition of upward mobility. In Punjab, wheat and rice yields however increased dramatically only until the 1970s-1980s. Since the 1980s and 1990s, symptoms of social and ecological degradation began to surface visibly puncturing this imagery of Punjabi agrarian prosperity. On a closer look at the physical landscape, it is difficult to not notice the conspicuous absence of trees, with the exception of patches of poplars and eucalyptus grown for commercial purposes, or few native tree species lining the sides of railway tracks. During spraying season, the stench of agrochemicals pervades the fields and occasionally there are dead birds on roadsides. Suffocating smog completely engulfs the fields and villages for days after the post-harvest

[1] Punjab has highest rates of productivity in wheat and rice and almost 100% irrigation of arable land, most of which is through pumping out ground water through tube wells. The net irrigated area as the proportion of net sown area was 99.6% in Punjab as compared to the national average of 45.7 percent, out of which majority was tube wells (75.53%) followed by canals 24% (Agricultural Census 2010-2011, Government of India).

burning of crop residue. The invisible toxins in the environment, food and groundwater are becoming manifest through growing intensity and incidence of diseases.[2]

Critical scholarship on the Green Revolution highlighted the marginalisation of small and marginal farmers, and increasing precariousness among landless workers, through the early decades (Griffin 1974; Shiva 1989; Patnaik and Bernstein, 1990). In this dissertation, I explore the extension of experiences of precarity to medium farmers in the last three decades, once perceived as 'beneficiaries' of the Green Revolution. And how their experiences of precariousness have created the conditions for emergent politics for sustainable agroecological farming. As further agricultural intensification has become unfeasible with rising costs of cultivation, chronic indebtedness and frequent crop failures, an embryonic local counter-movement has begun to develop over the past 10 years (Singh 2004; Jodhka 2006; Brown 2013). The movement, *Kheti Virasat Mission* (henceforth KVM) that roughly translates as 'a mission for reviving farming heritage', precipitated by a sense of crisis and disillusionment with statist interventions, employs a politics of restructuring everyday practices of production and consumption, specifically enacting a shift toward agro-ecologically sustainable farming.

[2] Punjab has about 4.2 million hectares of cultivable area, which is 3% of the net area sown in the country. It produces about 19% of India's wheat and 11% of rice from 12.4% and 6.7% of the total area under wheat and rice, respectively. It has contributed 25-50% of rice and 38-75% of wheat to the central pool of food grains over the last four decades. Cotton is another important crop of the state, which is grown over 5.2 lakh hectares (2011-12), which constitutes about 5% of the total cotton area, and 9% of the total cotton production in the country (State Agricultural Report 2013). This indicates the level of agricultural intensification over the five decades since the Green revolution in the 1960s. It is now widely accepted in policy and the wider public domain that monocultures of rice and wheat with excessive cropping intensity have drained natural resources such as soil and water. The productivity level of wheat and rice has reached a plateau, and farmers have to use higher quantities of inputs to maintain current levels of yields.

In this dissertation, I examine the conditions which have made possible the politicisation of socio-ecological relations, and how this political discourse is being deployed to prefigure an alternative food system in Punjab. To do so, I focus on how men and women from rural households, both participants and non-participants in the movement, experience the transformation of work and social reproduction practices geared towards extractive agriculture. The prefigurative form of political mobilisation emergent at the present conjuncture provides an opportunity to understand the relationship between socio-ecological change enacted through everyday practices and political agency.

Technopolitical statist interventions, that were critical to the institution of Green Revolution farming, have been shaped by the logic of compartmentalization, which conceives of the 'social' and the 'ecological' as well as production and social reproduction as separate realms. An exclusive emphasis on increasing productivity of cereal crops, particularly within the North-Western belt of Punjab, Haryana and Uttar Pradesh exemplifies this logic. Surplus production only of wheat and rice concentrated in this region was intended to fix the severe crisis of social reproduction nationally at the end of the colonial period while enabling the development project of industrial expansion that required cheap food grain for the working classes. Extractive agriculture to produce food grain surpluses was critical to the process of postcolonial state formation and legitimization. Punjab, in particular, and the Northwestern region more broadly, became sites of such extractive agriculture and were produced as 'breadbaskets' in the national division of labour. The spatial and social displacement of ecological costs has been fundamental to postcolonial development practices. Such displacement has been constitutive of rural struggles in Punjab since post-independence that identify singular primary conflicts while bracketing other modes of exploitation. Mobilisations for land redistribution, highlighting class conflict in the 1960s and 1970s were

followed by formation of farmers' unions led by middle and large farmers that identified urban-rural inequality as the primary axis of conflict, demanding greater input subsidies and prices from the state in the 1980s.

While scholarly critiques have pointed to increasing ecological poverty as a consequence of deepening capital-intensive agriculture since the early decades (Shiva 1989), ecological degradation has emerged on the political landscape relatively recently in the last two decades. KVM's advocacy for a sustainable food system in the Malwa belt explains the current crisis as a rupture of socio-ecological relations and seeks to repair these relations through prefiguration, that is the transformation of everyday practices of production and consumption. Thus, rising social inequality and ecological degradation are not conceived as parallel processes but as mutually constitutive of each other.

Prefigurative politics and the concurrent analytic of the transformation of everyday practices and lived experiences resist compartmentalization inscribed through Green Revolution techno-politics. This resistance is premised on the recognition of temporal and social displacement of ecological costs within Punjab as the material effects of such compartmentalization. Over the past six decades, these effects are becoming visible in health outcomes, crop failures and economic unprofitability of farming making further intensification as well as the in-situ displacement of costs impossible. The constructive program of shifting toward bio-diverse natural farming, and self-sufficiency in local healthy food consumption principally eschews class and statist politics. However, the regional moral ecology is replete with contradictions: the memory of agrarian prosperity facilitated by statist interventions, failure to realise the promises of development –that is a transition to secure white-collar jobs for the majority, and the current experiences of socioeconomic and

ecological precariousness rooted in farming. I ask how these contradictions constrain and are reshaping the agenda of agro-ecological sustainability.

I. The historical geography of Malwa's cotton-belt

Known as the cotton belt, the South-Western Malwa region is the largest region in terms of area, with the largest number of farm households and the lowest levels of education in Punjab (Ghuman, Singh and Singh 2007; Bajwa et al 2015). Lying south of river Sutlej, it is a semi-arid region with a mix of sandy and alkaline desert soils (Figure 1 and 2 in the Appendix). People within and outside the region routinely talk about its 'backwardness' compared to Doaba and Majha regions of Punjab. This is despite or perhaps because of relatively larger average operational landholdings which is said to explain the 'feudal mentality' and lack of sufficient occupational diversification among rural households. Emigration has been significantly more common in the other regions through the colonial and postcolonial period, which in turn has changed the makeup of villages in Doaba and Majha. The agrarian crisis, particularly the growing health crisis attributed to chemical contamination of soils and groundwater, is known to be most severe in Malwa, because of cotton cultivation.[3] State agencies do not procure cotton, the third prominent crop in Punjab after wheat and rice. While cotton is more labour-intensive, and better suited to the regional ecosystem, many farmers in recent years have started shifting toward rice cultivation in the region. Growing paddy comparatively secure as it is procured by the state at a minimum support price along with wheat.

[3] Studies have shown a high level of uranium concentration in drinking water samples in the southwestern districts of Punjab (Bajwa et al 2015).

The price of cotton, in the open market, has been falling consistently over the last few years, even as the input prices are going up with rising pest attacks and higher prices of genetically modified cotton seeds (Bacillus thuringiensis popularly referred to as Bt cotton). Bt cotton, India's first, and so far, the only allowed genetically modified crop was introduced in 2005, and now occupies a majority of the cotton acreage in Punjab. Farmers adopted Bt cotton after the consistent failure of American hybrids in the 1990s because of attacks by boll-weevil (cf. Stone 2011). After high yields in the initial few years, uncontrollable attacks by pests' other than the boll-weevil have surfaced. Farmers who can afford to invest in additional motors for pumping out groundwater are shifting to paddy, often taking loans to make the shift. An assured state supported minimum price and procurement infrastructure for rice makes it less risky, but increasing acreage under rice is creating further pressure on already critical groundwater level. This shift away from cotton, which has deeper historical roots as opposed to rice, is an unequivocal expression of the desire for the increasingly elusive security and stability.[4] Even though the increase in support prices for wheat and rice has been minimal, and incommensurate with the rise in cultivation costs and inflation (National Commission for Farmers 2006), they are reliable and the only form of assured basic income. Wheat, a staple in the local diets provides food security and income for medium farmers who produce a surplus, the other crop, whether rice or cotton, is the primary source of cash income for consumption expenditure including health, and education.

Rural Malwa is an apt vantage point to unravel the trajectory of temporal, social and spatial displacement of ecological costs within Punjab and the saturation of this process. As the predominantly agrarian and relatively dry and semi-arid region, it is anomalous in relation to

[4] Rice is perceived as an alien crop that is not a part of the local diet even in areas where it has been grown for decades now, and until recently required the knowledge of migrant labour from Eastern states specifically for transplantation.

the imagery of prosperity. The specific materiality of cotton cultivation and its exclusion from the state-supported procurement system has produced conditions for rethinking extant agrarian practices. The emergence of the agro-ecological sustainability movement here reflects the manifestation of socio-ecological degradation in stark forms, produced through the intensification of the technological treadmill. The history of the cotton-belt denaturalises the imaginary of Punjab as a 'core' region and the implied valourisation of a development trajectory structured through capital-intensive farming in this imaginary.

The salience of region-centric analysis has been highlighted in recent South Asian historiography. Accounts of regions as produced ecologies and not as bounded geographical entities pose a challenge to methodological nationalism and draw attention to ongoing dynamics of postcolonial nation state formation (Rangan 2000; Ludden 1999, Agarwal and Sivaramakrishnan 2000; Goswami 2004). As Haripriya Rangan (2000) argues 'regionalism' allows for an analytical focus on processes of governance and the attendant conflicts rather than presuming the inherent and immutable character of pre-colonial, colonial or post-colonial states. Others have argued that 'regionalism' has been a historically distinct characteristic of the South Asia on account of the diversity of its agrarian environments (cf. Ludden 1999, Agarwal & Sivaramakrishnan 2000). Regions draw attention to the unevenness constitutive of nation state-formation on the one hand and disrupt the First World/Third World dichotomy on the other hand as sites where local and global processes articulate (Walker 2003; Galt 2013; Neumann 2010; Makki 2012).

As a site of extractive agriculture and because of its geopolitical location Punjab was critical to both colonial and postcolonial state formation. While 'Green Revolution' in the 1960s is often characterised as a moment of rupture, the roots of techno-political statist interventions

can be traced to the colonial period. Going beyond the commercialization of agriculture through restructuring revenue collection, intensification was promoted for export of wheat and cotton, and for domestic consumption to quell the growing unrest in British India. The colonial state built an extensive canal infrastructure, enacted measures for land consolidation, and incentivised Sikh Jat peasants from central Punjab through recruitment in large numbers in British India army and land grants in the canal colonies. The canal colonies built around canals in previously pastoral territories were supposed to be the 'embodiment of science, modernity and progress' where pastoral populations were 'civilised' through scientific agrarian practices (Bhattacharya 2012:5). Disciplining of the population through classification, the institution of new labour practices and recognition of private property went hand in hand with disciplining of the material landscape (Gilmartin 1994). The straight-lined square plots, perennial canals and institution of crop uniformity were aimed at producing a regime of control and precision to displace uncertainties of farming practised in sync with seasonal rhythms.

As David Ludden (2000) argues, Punjab can be thought of as a frontier region. The lowlands in Punjab were barely cultivated in the sixteenth century and in 1800 large tracts of the land were still open for grazing. However, after 1850 the colonial state built 20 canals, extending 886 miles, which by 1945 irrigated 15,688,000 acres, much of it bearing more than one crop. The increasing frequency of agrarian unrest after 1850 reflected the competition over land, rights to resources, water, farm-incomes amid the final closure of farming frontiers (Ludden 2000: 261-262). Subsistence farming in North-West Provinces transformed into an export sector to stabilize British grain prices and provisions during years of poor harvests. Punjab became an important shock absorber for Britain and, to a lesser extent, continental Europe in face of poor harvests and higher prices in the US wheat belt. The coincidence of drought in

North America and South Asia was particularly dangerous for Punjabi cultivators (Davis 2001:123). The general instability and volatility of prices generated by virtue of being 'shock absorber' region, entrapped cultivators in debt and generated tremendous political conflict within the region (Fox 1985; Mukherjee 2005; Mooney 2013).

While beyond the scope of this dissertation, this long history makes visible the transformation of Punjab from being a frontier region inhabited by pastoralists and self-sufficient peasantry to a 'breadbasket' produced through aggressive intensification. It also disrupts its ecologically determinist representation as a 'core' developed region by virtue of its natural endowments often invoked in Green Revolution narratives through the phrase 'land of five rivers'. The specific ecologies of the pastoral highlands, the intensely cultivated and densely populated Central Punjab and the arid desert-like South West region were entangled in the colonial modernist project in different ways, which produced conflict between social classes within and between these regions. The reconfiguration of the material landscape has been in conjunction with the production of the class of 'yeoman'/ progressive Sikh Jat farmer-owners in conflict with pastoral communities in the first instance, and subsequently with the state. Indebtedness rose phenomenally among Punjabi cultivators, the so-called 'favoured subjects' of the British Raj by the first few decades of the twentieth century (Thorner et al 1996; Darling 1977), leading to the periodic eruption of protests and communal tensions (Fox 1985).

As Javeed Alam (1985) argues the key dilemma in Punjab has been explaining the discontent among classes, which supposedly benefitted from the development of capitalist agriculture, manifest in radical political movements. The militant Sikh secessionist movement of the 1980s brutally suppressed by the Indian state has been attributed to the disruption of the

social fabric with rising inequality, an influx of migrant agricultural labour from other parts of the country and the emerging ecological crisis (Pettigrew 1995; Shiva 1989). According to Joyce Pettigrew the secessionist guerrilla movement which begins to take shape as early as 1978 was in part triggered by the suffering of small farmers and already rising unemployment in rural Punjab. The immediate sparks that unleashed the violent mobilisation included the suspension of the policy of disproportionately greater recruitment for the Indian army from Punjab instituted by the colonial state, and diversion of canal water to other states by the federal government which forced Punjabi cultivators to rely more on groundwater extraction through tube wells (1995: 55-58). The dispute on river water sharing between Punjab and the neighbouring state of Haryana is ongoing and has been central to the narrative of regional exploitation by the federal state. It is noteworthy that these issues have largely been excluded from both celebratory and critical scholarship on the Green Revolution. Richard Fox's (1985) account of the colonial period in Punjab also shows the relationship between the volatility created by agricultural intensification and incorporation of Punjabi farmers into the global food economy and the rise of communal political movements. The dynamics set in motion in the colonial period laid the foundations for the spatial displacement of ecological costs with Punjab at the receiving end of the national division of labour enacted through Green Revolution interventions.

The radicalism of the agroecological movement in Malwa lies in the fact that farmers who practised chemical intensification and enjoyed short-lived monetary gains are at the forefront of the struggle. They are employing an indigenist discourse to resist further advances by global capital mediated via the national state. Indigenist politics, associated with Adivasi and peasant communities marginalised by the 'development project' (McMichael 2017), is being enacted by capitalist farmers from the regionally dominant caste of landowning Sikh-jats.

Invocation of indigenist discourse led by a dominant community from a 'core' region is not based on an assessment of where they stand 'on a scale of accomplishment naturalised by the development state' (Cederlof and Sivaramakrishnan 2006: 5). Rather, it is based on the rejection of such a scale and the recognition of its limits. The discontent expressed by agrarian households in Malwa including landowning cultivators and landless workers, however, does not completely align with an indigenist discourse of autonomy and sustainability. They continue to make demands for a livable income through adequate support prices and secure jobs in the non-farm economy that were promised by the development state and remain unfulfilled (cf. Rangan 2000).

II. The Agrarian Question of Labour (Practices)

Small holder farming is far from disappearing in India. There is no visible trend yet toward concentration of agricultural land ownership. Nearly 60% of the population continues to depend on agriculture for social reproduction in conjunction with work in the informal rural and urban economy. Jobless growth of the non-farm sectors has been the persistent trend since the onset of neoliberal reforms in the 1990s. The widespread crisis among farming households also began in the 1990s and has continuously deepened since then. Therefore, it has been argued that the agrarian question of capital has been bypassed in neoliberal India and replaced by the agrarian question of labour, or more aptly a crisis of social reproduction for the majority of the population (cf. Bernstein 2010; Lerche 2011; Shah and Harriss-White 2011). The political implications of such a framing of the agrarian question of labour, where labour refers to fragmented dispossessed classes, as a crisis of social reproduction for the soon-to-be surplus populations dispensable to capitalist accumulation are bleak (Bernstein 2006; Li 2010). The assumed inevitability of such a transition implies either an acceleration

of job creation in the non-farm economy and/or expansion of state-led provisioning. On the other hand, the varied and proliferating forms of rural struggles in India in the last decade are challenging the structural constraints on agrarian liveihoods, which continue to be preponderant in the form of petty commodity production. Paying attention to the agendas of these struggles becomes even more pertinent given that the large-scale corporate take-over of agriculture through enclosure of land, has not yet taken off in India preserving the possibility of a future with viable smallholder farming.[5]

Instead, the process of 'depeasantisation without proletarianisation' (Araghi 2009) has played out through the transformation of the labour process with capital-intensive inputs and squeeze on farm incomes through dwindling or volatile prices leading to chronic indebtedness. Most affected are small and marginal farmers, but it is also becoming difficult for medium farmers to generate a livable income from farming. Thus, it is principally agrochemical and seed companies, and large-scale traders of agricultural commodities that are accumulating in the agricultural sector.[6] The transformation of farming practices through mono-cropping and chemical intensification has proceeded unevenly and is highly differentiated regionally. While productivity is stagnating in Green Revolution regions where such intensification has been ongoing since the 1960s, regions in Central and Eastern India are becoming new sites of investment and productivity growth spurts. While there have been several insightful studies of regionally situated histories of agrarian transformation in India the political implications of

[5] Acquisition of agricultural land for industry, with the mediation of the state, however, is a looming threat. It is worth noting that the geography of land grabbing for industry has expanded beyond tribal areas where agro-forestry is practiced to include core agricultural areas. And, India is actively involved in land grabbing via multinational companies to procure food for domestic consumption (Landy 2017; Makki 2012).

[6] According to the most recent survey of National Sample Survey organisation (2012-2013) over half of the 58% of agricultural households in the country are in debt, with the average loan amount outstanding for a farm household being Rs. 47,000. The average farm household income is a paltry Rs 6,426 per month (about $99), out of which only 47.9% comes from cultivation (Rukmini 2014).

this unevenness remain unexplored.[7] Farmers unions across the country have been demanding loan waivers, compensation for families where farmers have committed suicides, and most critically increase in minimum support prices of crops and expansion of the state procurement system that would stabilise prices. Land conflicts have also been proliferating in different parts of the country in significant numbers since the 2000s. These include farmers' agitations against the acquisition of agricultural land and/or demands for adequate compensation. As Michael Levien (2013) argues dispossession of land poses an immediate and irreversible threat to people's means of production and subsistence and often involves violence, and therefore is likely to generate disruptive and overt resistance. Levien (2013: 366) also contends that land dispossession is likely to produce 'local, ad-hoc, single-issue forms of organisation' that target the state.

In contrast, it is difficult to neatly delineate forms of political agency produced through gradual and uneven dispossession in the form of loss of control over the labour process for landowning farmers.[8] Arguably, such a process is likely to create conditions for quiescence and/or fragmentation of agrarian interests. It is now widely acknowledged that farmer suicides stemming from agrarian distress have been concentrated among small and medium farmers from politically dominant castes and groups and in regions that embraced Green

[7] Ethnographies of regionally situated transformations of agrarian work in India show how sociocultural and material processes produce subjectivities and forms of political agency (Gidwani 2008, Chari 2004; Harriss 1982). Byres (1981) hinted at the political implications of regional unevenness but as a comparison based on predefined attributes instead of mutually constitutive relational process.

[8] In the Grundrisse, Marx describes the real subsumption of labour as 'the accumulation of knowledge and of skill, of the general productive forces of the social brain, is thus absorbed into capital as opposed to labour and hence appears as an attribute of capital' (Marx, 1975: 694). Signaling the political implications, Marx argues that this process leads workers to attribute their exploitation to machinery and technology, that is means of extraction, as opposed to its employment by capital (Marx, 1976: 554-55). Yet, Marx conceives of politics primarily in terms of constructing alternative social relations, and not alternative forms of knowledge production and labour practices.

Revolution practices (Muenster 2015; Shah 2012; Kennedy and King 2014). Landowning farmers in the Green revolution belt had significant political clout in the 1970s and 1980s and put forward demands for greater inputs subsidies and prices from the state. These demands accelerated intensification, which ironically is in part responsible for the weakening of their political leverage. With abundant availability of food, strengthening of the Indian state and corporate capital, and distress in the agrarian economy since the 1990s, the political leverage of farmers' unions is weakened significantly.

The experiences of Punjabi farmers and the history of agrarian struggles in the region leading up to the nascent movement for agro-ecologically sustainable farming is instructive for understanding the political implications of the crisis generated by deepening technological treadmill. Punjabi farmers today have negligible control over the labour process. Everything, from cropping choices and methods to inputs that were instituted through statist interventions, is now a part of a self-sustaining technological treadmill. Their experiences speak to the contemporary agrarian question of labour, framings of which have paid scant attention to labour practices and consequently ecological dynamics (Akram-Lodhi and Kay 2010). Attention to agrarian practices and how they articulate with socio-ecological reproduction in a 'core region' in the Global South can shift the political problematic by foregrounding the failure of modernist paradigm (cf. Van der Ploeg 2010; McMichael 2006). More critically, it can provide insights on whether such a failure can produce a place-based politics that privileges both social justice and ecological sustainability.

The family farm and the peasant farmer were considered anomalous in the classic agrarian debate because of incomplete realisation of real subsumption of labour, or capitalist

transformation of the labour process (Nadkarni 1991, Alavi 1975).[9] Subsequent scholarship attributed agrarian exceptionalism to constraints imposed by the biological conditions of work (Goodman and Redclift 1994). This notion of exceptionalism informed the debates on agrarian politics as well. Overdetermined by the assumption of class polarization, the middle peasant was at the centre of the political agrarian question. While orthodox Marxist scholars characterised the 'middle peasant' as conservative and reactionary, agrarian scholars drawing on experiences of postcolonial nations saw the middle peasant as the revolutionary class given its relative autonomy (Alavi 1973; Wolf 1971). However, as John Harriss (1979; 1982) convincingly argued based on his rich ethnography in Northern Tamil Nadu, the 'middle peasantry' was an inherently unstable group with caste and kinship ties to other classes of farmers, and dependent on traders and merchants for loans to buy agrochemical inputs and sell produce with the adoption of Green revolution practices. The question of political class formation was thus not straightforward in the context of changing agrarian practices mediated by extensive statist interventions. Regardless, of whether the farmers' mobilisations in the Green revolution belt in India were considered conservative and reactionary or progressive, their demand for agro-input subsidies drew attention to transformation of the labour process, expanding the political discourse beyond localised land and labour conflict.

The small number of Punjabi farmers leading the sustainability movement by shifting toward natural farming can indeed be categorised as 'middle-class'. However, the 'middle-class' status is not by virtue of land ownership alone but a conjunction of other factors. Within the national context, the majority of Punjabi farmers growing wheat and rice have had relatively

[9] The issue of capitalist transformation of agriculture was germane to the mode of production debates in postcolonial India as well, although the focus was largely on relations of production, not agrarian practices. Very few studies of agrarian transformation in India have paid substantive attention to analysis of technology in the transformation of labour process and ecological dynamics (cf. Amin 1982; Pandian 1987; Gupta 1998; Stone 2007; Stone 2011; Stone & Flachs 2017).

stable incomes because of access to state procurement infrastructure. While minimum support prices declared by the government for certain crops formally apply to all farmers, less than six percent farmers nationally are able to sell at these prices to state procurement agencies (Kumar 2015; cf. Landy 2017). The extensive networks of market yards for such procurement are limited to northwest Green Revolution regions including Punjab. In terms of production though Punjabi farmers are the most exploited with the highest usage of fertilizers, pesticides, insecticides and groundwater. The easy access to these inputs is increasingly being viewed as a bane with deepening social and ecological crisis. Within the medium landowning class of farmers, the small subset who are shifting to sustainable farming practices are mostly elderly farmers who have some knowledge of farming prior to the diffusion of Green Revolution practices, some form of stable non-farm income coming into their households and an experience of cognitive disillusionment with scientific agriculture in its existing form.

I argue that labour practices, as an analytical departure point for understanding political agency, are significant for three reasons. First, they reveal the epistemic rupture underlying techno-politics of the Green Revolution that makes the interactions with the material environment in the process of social reproduction politically invisible (Ekers and Loftus 2013). The co-constitution of the social and material landscape through human and non-human agency is made invisible, as the notion of 'expertise' drives techno-political development practices that are characterised by this process of obfuscation (Mitchell 2002). As Timothy Mitchell writes:

"Techno-politics is always a technical body, an alloy that must emerge from a process of manufacture whose ingredients are both human and non-human, both intentional and not, and in which the intentional or the human is always somewhat overrun by the unintended. But is a particular form of manufacturing, a certain way of organising the amalgam of human and

non-human, things and ideas, so that the human, the intellectual, the realm of intentions and ideas seems to come first and to control and organize the non-human" (pp. 43).

Moreover, as Schneider and McMichael (2010) argue the "epistemic rift" is also replicated in social theory, which has focused predominantly on social relations of production, neglecting the restructuring of labour practices. Emergent agrarian resistance in the form of prefigurative agro-ecological politics poses a fundamental critique of the rationalisation of the labour process and highlights its consequences for both social and ecological reproduction.

Second, memories of how agrarian work was transformed through the Green Revolution decades are also an account of how production is embedded in, and disembedded from, the total system of reproduction (Watts 1983). They highlight the experience of deepening commodification not just in the realm of production but also of consumption practices, the reconfiguration of sociality, gendered socio-cultural practices as well as notions of well-being and upward mobility. In other words, I argue that these memories are critical for reclaiming conceptions of 'living abour' in a seemingly homogenised agrarian landscape (Chakrabarty 2008; Gidwani 2008). As Chakrabarty argues in his reading of Marx, the 'living' quality of labour resists disciplinary measures enacted in the process of abstraction of labour by capital. This process of abstraction is, therefore, never complete, which in turn leads to the production of more 'dead labour' or technology, creating the conditions for emancipation of labour and the dissolution of capital (2008: 61). Memories of transformation of agrarian work foreground the 'living' quality of labour as they map the relation of workers with soils, crops, agro-chemicals and machinery, and with each other.

And finally, the collective shared memories that recall past practices point towards exclusions structured through techno-political interventions that are invisible on the material landscape.

Some of these exclusions have been not recognized by the organized agrarian mobilisations in the postcolonial period as well. Most notably, in Punjab, these include tasks performed by women, which were marginalised with their eviction from the fields, as well as the form and role of the commons in sustaining agrarian production and everyday consumption. The history of the eliminated commons, which included not just material resources but also collective work practices, makes visible social groups that have been eliminated from the history of the Green Revolution. Struggles for land redistribution by landless Dalit communities in the early 1960s and 1970s were driven by the emancipatory momentum of the anti-colonial nationalist movement but were co-opted and suppressed through the statist developmental politics. These struggles though continue to be recounted in the history of agrarian politics in the postcolonial period (Singh 1994; Judge 1992). The experiences of pastoral communities, however, germane to the regional ecology prior to agricultural intensification are absent in official and resistance narratives.

III. A Political Agroecology

The movement for agro-ecological sustainability in Malwa is distinct from other 'environmental' political movements spurred by 'development induced displacement' (Fairbairn et al 2014; Baviskar 1995). The latter have included struggles against large-scale infrastructure projects and extractive industries that threatened people's immediate livelihoods and the environment they inhabit. Much of political ecology scholarship has focused on struggles over resources and livelihoods from the standpoint of such marginalised subjects of development (Rangan 2000; Martinez-Alier 2014). While the movement led by KVM has predominantly middle-class farmers as participants, it shares the vocabulary of other development induced struggles in the global South – that of enacting material and

cultural autonomy, revaluing indigenous knowledge and practices, and enacting nurturing socio-ecological relations (cf. Escobar 2008).

For Punjabi farmers, the struggle is not one of preservation but for forging new practices of production and consumption in a degraded material and social landscape. While sustainable agroecological farming is incipient and much less vibrant than in many other regions of India, it is precisely its emergence in Punjab that is instructive for understanding the exclusions structured through developmental politics, as well as the possibilities for inversion through the standpoint of socially and ecologically embedded producers situated within the constraints of global political ecology, mediated via the nation-state (cf. Mitchell 2013; McMichael 2013). The agroecology movement is working against the extant moral economy shaped by dependence on public infrastructure designed for agrochemical intensification. As this public infrastructure of input subsidies and support prices for wheat and rice that incentivises mono-cropping is being dismantled, cultivators trapped in intensification treadmill are left to bear the costs of increasing productivity on their own. Therefore, the parallel struggle led by farmers' unions is to preserve this state support that enabled the Punjabi farmers' position of relative privilege.

In this context, I employ the tools of political ecology in three ways. First, I argue that focusing on the experiences of farmers in the cotton-belt of Malwa perceived as an internal 'backward' sub-region foreground the marginal standpoint that challenges the imaginary of Punjab as the wheat-rice breadbasket and a success story of the postcolonial development project. It also draws attention to how the materiality of specific crops is constitutive of social relations and political agency. The history of agrochemical intensification specific to cotton and its exclusion from the state procurement system has produced a relatively deeper

economic and ecological crisis. The crisis is experienced not simply as deprivation but in the form of heightened risk and volatility, loss of status, and the inability to realise imagined futures. This, in turn, has created the conditions for the emergence of a movement for agro-ecological sustainability.

Second, I situate the movement for agro-ecological sustainability by mapping the lived experiences of the present crisis of both movement participants and non-participants including landless cultivators and farm workers. While the political economy of agrifood system has tended to look inward, political ecologists have situated food and agrarian politics within broader contexts that shape people' lived experiences (Galt 2013; Carney and Watts 1990). Narratives articulated by men and women from agrarian households with different social and economic standing are nonlinear accounts of the transformation of both production and social reproduction practices through the Green Revolution decades. Their evaluations of lost agrarian practices and the Green Revolution practices that replaced them, complicate the mobilisation discourse of the movement which reconstructs a valorised indigenous 'past'. These narratives are therefore useful as repositories of alternative ways farming and modes of dwelling that now exist only in the shared collective memory, as well as to trace the exclusions enacted through Green Revolution practices that are being reinforced either strategically or inadvertently by the agro-ecological sustainability movement. The collective social memory filtered through the present sense of crisis illustrates how experiences constitute subjectivities, which in turn is critical for understanding both the possibilities and constraints of agroecological politics. This dissertation is animated by the question of how alterations in everyday practices that are experienced as qualitative ruptures inform notions of well-being, which in turn shape the possibilities for collective struggles.

Finally, I suggest that the prefigurative mode of organising adopted by KVM is salient for understanding how socio-ecological relations shape political agency. KVM's mobilisation is centred on producing critical consciousness in and through the process of transforming everyday practices of food production and consumption. Both place-making and temporality are critical to such prefiguration. The enactment of practices as a mode of forging community and solidarity with the ecosystem is in principle different from the defence of the closed predefined community that breeds reactionary politics. Prefigurative politics also reconfigures the relationship between the past, present and the future in ways that challenge the linear conception of progress germane to state-led development practices and the discourse of development more broadly. KVM challenges the discursive and material de-valourisation of agrarian work and the naturalisation of agrochemical intensive agriculture as a progressive form of farming. I examine how such mobilisation is unfolding in practice.

The mobilising discourse of cultural autonomy along with a practical agenda of transformation that is invoked by agroecological politics in Punjab offers a fundamental critique of techno-political practices. The idiom of cultural autonomy challenges the productivist logic of development practices, as well as critical accounts of the ensuing crisis that separate economic distress from ecological degradation. While the assertion of cultural autonomy mirrors techno-political practices through inversion, that is, by emphasising the 'non-economic' as a strategic essentialism, focus on practical transformation in organising has constituted social reproduction as a site of struggle.

As Wolford and Keene (2015) point out there has been a limited engagement with organised resistance movements among political ecologists, and that this engagement has been deeply influenced by the work of E.P. Thompson and Antonio Gramsci in emphasising how norms

and customs shape struggles over material resources. The emphasis on norms and customs, foreground not just conflicts over access to material resources and the environment, but struggles over different ways of organising production and social reproduction practices. What is particularly interesting is that the protagonists of the agroecology movement also view themselves as being implicated in the process of socio-ecological degradation. This suggestion of complicity however also provokes resentment from those situated at the bottom of the gender, caste and class hierarchy that the movement is trying to mobilise, feeding into the fissures within the movement. I argue that these fissures are allowing for the forging of a more inclusive agenda that goes beyond technical framing of agroecology and parochial notions of localised autonomy.

Movements for agro-ecological sustainability, including organic farming, have been criticised for being implicated in cultural conservatism and for their failure to challenge local power relations (Guthman 2004; Brown 2013; Khadse et al 2017). Or, as resistance to and delinking from state and corporate capital becomes the primary focus, caste, class and gendered relations are analytically deprioritized and the notion of traditional farming knowledge is employed uncritically. Traditional farming knowledge is often a reference to technics such as mixed cropping, use of native seed varieties, irrigation suitable to local ecosystems, cultivation of coarse grains and foods that were a part of local diets, but without an elaboration of how these technics are or were embedded within historically produced social relations and enacted as labour practices (cf. Gregory et al 2017).

The individual oral histories are suggestive of different ways of knowing based on lived experiences differentiated by generation, class gender and caste as well as the points of convergence that form the shared collective social memory. Through these recollections, I

outline the different moral economies that coexist, which are also critical for understanding the competing discourses emerging within KVM (cf. Wolford 2010). The divergent understandings of agro-ecological sustainability within the movement show the potential for addressing intersectional forms of exploitation through prefigurative politics (Bezner Kerr 2014). This specific form of organising reflects a Gandhian legacy of constructive resistance that is shared by several environmental struggles in post-colonial India and cannot be understood through framings of class and/or identity politics. The deployment of deliberative practices as a mode of organising privileged over ideological framings recognises that subject formation is an ongoing, dynamic process. As Arun Agrawal (2005: 166) argues subjectivities are not durable sites where consciousness resides. Rather there is an iterative relationship between practices and perceptions, and it is the recognition of this contingency that makes it possible to introduce the register of the 'political'. While Agrawal (2005) focuses on how environmental subjectivities are constituted by governmental regulations and practices, KVM's mobilisation employs practices to produce critical consciousness among those who work on the land across social classes. Emplaced practices thus become a form of struggle to imagine and transition to an alternative food system (cf. Moore 2005).

By focusing on the internal negotiations within the movement, and the change in KVM strategies over the last decade, I show that practice-based mobilisation has reshaped the agenda of the movement. From being centred on advocacy of a purist form of bio-diverse natural farming which within the existing institutional infrastructure was only possible for a very small set of largely elderly landowning farmers, there is now a wide range of forms of participation. These include reducing chemical inputs with every season, continued use of fertilizers with natural management of pest and insects, producing organic food for household consumption or experimenting on a small part of the farm land. This reconfiguration has

enabled the inclusion of social groups other than medium landowning farmers to a limited extent. As Edelman et al (2014) suggest the 'tolerance for pluralism' and fostering transitional efforts towards agroecology is one of the biggest challenges for the food sovereignty movement (Holt-Giménez and Shattuck 2011). KVM's experiences illustrate how these challenges are constantly negotiated within movements, of enacting new practices within the constraints imposed by the particular historical trajectories of regional ecologies, while keeping alive more radical emancipatory possibilities on the horizon (Kloppenburg 2014).

IV. Methods

In this dissertation, my aim is to focus on the subjective experiences of the Green revolution in the cotton belt of Punjab from the standpoint of men and women located differently and relationally in the social hierarchy. I argue that subjective experiences and perceptions of change in agrarian work, labour practices and social reproduction practices through the Green Revolution period are critical for understanding the emergence of and the constraints on the movement for transition to agro-ecological sustainability. While there has been a strong tradition of ethnographic research in studying rural India, studies of the Green Revolution have largely been devoid of subjective accounts of transformation, with a few exceptions (eg. Kumar 2016). Moreover, even as environmental decline is part of the recent work on agrarian crisis, little attention has been paid to how such environmental decline is interpreted and experienced by rural cultivators and its political implications (Vasavi 2012; Arora and Deshpande 2013).

Therefore, this study is based on qualitative methods, predominantly semi-structured and unstructured interviews in the form of oral histories, extended observation and sustained interactions with people in 4 villages as well as the nearby town of Jaitu, in Faridkot and Bathinda districts of Punjab. I also travelled to a few other villages in these districts to interview natural and organic farmers associated with KVM. I rely predominantly on observations, in-depth interviews and oral histories to examine perceptions, experiences, and interactions with the material and social environment, as a way of understanding how subjectivities are formed through everyday practices (Scott 1991). Oral histories with elderly men and women were particularly informative in understanding the processes of resistance, adoption and naturalisation of Green revolution practices since the early decades. These retrospective accounts evaluate the present crisis through this long-term perspective. I employ life histories to understand self-presentations of well-being and changing notions of what constitutes dignified work, as well as how memory constitutes identity and sense of entitlement (Chari 2004; Moore 2005). The process of memory-making in these narratives connects the past with the present, constituting certain events as significant and moments of rupture (Lamont and Swidler 2014). The memories of elderly farmers also make visible lost or eroding practices and ways of farming, reconstructing material landscape that no longer exists (cf. Gold and Gujar 2002). They reflect not only what happened but also what people wanted, therefore outlining alternative imaginaries of which there are no visible material traces (Portelli 1991). It also becomes possible to uncover marginalised perspectives that are not reflected in collective, organised expressions of resistance (Jeffery and Jeffery 1996). Most significantly, these oral histories interweave the 'public' and 'private' domain, showing how the domestic, familial domain intersects with production and labour, as well as political and institutional apparatus in individual lives as feminist scholarship has illustrated (cf. Laslett and Thorne 1997; Abu-Lughod 1993).

All of the interviews were with men and women were from small and medium landowning households, with landholdings between less than an acre to 20 acres, and tenant cultivators. The majority of the interviewees had land less than 7 acres.[10] A small number of farmers associated with KVM were practising natural/ organic farming and others were in the process of reducing their usage of agrochemicals and adopting non-pesticide management practices incrementally with support from KVM. Research participants also included landless households, who employ diversified livelihood strategies seasonal wage labour on farms, in brick kilns, construction and transport within and outside the villages. All of them though lived in the village, while commuting to nearby towns and cities for work. Some were also tenant cultivators leasing in land through an annual or short-term contract. Landless households were primarily lower-caste Dalits households, known locally as Mazhbi Sikhs, and landowning households were Sikh Jats, the dominant agrarian caste in Punjab. In some instances when Sikh Jat households had lost their land due to debt, they continue to be referred to as *zamindars* (landowning castes) but without land. I purposively excluded large farmers, with landholdings above 30 acres and those who were largely absentee landlords.[11] While most of the men and women that I engaged with during this research were not movement members or associated with KVM, they did reside in villages where KVM had a significant presence. Interviews with men farmers were mostly conducted in the fields while they were at work, and with women in their homes. Extended discussions within homes often

[10] According to government classification landholdings of fewer than 5 acres are categorised as small and marginal, and between 5-25 acres as medium. Small and marginal operational landholdings have been consistently increasing in Punjab. The proportion of marginal and smallholdings, which was 13.36 and 18.25 per cent in 2005-06, increased to 15.50 and 18.53 per cent, respectively. On the other hand, the proportion of holdings in all other categories viz. semi-medium, medium and large has declined during this period (Singh et al 2012).
[11] Large farmers (those with more than 10 hectares of land) constitute about 8% of all farmers in Punjab, as opposed to only 1 per cent of the total nationally (Singh 2013: 164).

included several members of the family from different generations. To map the broader workings of the regional agrarian economy, I conducted structured interviews with agricultural scientists, agronomists and extension officials in Punjab Agricultural University, Ludhiana as well as the regional extension centre in Bathinda. I also interviewed commission agents who buy grain from farmers, and provide loans as well as agrochemical dealers and shopkeepers in the town of Jaitu, and in Bathinda city. These towns are the prominent regional nodes for marketing with market yards where farmers from the nearby villages come to buy inputs and sell produce.

Activists from Kheti Virasat Mission (KVM) were instrumental in conducting this research. The 4 villages where I conducted research were chosen because of their proximity to the town of Jaitu where KVM's central office is located, and where I resided for a part of the fieldwork. The remainder of the time I was living in these villages in the homes of natural farmers associated with the movement. Therefore, contact with farming households not associated with the movement was initially established largely through KVM activists and their network of friends and family. KVM activists who are mostly residents of villages in this area, and natural farmers working with the movement were my primary interlocutors while interacting with people. As key informants, they have played a critical role in shaping my research agenda and have informed my methodological decisions. Thus, this study is not representative but illustrative of the meanings small, marginal and medium rural cultivators attach to agrarian work, how they evaluate the transformations enacted through Green Revolution decades and interpret the present crisis, located in an environment where KVM's activities have politicised existing socio-ecological relations. KVM's critique of the Green Revolution, state-led development interventions, and understanding of the crisis contest the epistemology that ruptures socio-ecological relations, and production from social

reproduction. Influenced by their epistemic intervention, I have tried to mirror this relational understanding in my analysis by emphasising practices and formation of subjectivities.

My analysis of the KVM's organising practices is based on in-depth interviews with activists, observations of their daily activities in the villages, and internal meetings of the organisation over this period. I accompanied activists on their visits to villages, attended village meetings, training sessions on agroecological methods, participated in their interactions with individual farmers on the farms and in people's homes. I also conducted interviews with farmers who were transitioning toward agroecological practices, participating in movement's activities, and non-participants who attend the introductory village meetings, and those who were associated with KVM but have grown disillusioned or distant to understand motivations and constraints on participations and non-participation. All the interviews were conducted in Hindi and Punjabi and translated into English. I coded the interviews to identify common themes in two ways. The first set of themes are concerned with the changes through the Green Revolution decades in everyday agrarian work practices and the corresponding transformations in social reproduction practices; the ways in which the articulations of the present crisis interpret social and ecological dimensions of the crisis, and factors that the crisis was attributed to. The second set of themes were to do with KVM's organising practices, evaluations of the feasibility of agroecological practices in counteracting the crisis, and constraints in enacting such practices.

When I began this research in 2013, I intended to explore the systematic devaluation of agrarian work through the lens of intergenerational relations, focusing on how post-colonial developmental practices produced aspirations for non-agrarian livelihoods and moving out of the village. I sought to understand how these aspirations and the inability of the majority

among the younger generation to actualize them is shaping political subjectivities within rural spaces. Interactions with KVM activists, and observations and conversation with people outside the movement in the initial phase, though, put the notion of crisis at the forefront. More broadly, in the last few years, the narrative of a deepening agrarian crisis has also gained momentum in the national public discourse. Farmers across the country, including in Punjab, are increasingly expressing their discontent through protests over increasing debt, crop failures and inadequate prices. Precariousness and downward mobility seemed to be the defining experience of landowning farmers. Everyday conversations in villages were dominated by health concerns and the lack of cash to meet everyday expenditures. Subsequently, my research goals shifted to understanding the specific forms in which this 'crisis,' defined by precariousness, is being experienced, what preceded this sense of downward mobility, and the process of construction of collective imaginary of emancipatory possibilities. Within this framework of understanding historically produced subjectivities and political agency, the experiences and recollections of elderly and middle generation of farmers became more significant. The former by virtue of having lived through the early Green Revolution life transition period, and the latter by virtue of being entrenched in and enacting the rapid agrochemical agricultural intensification.

My research has been thin on youth, particularly men, from both landowning and landless households as they are largely outside the ambit of process of changes in agrarian work that I sought to understand. Older generations talked about them in interviews as being preoccupied with carving livelihoods outside the village, disinterested in farm work and often as being idle and disillusioned from being unable to obtain the jobs that they desire.[12] While young

[12] The proportion of rural students in higher education is extremely low. Ghuman (2008) suggests that only 4.07% of the students in the four major universities were from rural areas in 2005-2006. The collapse of rural education started in the 1980s in Punjab with declining

men from landowning households were occasionally present during interviews with farmers in their fields, I had little engagement with young men from Dalit landless households, majority of whom work outside the villages or in grain markets, or occasionally as hired labour driving tractors or spraying agrochemicals in the fields. My interactions with young men were also limited as a woman given the regional gendered norms and since young women activists accompanied me most of the time. After a few initial interactions mediated by KVM activists, I was able to independently talk to women and families in their homes. However, given the restrictions on mobility of women in the region, particularly on going to the fields that are located outside the village, I was able to observe labour practices and conduct interviews with male farmers in their fields, only when I was accompanied by male activists or natural farmers from KVM. My association with KVM thus provided a partial picture of the lived experiences of rural households. But I was able to gain significant in-depth insights into the processes of mobilisation and negotiations over what constitutes agro-ecological sustainability. Moreover, since KVM activists come from a wide range of socioeconomic backgrounds, I was able to gain access and establish rapport across social classes in the villages. This would have perhaps not been possible if I had become associated with people or households from particular class and caste in the villages.

I have centred my analysis in this dissertation around oral histories of the Green Revolution and KVM's organising practices in order to map both marginalised and eliminated practices as well as emergent possibilities. As Henri Lefebvre writes, ''the category (or concept) of the 'real' should not be permitted to obscure that of the possible. Rather, it is the possible that

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share for education in the state budget. The dropout rate is extremely high in rural primary government schools, and as many as 69% of rural households do not have a single member who has completed class 10. Unlike other regions, the proportion is relatively better for labour households (90%) than landowning farming households (Ghuman 2008: 14).

should serve as the theoretical instrument for exploring the real.'' (quoted in Smith 2016: 237). In the following section, I briefly outline the arguments in this dissertation.

V. Chapter Outline

Chapter 1: Prefiguring Sustainability examines the mobilisation efforts of *Kheti Virasat Mission* (KVM), working in the Malwa region since 2005 to enact practices of sustainable food production and consumption. KVM aims to convince farmers to farm with organic inputs, rejuvenate biodiversity, and enable consumption of organically grown food among rural and urban Punjabi households. Eschewing the politics of making demands on the state for resources, KVM advocates for a constructive prefigurative form of politics that is centred on repairing the disconnect with nature and reviving cultural autonomy. The prefigurative mode of organising by enacting practices is precipitated by an oppositional discourse. The oppositional discourse stresses regionalist exploitation – the degradation of Punjabi soils, water and labour, and dismantling of cultural and material autonomy through colonisation by Western agricultural scientific practices mediated via the postcolonial state. Their mobilisation discourse is also critical of the dominant narrative of 'agrarian crisis' in India that is centered exclusively on unprofitability of farming and increasing chronic debt among farmers. Instead, they argue that experiences of 'progressive' farmers in Punjab who have followed the state-led 'modernisation script' reveal socio-ecological degradation that is not captured by narrow economistic framings of the crisis. Along with material degradation, widespread health crisis, excessive consumerism, and commodification of socio-ritualistic practices indicate a moral and cultural decline or what KVM calls a 'civilizational crisis'.

I discuss how KVM is reframing the crisis in Punjab through its mobilising discourse, and why their discourse of a 'civilisational crisis' translates into a prefigurative form of politics. I situate this prefigurative form of politics in relation to the ways in which other more dominant actors on the regional agrarian political landscape associated with the Green revolution, namely, the farmers' unions - Bhartiya Kisan Union (BKU), and the public research and extension system led by the Punjab Agricultural University (PAU) are addressing the agrarian crisis.

Based on extended observations and interviews with activists and farmers associated with the movement in varied ways, I examine how prefiguration is conceptualized within KVM. I discuss the constraints and challenges activists confront, and the internal contestations over modes of organising within KVM that have led to a transformation in strategies. The unfolding trajectory of this emergent movement is displaying two contradictory tendencies. On the one hand, there has been a 'dilution of the agenda' as some internal critiques suggest, with a narrowing focus on disseminating organic farming techniques mostly to medium and large landowners and the creation of niche elite organic food consumption networks. On the other hand, there is a marginal trend of landless households, particularly women, engaging with the movement by cultivating healthy food for household consumption.

Chapter 2: Revisiting the 'Green Revolution' through the lens of labour practices

historicizes the emergence of the politics of sustainability, through oral histories of changes in agrarian labour practices and attendant life-worlds since the 1960s. These collective memories reveal what has been eliminated from the material landscape as well as the subaltern voices excluded from landscape of organised resistance. I employ the standpoint of labour practices to traverse across procrustean class categories of landed and landless

agrarian households. Methodologically, this is significant to capture the experiences of households who have moved in and out these categories, of individuals whose access to land and control over decisions about farming practices is shaped by social norms or tenancy and rent. Labour practices are a critical lens for understanding how materiality of production and social relations are constitutive of each other, and therefore, experiences of degradation that shape conceptions of sustainability.

In particular, I focus on how elderly men and women recall the early Green Revolution period – the attempts of government workers to enact radical transformations in cultivation practices and how they were received. Stories of changes in cultivation practices highlight how the processes of adoption and normalization of fertilizers and other agrochemicals, mechanization of farm operations and creation of state procurement infrastructure, transformed the material landscape (cropping choices, irrigation practices, physical landscape-native tree species and animals); labour relations as well as political relations within the village. Articulated from the situated standpoint of caste, class and gender, and filtered through the prism of the present agrarian crisis, these experiential narratives suggest nonlinear and ambiguous trajectories of mobility and changing notions of well-being and status. These subjective histories challenge the existing compartmentalised bureaucratic, economic, agronomic, and social science accounts of the Green Revolution decades, which inadvertently replicate the techno-politics of state practices. And, they illustrate how such cognitive compartmentalization is an effect of the process of disembedding production from socio-ecological reproduction. Memories of embodied experiences and practices reveal that such a process is always partial and ongoing, even as technopolitical practices and knowledge production aspire to naturalise the separation of socioeconomic, cultural and ecological domains.

In **Chapter 3: The Unmaking of the 'progressive' Punjabi Farmer: Precariousness and Downward Mobility** I examine the lived crisis for the dominant agrarian castes of Sikh Jats, who were seen as the primary beneficiaries of Green Revolution practices, and have been a the centre of agrarian resistance in the post-independence period. The narratives of crisis articulated by 'bullock capitalists' go beyond the realm of production practices and broadly centre on three themes: first, the insecurities generated by insurmountable debt, lack of disposable cash, increasing incidence of diseases and a dysfunctional public health care system, and the heightened economic risk entailed by cultivation, which is resulting in the trend toward leasing out land to generate secure incomes in the form of rent; the second set of themes revolve around aspirations for the future particularly for the younger generation; and lastly, the tension between growing individuation ethic and social obligations and consumption practices that are essential to the maintenance of status associated with dominant landowning agrarian castes. I argue that the Punjabi 'bullock capitalists' who occupy an exceptional position in the rural/agrarian South by virtue of being firmly embedded in statist development practices provide a unique standpoint for reflecting on the politics generated by an experience of precariousness that follows stability, a sense of downward mobility and break-down of social ties. Individualised strategies of coping with this crisis entail undertaking further risks such as leasing land for cultivation by landless households or taking loans for further intensification by landowning households. The present landscape of resistance in Punjab is significant for examining the question that underpins the debates on precarity, which Isabell Lorey (2015) succinctly frames as whether the crisis of the collective, that is the disillusionment with state-led development politics, will pave the way for the emergence of the commons?

To explore this question, in **Chapter 4**: **The Politics of Precarity and Survival** I return to the prefigurative politics of sustainability spearheaded by KVM. Through observations and interviews with farming households in villages, I show how they are engaging with and responding to KVM's organising practices. Entrenched in the ethos of commercial cultivation, the process of shifting toward sustainable agroecological farming and consumption seems radical, risky and almost impossible to majority of farming households in the current institutional and policy environment. In this context, understanding the motivations and trajectories of the few farmers who are adopting sustainable agroecological practices reveals the possibilities for change. The predominance of elderly farmers in this group who are not necessarily large landowners but have other stable sources of non-agrarian income in their households is suggestive of two things. One, that the memory of the early Green Revolution period is a critical resource for imagining a different way of farming. These memories and embodied knowledge enable them to translate the cognition of the failure of agrochemical agriculture witnessed in the form of declining health and the on-going cotton crop failure over two decades, into transformative agro-ecological practices. Two, precariousness combined with lack of material resources, can shape an oppositional consciousness but impose severe constraints on people's ability to engage in transformative practices. Women from both landowning and landless households, particularly the latter, however, who have not been immersed in commodification of farming by virtue of their active exclusion through the Green revolution decades from the fields are now engaging in agroecological food production for self-consumption. The elimination of cotton, particularly indigenous varieties which were labour-intensive, and the increasing shift toward paddy cultivation (almost complete mechanisation of wheat-paddy monocropping rotation) limited participation of women from landed households in farm operations and the amount of work available for landless farm workers. Like other regions in India, excluded from the state-led

agricultural modernization program, that is now active sites for sustainable agriculture initiatives of various hues, the subjectivities of women and landless households in Punjab have not been produced through developmental practices of commodification. The diffusion of equitable socio-ecological reproduction practices is therefore contingent on the substantive engagement of these marginalised groups.

CHAPTER ONE

PREFIGURING SUSTAINABILITY

I. Introduction

Critical scholarship on Green Revolution practices has highlighted ecological degradation along with deepening social inequalities since the 1970s and the 1980s (Shiva 1989; Griffin 1974; Patnaik & Bernstein 1990). On the political landscape, however, ecological degradation emerges as an issue only in the late 1990s and early 2000s in Punjab. In this chapter, I examine the conditions that have enabled the politicisation of ecological degradation and 'sustainability' and the specific forms in which this politics is being articulated. I focus on the mobilisation discourse, strategies and experiences of Kheti Virasat Mission (KVM), a local group that has been working in the Malwa region of Punjab since 2005, to transform food production and consumption practices among rural households. More recently, KVM activists have begun to form urban consumer networks in Punjabi cities to buy organic produce directly from farmers. While KVM has had limited influence over the past decade in terms of the number of farmers who are associated with the movement, it is arguably the most prominent voice in the state articulating a vision and an agenda for sustainable farming.

The group emerged in 2005, as a loose coalition of mostly medium scale farmers, and a disparate set of local actors including journalists, urban citizens, village schoolteachers and academics from the region. The founder of the organisation was a local journalist initially motivated by concerns over pesticide contamination and rising health concerns in the region. He was affiliated with the Swadeshi Jagran Manch, an anti-globalisation movement that

became active in the early 1990s, and is a part of the Rashtriya Swayamsevak Sangh the family of culturally nationalist Hindutva organisations. While the founder is no longer affiliated with the organisation and claims that the agenda of ecological sustainability transcends the left/right ideological divides, the discourse of indigeneity is central to KVM's organising practices. Indigeneity within KVM's discourse, however, is disjointed from Hinduism, which would have very little resonance in rural Punjab inhabited predominantly by Sikhs, a minority community in the national context with a history of conflict with the federal post-colonial state.[13]

The small core staff of paid workers are rural inhabitants from the region from both landowning and landless households, who do the bulk of the organising work in the villages and conduct training sessions on organic farming practices. As part of the national network of farmers' organisations that work under the banner of Alliance for Sustainable and Holistic Agriculture (ASHA), KVM engages in seed and knowledge exchanges and participates in national level campaigns advocating farmers' rights. KVM first gained attention through their involvement with the campaign against the introduction of genetically modified cotton seeds (known as Bt cotton), in alliance with Greenpeace, when it was introduced in 2005. Bt cotton is the first and so far the only genetically modified crop allowed in India. They also began to be recognised in the public discourse after the founding member highlighted the health crisis in the regional and national media by talking about the ‘cancer train', which has now become a widely known symbol of the agrarian crisis in Punjab. The Bathinda Express

[13] See Trent Brown (2014) for a detailed biography of the founder of KVM. As Brown suggests, the founder of KVM has renounced his formal affiliations with Hindu nationalist organisations but continues to draw on his personal connections with them along with people from all sides of the political spectrum including the Left to further the agenda of ecologically sustainable farming. Moreover, as I will show in what follows that KVM's everyday organising practices reflect a broad-based movement, where Hindutva ideology has no visible influence.

is now known as the ‘cancer train' because a majority of its passengers are travelling from the Malwa region in Punjab to Rajasthan for treatment at a state-run cancer hospital.

The farmers who became associated with KVM initially had been experimenting with a variety of agroecological methods, after being disillusioned with chemical farming. For many of these farmers, this disillusionment stemmed from the failure of cotton crop due to persistent pest attacks, particularly by the boll weevil (locally known as the American bollworm), and the failure of pesticides in controlling them year after year in the 1990s. Along with the economic distress propelled by the failure of the cotton crop, farmers were also motivated by their observations of rising incidence of cancer and other diseases within their villages and often their own families. KVM became a forum for facilitating interactions among them, for sharing agroecological knowledge, seeds and other resources and campaigning for the widespread adoption of sustainable agroecological production practices. The small but growing urban affiliates are primarily mobilised through consciousness raising campaigns about the adverse impact of agrochemicals on human health.

KVM self-identifies as a broad-based people's movement for the environment, and it is formally registered as a not for profit trust that runs largely on individual donations from urban Punjabi supporters and occasionally grants from donor organisations such as Action Aid. Workers and affiliates of KVM though vociferously distance themselves from development NGOs with donor driven agendas, which they argue is part of the broader trend of the pervasive commodification of social relations. They also distance themselves from party-politics and established dominant ideologies of the left and the right, and claim that a broad-based movement that cuts across social classes is necessary for repairing socio-ecological relations.

In contrast to extant forms of agrarian political mobilisations, specifically by farmers' unions in Punjab that make claims on the government, KVM has adopted a mode of organising that focuses on the practical transformation of food production and consumption practices enacted by and simultaneously forging place-based autonomous communities. Underpinning this agenda of practical transformation is the discourse of what the founding member of the group calls a ‘civilisational crisis'. The narrative of a ‘civilisational crisis' formulates a historically informed critique of state-led Green Revolution practices, and the attendant transformation in the social ecology of the region since the 1960s, which is reflective of continuing material and cultural colonisation in the post-colonial period. Such a critique is more holistic than the economistic narrative of the agrarian crisis that attributes the current distress among farmers to neoliberal restructuring by the Indian state since the 1990s (cf. Walker 2008; McKinney 2013; Banerjee 2015; Peschard 2014).

KVM activists argue that a narrow economistic framing of the crisis focused on the decline in incomes of farmers is inadequate. Such a framing either excludes ecological degradation or frames it as a problem that is disconnected from the socio-economic crisis, thereby reproducing the technocratic logic that shaped the Green Revolution in the first place. By employing the frame of a ‘civilisational crisis' activists point to the continuities between the practices of state led developmental decades from the 1960s to the 1980s, which in Punjab were synonymous with the Green Revolution, and neoliberal restructuring of agriculture since the 1990s that is also legitimised as a development strategy (Connell and Dados 2014). It is not simply the withdrawal of state resources from agricultural sector and dismantling of trade barriers since the 1990s, but the long history of techno-politics that engendered capital-intensive agriculture and commodification of social reproduction that has generated the

current crisis (Patel 2013). The federal government heavily incentivized the adoption of monocultures, and use of agrochemicals by providing subsidies and procuring selected food grains - wheat and rice - at minimum support prices. Investment in rural infrastructure was limited to the building of roads necessary for transporting grains, and electrification for ensuring irrigation through groundwater extraction. No concomitant investments were made in health or education in rural areas during the developmental decades, even as the new production system dismantled local interlinked ecosystems. With gradual withdrawal of state support in the domain of production, farming households continue to sustain capital-intensive production on their own while bearing the risks and consequences of rapid intensification over the past five decades. The crisis is thus precipitated by the state led development trajectory that eliminated other localised agro-ecologically and socially sustainable options for rural households.

Given this expansive framing of a civilisational crisis by KVM, the prospective agenda of shifting toward natural farming practices is contingent on the transformation of the value system of Punjabi farming households. Activists conceive of political agency as consciousness raising for revaluing pre-colonial indigenous practices as well as creating the material conditions for transformation of socio-ecological practices. Going beyond articulating resistance against government interventions or making demands on the state, their politics is prefigurative in enacting practically the values that are desired in a future world and engendering place-based material autonomy by drawing on a constructed past (cf. Escobar 2008).

Organising practices of KVM in recent years have focused on convincing farmers to gradually reduce the use of fertilizer and chemical pesticides in wheat and rice crops, setting

aside the objective of reviving biodiversity. In addition, farming households are encouraged to carve out a small plot in their fields or homestead land to grow vegetables and grain for household consumption through natural farming practices. While farmers are reluctant to adopt natural farming on their entire land and risk yields and cash incomes, growing healthy food for household consumption is more easily accepted. In the last two years, KVM is also facilitating informal consumer networks for marketing organic produce in urban centres of Punjab and urban gardening. Both these activities are confined to upper middle-class households.

The modified strategies have been more effective in enrolling more farmers with the movement. These strategies though are also shaped by economistic reasoning, and privilege the dissemination of formulaic organic techniques instead of experimental production of farming knowledge through communal practices and collaborations among farmers. While there has been a dilution of their pre-conceived agenda over the past decade in an attempt to involve more people, organising by KVM has been able to change the political narrative by configuring social reproduction as a terrain of struggle. The transformation of the political narrative is visible in the increasing discussion of the relationship between health and chemical-intensive agriculture in mainstream public discourse, and deliberative engagement with food practices even as it evokes varying levels of participation. Participation varies at the village level in terms of numbers but more significantly forms of participation vary as well and often changes for individuals and households over subsequent cropping seasons. There are farmers who practice completely organic agriculture that is without any synthetic inputs but continue with the wheat-paddy or wheat-cotton monocultures. A small number of farmers are practising natural farming moving beyond eliminating agrochemicals to bio-diverse and multifunctional farming. The majority of farmers who get involved with KVM

only reduce the agrochemicals used in wheat and rice, or sometimes only in wheat since it is consumed at home as well. They also adopt some ecological management practices such as modifying cropping density, timing and forms of application. In villages were KVM has been working for several years now, there are between 50-100 households where women have started growing kitchen gardens with organically grown vegetables primarily for household consumption, and a few sell the surplus as well.

I begin by discussing how KVM is reframing the crisis in Punjab through its mobilising discourse, and why their discourse of a 'civilisational crisis' translates into a prefigurative form of politics. I then situate this prefigurative form of politics in relation to the ways in which other more dominant actors on the regional agrarian political landscape associated with the Green revolution, namely, the farmers' unions - Bhartiya Kisan Union (BKU), and the public research and extension system led by the Punjab Agricultural University (PAU) are addressing the agrarian crisis. Finally, I discuss the constraints and challenges activists confront, and the internal contestations over modes of organising within KVM that has led to a transformation in strategies.

I argue that KVM's organising practices are expanding the political discourse by reframing the agrarian crisis from an economic crisis to one of socio-ecological degradation. In doing so, they propose an alternative imaginary that necessitates reconnecting food production and consumption. Significantly, such prefigurative politics is partly premised on the recognition that landowning farmers co-produced the crisis. The agenda of practical transformation, however, is constrained by a degraded landscape. In addition to depleted, contaminated soils and groundwater, elimination of native seeds and tree species, activists have to contend with the moral economy of rural households, particularly landowning farmers, which is shaped by

commercial agriculture, and a culture of dependence on the government instituted through a subsidy and price support regime. Internal contestations within KVM and the challenges in everyday organising faced by activists, also reveal the limits of the homogenising discourse of cultural autonomy that excludes landless and tenant cultivators, and papers over gender and caste conflicts. The transformation of agrarian practices through the Green Revolution period produced impersonal relations of production and consumption, and the separated work from social reproduction in everyday life.[14] In this context, while KVM activists conceive of sustainable agroecology as being embedded in collective work, inter-generational learning and farmer-to-farmer knowledge exchange, in practice they are unable to generate a collective work ethic. Instead, increasingly they are interacting with individual farmers or households to disseminate knowledge of organic methods of production. Thus, they are struggling to produce new deliberative forms of sociality that are not structured through caste and kinship relations but produced through and enable agro-ecological farming.

II. Reframing the Crisis

"Everyone goes to the Gurudwara in the morning and chants -*Pavan guru paani pita, maata dhart mahat (air is our teacher, water our father, and the great earth our mother).* Then they go and spray poison on their fields and feed that food to their own families and sell it in the market." Founder of KVM

Unlike the widely accepted critiques of the 'Green Revolution', which have centred on regional imbalances in resource allocation by the federal government, reinforcement and exacerbation of social inequities and environmental degradation (see Shiva 1989; Griffin 1974), KVM articulates their critique in terms of a 'civilizational crisis'. The narrative of 'civilizational crisis' articulates a distinctly postcolonial critique adopting the discourse of

[14] I explore this process in depth through oral histories in Chapter Two.

indigeneity and cultural autonomy that valorises a pre-colonial past. Material exploitation, mining and contamination of soils and water, in this narrative is intertwined with the deterioration of health and well-being of people and reflects the disruption of the cultural ethos of the region. The development interventions of the postcolonial state are conceived as an extension of Western colonisation through scientific agricultural intensification employing the legitimising discourse of ‘national food security'.

Green Revolution production practices of monocultural farming using hybrid seed varieties, synthetic fertilizers and subsequently pesticides and insecticides, were aggressively promoted through government subsidies and extension services in the early decades. The input subsidy regime, and the state procurement of wheat and rice made farming households dependent on the state in the first instance, and subsequently on agrochemical companies. While landowning farmers did accumulate cash incomes in the initial two-three decades, they lost autonomy over cropping choices and farming practices. Transformation of the labour process through the commodification of inputs and knowledge, reduced farmers to ‘propertied wage labourers' without much control over the process of production or the value of their products (Kloppenburg 2004). Simultaneously monocultural cropping eliminated crop diversity and structured deep dependence on the market for everyday consumption needs. From KVM's standpoint, even more significantly, ‘Green Revolution' practices and the new work-life rhythms disrupted the sense of communality within the villages, producing individualistic thinking and materialistic consumerism.

During village meetings, activists draw attention to sociocultural malpractices that have become widespread over the past five decades. These include increased expenditure on

weddings, particularly on dowry, high female feticide rates in the state[15], commercialisation of religious institutions and ritualistic practices, the construction of large urban style houses on farmland, and the trend of selling land to send members of the family abroad for petty jobs, and most critically widespread drug and alcohol addiction especially among young men. Activists argue that these practices are germane to the current agrarian crisis, and are manifestations of the ethos created through the Green Revolution decades. The founding member of the movement often says in his public speeches, "the tragedy of Punjab today is that our land is addicted to chemicals, just as our people are addicted to drugs". Activists also allude to the disappearance of joint cultivation by extended kin groups, the disappearance of seed exchange and labour sharing practices among farmers, and traditional food such as millets that were a part of the local diet. The thrust of this narrative is that the quality of life was better two-three generations ago even though there were less material comfort and convenience. The structuring of the labour process through mechanisation and synthetic inputs generated convenience, but in the long run led to the deterioration in the quality of life. The disconnect with the environment, the abandonment of what activist call ‘caring farming practices', have polluted the water and soils, as well as the human body, visible in rising incidence of cancer, reproductive health issues and other diseases.

KVM's framing of the agrarian crisis points at the distributed effects of degradation across social classes. While holding government interventions responsible for degradation, the discourse of a ‘civilisational crisis' that suggests colonisation of minds and practices, also implicates landowning farming households themselves in this process of degradation. In doing so, this mobilising discourse sets the stage for a prefigurative politics that centred on

[15] According to the Government of India census 2011, the child sex ratio for Punjab was one of the lowest nationally: 846 females per 1000 males, which is much below the national average of 919/1000.

the transformation of everyday practices of production and consumption.

KVM's organising model challenges the knowledge politics underpinning the propagation of industrial farming practices. Within this framework, shifting toward natural farming practices is contingent on altering the value system of Punjabi farming households shaped by modernization paradigm. Opposition is expressed to increasing control of transnational corporations over the food system, state support for agrochemical companies, and the public university and extension system that perpetuate a Western model of agricultural science. Class differences among rural households and conflicts over unequal access to resources within villages, however, do not surface on the organising agenda. Activists argue that organising predominantly among landowning farmers who also belong to the dominant Sikh *Jat* caste, is strategically essential as they are the ones who make decisions about cropping choices and farming practices. Moreover, activists emphasise that the socio-ecological disconnect shaped by the current farming system is detrimental to the well-being of all classes and castes. Unlike landless tenant cultivators and farm workers, the majority of whom are from lower caste communities that have borne the consequences of chemical agricultural intensification disproportionately, the Sikh Jat farmers are implicated in the process of socio-ecological degradation and should be responsible for the work of restoration.

In response to my question about which class of farmers are more likely to change their farming practices or reduce the usage of chemicals, Amrindar, an activist working with KVM since its inception says,

> "It is not about class or how much land someone owns. People who understand the adverse implications for social life, health and environment are willing to experiment. Those who only look at it from an economic perspective will not. When I approach farmers for the first time, I do not talk about organic practices and methods, instead, I outline the connections between social life and the

> environment. I talk about how our grandparents' generation used to live, the deterioration in the quality of life –increasing health problems and social conflict within families and in the village since the Green Revolution. Cancer is destroying *zamindar* families and landless families."

When I suggest that a *zamindar's* household will have more resources for medical expenses, Amrindar retorts that even most landowning families are unable to meet the expenses of cancer treatment. And that KVM's objective is not to tackle immediate distress farming households face, but to address the underlying causes and create a mass movement for restoring a healthy environment. The politics of redistribution of resources is transposed to the national and global scale. Occasionally KVM is involved in advocacy campaigns and protests as part of the national alliance of sustainable farming organisations targeting the government. Most recently the organisation played a key role in the campaign against approval of the first genetically modified food crop – herbicide tolerant variety of mustard, produced by scientists at a public university in India. Mustard, a native crop of Punjab and an important part of the local diet, has been marginalised through the Green revolution decades. The campaign has highlighted the potential harmful effects on farmers' livelihoods, health and environment, and makes the case that public resources should be used to fund research on and incentivize organic farming instead. Oppositional politics practised by KVM thus is limited to prevent further incursions into the local farming and ecosystem by agrochemical corporations, as well as statist interventions for agrochemical intensification. They do not endorse or support agitations by farmers' unions to demand higher minimum support prices for wheat and paddy crops or engage with farm workers unions demanding higher wages or protesting usurpation of Dalit share of village land by the Sikh *Jat* households. To enact the constructive agenda of transforming practices locally, it is important for activists to not antagonise any particular social groups.

While organising in the villages, activists translate the abstract idea of a ‘civilisational crisis' by focusing on the relationship between health and environmental degradation to lay the groundwork for convincing farmers to move toward natural farming. The following excerpt from an introductory village meeting in Bathinda district shows that the narrative begins with a critique of Green revolution practices before charting a constructive agenda for action. The critique is centred not on economic exploitation, but on the detrimental impact on quality of life and well-being.

At a gathering of about 30 male farmers in a village which was identified as having the highest level of uranium in the groundwater in the district, Amrindar talks about reproductive health issues, which are becoming commonplace in the villages, and argues that similar patterns can be seen in people and in domesticated cattle.

> "It is becoming harder for women to conceive without medical treatment. The amount of 'rae/spray' (colloquial term for fertilizers/pesticides) keeps increasing every year. Some people are using as much as 7 bags of urea while planting just one acre of fodder. In addition, we inject them with drugs for higher milk production. The fodder absorbs these chemicals and stores them, and the cattle then consume it. Earlier our cows had the capacity to give birth 17-18 times in their lifespan, now it is reduced to about 7-8 years."

Everyone in the meeting nods in agreement. After speaking about disappearing species of birds that kept the insect population in check, pollution of air, water and soil, he suggests that the only way to transform this situation is by changing farming practices and using only organic, non-toxic inputs. At this point, a farmer interjects and says, "our population is increasing rapidly, and we have to keep increasing yields, which is not possible with just organic farming." In response, Gaganpreet argues,

> "we produce much more food than is required by the current population. We cannot worry about feeding the country anymore that is the job of the government. Farmers and particularly Punjabi farmers have been fooled for a long time by appealing to their moral sensibilities by governments. They call us 'annadatta' (bread-givers), shout slogans like '*jai jawan and jai kisan'* (praise the soldier and praise the farmer), and we get fooled into thinking it's our responsibility to sacrifice and feed the country, without thinking about the costs to our land and our children's well-being. A farmer can feed his own family with healthy food with two and a half acres, let the government worry about feeding the rest. What have we got in return? Nothing. The prices do not compensate us for our labour and our polluted land, water and air are making us ill…The whole system will crumble without the farmer. Public sector employees, even at the lowest rung, receive health benefits, and a regular, stable salary. The government should fix an annual salary for farmers if they want us to work for the welfare of the entire nation." A farmer in the audience poses the question – 'should a farmer with 100 acres also get this salary that we are demanding from the government?' Amrindar replies that majority of the farmers are indebted, and they are putting up their land as collateral, even those who own 100 acres.

Farmers at the meeting, however, seem unconvinced by this argument. Some of the responses from farmers to this homogenising discourse echo some elements of the growing sentiment within the public policy domain that liberalisation in the agricultural sector did not go far enough. Non-targeted subsidies to the agricultural sector as a whole mean that large farmers are entitled to free electricity, subsidised fertilizer which benefits agrochemical companies, and tax-free incomes, hampering both growth and the realisation of social equity goals. These sops also promote the indiscriminate use of water, fertilizer especially urea, and government price support for wheat and rice prevents crop diversification. KVM's position is that the subsidies should be directed toward incentivising organic farming by supporting farmers during the transitory period through direct subsidies and building the organic supply chain.

While there is a broadly articulated mobilisation model within KVM premised on reviving material and cultural autonomy, the process of organising is not coherent and unitary by any

means. Activists speak from their own located social positions and tend to emphasise different aspects during their visits to the villages. Most of the core paid staff at KVM, responsible for everyday grassroots organising, are locals from rural landless households. The Sikh *jat* farmers from landed farming households that they address command a dominant position in the village social hierarchy of class and castes. Activists are, therefore, reluctant to do organising work in their own villages where they occupy the lower rung of the social hierarchy. In other villages, they are able to establish their status as experts in organic farming more easily. For several of them, their involvement with KVM did not begin with an ideological commitment but the search for a job. And, unlike farmers entrenched in Green Revolution ways of cultivation, the process of learning about organic farming for these activists from landless households does not begin with a process of unlearning. They establish their credibility through their association with KVM, and the informal education process they have undergone through training and interactions with organic farmers locally and from other parts of the country. The following trajectories of three activists illustrate how caste, class and gender intersect variously and shape their experience of organising.

Gaganpreet has been working with KVM since its early years and is now a senior activist. Like a majority of rural educated youth without technical training or advanced degrees, Gaganpreet made several attempts to get a government job but was unsuccessful. After working as a teacher at a private school, and being dismissed abruptly, he found himself working for KVM through a chance encounter. Despite no knowledge of farming and a very low salary, he decided to take the job, realising that this was his only choice. He says, "I am from a landless household, and therefore did not know much about farming. My father was not a farmer, my grandfather owned a small piece of land, but he had to sell it. I learnt everything about natural farming from the trainings that were organised by KVM, and

through experience working with farmers." He recalls the tremendous uncertainty in initial years when KVM was established as there were no stable sources of funding. This meant that activists like him had to forego their salaries for months. He concludes by saying that this was the only way he could have obtained dignified work, “when I see my peers from school who are also from landless households, they are either working as daily wage labour in construction and during sowing and harvesting on farms or leasing land for cultivation. I thank my stars that I was able to find something meaningful." Gaganpreet goes on to suggest that unlike government jobs, which are essentially like a lottery, or insecure petty jobs in private companies where formal education and the ability to pay bribes matters, in this context he could climb up the organisational hierarchy, and the social hierarchy, by harnessing his informally acquired knowledge and personal charisma. His commitment to sustainable farming has developed through experiences over the past decade and his approach to organising is premised on facilitating a deeper understanding of the crisis as illustrated by the excerpts from village meetings above.

Gaganpreet's evaluation of his life-trajectory reveals the complex ways in which aspirations are shaped. Aspirations are policed by individuals themselves through recognition of limitations that are imposed by social hierarchies, and reflect the multiple gradations in terms of which dignified work is defined going beyond economic compulsions. It is also suggestive of the role knowledge can play, and in this instance an alternative form of knowledge, in charting a pathway for upward social mobility. Agrarian crisis has dented, albeit in a marginal way, the stronghold of dominant landowning castes on generational social mobility. This is partly because the conception of social mobility has changed and is no longer solely associated with ownership of land and accumulation of and through the property. Given the economic distress and risk associated with farming, and the penetration of developmental

discourse that devalues agriculture, rural households across classes aspire to obtain white-collar salaried jobs. This is evident in the struggles of young activists at KVM who espouse the cause of revaluing agroecological farming while facing pressures from their families.

For young people like Gaganpreet from landless households finding a salaried job means escaping the life of a 'wage hunter-gatherer', a term coined by Jan Breman (1994) to describe the uncertainty and precariousness of daily wage work. For rural youth from landowning households, generally with higher educational qualifications, finding 'white collar' jobs and moving out of agriculture is about doing work that is commensurate with their status. Such work though is rarely available within the village, and rural youth are disadvantaged in the urban service industry in comparison with urban educated youth with the same formal level of qualifications.

Deep Singh, a young activist working with KVM from a medium landholding household experienced a sense of dissonance while pursuing an advanced degree in entomology at Punjab Agriculture University, as he realised that the practical work of cultivation was far removed from the scientific agricultural education. He wished to pursue what he calls 'thoughtful farming' and began experimenting on his family's land by reducing the use of agrochemicals. However, he was under tremendous pressure from his family who expected him to get a 'white collar' job like his peers after obtaining an advanced degree. He says,

> "my family had spent money on my education and I was one of the privileged few from an agrarian household who managed to get an MSc. So they were upset when I went back to farming and that too natural farming. When I came into contact with KVM, I decided to work with them partly so that I could convert our land to natural farming, but also because it reassured my family that I had a job and was earning a salary. This was a job that seemed more fruitful to me and allowed me to do what I wanted to do with some support, which was better than becoming a puppet as a government

> employee, or pedalling poison by working for agrochemical companies."

Deep Singh has been working with KVM now for two years while cultivating his own bio-diverse 7-acre farm. In his work at KVM, he primarily focuses on trainings farmers' in natural cultivation practices. Unlike other activists who communicate certain practices as formulas and focus on more on the broader narrative of exploitation and dependence, Deep Singh focuses on the cultivation practices. He adopts an experimental approach to training and drawing on his education as well as experiences of transitioning to natural farming at his own family's farm, he is able to articulate the logic behind the value of adopting some practices over others.

Rajji Kaur, another activist who also grew up in a landowning Sikh jat family like Deep, but with a significantly smaller farm, on the other hand, expresses the standpoint of farmers' rights much more emphatically. Despite being the so-called ‘dominant castes', she says that there is constant economic distress in her house. Her father runs a tractor repair shop, and her brother farms the three-acre family farm, but they are always struggling to make ends meet. These experiences shape her approach to organising. Highlighting exploitation of farmers through government policies is central to her mobilising discourse, from which she concludes that farming households have to become self-sufficient instead of looking toward the state for ‘hand-outs'. As she argues,

> "When people from urban areas say things like farmers are growing healthy food for themselves and feeding us poison, my response is that urban citizens or policy makers have never thought about the well-being of farmers. Everyone is just interested in keeping food prices low. If the government wants to subsidise the food, it should pay farmers full price –procure the food and then subsidise it. Why penalise the farmers? The support prices do not account for the labour of the farmer. The problem with farmers in this country is that they have never been united and therefore are not able to exert any pressure on the government. If today all the farmers in this country go on a strike and grow food just for their

> own families, how long will the government feed the country through imported food? Even if they take away all our land forcefully, who will cultivate the food? I always unapologetically advocate that farmers grow organic food for their own families."

Moreover, as a young woman activist in a region where cultivation in the fields is largely carried out by men from landowning households, her credibility is often questioned when she conducts trainings focused on the practical aspects of cultivation practices, particularly by elderly men. She has also been unable to convince her brother and father to reduce the use of agrochemicals in their family farm. Her work at KVM is now largely focused on working among women to grow vegetables for home consumption. Based on her experiences since 2009, she contends, ‘it is easier to convince women who think about their children's health, whereas men think about yields and prices first.'

It is evident that activists interpret the overarching mobilisation discourse articulated by KVM in varied ways. Their approach to organising is shaped by their own position in the social hierarchy, defined at the intersection of class, caste, gender and age, which in turn determines who they have access to, and are able to influence. Further, activists also push certain agendas within the organisation based on interactions with particular social groups. The loosely knit framework of KVM rooted in the rejection of conventional ideological politics allows for such a diffuse process of mobilisation to take shape, which is not premised on identifying a singular conflict, or principal contradiction.

III. Prefiguration and the Politics of Practice

In the last two decades, the notion of prefiguration has become critical for understanding emergent forms of struggles that enact social change, in the backdrop of increasing de-

legitimization of the state as a site for political contestations in the era of neoliberal restructuring (Biekart and Fowler 2013; Bayat 2013; Pickerill & Chatterton 2006). Prefigurative struggles focus on direct action, on aligning means with ends, and 'creating a new society "in the shell of the old" by developing practices and modes of interaction that embody the desired transformation' (Leach 2013; cf. Escobar 2008; Gibson-Graham 1996; Ince 2012). Drawing on the experiences of alter-globalisation movements of the 1990s and 2000s, Maeckelbergh (2011) suggests that prefigurative politics reconfigures the temporal distinction between the present and the future, as social change is not deferred to the future by demanding reforms from the state or seizing state power. Thus, 'the struggle and the goal, the real and the ideal, become one in the present' (Maeckelbergh 2011: 4). Prefigurative politics rooted in anarchist philosophies articulates a critique of authority and works toward engendering collective self-management in critical engagement with the broader state and market structures, eschewing the distinction between political and social change (Ince 2012). Calling for non-representational politics, such mobilisations seek to infuse political action in everyday life activities. In outlining the everyday prefigurative politics enacted by youth activists in provincial North India, Jeffery and Dyson (2016:96) suggest that change is perceived as being the 'cumulative precipitate of action in the present.' Understanding temporality is central to prefiguration as the past, present and future come together in nonlinear ways, posing a challenge to stageist development ideology and practices. The past is often constructed selectively and used as a critical resource to reconfigure the present. The selective reconstruction of the past has been particularly significant in the postcolonial political landscape.

The genealogy of prefigurative politics in India can be traced to Gandhian anti-colonial struggle. For Gandhi, the notion of *swaraj* (self-rule) was not limited to freedom from the

colonial state but embodies an anti-statist politics that challenges the concentration of political power. Instead, he envisaged the postcolonial nation with an alternative institutional form constituted by decentralised and materially self-sufficient village communities. The politics of noncooperation with unjust authority was to be accompanied by a constructive program of socio-economic revival. The communality of the village in this conception was not premised on primordial ties but associational voluntary ties forged through a constructive program of multi-faceted collective practices that included promotion of cottage industry, the abolition of untouchability and campaign for sanitation (Mantena 2012; Skaria 2002). As Mantena writes, Gandhi understood constructive work ‘less in terms of political education or consciousness raising than as fundamentally experiments in self-rule' (2012:562). In this conception of politics, practical transformations were not confined to the sphere of production and were potentially generative of new forms of sociality where self-sufficiency and localised accountability are paramount. While moralism is often attributed to Gandhian politics, Mantena rightly argues that practical strategies of prefiguration challenged precisely the moral certitude implicit in politics of representation and mobilisation around preconceived ideologies.

Environmental mobilisations in postcolonial India have been particularly influenced by Gandhian modes of organising, most notably the Chipko movement (Hug a tree) in the Himalayan state of Uttarakhand (cf. Rangan 2000; Shiva 1986; Klenk 2004). Such environmental struggles in marginalised spaces that have been neglected by the development project, adopted non-cooperation to protest statist interventions that threatened local forest based livelihoods of communities. By contrast, in Punjab, the state was infused in everyday life through agricultural modernisation, and its established legitimacy among farmers is under threat. In this context, prefiguration involves the construction of an alternative trajectory of

production and consumption, which is not a defence but a radical restructuring of extant farming practices and dominant ways of life. Precipitated by disillusionment with the statist development project the emergent prefigurative struggle in Punjab, thus shares common ground with the contemporary global wave of struggles in the Global North fueled by austerity and dismantling of the welfare state. It does not, however, share the vocabulary of creating alternative and autonomus spaces from capitalism (cf. Graeber 2013). Rather, it employs an anti-colonial, post-development discourse that needs to be historically situated.

KVM's discourse of 'civilisational crisis' can be understood through the Gandhian conception of politics where constructive work is privileged more than resistance. Or, more accurately resistance is expressed primarily although not exclusively through the enactment of constructive practices. For KVM, what is most significant from the standpoint of enacting constructive politics is not only the transformation of the material and institutional landscape but the colonisation of everyday practices and minds. The agrarian populism of the 1970s and 1980s created a political identity of the undifferentiated 'peasantry', even as it represented the interest of the middle caste peasant proprietor in the Green Revolution Northern belt. While Marxist scholars rightly criticised these New Farmers movements for employing a Gandhian populism that rejected class conflict and for their traditionalist/conservative agenda, these Farmers' movements nevertheless inaugurated the critique of prevalent nationalist development that aligned linear progress, scientism and sovereignty in post-independence decades (Roy & Borowaik 2003; cf. Brass 1994). Challenging the decline of 'a paternalistic but protective nation-state' that was yielding to globalised capital, farmers' unions were adopting neo-nationalist discourse enabled by the short-lived prosperity of the Green Revolution for the middle caste landowning farmer (Roy & Borowaik 2003: 74).

By contrast, KVM's agenda emphasises ‘place-based' practical transformation. It may be labelled ‘populist' in a different sense as their rejection of class, identity or interest based ideological mobilisation is precipitated by the need to recognise common conditions of exploitation across rural social groups. The mobilisation is also enlisting the support of urban middle classes in their constructive program. However, internal contestations within the movement do challenge caste, class and gendered privileges, as the constructive program of agroecological transformation is enacted. The underpinning conception of politics is Gandhian as political subjects are produced in and through the enactment of constructive practices, and not simply through the consciousness of common experiences of exploitation. KVM's critical discourse is, nevertheless, imbued with lingering traces of populist farmers' movements that produced a specific political consciousness - that of a rural/agrarian class and region exploited through the practices of the Federal Indian state (cf. Singh 2008).

In terms of practical transformation, they advocate an agroecological approach premised on self-reliance and bio-diversity, that calls for the elimination of dependence on any external inputs or market-based institutions such as organic certification seals and fair-trade systems. Critical to the agroecological approach is practice-based knowledge through experimental, in situ innovations corresponding to local socio-economic needs of farmers and their biophysical circumstances. In privileging the ‘local' in this way, the politics of agroecology seeks to redefine socio-ecological relations through the reorganisation of labour and consumption, challenging abstraction from material processes, in the realm of knowledge production and through commodification (Altieri and Toledo 2011). Within KVM's discourse that emphasises transformation of food production and consumption practices to revive material and cultural autonomy, agroecological practices are politicised in ways that align with post-development critiques and conceptions of prefigurative politics (cf. Escobar 1995;

2008). They also employ the invocations of postcolonial theorists such as ‘decolonisation of the mind', and ‘community' over ‘class' in the service of engendering ecologically sustainable practices.[16] The critique of the Green Revolution is centred on politics of knowledge production, an epistemic colonisation through the Western model of development executed through state practices that have paved the way for control by transnational corporations.

KVM's politics self-consciously claims to make an epistemic intervention by connecting social and ecological degradation as being symptomatic of the same historical process, thus eschewing the compartmentalising logic characteristic of techno-politics. They employ the western-indigenous binary to make this claim, where (lost) indigenous culture stands in for life-worlds and practices that nurture socio-ecological relations. The politics of restoration in this framework is centred predominantly on the transformation of practices of production and consumption of food in sync with lost indigenous values. Activists perceive the green revolution as a moment of rupture, which led to the degradation of material resources as well as loss of indigenous knowledge and practices. Therefore, prefigurative politics in this instance is not a defence of an extant moral economy but the construction of new practices and sociality legitimised in the domain of ethics and based on a selective reading of the past. A reversal of the process of in-situ ‘accumulation by displacement' (Araghi 2009; Feldman and Geisler 2012) is imagined through this subversive appropriation of the historicist narrative where a rhetorical return to the ‘non-modern' becomes both an organising trope, and a strategy for recovering lost knowledge.

[16] Meera Nanda (2001) has argued that the idiom of hybridity and ‘incommensurable' worldviews employed by postcolonial theorists are amenable to reactionary populist politics of the kind practised by farmers' unions like the BKU that reinforced casteist and patriarchal norms which also actively colluded with Hindu nationalists in western Uttar Pradesh. Nanda cites Akhil Gupta's (1998) work as exemplary of this tendency in underplaying class contradictions and claiming that cultivation practices of green revolution farmers in western UP are characterised by hybridity, and the identity of ‘underdevelopment' is central to the populist farmers' movements of the 1980s.

Many scholars though have flagged the dangers of alignment whether explicit, strategic or unintended between neo-traditionalist scholarly and activist environmentalism, and the politics of Hindu nationalism in India. Both articulate a critique of colonial modernity and employ a discourse of indigeneity that valorises a pre-colonial past as a repository of 'Indian values' (Mawdsley 2006; Philips 2001; Sharma 2012). Instead of a dialectical understanding of history and ecology, both these discourses tend to employ a dichotomous framework of opposition between Western science/technology and traditional sustainable localised practices (Philips 2001). At the present moment when Hindu nationalism is pervading the political domain in India, it becomes pertinent to examine how the ecological question is posed and addressed. The idiom of cultural and material autonomy, which is at the core of prefigurative politics for ecological sustainability, becomes particularly susceptible to appropriation by an exclusionary politics of nativism.

Traces of such Hindu nativist discourse are present in the articulations of some people within KVM as well. They are mostly non-farmers who construct a simplistic narrative of 'civilisational crisis' as a long history that begins with Muslim invasions, followed by British colonialism, and postcolonial development project that has disrupted and eroded the ecologically balanced Hindu way of life. In this essentializing narrative, cultural autonomy becomes the mirror image of techno-political developmentalism. However, these marginal voices do not resonate with Sikh Jat farming households, who are predominant in rural Punjab and perceive themselves as an exploited minority nationally. Antagonism among Sikh *Jat* cultivators toward largely Hindu moneylenders and urban traders has deep historical roots in Punjab (cf. Fox 1984). The recent controversy over the ban on cattle slaughter which has been a staple demand of Hindu nativist groups in the name of protecting traditional

Indian culture, for instance, is resolutely opposed by cultivators who cannot afford to keep unproductive cattle past their milk bearing years. Several farmers brought up the issue of disruption of cattle trade at local regional markets in recent years by errant Hindu fundamentalist groups in Punjab, which they argue has added to their distress. The exclusionary discourse of Hindu nativism that has evolved into cultural nationalism also does not resonate with KVM activists who do the work of grassroots organising as most of them have experiences of being situated at the bottom of the local social hierarchy. Moreover, in everyday mobilisation by KVM activists the focus is overwhelmingly on changes in production and consumption practices. Very few of the grassroots organisers subscribe to or invoke a coherent ideological discourse, except that of highlighting the material exploitation of farmers and their lands through statist interventions. Non-commitment to any well-defined ideological discourse, or political standpoint of a social group, however, means that strategic alliances are drawn to realise specific agendas. The recent ongoing campaign to oppose the approval of genetically modified mustard is an example of such an alliance. The campaign brought together farmers' unions, KVM and other sustainable agriculture groups from across the country who form ASHA collectively, together with Swadeshi Jagran Manch an offshoot of the Hindu nationalist social organisation Rashtriya Swayamsevak Sangh. The voice of the Swadeshi Jagran Manch received disproportionate attention in the public debates as it was challenging its own political party BJP that is currently in power. Emma Mawdsley (2006) frames this as the question of 'guilt by association', which has become pertinent in the context of the contemporary resurgence of Hindu cultural nationalism. Mawdsley writes, "Are neo-traditionalist activists and scholars, who seek to mobilise cultural precepts around the environment in positive and well-meaning ways, tarred simply because their ideas share some things in common with the Hindu Right? And following on from this, do these arguments discredit all environmental movements and initiatives that draw upon divergent

Hindu idioms or beliefs?" Mawdsley argues that there needs to be a critical engagement with selective narratives of the past that are utilised for furthering the politics of ecological sustainability, recognising that they are modern constructions. Some KVM activists invoke traditional cultural norms, but it is regional material exploitation that is central to the legitimising discourse employed in everyday organising. It is evident that agroecological practices are unequivocally emerging from present material constraints and through cross regional exchanges.

Participation in the wider national alliance of farmers' organisations and sustainability movements ASHA, would also prevent the discourse of 'civilisational crisis' from devolving into an exclusionary cultural nationalism. For KVM this engagement with the national network has been essential, as the practical work of material transformation in Punjab is made possible through exchange of knowledge and resources such as indigenous seed varieties with 'undeveloped' regions. Regions marginalised in the developmental period, are repositories of seeds and knowledge of agroecological farming practices, and have become critical to prefigurative political practice. Natural farmers from other parts of the country played an active role in the initial years in conducting trainings on various forms of natural farming systems. KVM activists also frequently bring indigenous varieties of seeds from neighbouring states that have disappeared from the agrarian system in Punjab. This circulation of knowledge and materials suggests that the uneven development process that produced the spatial and temporal displacement of ecological costs also enables a politics of restoration. The refusal to explicitly challenge caste, class and gendered hierarchies, however, does have implications for grassroots organising, which I will elaborate in the final section of this chapter.

IV. Autonomy as Anti-statism

The distinctiveness of KVM's standpoint becomes clear in their critique of other forms of articulated resistance to the Green Revolution model and its consequences. KVM argues that the extant forms of critique that are seemingly divergent, most prominently Left wing organisations and populist farmers' unions, nevertheless share an economistic framework. Left organisations' focus on class inequalities, particularly in terms of ownership and access to land, and the populist farmers' unions' such as the BKU on demanding increased support prices and input subsidies from the state (cf. Lerche & Harriss-White 2013). These 'economistic critiques' do not address socio-ecological relations and fail to take into account the historical and cultural specificity of the region. Increasing subsidies for inputs like fertilizers, diesel, water and electricity as well as support prices for procurement of wheat and rice will not alter the mono-cropping chemical intensive farming system, or alleviate the causes for farmers' economic distress. Like the populist discourse of the BKU (Gupta 1998), KVM activists also invoke the 'urban bias' thesis, but they emphasise the regional dimension of exploitation.[17] From an ecological standpoint, the criticism of the Green Revolution policies that concentrated new technologies and state resources in the North-Western belt in India and created regional imbalances is inverted. Decades of agrochemical intensification have led to an ecologically degraded landscape in Punjab, whereas states peripheral to the national development project in the 1960s -1980s such as Bihar are now vibrant sites for experiments in sustainable agriculture.

[17] Varshney (1998) has questioned the 'urban bias' thesis in India, which was central to the discourse of farmers movements on the grounds that unlike in the West, democratisation preceded industrialisation in India, which had profound consequences because of the influence dominant agrarian interests had on the political landscape.

Based on this narrative of the crisis, which suggests that statist development interventions of agricultural modernisation reflect and have produced epistemic colonisation, the assertion of cultural autonomy becomes critical for reviving material autonomy. Within this framework, shifting toward organic/natural farming practices is contingent on the transformation of the value system of Punjabi farming households. The narrative of social degradation accompanying material degradation expresses an understanding of agricultural modernisation as biopolitics that has produced consumerist and individualistic ethos along with dependency (cf. Patel 2013). In the post-1990s period of structural reform where agricultural sector has been marginalised, this biopolitics is conjoined with a loss of organised representation of agrarian classes in national electoral politics.

The idiom of moral decline and epistemic colonisation employed by KVM implicates farmers in this process of degradation structured through statist interventions. More critically, it centres farmers as key political agents for the transformation of social practices and organising an alternative agroecological system, which is sustainable and autonomous. Anti-statism is an integral part of how political agency is conceptualised, in the sense that farming communities are deemed as the primary agents of transformation. It is not surprising that prefigurative politics has emerged at a conjuncture when the landowning agrarian dominant castes, have lost their influence as an interest group to determine the shape of national policies. Rudolph and Rudolph (1987) argued in their seminal study that the medium scale farmers, or the ‘bullock capitalists' who owned lumpy forms of capital such as tractors and tube wells and used Green revolution inputs, gained political leverage with increasing productivity in the 1970s. The first phase of land reforms focused on giving land rights to tenant cultivators was more successful than the second phase focused on imposing land ceilings, and redistribution, which had the effect of strengthening the class of ‘bullock

capitalists'.[18] Challenging scholars who argued that commercialisation and modernisation of agriculture led to growing class polarisation particularly in 'agriculturally advanced' states like Punjab (Frankel 1971), they suggest a more complex and ambiguous picture. They argue that the class of 'bullock capitalists' or peasant proprietors and urban educated middle classes who dominated the bureaucracy and the public sector were responsible for the centrist politics of the Indian state (cf. Corbridge 1997 for a summary of critiques of this argument). It is pertinent to recall that Punjab government representing the interests of large landowners lobbied with the federal state in the 1960s, to be chosen as the site for investment that spurred the Green Revolution (cf. Frankel 1971). As Terry Byres (1981) argued in his seminal article, rich farmers in the north-western green revolution belt did become a class for itself, successfully preventing agricultural taxation, further land reforms, nationalisation of the grain markets and maintaining the favourable inter-sectoral terms of trade. On the other hand, the presence of permanently attached labour, availability of migrant labour and partial proletarianisation prevented organised struggle by agrarian workers. The political implications of the incorporation of small and middle farmers on adverse terms, both as producers and consumers, are never fully explored.

The alliance between the middle caste landed farmers, the self-employed and the urban middle classes that stood between the industrial capitalists (domestic and foreign) and the waged working classes shaped the development trajectory in post-independence years. This led many scholars to characterise the Indian state, drawing on Kalecki (1972), as an 'intermediate regime' (cf. Raj 1973; Mitra 1977; Bardhan 1984).[19] Planners allocated public

[18] They were the largest agrarian class in 1971-72, comprising 34% of the population and controlling 51% of the land (Rudolphs1987: 52).

[19] Richard Fox (1984) analyses developments in colonial Punjab to give historical concreteness to this interpretation of political economy of post-independence India, and to

investment to heavy industries in the first few decades after independence and envisaged rural development through institutional reforms. These reforms included land and tenancy reforms, and creation of institutions of decentralised village governance. Land redistribution efforts, however, were derailed in most parts of the country partly because the task of implementation rested with the state governments where landowning agrarian castes exercised influence (Gupta 1998; cf. Sathyamurthy 1989). It is noteworthy that land reforms were partially successful in the first phase that involved abolition of absentee landlordism and intermediaries, which strengthened the middle peasant proprietors. However, the second phase of imposing land ceiling and redistribution of surplus land was largely thwarted.

The compromise struck between rural elites who controlled state governments while the small but powerful English educated middle classes favouring industrial expansion that controlled central government was partly possible because of the relative insulation from the global economy (Rudolph and Rudolph 1987). Nevertheless, import substitution through Green Revolution practices of agrochemical intensification substituted grain import dependence for dependence on industrial inputs (Friedmann, 2005: 246). The international food regime under American hegemony thus eliminated certain choices for developing national and local modes of regulation.[20] The discourse of development in post-colonial nations like India employed the idea of inter-sectoral balance that never came to fruition in practice (cf. Friedmann and McMichael 1989).[21]

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explain the emergence of communal political identities on the one hand, and politics of inter-sectoral distribution on the other, both of which limited class-based political mobilisation.

[20] See Cullather (2010); Perkins (1997, cf. pp 157 – 187 for a detailed discussion on India); Harwood (2012)

[21] Friedman and McMichael (1989) have argued that inter-sectoral balance, between agriculture and manufacturing, applied only to the US and that too for a brief period but gained widespread ‘ideal' currency through the modernization and dependency theory.

In the 1970s and 1980s, medium and large agrarian producers in the Green Revolution began to move beyond exercising influence locally and to highlight the 'urban bias' of national policies. As primary contributors to national food stocks, they had political leverage. The post-colonial state became the frame and space of negotiation in the second food regime, which as Friedmann points, was distinct because of its state-led or mercantile character and promoted the industrialisation of agriculture in the Third World (2005: 242). While farmers' unions like the BKU demanded greater input subsidies and favourable prices for agricultural commodities, the so called 'backward classes' movements in the northern Hindi heartland region also comprising landowning agrarian castes challenged the literate upper caste hold on clerical positions and bureaucracy. Thus, the mobilisation discourse of 'urban bias' also encapsulated caste-based status politics that expressed aspirations for upward mobility. Some of the core activists of the movement were farmers' sons, who were denied urban white-collar jobs particularly in the public sector, which they thought were commensurate with their educational attainments (Gill 1995).

The so-called 'New Farmers movements' that emerged in Punjab and Tamil Nadu in the early 1970s, later spread to Karnataka, Maharashtra, Gujarat, Haryana, Uttar Pradesh. The central slogan employed was that of Bharat versus India –Bharat being the indigenous name while India being the Westernised name symbolising exploitation, and the central government was the main target of their agitation. Some of their specific demands included lower input prices on fertilizers, seeds, pesticides, lower tariffs on electricity, water, lower taxes and debt relief, as well as higher prices for crops (Lindberg, 1995). Led by middle and large farmers of dominant agrarian castes, they were deeply rooted in patriarchal ideology and opposed to land redistribution reforms (Brass, Banaji 1995). However, as other scholars point out that unlike previous peasant movements that only focused on class relations within the village,

these farmers' movements foregrounded supra local structural determinants, that is, relations of exploitation and surplus accumulation from agriculture at the national and international level (Omvedt 1995; Gupta 2002). Dipankar Gupta (2002) also suggests that unlike previous Indian peasant movements limited to challenging exploitative practices, the new farmers' movements were prospective and attempted to influence national policies on prices and taxation structures, and the overall development trajectory by re-centering agriculture.[22]

The commodification of agricultural inputs in Green Revolution sites that spurred these movements, translated into hybridity at the level of farm practices (Gupta 1998). While farmers utilising hybrid seeds and biochemical fertilizers were no longer 'traditional farmers, they were also not like farmers from the United States or Europe' (Gupta, 1997: p156). Practices of farming were shaped by multiple epistemologies and strategic choices determined by location in the social hierarchy and ecological contingencies. Even though with Green revolution technology, practices of farmers were over-determined by social logic, in some measure they were guided by contingencies imposed by the production process itself in terms of the ecological feedback loop (1998:181). While ecological sustainability was not prominent in the mobilisation discourse of the farmers' movements, Lindberg (1995) suggests that in dry regions, farmers' movements did begin to articulate an alternative trajectory that included ecologically sustainable practices.

[22] The debate on whether these new farmers' movements represented the interests of small and middle farmers has been contentious. Varshney (1993) and others have argued that small and middle peasantry was mobilised, as they would also benefit from increased prices of food grain, even as the new farmers' movements were fractured along caste, ethnicity and religion. Whereas, Marxist scholars like Tom Brass (1995) contended that the economic interests of poor and small peasants were antagonistic to that of the large farmers which led to the adoption of populist idiom of 'otherness' in caste, religious and sectoral terms. One of the limitations of this debate is that very few analyses of the new farmers' movements were based on ethnographic research. There is negligible understanding of who and which farmers joined these movements and why, or of the process of mobilisation (Omvedt in Brass 1995; Corbridge 1997).

Lindberg contends that very little new thinking on agricultural practices or development was visible in the politics of the unions like BKU in the North Indian belt of Punjab, Haryana and Western Uttar Pradesh, and they were simply asking for a better deal. Since the Indian state depended on this region for food and cash crops, the BKU was in a strong bargaining position. In dry regions because of lack of irrigation, the Green Revolution was not very successful in raising productivity. Therefore, the agenda of farmers unions in these regions evolved to include an alternative agricultural development model. For instance, the *Shetkari Sangathan* (SS) in Maharashtra along with highlighting the urban bias' in state policies, also advocated for natural/organic farming, and self-sufficient agriculture which relies on locally produced seeds, limited use of chemical fertilizer and pesticides, small scale irrigation and water sharing schemes as well as primary processing of produce at the village level. The Shetkari Sangathan however also advocated liberalisation of trade, which they argued would rectify the exploitation of farmers structured through state intervention that kept food prices low, thus forecasting the contradictory dynamics of the neoliberal period.[23]

[23] Sharad Joshi, the leader of SS, articulated the Bharat vs India not just as a town-country divide but an exploiter-exploited divide. Joshi argued that 'under capitalism the extraction of surplus from agriculture and from natural resources was central' and 'exchange relations, not property relations were the means of exploitation which was a result of not just market processes but the intervention of the state' (Omvedt, 1995: p96). Joshi in an interview in March 1989 observes, "The real contradiction is not in the village, not between big peasants and small, not between landowners and landless, but between agrarian populations as a whole and the rest of the society" (cited in Lindberg, 1995: p96). Joshi believed that liberalisation would eliminate state intervention in the form of price distortion and support Indian peasants, who were 'heavily taxed' as opposed to farmers in developed countries who were heavily subsidised. The BKU, in contrast, opposed the entry of foreign capital as it would undermine national sovereignty and depress domestic prices of agricultural output (Brass, 2000: p109). SS challenged Nehruvian socialism and advocated for the Gandhian model of development that contested the replication of Western model of development, valorised the notion of self-sufficiency, employment generating village economies and devolution of power from the centre to village elected bodies. But it also supported trade liberalisation as a way of redressing state power.

Three decades later, neoliberal restructuring since the 1990s and material degradation have brought the crisis to the doorstep of Punjabi farmers. Withdrawal of resources from agriculture and deregulation has caused acute rural distress in sites of capital-intensive farming that were heavily dependent on the state subsidy regime (cf. Walker 2008; Vasavi 2012; Padhi 2013; McKinney 2013; Banerjee 2015). Neoliberal restructuring of agriculture thus both reflects the declining power of 'bullock capitalists' in the statist class coalition and further reinforces this decline. The so-called new farmers' movements are playing a reactive role rather than shaping policy agendas as a demand group. The various factions of the BKU in Punjab, for instance, have been engaged in episodic protests demanding adequate compensation for land acquisition, for crop damage, for suicides due to agrarian distress, and delays in procurement of crops by state agencies, in the last decade.

The turn toward anti-statism and conceptualisation of political agency as cultural autonomy and transformation of social practices, embodied in the organising discourse of KVM, has to be understood in this context. The assertion of material and cultural autonomy is premised on an understanding that state policies of the development decades initiated the process of structuring dependence among rural communities and socio-ecological degradation. And that the crisis that has become visible for farmers in a stark form in the neoliberal period illustrates a deepening of those earlier processes and reveals their unsustainability. Unlike the mobilisation discourse of farmers' unions such as the BKU that worked within the frame of economic nationalism, the discourse of regional exploitation and socio-ecological degradation brings to surface the displacement of ecological costs spatially and over time. Such displacement has political implications as struggles are shaped by the ways in which crisis is experienced. For the majority of landowning farmers in Punjab, it was clear by the mid-1980s that economic profitability from agricultural intensification was under threat,

which was reflected in the demands that BKU was making on the state. The reactive mobilisation discourse of BKU is unable to articulate and address the current crisis of social reproduction, most apparent in the health implications of agrochemical intensification that are becoming visible after several decades even as households have little spending cash for meeting medical expenses.[24] Rudolph and Rudolph (1987) contrasted this 'new agrarianism' in the mid-1980s with the old Gandhian agrarianism. They suggested that farmers' unions invoke Gandhi in pragmatic and technical terms to highlight exploitative relations against agriculture as a sector, whereas old agrarianism employed in the anti-colonial movement stressed self-sufficiency at the village level. It advocated for a labour-intensive mode of production and restraint while challenging endless consumption. It is interesting that the notions of place based autonomy embodied in the anti-colonial discourse of 'old agrarianism' have returned in the form of agroecological politics.

Jennifer Clapp has argued that greater distancing in the food system, that is the spatial separation of consumption from agrarian production landscapes, enables the externalisation of ecological and social costs by powerful actors particularly transnational corporations. Lengthening of food commodity chains makes it difficult 'to connect unsustainable outcomes on agricultural landscapes to specific actors and to hold those actors responsible' (Clapp 2015: 316). The notion of 'distancing' can be usefully employed to understand displacement of economic and ecological costs over time and its masking effects. In the first instance, such costs in Punjab were transferred to subaltern social groups that did not have access to land or were dispossessed through the transformation of labour practices and relations. These groups were not only absent from the social base of the BKU, but BKU's agenda was openly

[24] I examine the various forms in which this crisis of social reproduction is unfolding in Chapter 3.

antagonistic to their interests.[25] For landowning cultivators who were early adopters and beneficiaries of the technological package, the economic and ecological costs of the technological treadmill instituted through the Green Revolution decades were displaced over time. The political implications of this masking can be read retrospectively in examining the mobilising discourse of the farmers' unions. The displaced costs of the Green Revolution are becoming visible cognitively and experientially for the majority, including the once powerful middle sections of the peasantry. The extension of the crisis to this group that followed the 'modernisation script' (cf. Van der Ploeg 2010) has inaugurated the nascent and contested politics of sustainability.[26] The simultaneous visibility of social, economic and ecological consequences has opened up the space for KVM's prefigurative politics of practical transformation that illustrates an integrated conception of sustainability.

V. Public Agricultural Extension and Technopolitical Sustainability

There is recognition of the social and ecological dimensions of the crisis within the publicly funded agricultural research and extension system, but their interventions are largely limited to the sphere of production. In this section, I examine understandings of crisis offered by scientists at the state-led Punjab Agricultural University (PAU), and government extension officials, to illustrate that they reflect an epistemic framework that separates the social and

[25] I will discuss their presence in the new wave of sustainability politics, particularly in relation to KVM's organising practices later in this chapter.

[26] Van der Ploeg (2010) suggests that not only has modernisation of agriculture excluded the majority of farmers but also destroyed those who were a part of the modernisation. Hence, it is increasingly becoming not only materially unsustainable but unattractive to individuals and communities. Citing the case of European farmers he suggests that the crisis of modernist agriculture is paving the way for regenerating the Chaynovian peasant mode of production. He posits the emerging restructuring of farming practices as active resistance to the corporate food regime as farmers move away from 'entrepreneurial trajectory towards the re-creation of peasant trajectory'.

ecological dimensions of the crisis being experienced by farming household.[27] This separation is institutionalised in the production of agricultural knowledge within disciplinary silos in the university, a problem that becomes clear to extension staff when they interact with farmers to resolve practical problems in their fields. Even when scientists recognise the limitations of their frameworks and the inadequacy of new production techniques that are being developed to address farmers' crises, they claim they are unable to influence policy shifts required for restructuring farming in fundamental ways. Moreover, the general devaluation of agriculture is visible in the declining resources allocated to public research and extension.

Entrenched in the Malthusian mindset, the University's historical mandate of fulfilling the objective of ensuring national food security is constantly highlighted by research and extension staff. There is a disproportionate focus on production and dissemination of improved, hybrid seed varieties and promoting new machinery, without sufficient attention to ecosystem management practices (cf. Dhiman et al, 2010).[28] This is evident at the periodic farmers' fairs held at the University, where corporations advertise new farm machinery and agrochemical products. Farmers though say that they mostly come to these fairs to buy PAU seed varieties, which are not easily available in the market.

At one such two-day farmer camp in March 2015 at the regional PAU centre in Bathinda, agricultural scientists in their speeches consistently emphasised the need for crop

[27] PAU was established in 1962 by the government. Modelled on US land grant colleges, it has a mandate of an integrated research, teaching and extension. The University played an important role in implementing Green Revolution practices, a role that scientists and extension officials continuously emphasise with pride (Dhiman et al 2010).

[28] Further, scientists point out that basic research in biological methods of ecosystem management are underfunded because they do not create avenues for profit generation in the same way as synthetic chemicals do (cf. Yapa 1993)

diversification and further mechanisation to reduce labour costs. They also talked about mechanical technologies that would help save water such as land laser levellers for preparing the fields for paddy cultivation. Urging farmers to use agrochemicals judiciously, one speaker says, "When we talk about fertilizer, we have to talk about soil testing. You should contact the University for Soil testing to determine how much urea (nitrogenous fertiliser), DAP (di-ammonium phosphate) and micronutrients are needed by your soil. Excessive application of urea is harmful to the crop and the soil. It can seep into the water, and release gases which harm the environment." He then shows them a shade card that costs 100Rs and advises that they corroborate the shade of green of their plants to determine the amount of urea required in their fields. He says, "it will reduce the cost of cultivation, as well as the pesticides and herbicides required. If you have used DAP for the wheat crop, there is no need to apply it again for the following paddy crop that year. If you use green manure Basmati crop can be grown without any urea." Out of the small proportion of farmers who attend these fairs, very few are sitting and listening to these speeches where scientists dispense advice in an ad hoc manner. Long queues can be seen in front of seed sale counters. Farmers complain that the availability of PAU seed varieties is much less than the demand, and this is a recurring trend year after year at the fair. After travelling long distances from their villages they are only able to procure a small amount of seeds. Apart from the seed counters, farmers can be seen at stalls displaying new machinery through demonstrations. In contrast to the didactic mode adopted by university staff, private companies use demonstrative methods and individualised interactions in farmers' fields to disseminate information, which clearly resonates more with farmers.

Alongside specific technical advice, university scientists and extension officials adopt a moralising tone. On the one hand, they stress the importance of scientific farming to improve

the quality of crops, for instance buying certified seed varieties recommended by the University to prevent crop damage, even as these seed varieties are not available in adequate quantities. On the other and some officials also talk about social trends such as the younger generations' detached approach to farming and excessive expenditure on consumer goods. Unlike KVM's narrative of social degradation linked to the Green Revolution, however, these trends were attributed to moral deficiencies among farming households. One of the trustees on the University Board for instance in her speech says,

> "The older farmers went to their fields daily to find out what the crops needed. They decided on when and how much water and manure was required based on weather conditions and the appearance of plants. Farmers today do not bother – water is easily available so they use it indiscriminately. It is the same story with pesticides. If you go to the fields frequently, you will realise that pesticides are not needed in the quantities they are currently being used in…the rising indebtedness is not the fault government we have to stop excessively spending on weddings, weddings took place earlier as well without all the pomp and show."

She goes on to talk about how idleness among people is responsible for increasing crime and drug addiction. Arguing or more collective action, she advises farmers to form groups and committees at the village level to exchange information and to create a sense of community instead of sitting in front of the television. While referring to similar social and ecological manifestations of the crisis as KVM, these articulations are characterised by historical amnesia. They do not acknowledge the role played by public extension system in engendering the current production system while pointing at the corresponding transformation of social relations. 'Herd mentality' of farmers and lack of education are proffered as explanations to explain farmers' preoccupation with high yields and indiscriminate use of agrochemicals and water, as well as rising debt and social pathologies, despite an acknowledgement of structural constraints such as limited and declining reach of the underfunded public research and extension system. Nevertheless, there is a growing

acknowledgement of the forms in which a sense of crises is experienced beyond the sphere of production and their underlying interconnectedness. For scientists, the social, ecological and economic manifestations are unintended consequences of technological innovations for which either the political classes or farmers are held responsible. Thus, they continue to partition off the realm of knowledge production from the process of 'implementation', which is where the crisis takes shape according to them. As one agronomist at PAU admits,

> "There is no natural fertility left in our soils, they are barren. Punjab should get some compensation from the central government for bearing the burden of feeding the country using its natural resources disproportionately in the past five decades. Monoculture will eventually create ecological problems. It was the need of the hour in the country in the 1960s to produce food grain and prevent famine, which we did successfully. The university or extension officials did not prescribe over-fertilisation. That happened because of the farmers' economic compulsions, which in turn have been shaped by government policies. When a farmer's land loses its productivity, the government should compensate them to help them rejuvenate the soils. Over time the cost of living has increased exponentially but not the farmers' incomes. About 20 years ago selling two trolleys of wheat could buy a tractor, now selling two trolleys of wheat cannot even buy enough diesel to run the tractor. The farmer does not get adequate returns for his crops, and the prices of other things that he has to buy from the market keep increasing."

The problem, as suggested by this above quotation, does not lie in a focus on increasing productivity that continues to be the mandate of the university, but in inadequate policies to address the consequences of farmers' well-being. Like many others, the above agronomist goes on to suggest that the need of the hours is to move people out of agriculture. He says, "I do not think that increasing government support price is the solution to the crisis faced by farmers. There is an urgent need for creating more jobs. Frustration among youth due to unemployment is increasing crime and theft. Fragmentation of land over generations has created economically unfeasible operational holdings and so we have to adopt the model of contract farming and/or cooperative farming."

Others advocate turning agriculture into ‘white collar work' through further mechanisation. The Director of a regional Farm Advisory Centre points out that one of the major initiatives of the agriculture department is to keep youth in agriculture.

> “We have a government scheme called ARYA – Attracting and Retaining Rural Youth In Agriculture. There is also a focus on skill development for those who have completed high school, for instance in agriculture allied activities like bee keeping and mushroom cultivation. We have to transform agriculture into ‘white collar’ work to attract literate youth. This is possible with more mechanisation – but the most significant issue is to provide a buffer against the extreme uncertainties in agriculture faced by farmers. This is particularly important now, given that climate change is affecting cultivation- particularly through the unpredictable rainfall patterns. Also, labour costs are increasing so mechanisation becomes essential.”

This perspective clearly approaches the crisis from the perspective of medium and large landowning farm households and the educated youth, and implicit in this vision is the transfer of the ‘dispensable’ landless as well as those from small and marginal farming households out of agriculture. The solutions proposed by the government extension system for moving toward sustainable intensification are, therefore, a continuation of techno-politics of the Green Revolution. There is a slight shift from the ‘yield centric’ approach to one that focuses on sustainability, but this shift continues to work within a framework that does not think of farming as an integrated system embedded in socio-political relations. Farmers become recipients of ‘expert knowledge’, regardless of whether the messages are about conventional farming or sustainable agriculture. They implement ‘expert knowledge’ produced in disciplinary silos and disseminated as formulaic practices. Any modification on the part of the farmers based on their own needs is perceived as a deviation from the script.

The hybrid practices that reflect multiple epistemologies and resource constraints (Gupta 1998) are cited as being responsible for environmental degradation and the crises that the farmers are facing. Scientists and agrochemicals dealers often cite the example of farmers not following refuge management practices while planting hybrid Bt cottonseed varieties as the cause of increasing pest attacks. Most farmers discard the non-Bt seeds that come with Bt cotton seeds or feed them to animals, instead of planting them on the periphery of the plots because their purpose is not clear to them. Based on their own perceptible experiences, farmers argue that non-Bt seeds on the periphery of the plot attract pests. The shopkeepers, from whom a majority of the farmers get information about agrochemical products, do not explain the purpose of planting them nor is it explained on the packaging. Some farmers say they did experiment in the initial years but came to the conclusion that it was a wasteful use of land. The mode in which scientists comprehend and attempt to resolve the crisis is identifying discrete primary causes for problems such as increasing pest attacks. This mode does not incorporate complex, multidimensional understandings of crisis, or devising solutions within a long-term analytical framework. Activists and several elderly farmers, on the other hand, situate the increasing incidence of pest attacks on Bt cotton in the longer trajectory of mono cropping, changing cotton varieties and use of pesticides since the 1960s, pointing to the cascading and unpredictable effects of an imbalanced ecosystem.

Even within the terms of the scientific establishment's own framework, however, the lacunae in implementation are glaring. Farmers are unaware of refuge management practices because government extension outreach in the villages is negligible. The few farmers who report interacting with extension officials were educated, large landowners who initiated contact themselves. Barring field trials of new chemical products of companies, most farmers have never had any interactions with the extension or University officials in their villages or fields.

As elderly farmers point out this was not the case in the early decades of the Green Revolution in the 1960s and 1970s, when the *Gram Sewaks* (government village extension workers) were actively trying to introduce fertilizers. Khushwant Singh, a farmer in his 70s says, "When the problems of chronic pest attacks and stagnant yields appeared in the 1980s, the extension officials disappeared from our villages." In contrast, most farmers remember recent interactions with representatives of seed and pesticide companies who visit the villages frequently to advertise their products, particularly at the start of the sowing season. Thus, seamless privatisation of the Green Revolution followed the institution of the technological treadmill through public extension system in the initial decades.

While acknowledging the economic constraints faced by farmers and the public research and extension system, the PAU scientific community nevertheless continues to attribute responsibility for ecological damage and the contamination of water and soils onto farmers. Agronomists and extension staff who frequently interact with farmers have a more nuanced understanding of the crisis. Research scientists, however, complain about the inability of farmers to follow expert advice. They cite the excessive use of fertilizers and pesticides over the recommended dosage, and at inappropriate times during the cropping cycle, indiscriminate use of water by leaving the water pumps running; blindly following the advice of commission agents and dealers/shopkeepers of chemical inputs instead of the recommendations made by the University.

Extension officials at PAU also admit that lack of resources prevents them from reaching out to small and medium farmers in the villages. The public extension and research system are severely underfunded compared to seed and agrochemical companies. This particularly impacts field-based research and extension. Trials and demonstrations of new varieties are

conducted on the fields of large farmers with higher levels of literacy, who are perceived as 'capable of following instructions properly' or on farms that are easily accessible because they are closer to the road. Most extension and outreach activities are ironically now confined to the university campus and regional stations. Few farmers are able to come to camps and training sessions held at the University or the regional research/extension stations. These include large farmers who employ hired labour and have the time and resources or elderly farmers who have little decision-making power within the household. The extension officials work with the same 80-100 farming households in a district over many decades. Farmers who have these established relationships with extension staff are the ones who call in to ask for solutions for problems of pest attacks, or crop diseases at the university, or the Farm Service Centers (Krishi Vigyan Kendras). The majority of the farmers end up going to local agrochemical shopkeepers during instances of pest attacks or other diseases afflicting crops that they are unable to control. In fact, farmers often refer to pesticide dealers and agrochemical company representatives as 'Doctors'. Local dealers and shopkeepers work within a highly competitive environment where large agrochemical conglomerates offer incentives based on achievement of sales targets. There is a great deal of overlap between commission agents who lend money and buy crops from farmers and also act as vendors of agrochemicals. Commission agents in such instances often sell agrochemical products to farmers on loan, increasing their debt levels.[29] Along with sending representatives to villages to conduct demonstrations of agrochemical products in farmers' fields, conglomerates also conduct technical trainings for shopkeepers and input dealers. These trainings provide them

[29] As reported by shopkeepers and dealers in the town of Jaitu and in Bathinda city, these incentives include both share in profits and non-monetary incentives such as expensive holidays.

with enough knowledge to become credible as experts offering advice on crop diseases and pest attacks. This, in turn, has a significant impact on boosting sales.[30]

Beyond issues of access, the autonomy of public research and extension system is compromised, given their entanglement with agrochemical companies, whether indirectly through pressures from ruling political classes that influence research agendas or directly through collaborations and investments. In 2012, for instance, the Punjab government asked Monsanto to set up a Maize research centre for developing new hybrid varieties, a move that was justified as part of a strategy for crop diversification particularly to replace water-guzzling rice. Maize, incidentally, was a popular native crop in Punjab and a critical part of the local diet prior to the Green Revolution marginalised with the institution of wheat-paddy-cotton mono-cropping cycle. This entanglement is not just visible in episodic instances but is built into institutional processes of regulation. For instance, some seed varieties and agrochemical products produced by private companies are recommended by the University in its Package of Practices that is published twice a year for the *rabi* and *Kharif* season and is widely disseminated among farmers. A scientist outlines the process by which such recommendations are arrived at:

> "Companies approach PAU to test their products – new seeds, weedicides, pesticides, herbicides and insecticides. Then we carry out field trials to test effectiveness as well as to figure out dosage requirements for these inputs Sometimes they are recommended and sometimes they are not. For instance, there are about 100

[30] At one such day-long training in Bathinda in May 2015 conducted by one of the leading domestic corporations with one of the top share of the agrochemical market, sales personnel were introduced to new products and instructed in extremely complex technical specifications of each product –its chemical composition and methods of application. They were advised to share methods of application in detail with farmers at the time of making the sale, and follow up with them a few times until they are proficient. Feedback was also sought from sales personnel about which products farmers complained about and how to address these complaints by instructing farmers in precise and appropriate methods of application.

> varieties of Bt cotton seeds available in the market right now, but PAU has recommended only about 3-4 varieties."

He then goes on to point out the flawed nature of this process. "The trials are not conducted every year, so the same recommendation for a product continues to be published year after year. Also, most of the times companies test directly in the fields with farmers. It is the responsibility of the agriculture department to check samples that are available in the market for consistency of quality. But the problem is that they generally take samples from the smallest container available, whereas adulteration is more prominent in the large quantity containers. The Agriculture Department owes millions of rupees to dealers for these samples, which they have been unable to repay. The state government is bankrupt. This gives a boost to companies to continue with nefarious activities and make deals with officials within the agriculture department to put out spurious products in the market. The problem of spurious pesticides available in the market is a serious one and has been partly responsible for the increased frequency of crop damage." He concludes by saying that in any case majority of farmers do not follow University recommendations. "Farmers choose higher yielding seed varieties over the recommended drought and disease resistant ones."

While 'precision farming', 'integrated pest management', 'conservation agriculture' and even 'multi-functionality' has entered the lexicon of recommendations made by the University in the last 5-6 years, in practice they have not been effective, as recognised by many of the extension officials. The set of recommendations published in the Package of Practices produced by the University continues to emphasise agrochemical product driven practices instead of focusing on ecosystem management practices. In recent years farmers were encouraged to grow guar beans and Basmati rice, crops that require less water and agrochemical inputs and were also in demand in the global market. The Director of the Farm

Advisory Centre, however, points out that they did not have much success in increasing the acreage under less water consuming crops because of price volatility. He says, "With guar, the response was good in the beginning, but dwindled as prices in the global market crashed. Similarly, with Basmati rice, the problem was over production, which pushed down prices, and we are telling farmers not to grow it this season." Farmers are asked to grow crops that are lucrative as export commodities and less input intensive. Such an approach requires consistent interaction with farmers based on up to date information on global commodity prices, which is simply not feasible. The definition of crop diversification within this approach is narrow. It entails a shift away from the current wheat-rice or cotton rotation to other temporarily lucrative crops, without challenging the system of monoculture cropping and 'distancing' mechanisms that structure the global food system.

Research feeds into extension in a fragmented manner. For instance, there is very little coordination between plant breeding, soil sciences and entomology, and practices propagated through extension do not account for the material constraints that majority of the farmers face. Farmers' decisions to not adopt these practices, however, are not explained in terms of these structural constraints such as inadequate outreach and extension but by constructing them as 'irresponsible and ignorant' subjects. Along with newer technological fixes such as genetically modified crops, state regulation and policing of farmers is gaining prominence as a strategy for prohibiting ecologically damaging practices. The state government, for instance, fixes a date in the summer before which transplanting paddy is illegal, in order to ensure that transplantation is done with the onset of monsoons, to prevent extraction large quantities of groundwater for flooding the fields.

The practice of burning fields after harvest to get rid of residual rice straw, which has become widespread in recent years, is an instructive example of the techno-political approach adopted by state institutions. These large-scale fires destroy organic matter, insects and other living organisms in the fields with detrimental effects on soil health, and environmental pollution creating asphyxiating smog for days.[31] University and extension officials attribute the problem to the 'greed' and irresponsibility of farmers. They also claim that greater policing is required by the state to stop the practice which is officially banned, as the ruling political parties do not want to take the risk of antagonising farmers and therefore the ban is not implemented. This narrative excludes the origins of this practice, which is relatively new and explains the conditions under which it has emerged.

Farmers point out that residual paddy straw became a problem after the introduction of combine-harvesters less than two decades ago. The combines were supposed to be more efficient and replaced the threshers that preceded them. Combine harvesters destroy straw partially rendering it unusable as fodder. Further, paddy varieties grown in Punjab produce straw rich in silica, which is hard to process in the short time window of a fortnight between harvesting and sowing of wheat. Wheat straw is preferred as fodder. Indebted farmers are unable to afford the costs of extra diesel, required to get rid of the paddy straw quickly and prepare the fields for the sowing of wheat. The cost of diesel has also been consistently rising. Apart from imposing a ban, the state government has attempted to introduce machines to sow wheat in standing rice stubble with zero tillage through the Primary Agriculture Cooperatives Societies at a subsidised rate.[32] Most farmers though, struggling to repay

[31] In the last few years, the toxic smog has travelled to the national capital Delhi that is surrounded by green Revolution states of Punjab, Haryana and Uttar Pradesh thereby drawing national and international attention to the issue (cf. Mathur 2016; Anand 2016).

[32] Machines such as 'happy seeders' developed by PAU and straw balers were first introduced in 2010, but have not been effective in stopping the practice because they are

existing loans, are reluctant to invest in new machinery even when heavily subsidised. It is noteworthy that the cycle of chronic debt for many farming households began with investment in buying tractors with subsidised loans in the late 1970s and mid-1980s.

The cycle of technical fixes that are premised on a narrow temporal and conceptual framing of the problem, were short-lived gains are followed by problems that require further investment in new forms of technology has pushed farmers into chronic indebtedness. The unsustainable arc is becoming apparent but also seems insurmountable to rural households, as their material resources have been eroded in the process, and the cumulative knowledge developed generationally through experimentation and accommodating localised ecological feedback loop has been interrupted. KVM activists argue that the problem of rice straw burning is symptomatic of the larger problem of monocultural farming, and treating symptoms is not sufficient. Organic farmers are not burning their fields, as they are building economically and ecologically viable agrarian practices contingent on improving soil health. KVM and other farmer organisations are also actively challenging the construction of the problem of crop-residue burning in the mainstream public domain that focuses on farmers responsibility for air pollution that is affecting the health of urban citizens while neglecting industrial and vehicular pollution and the distress in the agrarian economy.

Rooted in the Green Revolution legacy, scientists and extension officials at PAU maintain that organic production cannot support a growing population, but also acknowledge that crop diversification is necessary. Moving away from wheat-paddy or wheat-cotton rotation is essential for restraining the depletion of ground water, restoring soil health and ecological balance in Punjab. At PAU camps farmers are encouraged to diversify into high-value crops,

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costly, evident by burning of crop residue on a wide scale in the past two years (Roy 2010; Majeedi 2016).

particularly horticulture, mushroom cultivation, bee keeping and fisheries highlighting their export potential. Farmers are advised that such a shift would generate higher incomes, even if the initial investments require taking on loans. Alongside the shift toward technologically driven sustainable intensification, where sustainability is defined as conservation of natural resources, the discourse of national food security is being replaced by a prescription for high-value export agriculture for economic and crop diversification for a 'developed' region like Punjab. However, scientists acknowledge that unless there is a shift in government policies any substantive changes in terms of crop diversification are unlikely. Unless minimum support prices and state procurement infrastructure is extended to other crops, farmers locked in debt are unlikely to make that shift on any significant scale. They argue that the apathy of the political classes and their collusion with corporate interests stands in the way of meaningful reforms, and as scientists, they have no clout to influence policies. In this diagnosis, they converge with KVM, but their prescription for 'meaningful reforms' is in conflict as it calls for a greater role for scientific expertise.[33]

As Raj Patel (2013) contends neoliberal restructuring of agriculture or the new Green revolution has an even more pronounced biopolitics occluding the possibility of broader structural change. The Green Revolution of the 1960s began as a measure for containing socialism and adopted the trope of national self-sufficiency. Now the discourse has been reconstituted and employs the idiom of individuation that valorises entrepreneurship.

[33] The Punjab government appointed Johl Committee recommended crop diversification as early as 1986, followed by a second report in 2002. In 2002 the Johl committee report recommended shifting one million hectares of cultivated area of the state from under wheat and rice to other crops, preferably oilseeds and pulses. It also recommended providing compensation to farmers on a per hectare per year basis who shifted to other crops to make up for any economic losses, and monetary compensation to village panchayats that promoted diversification of land in their villages. However, the scheme remains unimplemented, as the administrative demands of the scheme were beyond the capacities of the state government and farmers continued to expand the area under wheat and rice (see Shergill 2007).

Agricultural modernisation is no longer framed in terms of national food self-sufficiency, but by employing the trope of efficiency and production of high-value agricultural commodities for the global market, exemplified by the speech of the Indian Prime Minister at the recent National Organic Convention in January 2016. At the convention, the Prime Minister underscored the need for technological innovations for moving toward increased productivity through ecologically sustainable farming. These innovations include soil health cards to promote the need-based use of fertilizers and agrochemicals, creating digital platforms to document the knowledge of 'progressive farmers', and encouraging the entrepreneurial spirit in rural India to promote value addition through food processing, branding and marketing of organic produce. While lauding the complete shift to organic production in the small Northeastern state of Sikkim, hitherto peripheral to the Indian state's development project, the Prime Minister does not mention the ban on Sikkim government's policy that gradually phased out before imposing a complete ban on chemical pesticides from entering the state over a period of 10 years. The exclusion of the role of structural policies reflects the framing of 'sustainability' in the narrowly defined terrain of scientific knowledge driven practices in the dominant discourse. This recasting is symptomatic of neoliberal political rationality that has shaped the development strategy and practices of the Indian state and is particularly salient in the restructuring of agriculture and land use since the 1990s (cf. Peschard 2014). Moreover, agriculture sector largely falls under the jurisdiction of state governments in India, and state government in Punjab has been at the forefront of the neoliberal project of agricultural modernization.[34]

[34] In recent controversy over the introduction of genetically modified mustard, for instance, unlike Punjab, the governments of so-called backwards states such as Rajasthan, Bihar, Madhya Pradesh have opposed the move and registered their protest with the federal government.

The focus on sustainable agriculture in rain-fed regions such as Sikkim that were excluded from the Green Revolution intensification project is not surprising. Once again the Indian state is 'betting on the strong', by focusing on rain-fed regions with healthy soils and social infrastructure conducive for a more sustainable Second Green Revolution.[35] In addition, the national government agency Food Corporation of India (FCI) is also planning to phase out central crop procurement facilities from Green Revolution states like Punjab and invest in building procurement infrastructure in other states. Surplus states like Punjab have opposed the move towards decentralization, arguing that they do not have the institutional capacity to ensure procurement (Landy 2017). The focus on production of rain-fed regions as sites of sustainable agriculture is justified by the state in the idiom of comparative advantage, as the onus of dealing with the social and ecological damage through rapid agricultural intensification within Punjab is being passed on to the farmers.

VI. The Limitations of Prefigurative Politics

KVM has made extremely limited inroads over the past 10 years, in convincing farmers to adopt natural and organic practices. This lack of success in enrolling a significant number of farmers with the movement has led them to modify their organising practices. In the early years, the emphasis was on working according to principles of natural farming, such as using only organic inputs that were generated on the farm and within the household, restoring biodiversity by moving away from monocultures of wheat, rice and cotton, intercropping, and recovering indigenous seed varieties. Such radical restructuring of practices is perceived as being too risky by a majority of farmers in the absence of any institutional support to absorb

[35] The introduction of the Green Revolution package of hybrid seeds and fertilizers in the 1960s was also a strategy of 'betting on the strong', where regions like Punjab and Haryana with irrigation infrastructure and relatively larger consolidated landholdings were chosen for intensification and production of food grains to fill the national buffer stocks.

the losses through the transition period. As a consequence, in recent years KVM has shifted its strategy. Moving away from holistic natural farming embedded in ecological principles, they are now adopting an incremental approach that aligns more with short-term goals and resonates with a larger number of farming households.

The primary objective of organising now is to convince farmers to gradually reduce synthetic inputs - fertilizers and pesticides with every cropping cycle, especially in wheat and paddy. KVM activists appeal to conventional farmers by arguing that reducing synthetic chemicals inputs would reduce their costs of production, without significantly affecting yields, if they follow the ‘correct' organic practices. Fear of reduction in yields is what prevents farmers who do recognise the harmful impact of agrochemicals from moving toward organic production. The other goal pursued by activists is to convince farmers to set aside some portion of their land, usually one or two acres, for growing wheat, vegetables and lentils with zero synthetic chemical inputs for their own household's consumption. The majority of farmers associated with KVM in Faridkot and Bathinda districts follow both or one of these strategies. The necessity for cultivating organic wheat and vegetables for self-consumption is framed in the context of public health crisis. Activists highlight the historical discrimination against farmers and rural inhabitants structured through national public policies since independence, and the general apathy of non-agrarian populations toward farmers, to legitimize self-consumption of organically grown food, even as they sell ‘unsafe' food commercially which is grown with chemical inputs. In addition, KVM is creating spaces for marketing organic produce in urban centres of Punjab largely catering to upper middle-class households at present. The modified strategies have been more effective in enrolling a larger number of farmers with the movement. Economistic reasoning though also shapes these strategies, which was at the centre of KVM's critique of the tactics adopted by farmers'

unions. This shift has also many that activists disseminate formulaic organic techniques instead of fostering the experimental production of farming knowledge through communal practices and collaborations among farmers. Within the movement, some activists perceive this shift positively arguing that such an approach is more inclusive and enables the expansion of the social base of the movement, while others contend that this shift is compromising the goals of the movement.

In introductory meetings in new villages, activists continue to focus on outlining the connections between ‘social' and ‘environmental' aspects of the crisis. Farmers who become interested then subsequently attend technical trainings on organic methods of production. These collective meetings within villages are then followed by activists interacting with interested farmers individually by providing them support through the various stages of the cropping cycle. By adopting this method of group trainings followed by individual interactions with farmers, activists have become bearers of ‘specialist knowledge' who disseminate formulaic organic methods. They have been unable to foster experimental social learning, and farmer-to-farmer knowledge and seed exchanges, germane to the politics of agroecology (cf. Altieri and Toledo 2011; Holt-Gimenez 2006). Activists argue that the pervasive individualisation ethic prevents farmers from organising and working collectively at the village level. Thus, the movement functions as a network where activists are connected with farmers as individuals, and work as mediators in facilitating knowledge exchanges.

The difference between fostering agroecological practices and dissemination of organic techniques and methods becomes clear by examining the critiques that are emerging from within the movement. These critiques are being articulated by a small number of farmers practising holistic natural farming. Many of them have been associated with KVM since

inception, and are often cited as examples that showcase the possibility of viable of organic farming in Punjab. These farmers who adopted natural farming through a process of self-discovery and experimentation are critical of what they refer to as the 'NGO-isation' of KVM, and the turn toward more economically driven mobilisation strategies.[36] While supportive of the efforts to create linkages with urban consumers and creating a marketing infrastructure for organic produce, they challenge the ways in which farmers are convinced to transform their production practices. Reducing and eliminating chemical fertilizers and pesticides while persisting with wheat and rice monocultures, and simplification of organising messages to a thrust on low costs of cultivation, they argue will not lead to the creation of robust farming systems.

According to this dissident faction, the dissemination of organic methods and techniques as formulas during trainings conducted by KVM workers reinforces a culture of dependence on 'experts'. Dissemination of formulaic knowledge of practices also fosters confusion among farmers and when promises of equivalent yields do not hold true, farmers are further disillusioned. Instead, they advocate taking a path that fosters agrarian practices based on sound ecological principles, focusing on reviving crop diversity, regenerating healthy soils with microorganisms and animals and bird species that were native to this region and integral to the farming system and adopting experimentation as a mode of organisation. This path, which is more difficult and will attract fewer farmers, will be sustainable in the long run and have a demonstration effect that will be more powerful than advocacy trainings. Instead of borrowing farming practices developed for other socio-ecological regions by organic farmers in other parts of the country, and then disseminating them as discretely broken down techniques, they favour a strategy that would focus on creating experimental farms in villages

[36] For a detailed discussion of how KVM seeks to differentiate itself from NGOs to retain its identity as a social movement see Brown (2014).

that would act as demonstration plots for viable diverse farming systems and sites for collective learning as well as knowledge repositories for farmers.

These criticisms highlight the emerging divide between KVM's work as an organisation working with the objective of enrolling a larger number of farmers and inclusion of more villages in their outreach, and farmers ideologically committed to natural farming within the movement. Narratives of these landowning farmers from dominant agrarian castes, however, also signal discomfort toward KVM workers who come from landless households or women workers who are now becoming active producers of farming knowledge through their interactions with the wider network of activists outside Punjab. KVM workers from landless households who have learned organic farming techniques as a part of their job, in contrast to farmers who grew up farming on their own land, establish their credibility as experts. And they are more successful in establishing a rapport with small and marginal farming households, and even within landless households while organising among women, by expressing an understanding of their economic constraints.

There is a consensus within the movement on the necessity for collective organising at the village level, however, activists find it difficult to forge deliberative, collective spaces at the village level to sustain agroecological initiatives despite repeated efforts. Activists offer several explanations for the failure of village level collectivisation. For instance, that the 'mind-sets of the *Jat* landowning castes' reflects deeper historical consciousness where communality is structured through kinship and clan ties, and not at the village level.[37] In

[37] The significance of the eighteenth-century attacks by vast armies in shaping political subjectivities of Sikh *Jats* has been documented in Punjab's historiography. Their kinship and interest based ties extended beyond village boundaries in attempts of seeking security and patronage through warlord organisations, making factionalism endemic to Punjabi social structure. These extended kin networks across villages were stronger than village solidarity (Pettigrew 1975). Framing of Sikhs as 'yeoman

more recent history, the breakdown of social ethos is attributed to the Green Revolution decades that fostered a preoccupation with higher yields. Further, secular spaces of sociality dissipated through the period of the 1980s in the wake of the brutal state repression of the militant Sikh secessionist movement. While not extensively examined, some scholars have attributed the emergence of the Sikh militant secessionist movement in the 1980s to the discontent and social inequality produced through agricultural modernization in the region as well. The communalisation of Punjabi society reflected rising social tensions among the Sikh landowning farmers and largely Hindu traders, between landowners and largely Dalit landless households, and the perceived exploitation of the Sikh minority community concentrated in Punjab by the national government (Corsi 2006; Shiva 1989).

These divisions have also been inscribed in the spatial organisation of the villages, as Dalit houses and those of the Sikh Jat landowners continue to be segregated, and activists organise separate meetings in different parts of the village. More generally, Punjabi villages are large and many resemble small towns. In addition, the structure of the newly built urban style houses, often outside the village on farm land, have changed the nature of social interactions as elderly people frequently point out. Women, in particular, suggest that shift from joint to nuclear households, and their retraction from farming activities in the fields has restricted their mobility and reduced the frequency of interactions with other women outside their family and kinship network. Collective organising has nevertheless been somewhat more successful among women. Women from both landowning and landless households are

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farmers' and as a 'martial race' through material and discursive practices of the colonial state further reinforced political subjectivity that was not expressed in terms of village community/solidarity, but land ownership and clan like networks across villages (Mooney 2013). One of the founding members of KVM, for instance, suggests that the mistrustful and consumerist nature of Punjabi people has deep historical roots. Punjab's geopolitical location made it vulnerable to periodic brutal attacks by invaders going back to the pre-colonial period. He quotes an old saying in Punjabi which roughly translates as - 'whatever you can eat or consume is yours, and the rest belongs to Nadir Shah', which refers to the invasion by the eighteenth-century Persian emperor)".

primarily mobilised to create and sustain vegetable gardens within the house for self-consumption. Partly, this is easier as women's meetings and activities are concentrated within the village in common spaces such as the government village school or *Anganwadi* (child care centres). Male farmers on dispersed farms that are located outside the village, on the other hand, can only be approached individually while working in the fields. Measures to go beyond knowledge sharing to labour sharing practices have failed among women as well. Rajji, a KVM activist cites a recent example of a failure. In a village, an old couple were unable to cultivate their land, offered their 3 acres to KVM in return for a share of the vegetables grown on the land. "We tried to get together a group of women from landless households to grow vegetables on this land. But women did not want to work in a group." Women, particularly from landless households, cite lack of time as the primary constraint, as they go out to work to earn daily wages in addition to performing household chores. They also bring up the lack of consistent water supply, and a shortage of organic materials such as dried cow dung cakes in large quantities, as most landless households are unable to keep livestock.

Discussions at village meetings that include people who are not yet involved with KVM activities suggest that people are unwilling to take responsibility for the current crises and expect the government to take action. While addressing a women's meeting in a Bathinda village, Rajji suggests that women are unknowingly feeding poison to their children. One of the women participants interjects to argue that the food system can change only if the government stops production of chemical inputs. She says, "It is easier to ban things from the shop. We eat grains that are grown with chemicals, that is the fodder our cattle consume, and then we drink their milk. How much of a difference can eating home grown organic vegetables make, if the rest of our diets are laced with chemicals?" Articulating a

prefigurative political stance, Rajji reasons, "If we do not change our own behaviour and always rely on the government to do things for us, then nothing is going to change. If your child is suffering from a disease, will you do something or wait for Badals (the current ruling political party in Punjab) to come and help you out." Referring to urea shortages in 2014, she goes on to say, "they sell these chemicals but we buy them. We go out and protest in the streets when there is a shortage of fertilizer in the market". This interaction reveals how political subjectivities of farming households have been shaped by dependence on government for their livelihoods, mediated through subsidies and price support that sustain the technological treadmill. The material consequences of this dependence have produced an agroecological politics of autonomy, but they simultaneously constrain the possibilities of collective practical transformation.

Lobbying by ASHA, at the national level of which KVM is a part, echoes the position that government needs to provide support for farmers through the transition process to organic production and to cope with economic and ecological distress generated by conventional farming. Farmers often argue at KVM meetings that the problems they face are related to marketing, not production. Apart from wheat and rice, procured by the government at a minimum price, prices for other crops are extremely volatile. When farmers have bumper yields, prices crash and they suffer losses. The example of potato overproduction in Punjab in 2014 came up at several village meetings that I attended. In the absence of remunerative prices, farmers in large numbers resorted to dumping their potato stocks on the roads. Emphasising their lack of control over price setting, a farmer says at a meeting- "it should be the job of the government to coordinate production at various scales or regulate prices at the national and international level. The farmers have no control over prices of their own product and can only ensure that they produce good yields."

The issues raised by men and women from farming households at village meetings are not centred on production practices, but on precariousness associated with volatility of prices, uncertainty about government procurement of harvested crops on account of quality, and delay in payments by commission agents and the incompetence of the government. Medium and large farmers also frequently raise the issue of labour availability. They argue that organic cultivation is more labour-intensive, and they are unable to afford the rising costs of labour. Even with conventional farming, labour costs are constantly going up along with costs of other inputs. Moreover, it is difficult to find labour during peak season as men from landless households prefer non-farm daily wage labour, which pays more. Farmers who are in the process of transitioning to organic farming find it particularly difficult to hire labour, as the work involves manual operations. In this context advocating for biodiverse cultivation becomes implausible for activists, as most farmers cannot afford to grow anything else except the state supported wheat and rice, in which most operations are fully mechanised.

Eschewing the language of class, KVM activists talk about a ‘breakdown' of the relationship between labouring classes and farmers with mechanisation. Echoing the grievances of landowning farmers, they also refer to how social security policies such as the MGNREGA (Mahatma Gandhi Rural Employment Guarantee Act) have taken workers away from farms revealing the class bias of their discourse. Activists claim their aim is to create a broad based inclusive movement in Punjab that focuses on engendering ecologically grounded farming practices among rural cultivators, without targeting any particular caste or class. This would be a step toward building a cohesive village community. The strategies outlined above, however, appeal largely to medium and large-scale farmers. Small farmers with one to three acres of land are unable to set aside plots for organic cultivation for household consumption.

They also cannot bear the risk of reducing fertilizer application, as even a small decrease in yields would have a drastic impact on their ability to meet daily needs and pay debts in the short-run. The temporal configuration of prefigurative politics thus poses a dilemma. Agroecological practices that require foregoing immediate monetary returns for restoring ecological equilibrium ad material autonomy, in the long run, entail risks that can be borne only by households with stable non-agrarian livelihoods. Since the collective model of agroecological farming has not taken root and state support for organic production is negligible, the risks and costs of transition have to be borne by individual households.

As of now, there is no systematic effort by KVM to organise among landless agricultural labour and landless tenant cultivators. The exclusion of groups that were marginalised and dispossessed through Green Revolution farming is thus reinforced with prioritisation of changing mindsets and farming practices over transforming policy frameworks. Long-term sustainability of agroecological cultivation is also suspect as more and more landowning households are leasing out land to avoid the risks of cultivation. Landless tenant cultivators are excluded in the outreach programs by state institutions and are also invisible within KVM's organising efforts. Interestingly, like government research and extension officials, KVM activists also suggest that landless cultivators who lease land use chemical inputs in the largest quantities. While this claim is backed by little evidence, activists reason that since landless cultivators pay an exorbitant rent for the land, they have to generate high yields in short duration, particularly with vegetable cultivation. Despite believing that they are the worst offenders, neither the government extension system nor KVM activists attempt to address landless cultivators in trainings and meetings geared toward promoting sustainable agricultural practices. This is illustrative of how the structuring of agrarian production through the Green Revolution decades is shaping the boundaries of sustainability politics.

The dominant focus on organising among landowning households is justified by activists by citing their role in co-production of the current crisis. Refusal to identify a principal contradiction as the driving force of the present crisis renders the constructive work of resurrecting material and cultural autonomy open-ended. Alliance formation with a small section of urban citizens is under way through informal marketing networks for organic produce. But the substantive inclusion of landless workers in agroecological organising remains extremely limited as it would entail addressing the thorny issue of access to land. Organising experiences of activists among women, however, suggest nascent pathways for a more inclusive framework that foregrounds social equity. Women activists reach out to a large number of landless households for growing vegetables on homestead plots for self-consumption. Women from landless households are more receptive to their efforts, as they value the savings that come with not having to buy vegetables from the market. They are also used to working as hired labour in the fields. The experience of working on their own homestead plots with some support from activists is greatly valued because they have control over the labour process and the final product.

VII. Conclusion

The 'Green Revolution' exemplified the technocratic development practices of the Indian state, that were set in motion by the political coalition of rural landowning and urban middle classes in the first few decades after independence. The influence of US government and actors like the Ford Foundation and Rockefeller Foundation also illustrated the tenuous nature of the project of national self-sufficiency and autonomy of the postcolonial developmental state. By the 1970s and the 1980s, these practices precipitated agrarian

populist mobilisations particularly in Green Revolution regions like Punjab. By providing staple food grains to national granaries these regions and the landed dominant agrarian castes within them, had become critical to the project of nation state-making. The discourse of food security and providing cheap grains was germane to establishing the legitimacy of the state while it focused on industrial expansion. Primarily representing the interests of medium and large cultivators, the farmers' unions in the Green Revolution regions, including the BKU in Punjab, therefore articulated the mobilising discourse of 'urban bias' in national policies. This discourse, on the one hand, attempted to forge a unified rural and agrarian political subjectivity nationally, and on the other hand highlighted regional exploitation revealing the tensions of the federalist state structure. Together, 'Green Revolution' statist practices and farmers' mobilisations that emerged in response to these practices had the effect of suppressing the agenda of land redistribution and structural agrarian reform.

The emergence of these populist mobilisations though also indicated the increasing marginalisation of rural middle classes in the statist political coalition that had led many scholars to characterise the post-colonial Indian state as an 'intermediate regime'. The 1980s was a period when structural reforms such as the agenda of land redistribution began to be replaced by populist welfare politics. Anti-poverty and public works employment programs sought to contain the discontent generated by the deepening social inequalities through Green Revolution and industrial expansion that characterised the developmental decades and inaugurated the era of neoliberal statist policies. Populist movements like the BKU were not simply reactionary and seeking to retain their class privilege in their immediate locales. They were also expressing discontent at the failure of the developmental promise of upward mobility. These aspirational politics transformed into a politics for survival as material degradation and social crisis precipitated by the Green Revolution deepened. Episodic

protests by various factions of the BKU in Punjab in recent years have been mobilised against land acquisition, delays in crop procurement by state agencies, demanding compensation for crop damage due to unseasonal rains or pest attacks, and for households where farmers' have committed suicides due to economic distress. Their mobilisations though have not developed any substantive prospective agenda that indicates any significant shift from their earlier demands for greater input subsidies and support prices.

By contrast, prefigurative agro-ecological politics spearheaded by KVM is counter-hegemonic as it consciously seeks to make an epistemic intervention through practical transformation enacted by farming households. While shaped by anti-globalization discourse of the neoliberal conjuncture, their organising also incorporates the legacy of agrarian resistance that articulated a discourse of rural and regional exploitation within a nationalist framework. KVM's narrative of crisis has successfully established the relationship between production practices and the crisis of socio-ecological reproduction, particularly by centering the connection between declining health and agro-chemical intensive farming practices. This, in turn, makes it possible to recognise common conditions of exploitations across social groups. This recognition, however, has not yet translated into cross class alliances in practice. Further, the individuated and economistic structuring of work entrenched through chemical-intensive and mechanised farming has made it extremely difficult to foster collective practices even among the Sikh *Jat* landowning farmers.

The ecological holism encapsulated by KVM's discourse of a 'civilisational crisis' translates into prefigurative political agenda of practical transformation across the realm of production and social reproduction. It seeks to counter the techno-politics of compartmentalization that set the terms for and produced a fractured landscape of resistance represented most

prominently by factions of BKU in Punjab. The political idiom of prefiguration that rejects class and statist politics signals a radical rupture but has had limited resonance so far in terms of concrete outcomes such as the large-scale shift toward natural farming practices and healthy food consumption. However, the holistic mobilisation discourse has provided a vocabulary for comprehensively understanding and articulating the current crisis and shifted the public discourse beyond a focus on productivity and production.

CHAPTER TWO

TECHNO-POLITICS AS PRACTICES:

REVISITING THE 'GREEN REVOLUTION' IN PUNJAB THROUGH THE LENS OF WORK

I. Introduction

KVM's critique of the Green Revolution foregrounds the rupture and repair of socio-ecological relations on the political agenda by calling for a transformation of food production and consumption practices. Prefiguration through such practices is both a politics of recognition of the material impossibility of continuing with current forms of chemical-intensive farming, and a constructive politics to chart an alternative pathway through sustainable agroecological farming. As I argue in chapter one, the mobilisation strategies of KVM mirror the exclusions of the techno-politics of the Green Revolution. The limitations in translating the counter-episteme they offer into practical possibilities reveal the structuring force of historical processes. Prefiguration, however, focuses attention on the relationship between politics and everyday life. In this chapter, I draw on oral histories that describe the early Green Revolution period, and the following decades of transformation in villages of Faridkot and Bathinda district to trace everyday transformations. These oral histories articulate the experiences and evaluations of changes in cultivation practices with the adoption of HYV seeds and agrochemicals. In these experiential narratives, the transformation of social relations, the material landscape, and production and consumption practices are interwoven. Together, these constructions of changing life-worlds articulated by men and women reveal invisibly unfolding gradual alterations of everyday practices from

diverse standpoints. These less spectral alterations are critical for comprehending the present experiences of crisis and emergent forms of political agency.

Borrowing the term ‘life-worlds’ from Dipesh Chakrabarty (2000),[38] I repurpose it here to emphasise the embeddedness of production and therefore labour practices in social reproduction. I argue that narratives of changing life-worlds and collective social memory stress the process of rupture between production and social reproduction through deepening commodification. As Nancy Fraser suggests, social reproduction encompasses not just processes of care and affective labour, and reproduction of labour power, but ‘the human capacities available to create and maintain social bonds, which includes the work of socializing the young, building communities, of reproducing the shared meanings, affective dispositions and horizons of value that underpin social cooperation' (Fraser, 2014: 542). The question of ‘horizons of value that underpin social cooperation' has become significant given the focus of prefigurative politics on place-based ecological sustainability and autonomy, premised on a critique of erosion of community through statist interventions.

The lenses of labour practices, work and ‘life-worlds' allow us to historicize the conditions under which the current prefigurative politics for ecologically sustainable farming have emerged as well as the exclusions it engenders. The experiences and memories of those who laboured on the land without ‘ownership’, invisible on the landscape of post- Green Revolution resistance, reveal most poignantly how labouring in the fields was embedded in social reproduction, and the disruption of this connection. Landless workers and cultivators are excluded from the grassroots politics of sustainability as structural conditions inhibit their participation, even as the practices they elaborate in their accounts of the early Green

[38] Chakrabarty (2008) uses the term ‘life-worlds' to describe the non-secular activity that is rendered as labour or work under capitalism, and is represented as such in historiography.

Revolution period hold the kernels for reviving just ecologically sustainable farming. Landowning farmers, on the other hand, were both the beneficiaries of Green Revolution interventions, and are now the constituency that is targeted for enacting a shift toward sustainability. Landowning farmers' experience of exploitation structured through the commodification of farm inputs, displacement of knowledge production off the farm, and pricing of agricultural commodities, borrowing from Sidney Mintz (1986) is more 'mystical', that is a result of unseen forces. Centering the transformation of labour practices analytically thus allows for qualitatively specific form of exploitation experienced through such a process.

Without using procrustean class categories, thus, I examine experiences and perceptions of interactions with the material and social environment, to understand the forms in which exploitation is experienced, and how political subjectivities are formed (Scott 1991).[39] Commonalities in qualitative experiences of exploitation emerge across generally predefined social classes at the present conjuncture. For instance, women from landless and landowning households evicted from the fields with the shift away from labour-intensive cotton cultivation experience loss of autonomy, and recall their own centrality to the household economy in the era of relatively decommodified social reproduction. Their accounts also share affinities with the elderly generation of farmers, who are aware of an alternative way of farming embedded in social reproduction, based on their experiences of the pre/early Green revolution years. These crosscutting affinities across conventional class categories are a reminder of the singular structural processes within which seemingly divergent but related life-worlds unfold. They also reflect the mutually constitutive and dynamic character of labour practices, knowledge, and social relations within ecosystems (Carney 1992).

[39] As Joan Scott argues rendering of 'experience as evidence' with the objective of highlighting marginalised voices can end up reifying class identities, where in the last instance relations of production become deterministic for political struggle (1991: 777).

Critical analyses of the Green Revolution pointing at increasing class and regional inequalities and environmental degradation surfaced in the early years of the Green Revolution in India, tempering the euphoric accounts of dramatic increases in food grain production (Frankel 1971; Griffin 1974; Shiva 1989). The Marxian analytic of rural class differentiation over-determined the economic and political analyses of the Green Revolution. Consequently, political agency, or the lack thereof, was inferred through objectively defined class positions neglecting subjective experiences of exploitation (Rudolph and Rudolph 1987; Byres 1981; Dhanagare 1987). Within the agrarian studies Marxist political economy framework, the attention to productive forces was rare (cf. Amin 1982; Pandian 1987).[40]

Moving beyond methodological nationalism, recent scholarship on the 'Green revolution' has emphasised the significance of knowledge politics, revealing the assumptions and political processes underlying technocratic post-colonial development practices, and situating them in the global political economy historically (Cullather 2010; Baranski 2015; cf. Perkins 1997; Kloppenburg 2004). These studies provide useful insights on the elision of democratic processes and the foreclosure of politics of social equity through the unfolding of techno-politics. These critiques, however, reinforce the assumptions of such techno-politics in their analytical frameworks. Privileging of knowledge politics in the institutional domain neglects the transformation of quotidian life-worlds and the multiple power hierarchies that shape them. As Raj Patel (2013:26) argues, the most fundamental foreclosure has been a lack of analysis of social reproduction, making invisible the loci of resistance that did not have

[40] Terry Byres (1981), for instance, does discuss the labour process in terms of how biochemical innovations pave the way for mechanisation and the political implications of regional differences in wage labour to family labour ratios. However, this analysis of the elements of the labour process is nested within the overarching framework that privileges the assumption of class polarisation.

effective outcomes. Accounts of the Green revolution that claimed it was a success, focussed on productivity, adoption of the technological package and its consequences, but these themes also permeated critical analyses, leaving out the localised politics of resource use and access and the attendant transformation of socio-ecological relations.

Labour practices, as an analytical point of departure, is a political inversion in the context of a historical trajectory that reproduces the division between knowledge production and embodied labour through their hierarchical relationship. As Schneider and McMichael (2010) suggest the separation of the natural and social worlds in social theory has translated into an exclusive focus on social relations of production and reproduction. They call for a methodological focus on practices of labour as a corrective. Paying attention to the nitty-gritty of production practices not only sheds light on human-nature relations but also on the specific historical trajectories in which exploitation is situated and experienced. As Akhil Gupta (1998) argues "shifting the focus from knowledge to practices is also to shift from cognitive conceptions of culture toward those which emphasise the embodied and enacted realities of the postcolonial condition." Moving beyond the conceptual binary of indigenous/scientific knowledge in agriculture, Gupta suggests that farmers in the North Western Green Revolution belt employ hybrid discourses to explain their decisions and practices. The messiness of these practices reflects cultural and strategic choices that challenge the inadequacy of theoretical framings. More significantly, though they reveal the structural constraints as well as elements of marginalised moral economies. In Gupta's account, the processes through which these hybrid practices come into being, and their political significance, that is, their relationship with populist agrarian politics of the national ruling regime and farmers' mobilisations in the 1980s, remains unspecified. In other words, these hybrid practices are not situated within a historical trajectory but staged as an

'anthropological spectral present' as Veena Das puts it (1989:324). Social relations are, therefore, analytically severed from the process of political change.

Building on scholarship that focuses on agrarian practices, I discuss labour practices situated within narratives of change that outline and evaluate a remembered past in relation to the present crisis.[41] These experiential narratives articulated from the situated standpoint of caste, class and gender, and filtered through the prism of the present agrarian crisis, suggest nonlinear and ambiguous trajectories of mobility, and changing notions of well-being and status. They also provide access to practices and ways of being that are now invisible on the material landscape. Stories of changes in cultivation practices through the unfolding of 'Green Revolution' are interwoven with changes in food and consumption practices, in the ecology, rising expenditure on education and health and ritualistic obligations, and restructuring of the gendered division of labour, familial and village social relations. These subjective histories challenge the existing compartmentalized bureaucratic, economic, agronomic, and social science accounts of the period in significant ways, and provide insights into the constitution of political agency.[42] The relationship of labour practices with organised collective politics is concretizing at the present conjuncture with pre-figurative sustainability politics that explicitly and self-consciously employs 'practices' as the means for mobilisation, shifting from a nationalist to a regionalist framework.

[41] As Walter Benjamin (On the Concept of History, 1940) writes, "to articulate what is past does not mean to recognise "how it really was." It means to take control of a memory, as it flashes in a moment of danger."
https://www.marxists.org/reference/archive/benjamin/1940/history.htm

[42] Murray Leaf's Song of Hope (1984) is one of the few anthropological accounts of a Punjabi village in the early decades of the Green Revolution, which provides a thick description of everyday transformations. His thick description nevertheless analytically separates the social, cultural, economic system and the village ecology.

The radical transformation in cultivation practices within living memory for many is interwoven with changes in the social and material landscape. These memories, while based on individual experiences, particularly for elderly men and women, reflect a shared regional discourse (cf. Gold and Gujar 2002, Skaria 1998). Beyond expressing nostalgic loss for the quality of food, healthier environment and a sense of community, differences within this shared discourse emerge along caste and gendered lines. For those more deeply engaged in the work of social reproduction because of gendered norms, class position or generation, the understanding of change is 'fundamentally ecological in its sensitivity to the web-like interconnectedness of concurrent transformations' (Gold, 1998:168), offering a counter-episteme to techno-political frameworks. Yet, structural constraints such as the inability to access land or gendered and caste norms prevent them from mounting an effective collective agrarian politics. In contradistinction, landowning farmers entrenched in the commodified agrarian practices and developmental discourse of the Green Revolution, invoke correspondence between moral and environmental degradation– in terms of the inevitable loss of cultural values.

With the deepening agrarian crisis since the 1990s, farmers are recognising the impossibility of further profitable intensification and are therefore adopting individual strategies to combat the crisis (cf. Blaikie 1985). Seeking to invest in occupational diversification for the younger generation, restoring the long-term sustainability of the land is costly and no longer a priority. The few farmers who have shifted to organic and natural farming have so far been focused on de-commodifying their individual production practices, unable to revive a collective work ethic and practices of material commoning that would mitigate structural constraints faced by the majority (cf. Van der Ploeg 2010). The experiential narratives and memories of the

transition explain these dissident trajectories and the structuring conditions that produce them in a relational framework.

In what follows, I begin by outlining how the technological treadmill was instituted, resisted and normalised in Malwa, the cotton-belt of Punjab, by men and women located differentially in the social hierarchy. I then discuss the subsequent de-valorisation of agrarian work. Farmers experience loss of control over cultivation practices through simplification of the labour process, a process conjoined with the internalization of new forms of work ethic and formation of new aspirations. The specific form in which the labour process was altered highlights not only the dialectical relationship of human-nature interactions, particularly in the history of cotton production in Malwa, but also between production and the total system of reproduction (Watts 1983). And finally, I discuss practices that are no longer visible on the material and socio-political landscape transformed through the Green revolution decades. Constituted as the village material and social commons, these practices are present in the shared collective memory and particularly visible from the standpoint of those marginalised in the sphere of agrarian production, that is women and landless households. The narratives of marginalised subjects foreground the deepening commodification of social reproduction practices and the changing forms of gendered caste hierarchies that structured the lost moral ecologies. Hence, they are critical resources for challenging nativist constructions of ‘culture' and ‘community'.

II. Normalisation of the technological treadmill in Malwa

Cotton cultivation is critical to the historical trajectory of agrochemical intensification in the Malwa region in South-Western Punjab. Unlike other regions in Punjab (Doaba and Majha)

where wheat-rice mono-cropping rotation is pervasive, farmers grow cotton in this semi-arid region because of sandy soils and brackish water. Despite larger average operational landholdings, Malwa is perceived as 'backward' within Punjab because of less occupational diversification and greater dependence on agricultural incomes among rural households.[43] Emigration from other regions of Punjab beginning with British army recruitment, and continuing into the postcolonial period generated remittances that supplemented agrarian incomes. In the last three decades of growing agrarian distress, the trend toward emigration has gathered momentum in Malwa as well. The trajectory of cotton cultivation in the twentieth century in this crisis-ridden region illustrates the cascading effects of commodification and techno-fixes that have resulted in farming households losing control over production and social reproduction.

Locally, most people today suggest that problems with cotton cultivation surfaced in the mid-1980s. The crop was damaged year after year from boll weevil pest attacks, locally known as the 'American bollworm'. Despite the heavy use of pesticides these pests were uncontrollable and destroyed the crop into the late 1990s. With the introduction of genetically modified Bt cotton in 2004, yields improved significantly for a few years. Bt cotton is now grown on more than 95% of the land under cotton cultivation in Punjab. As Glenn Stone (2011) has also argued, the adoption of Bt seeds by a large number of farmers was not necessarily a sign of 'success but was symptomatic of their desperation resulting from the precdeding crisis of cotton crop failures. Farmers, however, began to report a decline in yields again since 2007. While Bt cotton variety was treated to resist the American bollworm, other pests became

[43] Malcolm Darling while remarking of the developmental successes of British rule cites the south-west as an exception. "The peasant is decidedly much better off than he was seventy years ago when the province came under British rule. Except in the south-west, where great poverty still prevails, his standard of living has risen materially, and he is better fed and better clothed, and to some extent better housed than he was before." (1977: 249)

active. Further, the price of cotton had been extremely volatile in the second half of the 2000s.

In September-October 2015 large-scale destruction of the Bt cotton crop by 'white fly', a sucking pest, reminded many of the indestructible bollworms in the 1990s.[44] Widespread protests by farmers groups blocking roads and trains, demanding compensation forced the government into action. In the following season in 2016, the government has been promoting sowing of indigenous cotton seeds through its extension centres (Pal 2016). Beyond offering compensation the provincial government is encouraging farmers to revive indigenous varieties of cotton on a large scale by making the seeds available through the extension system. While the government is reluctantly beginning to acknowledge the problem, large numbers of farmers in the region are abandoning cotton to shift to the water-guzzling wheat-paddy rotation. [45] State agencies procure paddy, unlike cotton, at a minimum support price and it, therefore, provides a secure income. Paddy cultivation is also less labour-intensive.

Elderly men and women contrast the flooded paddy fields with their memories of semi-arid, desert-like landscape populated with slow growing tree species such as *jand* (Prosopis cineraria) and *kikar* (Acacia), and the rain-fed mixed cropping system that included indigenous varieties of wheat, cotton, barley, gram and pulses, prior to the Green Revolution. Some, particularly in Bathinda, recall the sandy hillocks that they levelled for extending cultivable land as hybrid wheat and cotton monocultures replaced the mixed cropping system.

[44] Nearly two-thirds of the sown crop across the state was destroyed in October 2015 (Varma and Bhattacharya 2015; Gera 2015).

[45] In both Faridkot and Bathinda districts, farmers have been shifting from cotton to paddy cultivation in the last three decades. In Faridkot, this shift is more widespread unlike Bathinda, which is further South with saline groundwater and desert soils. According to a regional extension official, 10% of the land remains under wheat-cotton rotation in Faridkot, and 40% in Bathinda district.

Irrigation, the building of canals and then tube wells, has radically transformed the physical landscape within seven - eight decades. The desert-like landscape they describe is as unfathomable today, as it would have been for them to imagine flooded rice fields in this region a few decades ago. Not part of the local diet or landscape, paddy becomes an important crop in Punjab through the green revolution period. In villages in this study, cultivation of rice is being taken up by a significant number of farmers only in the last two-three decades, as the crisis with cotton deepened.

Transformation of cotton cultivation is germane to narratives of the transformation of life-worlds in the Malwa region, through the colonial and post-colonial period. The Colonial state introduced American varieties of cotton as early as the 1830s-1840s, prior to the annexation of Punjab in 1849.[46] In Punjab, new seed varieties and associated cultivation practices were introduced in the beginning of the twentieth century. The British administrator, Malcolm Darling (1977:152) writes in his treatise on Punjab province over 80,000 *maunds* (1 Maund =37.31 kgs) of wheat and cottonseed were sold in 1929-30. These 'pure seed' varieties in his words could be obtained from approved agents of the Agricultural Department. Wheat followed by cotton was the most important crop in the province.

Cultivators have experienced volatility and uncertainty associated with wheat-cotton monocultures since the beginning of the twentieth century. The following description by Malcolm Darling of the introduction of American cottonseed variety 4f in Punjab and what followed is in many ways uncannily similar to narratives articulated by cotton producers in Malwa describing the upheaval in the last few decades. I quote from this passage extensively

[46] Sven Beckert details how these early efforts to establish experimental cotton farms by US-born cotton planters failed as monocultural cultivation practices were incompatible with rainfall patterns and too capital-intensive for Indian peasants, who resisted in covert and overt ways (2014:125-131).

to show that, while extolling the virtues of scientific farming and improved seed varieties, Darling's ruminations nevertheless reflect an awareness of ecological constraints and the limitations of replicability, a fundamental tenet of technocratic interventions.

> "A variety of American origin technically called 4F and popularly known as Amreekan has been discovered which has a longer staple which can be used in Lancashire. From a single plant in 1908, it is grown on 11,31, 800 acres in 1925 because it gets a higher price…..but there is a fly in the honey that goes with all things of Western make. Can 4f be permanently acclimatized? In 1919 farmers began to complain of a mysterious disease in their cotton. In September and October plants dropped many of their flowers, bolls did not open properly, much of the lint was rubbish, and seeds developed less than they should. The result was a crop short by at least 70,000 bales of what was expected. Indian cotton, too, fared badly, but less so than American. The following years there was not much to choose between the two, but in 1921 the September rains failed, and 4f, being a thirsty plant, suffered severely. In the next four years, however, it did as well as ever: outturn and fibre were excellent, and it fetched so good a price that on a three-year average it produced Rs 40 an acre and more than its rival. Then again it came under a cloud, for the crop of 1926 proved a partial failure and that of 1928 gave the 'worst spinning results yet recorded yet.' Yet, despite all its ups and downs, it is still the most popular of the improved varieties, and of the 30,000 maunds of cotton seed distributed in 1930-31, it accounted for over 15,000. It is certainly less hardy and drought-resistant than Indian cotton but given reasonably good land, good cultivation, and sufficient water, it is as superior in yield as it is in value." (1977: pp 152)

Drawing on a social analogy as a mode of explanation, Darling nevertheless at the end identifies the regional environment as the primary source of difficulty, perhaps because his intent is to highlight the quick popularity of the seeds among farmers. That seed varieties have to be bred for higher 'yields' and traits that are commercially valuable, and ecological conditions should be 'controlled' and reshaped to support these varieties.

> "The history of the 4f illustrates the difficulties that have to be overcome before any improvement can be acclimatized in a country like India…just like the Englishman would find it difficult

> to settle in India without any deterioration of fibre, so in the vegetable kingdom it may be that improved variety of seed must eventually deteriorate for want of some essential property require on account of climate, the soil and general conditions of the country. One seed demands more water than is available, another matures too early, a third proves too attractive to the omnivorous insect, and what does well in the north may wither in the hotter south…..The Punjab climate, with its violent alterations of heat and cold, and rain and drought, is so exacting that it is not easy to develop seeds that are proof against it in every respect." (1977:152-153)

Techno-politics that is premised on the separation of social and ecological conditions, in order define discrete problems and engineer solutions, is emergent in the late colonial period, partially to deal with the discontent generated by dispossession through more explicitly violent mechanisms. In the developmental postcolonial period, such techno-politics becomes the dominant form for deepening commodification.

The centrality of agrochemicals in Green revolution farming exacerbated the volatility and uncertainties that Darling attributes to see varieties developed without consideration of local agroecological conditions. Agrochemicals are simultaneously perceived to be the cause of the insurmountable challenges posed by 'nature' and the only crutch that is accessible to farmers in their efforts to combat crop damage in the short-run. Some farmers had anticipated such a scenario as is evident from oral histories recalling the early decades of the Green revolution. Elderly farmers remember fertilizers (particularly urea) and irrigation, not the hybrid varieties as the key protagonist of the Green Revolution that brought about dramatic increases in yields. Recalling the early years of the Green Revolution, Gurlabh Singh, an 85-year-old farmer in Bathinda district with 4 acres says his family was the first in their village to start using fertilizer in 1962.

> "The *gram sewak* (government extension agent) came to our house and gave a bag of urea to my grandfather. My grandfather instructed us not to use it. After 10-12 days, the *gram sewak*

> returned and he threw the urea in two plots in our fields himself. The barley in the plots turned a lush dark green, and there was a significant increase in the yield. It impressed my grandfather and we started using urea. The *gram sewaks* advertised aggressively in the villages in those initial years. They brought bags of urea on mule carts and made an announcement in the village through the microphone in the gurudwara. I remember my uncle said at the time that a very deep hole has been dug and there is no getting out or going back now. Now several decades later, the government is appealing to farmers to not use excessive amounts of fertilisers and pesticides….the hybrid cotton came to our village before the Mexican wheat. With hybrid cotton, we were still intercropping vegetables and the indigenous variety of cotton for the home, but once the hybrid wheat variety was introduced, mixed cropping of wheat with gram and mustard stopped. It was not possible anymore. The gram crop did not respond well to the fertilizer, and a large amount of water required for the hybrid wheat did not suit the gram crop. The traders asked us not to bring mixed grains, only cleaned and separated wheat.

The reluctance of farmers to adopt the HYV package in the 1960s when it was first introduced has been noted even in regions of Punjab where it was documented as a success. Bureaucratic accounts and the innovation diffusion literature attributed this reluctance to illiteracy and an irrational attachment to old ways of life (cf. Sivaraman 1991). More nuanced analyses, however, show that farmers selectively adopted elements of the package based on utility and their existing material conditions. As Barbara Harriss (1974) shows in her analysis of villages in Punjab's Ludhiana district, that the planners and experts'' logic of maximizing food grain yields did not resonate with farmers who based their decisions on utility and at times profit maximization. Farmers used fertiliser in much smaller quantities than the recommended dosage and decided on proportions based on their prices. Nitrogenous fertilisers, available through government cooperatives at a subsidized rate, were used more than phosphate supplied by private traders and therefore more expensive, a trend that continues today. According to a recent government report, imbalanced fertiliser use in terms of NPK in Punjab is extreme, with a consumption ratio of 31.4:8:1 against a desirable one of 4:2:1 during 2014-

15.[47] The Indian government promotes such an imbalanced use as it controls the price of urea (nitrogenous fertilizer), whereas, the deregulated DAP (diammonium phosphate) and potash are exponentially more expensive.[48]

The increase in yields of wheat coupled with the unresponsiveness of other native crops such as millets, gram and barley to fertilisers and excess water, as well as the pressure from traders to bring in clean wheat initiated the shift toward monocultural cultivation. With the monocultural wheat-cotton rotation in place by the late 1970s, the incidence of damaging pest attacks increased. Agrochemicals, pesticides and insecticides, began to be used a decade after fertilizer use had become widespread but were mostly sprayed on cotton initially. As Gurlabh Singh points out,

> "First-generation pesticides like Endrin were first used only on hybrid cotton.[49] People were scared to use them for food crops. We thought of them as poison and most farmers refused to touch them. There was a hired specialist who came to the village for spraying pesticides. As a precautionary measure, this specialist would drink lemon water, bathe in mustard oil so that any chemical that touched the skin would slip off. Hired specialists continued to do the spraying for a long time. These pesticides were highly toxic. We did not go to the farm for 10-15 days after they were sprayed. Endrin had a powerful stench and induced nausea even after 10 days had passed since spraying. Women were not able to tolerate it, and many women from *zamindar* households stopped going to the fields for cotton-picking like they used to."

[47] Twenty-ninth report. Impact of chemical fertilizers and pesticides on agriculture and allied sectors in the country. Standing committee on agriculture (2015-2016) sixteenth Lok sabha. Ministry of agriculture and farmers welfare (Department of agricultural research and education).

[48] The declining response of crops to fertilizer use has been attributed to this imbalance as the amount of food grain produced per kg of fertilizer applied has declined from around 13kg in the 1970s to less than 4kg by 2010, according to fertilizer ministry data (Bera 2017).

[49] Endrin is a part of the Dirty Dozen list and was banned under the Stockholm Convention in 2000 (Johansen 2003).

Another farmer recalls how birds perched on trees would drop dead when Endrin was sprayed in the fields. Narratives of elderly farmers like Gurlabh Singh reflect a conflicted relationship with fertilizers, pesticides, and machinery. The resistance they highlight was not 'irrational' but premised on manifest transformations of their valued ways of life. For instance, explanations of initial resistance to fertilizer use cited the interruption of the mixed cropping system that was critical for fulfilling the household's consumption needs. Gram, millets and lentils intercropped with wheat did not thrive with the application of fertilizers. Time and again elderly people proudly remarked that they bought nothing but salt and tea from the market in those early decades. Consumption needs of the household shaped production practices in the fields. Writing in 1974, Barbara Harriss also points out farmers rejected HY varieties of wheat such as Mexican red wheat that did not match the local palate. After the government established a procurement system, the minimum support prices for HYV wheat in the early 1970s varied between Rs 76-81 per quintal, and the unofficial wheat price varied between Rs 70-80 per quintal. But the indigenous wheat variety was being sold at a higher price of Rs 110 per quintal, indicating the continued high demand. Over time though assured procurement by the government proved to be the most significant driver for adoption of HY varieties. In the present day, when indigenous wheat varieties have disappeared from the fields in Punjab, well-off farming households are buying these indigenous varieties from neighbouring states like Rajasthan, while they sell their own wheat in the market. Boards advertising the arrival of indigenous varieties of wheat from Rajasthan and Madhya Pradesh are displayed everywhere in market towns like Bathinda.

While the government extension agencies had to work aggressively to overcome the resistance to ensure widespread adoption of HYV seeds and fertilizer, this was not the case with pesticides a decade later. Farmers perceived pesticides and insecticides as dangerous,

but disruption of regional ecology with monocultural cultivation had made them indispensable. Unlike, fertilizers and seeds, they were not available through the government extensions system at subsidized rates, indicating the beginnings of cultivators' entrapment in the technological treadmill. As one farmer pointed out, 'as crop damage due to pest attacks became widespread and persistent, the government extension agents disappeared from the villages.' The material conditions thus eliminated the need for active governmental mechanisms for persuasion. Resistance gave way to internalisation and normalisation of agrochemicals reshaping socio-ecological relations.

Farm workers took over the dangerous work of spraying pesticides performed by hired government specialists with protective gear initially. The fear of the chemicals was so pervasive that many farmers did not let their *Siri,* (semi-permanent worker attached to a landowning household), do the spraying either.[50] Surjeet Singh, a farmer with 4 acres who employed a *Siri* on a crop-share basis, says that most *siris* refused to do the spraying because they had some leverage. Daily wage labour, on the other hand, had no choice because they had to earn money to meet their consumption needs. Others suggest that it was possible for daily wage workers to refuse as they could go and work on someone else's fields, whereas the *Siri* obligated through a patrimonial relationship with landowning households had a secure livelihood but little autonomy. The fear was the result of several instances of intoxication and dizziness, and even death due to accidental contact with pesticides. When men returned from the fields after spraying, women in the household would stay awake and periodically check

[50] 'Siri' is a term used to refer to farm workers who were attached to one farming household on a crop-sharing basis. In the late 1970s and 1980s, with rising productivity, there was a shift from payment through a fixed share in the crop to an annual wage contract. Later, as tractors and combines began to be used, and the need for hard physical labour eliminated, the Siri system disappeared. Barring very large absentee landowners, now most small and medium scale farmers hire only daily wage labour for certain operations during the cropping cycle.

on them to see if they were breathing. The fear gradually disappeared, partly because the subsequent generation of pesticides were not as toxic, and did not have immediately visible effects such as dizziness or nausea. Aerially sprayed by the government in the fields in the 1980s, DDT was banned in 1998 by the Indian government.

The harmful effects of chemicals through long-term exposure are visible on the bodies of farm workers. The pervasive use of agrochemicals has eliminated the option of refusal to spray pesticides, which many elderly farm workers recall exercising in the early years. Mansa Singh, an elderly former *Siri*, points at his swollen hands due to decades of throwing urea in farmers' fields. He says,

> from 1.5 bags (1 bag contains about 40 kgs) of urea per acre, we have now moved to 4 bags of urea per acre. We never used gloves, not then, not now. But in the early years, people were more cautious. We used home remedies to combat harmful effects, constantly washed our hands. I remember not sleeping for hours after applying pesticides. Now, these chemicals are in our water, in our food. You will find empty chemical containers in every household that are being used for storing water and other things. Gradually that fear disappeared. Now the situation has reversed - hired workers to prefer to use weedicides, or throw fertilizer, but they are not happy if they are asked to carry cow dung."

After decades of excessive use of agrochemicals, there is widespread recognition of deterioration in the quality of soil, and contamination of food and groundwater. Increasing incidence of diseases particularly cancer and reproductive disorders is a frequent topic of discussion during conversations in the village, and people attribute these to agrochemicals and changes in cultivation and food practices.[51] However, it does not inspire the same fear as

[51] This correlation is now being recognized by the government as well. See Twenty ninth report. The impact of chemical fertilizers and pesticides on agriculture and allied sectors in the country. Standing committee on agriculture (2015-2016) sixteenth lok sabha. Ministry of agriculture and farmers welfare (Department of agricultural research and education).

the early generation of pesticides, which caused dizziness, and even deaths that led many workers to resist their usage or employ precautionary measures. Today people acknowledge the harmful effects of agrochemicals but conceive of it as an occupational hazard that is unavoidable. The perception of harm has been diluted, as effects of agrochemicals are not being experienced in an immediate way, although this is changing with growing incidence of cancer and its widespread coverage in the media. The health implications of agrochemicals are at the forefront of KVM's mobilisation aimed at altering perceptions of risk, lack of control and apathy. KVM activists constantly seek to redeploy the term 'poison' as opposed to 'medicine' to refer to pesticides and insecticides in colloquial usage.

Farmers often compare weather patterns and agrochemicals while discussing variability and control in cultivation practices. The resilience of previous mixed cropping system was because of its ability to accommodate variability of weather conditions, and because household consumption patterns through the year were in sync with production. When crop damage due to unseasonal rains or drought did occur, farming households accepted it as fate and experienced it as a collective loss (Vasavi 1998). With agrochemicals, farmers suggest there is a semblance of exercising control over adverse conditions, but the control lies with others. They are dependent on being able to access expert knowledge that is commodified knowledge, which is mostly accessible through pesticide dealers and shopkeepers, and availability of cash or access to credit. Risks of cultivation are now borne individually and therefore crop damage is also experienced as individual failure and shame in this context.

While male cultivators, both landowning farmers and farm workers, foreground the transformation of production practices in their memories, elderly women, particularly from landowning households, recall more vividly what was eliminated through these

transformations. Situating agrochemicals in the longer trajectory of agricultural intensification, Malkeet Kaur, an elderly woman in her 80s married into a wealthy landowning household when she was 12 years old, says,

> When I was a child this area was not irrigated and there were no chemicals. The land was dotted with sand dunes and most people inter-cropped rain-fed mustard, grams, *taramira* (a fodder crop), sugarcane, cotton and wheat. There was only one crop in a year and the land was left fallow in a rotation. When the rains came the fields would turn bright and green. We (women) went to the fields and chewed on sugarcane while helping with picking cotton or weeding…gradually things began to change. The sand dunes were levelled, to make way for the sowing of paddy. Farmers started using pesticides and insecticides, to control bollworm attacks on cotton. When the bollworm attacked, no one knew what to do, so they did as they were told by extension workers and agrochemicals shopkeepers. The cycle began, the insects kept increasing and the chemicals kept increasing as well. When the bollworm attacks started destroying the cotton crop every year, farmers began to shift to rice. When insecticides began to be used, there was just monocrotophos,[52] and we used that for everything, regardless of the crop or the insects. But it stopped working after a while and had no effect on the pests. For a year or two in the early 1980s government helicopters sprayed DDT in our fields. They would come to each house in the village to record which farmers wanted their fields sprayed and then charge a small fee. A lot of trees were cut down during those years as well so that the helicopters and then tractors could move around easily. After the DDT spraying stopped, pest attacks increased and were even more persistent. Then labour began to be hired to spray in the fields with small tanks on their backs."

Capturing the transnational processes at play, in the end, she laughs and remarks, "the American bollworm occupied our fields, and my grandchildren migrated to America." In Malkeet Kaur's narrative, conjoins socio-ecological transformations, with changes in production and social reproduction practices. Associated with labour-intensive cultivation in the collective memory, cotton evokes qualitatively contrasting yet connected chronologies. Middle-aged male farmers shifting to paddy associate cotton with volatile prices and rising

[52] Monocrotophos is an insecticide meant primarily for the cotton crop, marked as red, which is the highest toxicity level, but is now widely used on food crops as well.

costs of cultivation. Farmers use pesticides most intensively on cotton, and persistent crop failures have been recurrent since the shift from improved seed varieties to American hybrids and most recently the shift to Bt cotton.

In contrast, for women from landholding households, as well as landless labouring men and women, who have seen the early years of the Green Revolution decades, the salient memory is that of cultivating indigenous cotton that was more labour-intensive. During harvest, indigenous cotton plant yielded flowers every week, and therefore men, women and children were in the fields picking cotton. Sharing work was also a common practice during the picking season, as people worked on each other's fields. Malkeet Kaur and other women of her generation also talk about intercropping indigenous cotton with vegetables for home consumption, and how these varieties provided sufficient fodder for animals. They recall spinning and weaving cloth with the short-staple indigenous cotton in groups to meet the everyday needs of the household. Therefore, women associate indigenous cotton not with monetary losses and ecological degradation, but with a loss of a sense of community, free movement between home and the fields, and a relatively decommodified life. Excluded from the realm of paid labour in the commodified economy, their narratives reflect what E.P. Thompson called the 'legend of better days'.[53] In these legends or memories, their life-worlds were constituted by useful work, the product of which they partially controlled and could consume directly. Women from landowning families were at the receiving end of double displacement as their work was confined to the limits of the home with commoditised inputs and machinery reshaping the labour process and the farming system as a whole. By virtue of being marginalised in the new economy, their articulated memories render the connectedness

[53] In Making of the English Working Class, E.P. Thompson characterises stories about 'personal and …close relations" between "small masters and their men", better quality of life and reflected "deep attachment to the values of independence" as 'legend of the better days' (1964: 302-305).

of socio-ecological reproduction visible. These memories help us comprehend more clearly the effects of techno-politics underpinning Green Revolution practices that work by 'misapprehending the mixed ways in which things happen' (Mitchell, 2002: 44). The rationalizing and universalizing logic of techno-politics is confronted with the messiness of social practices, an encounter that is not captured adequately in compartmentalized social science accounts. Critical accounts that document the social and ecological impact of the Green Revolution are complicit in reinforcing the exclusions of such techno-politics by not drawing attention to what has been marginalised and eliminated. They exclude precisely what the memories of men and women that I highlight in this chapter reveal, that is, the embeddedness of production in socio-ecological reproduction and the enactment of the ongoing process of disembedding. In this way, they become emblematic of techno-power, which as Timothy Mitchell argues proceeds through 'misapprehension, which produces the effect of separate realms of reason and the real world, ideas and their objects, the human and the non-human' (2002:44).

III. Devaluation of Agrarian Work

Simplification of agrarian work resulting from the commodification of inputs, and severing of knowledge production from in-situ practices, has led to the loss of control over the labour process as the narratives discussed above suggest (cf. Scott 1998; Kloppenburg 2004). The simultaneous commodification of social reproduction practices conjoined with un-remunerative prices for agricultural produce has meant that rural farming households have lost control over their own life-worlds. Non-remunerative prices indicate devaluation of agrarian work and the loss of political voice for the once dominant agrarian classes that exercised power as an interest group. In this section, I discuss how landowning Punjabi

households experience the devaluation of agrarian work. This devaluation is reflected in the struggle for ‘white collar' salaried jobs among the youth in landowning households. Status is no longer associated with working on one's own land but by obtaining an education that would lead to a job.

Amarjeet Singh, an elderly farmer with 4 acres, who now practices natural farming and runs an indigenous seed bank in his village, recalls a time when people with land preferred farming to government jobs.

> “When I started farming in 1977, I had a job as a stenographer. I quit and came back to farming my family land. In those days people in our community preferred farming if they had land, or could afford to buy land. You could make only Rs 300-400 in a salaried job, whereas with farming you could make a profit and improve your situation in life. I made enough money with farming to get rid of household debt in a few years. My peers who had government jobs were envious and would have preferred to farm if they could afford to buy land. Sikh-jats were not happy to work for someone else. It is hard to imagine today when young people even from landed households scramble even for the lowest ranking jobs. People pay bribes to enrol their children in the army or get any kind of government job. Some even sell their land to pay hefty sums to middlemen who promise to get their children petty jobs in Canada. The shift toward cultivation by nuclear households led to fragmented landholdings and less capacity to manage farms without machinery or hired labour, especially since the younger generation is unwilling to farm.”

Autonomy for elderly farmers like Amarjeet Singh was not simply about ownership of land, but the ability to make decisions about cropping patterns, managing the labour process, and ensuring that household consumption needs were met. In contrast, government jobs signified working for someone else and seen as incommensurate with their caste status. Conceptions of autonomy were clearly casteist, as working for others was associated with Dalit landless men and women. It is noteworthy that in the early decades of the Green Revolution, using family

labour was preponderant in Punjab (cf. Ruldolph and Rudolph 1987; Byres 1981).[54] As large landowning households accumulated surplus, withdrawing women from the fields and hiring wage labour to carry out a majority of the tasks became a status-marker. The withdrawal of women became a widespread social norm among Sikh Jat households, percolating to small and marginal landowning households as well. Hiring wage labour, particularly migrant labour also became more widespread in Punjab with the advent of paddy cultivation which in my study villages only happened in the late 1980s onward and has become widespread in the last 15 years. Punjabi cultivators were not adept at practices such as transplanting which were specific to rice. The transformation of labour process with greater mechanisation, particularly use of tractors, weedicides, pesticides and insecticides contributed to women's confinement to the home.

Both farmers and farm workers in Malwa converge in stressing how practices on the farm have now become more depersonalized. The commodification of inputs has made farmers dependent on representatives of agrochemical companies, shopkeepers and dealers for information about seeds, fertilizers and sprays. Work on the farm is now broken down into discrete tasks as well, often performed by different people on medium to large farms. From watering the crops to spraying of chemicals and harvesting, there is a clockwork-like mechanical quality to farming operations, dictated by access to inputs and machinery. The material unsustainability of agrochemical intensive farming is articulated in shared regional

[54] The ratio of independent cultivators using family labour to those using agricultural labour in the wheat growing areas of Punjab, Haryana, UP was 2:1, 3:1 and 4:1; whereas in rice growing areas of Tamil Nadu, West Bengal and Kerala it is 1:1, 1:1, and 1:2. Family labour was thus more important in wheat growing areas, whereas wage labour was more important in rice growing regions (Rudolph and Rudolph 1987: 352). Hiring wage labour, particularly migrant labour also became more widespread in Punjab with the advent of paddy cultivation, which in my study villages only happened in the late 1980s onward and has become widespread in the last 15 years. The transformation of labour process with greater mechanisation, particularly use of tractors, weedicides, and pesticides contributed to women's confinement to the home.

memories, but structural conditions prevent farmers as individuals from experimenting with alternative forms of farming that are skill and time-intensive. In the short term, for a majority of the farmers, their labour practices constitute a form of firefighting with the goal of maximizing yields and income to invest in moving out of farming, particularly by provisioning for higher education of their children.

Devalorisation of farm work through the developmental decades has been enacted through both material and discursive means (Vasavi 2012; Gupta 1998). The discursive denigration of agriculture through the naturalization of the notion of 'development' as transitioning out of farming is in tension with the much-touted imagery of the 'hard-working Punjabi farmer' in statist interventions. The identity of the Sikh Jat as the dominant agrarian caste have since the colonial period been defined by their status as proprietors who were also tillers of the soil. Classified as 'martial races' and 'yeoman farmers', the Sikh-jats of Punjab also constituted the majority of the British India army, and agriculture in the region was restructured to increase productivity for exports (Mooney 2013). The building of canal infrastructure, particularly in areas inhabited by pastoral tribes, and land grants for those who enrolled in the army, led many to argue that Punjabi peasant-proprietors were the 'favoured subjects' of the colonial state (Mukherjee 2005). Technical engineering that radically transformed the desert-like, semi-arid landscape through the creation of irrigation zones, was accompanied by social engineering in this 'frontier region' (Akhter and Ormerod 2015). In other words, the construction of the landowning Sikh Jats as 'progressive farmer' has deeper roots than the Green Revolution. Nicola Mooney (2013) has argued that the essentialized agrarian identity of the 'industrious and successful tiller of the soil' invoked in popular representations as well as embraced by Sikh Jats themselves today, was produced as colonial social constructs in

service of imperial objectives. As Mooney writes, “the Jats were ideologically privileged and materially rewarded for living within colonial representational categories (2013: 287)”.

Subjectivities of Sikh-jat farmers have been simultaneously shaped by the regionally specific developmental discourse of the ‘progressive farmer’, in contradistinction to the nationalist discourse of transitioning out of agriculture. The slogan ‘*Jai Jawan, Jai Kisan*' (hail the soldier, hail the farmer'), was launched in the mid-1960s during the takeoff period of the Green Revolution by the then Prime Minister, Lal Bahadur Shastri, professions to which Punjabi rural citizens have been tethered disproportionately since the colonial period. With the advent of the Green revolution practices the notion of the ‘progressive farmer’ specifically became linked to the adoption of HYV technology for ceaselessly increasing productivity, and disjointed from agrarian work. Over a few decades of the stagnation of yields since the 1980s, depletion of soils and groundwater, and frequent crop damage due to pest attacks and erratic weather conditions the ‘progressive farmers' is being recast as ‘ignorant and irresponsible' in expert narratives, and as ‘deskilled' in critical scholarship.

Attention to agrarian work practices, particularly within debates on agriculture deskilling have focused on the separation between manual and mental labour, and the severing of social learning from environmental learning (Fitzgerald 1993; Stone 2007). Conceptions of deskilling highlight implicitly or explicitly the externalization of knowledge production outside the farm and specific regional ecologies, through the commodification of the labour process and attempts to produce standardized forms of farming. They, however, neglect historical relations that shape agrarian practices and the broader discursive-material landscapes within which they are situated. As Akhil Gupta (1998) argues, farmers' embodied practices in the Green Revolution belt cannot be categorised as either indigenous or as

industrial/scientific farming. While Gupta leans toward drawing attention to the agency of farmers by employing the idiom of 'hybridity' to outline how they negotiate and explain technological transformations of socio-ecological relations, Glen Stone (2007) argues that farmers are becoming 'deskilled fad followers' as the link between social and environmental learning are severed.[55] Both these framings isolate particular production practices from the broader interdependencies in the ecosystem, and from the life-worlds that farmers and rural households inhabit (cf. Stone and Flachs 2017).

For farmers, the preoccupation with productivity is partly an expression of lack of control over prices they get for the crops. The cascading effects of the technological treadmill are most starkly visible with recurring cotton crop failures, which combined with volatile prices have pushed farmers into chronic indebtedness. When there is a delay in procurement of wheat and rice, or payment by state agencies, farmers in Punjab spill out onto the streets under the aegis of the numerous farmers' unions. There are frequent protests to demand an increase in the minimum support prices offered by the government as well. When it comes to crops that are sold in the open market, like cotton and vegetables, farmers talk about prices with the same sense of fatalism as unseasonal rain or conditions of drought. Cotton growers in Punjab are subject to transnational forces that determine the price of their crop and the cost of inputs they use such as genetically modified seeds, over which they have no control or mechanisms to ensure accountability.

[55] David Mosse (Stone et al 2007) rightly suggests that Glen Stone's critique of classic innovation-adoption theories replicates the techno-political framework that bifurcates the 'agro-ecological' from the 'socio-cultural' and that labelling farmers as 'deskilled fad followers' unwittingly becomes complicit with expert narratives of farmers as 'ignorant' and 'irrational'. Kloppenburg's (2004) characterisation of farmers as 'propertied wage labour' more adequately captures their loss of control over production practices, and the inability to deal with ecological consequences that have been unleashed over the last few decades as individuals.

The shift towards paddy cultivation more than anything expresses the need for stability. Cotton, the 'native' crop adapted to the regional socio-ecological conditions and grown for subsistence, in its new avatar has become a source of distress emerging from volatile prices and persistent crop damage. Paddy, on the other hand, while not consumed locally, provides security given its assured procurement by the state at a minimum support price. The task-based wages for transplanting are cost-effective for farmers, and overall there is a reduction in labour costs. Farmers often take on loans to invest in additional tube wells require for paddy cultivation in the hope of assured income. These changes in production practices are within the realm of the possible for farmers. Farmers, unable to exercise control over global price-setting mechanisms and cost of seeds and agrochemicals, seek to cope with the current conditions primarily by changing cultivation practices, disciplining labour and trimming labour costs. Unlike labour, farmers perceive agrochemicals as indispensable for maintaining current levels of productivity, and for preventing crop failure.

The now entrenched social norms prevent agrarian landed castes from employing family labour on the farm, particularly women, even in times of severe economic crisis. For Amarjeet Kaur's household, it became hard to continue growing cotton after their two sons joined the army.[56] Her husband jointly cultivates the family 20-acre farm with his 3 brothers in. She says,

> We used to sow cotton on 1.5 acres but decided to stop because it requires a lot of work. Multiple sprayings of pesticides are essential to control the bollworm and it is hard to find labour for cotton-picking. Earlier the rate for picking was Rs. 1 for 5 kgs, now it Rs 1 per kg. So, for every quintal, we have to pay 500Rs to labour. With Bt cotton, the bollworm attacks have reduced, but the

[56] In rural Punjab, joining the army and police has been and continues to be a preferred option for the youth. A legacy of colonial rule, when 50% of the British India army was recruited from Punjab, today the army is seen as the few remaining avenues of stable salaried employment that are available to rural youth (Fox 1985). It is common to pay bribes in an attempt to obtain a job in the army, which came up during several interviews.

> seeds cost more, so in the end the end the input costs remain high. The truth is we will only save money if we work with our hands and eliminate the labour costs.

Her husband, Gurmeet Singh, interjects to say that he personally would not object to Amarjeet working on the family farm, but others in the village would frown upon them. He recalls the days when the entire household used to be involved in cotton-picking.

> By the time my mother came with the first meal to the farm at 9 am, I had already picked two full bags of cotton. After getting done with household work, my mother joined us in the field. Only one member of the household would stay at home, while everyone else was in the fields including children picking cotton. The labour class also came really early to the fields and worked with us late into the evening. First, we picked the flowers, separated the cotton bolls. The ones that were not ripe yet were laid out on the terrace to dry. Then crop residue was removed manually to prepare the land for wheat sowing. The residue was used as fuel at home, but all of this required a lot of work that had to be done quickly. Otherwise, the wheat sowing was delayed resulting in lesser yields. Bt cotton is a longer duration crop, now the yield of wheat after sowing cotton is 30 man (1 man = 37 kgs), but for those who sow wheat after paddy instead the yield is 50 man. Rice is harvested in October, whereas cotton picking goes all the way up to December-January. So, you make more money with rice, and the wheat yields are more as well.

The rearrangement of socio-ecological relations in conjunction with and through labour practices has worked toward deepening commodification of farming. The primary enactors of these processes, landowning cultivators continue to strive to maintain their status in new ways even as their occupational identity is under threat. Gurmeet Singh adds,

> "it is not only women from landowning households that have stopped working in the fields, but men as well. We hire labour or let machines and agrochemicals do the work. As soon as it's noon you will see at least 50 people gathered at the village well to play cards and they will not leave until 4 pm. Workers demand as much as 300-400Rs per day so people are using machines for spraying and using weedicides instead of manual weeding. There is a landless community – the Bauria Sikhs in our village, and they nowadays lease land for 20000Rs per acre for three months from

> farmers between the summer and the winter crop to grow vegetables. By using excessive amounts of chemicals they are able to generate quick high yields. But they make a decent profit 50000-60000Rs in three months because their entire family –including women and children are in the fields from dawn to dusk. They also go and sell the vegetables directly in the market every day instead of selling them to the intermediaries." Referring to status norms, he concludes by saying that "*zamindars* cannot do things like this, so despite owning land in some ways we are worse-off."

Older landowning farmers often articulate deterioration in material conditions in terms of a moral critique. This critique centres on a decline in work ethic and is targeted at youth within their families, but more frequently at Dalit landless workers. Echoing a common refrain, Amarjeet Kaur, for instance, argues that landless communities within the village complain about the lack of adequate work but when there is a lot to be done in the fields during harvesting it is hard to find labour. Men from landless families instead prefer to work in rice shelling units or in construction and women on MGNREGA sites because it is easy to work. At this point, Sanjana a young KVM activist, who is a resident of a nearby village and from a landless household promptly intervenes and says, "labouring classes cannot be dependent only on farming for their livelihood, and they have to look after their own interests. In a few years' when the land is completely barren, the *zamindars* are going to be in the worst situation. They are not happy to work unlike everyone else. Instead, they take loans for everything."

The narrative of 'laziness' of labouring classes to explain their refusal to work on farms for low wages expresses the increasing loss of control experienced by dominant castes. Availability of non-farm work with relatively better conditions and ability to commute to nearby towns on a daily basis has partly empowered Dalit communities. Discursive denigration becomes a way of asserting status by dominant agrarian castes, particularly for small and medium farmers, in the midst of an economic crisis and a weakening agrarian

economy. But such status norms also close off access to livelihood options such as agrarian or off-farm wage work, including through the government run employment guarantee scheme MGNREGA. While MGNREGA is a non-targeted demand driven scheme, small and marginal *Sikh Jat* landowning households rarely avail of it even in times of tremendous economic distress.

Farmers often substantiate the correlation between moral decay and environmental degradation by arguing that government schemes such as subsidised distribution of grain, and MGNREGA have ruptured farmer-labour relations. Landless workers point to the irregularity of work available on farms through the year after mechanization. Whereas farmers frame the problem in terms of shortage of labour (mostly during transplanting of rice and harvesting), which they attribute to the labouring classes becoming 'lazy' and unwilling to work hard as they can subsist easily through government largesse, supplemented by off-farm wage labour which is less strenuous.

I discuss how the 'erstwhile progressive farmer' experiences what Araghi (1995) calls 'depeasantisation sans proletarianisation' and the survival politics it produces in the next chapter. For now, it is sufficient to note that the disdain expressed by small and medium farmers for government schemes such as the MGNREGA and distribution of subsidized grain, by labeling them as 'handouts' that make laboring classes 'lazy', is also an expression frustration at their inability to access these schemes in times of crisis. This frustration is compounded by the gradual rollback in agricultural input subsidies and the minuscule increases in minimum support prices for crops since the early 1990s.

Occasionally this moral critique of declining work ethic is directed inwards as well, particularly in the discussion of environmental decay and increasing health problems due to changes in cultivation practices. Surjeet Singh for instance after complaining about the unreliability of workers these days adds on further reflection, "the *zamindars* have stopped working with their own hands as well. They used to work alongside farm labour, now they just supervise them. Zamindar's work is confined to turning on the switch for motors to water the fields and operating machinery." Many farmers correlate the rising incidence of diseases to the decline in physical work performed by them.

Moral critique articulated by elderly farmers targeting the younger generation among their households reflects the remnants of the old sensibility, where caste-based occupational identity and claims for dominance, were linked to both work and land ownership. The nature of agrarian work associated with this sensibility was defined by autonomy. This autonomy had multiple dimensions - working on one's own land, assured subsistence, and the ability to make decisions about cultivation practices. While landed farmers recall lost autonomy in the sphere of work – both through the commodification of farming inputs and dependence on the state through the subsidy regime, decommodified subsistence and social reproduction are central to the memories of landless workers as well as elderly women from landed households.

IV. The Remembered Moral Ecologies

The memories of those who were marginalised in the new technologically driven and monetized economy shaped by the Green revolution provide a glimpse into lost moral ecologies. I use the term moral ecologies to refer to both non-monetised social relations,

practices of reciprocity often structured through patrimonial relations, and flora, fauna, common access land and water, that formed the basis of decommodified social reproduction. In rural Punjab, given the rapid pace of intensification and the resultant drastic erosions over a few decades, these memories are the only means of accessing what has been eliminated on the socio-material landscape. Hence, they become politically significant for resetting the terrain of contestations. They complicate the valorised and abstract construction of indigenous culture and values and push back against narrow framings of environmental sustainability.

The vast literature on agricultural transformation in post-colonial Punjab is largely silent on the erosion of the commons. This silence is peculiar given the critical role village and regional commons played in sustaining livelihoods, structuring interactions between pastoralists and cultivators and creating communities that extended beyond village boundaries (Kaul 1992). The term 'village commons' is commonly used to refer to open-access grazing lands that allowed small and marginal farmers, and landless households to keep livestock. In women's narrative though the village commons also contained native tree species and herbs as well as collective work practices. Native trees such as *van, jhand*, and *talli,* typical for an arid ecology were used in various ways in the local diet and for medicinal purposes. They disappeared partly due to clearance by farmers to increase the area under cultivation and partly due to the widespread use of agrochemicals. These tree species produced uncultivated foods that were an important part of the local diet across social classes. Recalling the days when she worked in the fields as a daily wage labourer, Mahindar Kaur, now in her 60s says,

> "we used to stay under the shade of the trees such as *jhand* and *kafir* to wait out the afternoon sun and then get back in the fields in

> the early evening. Now those trees are gone, you will only spot one or two remaining ones here and there. We plucked the fruit from these trees and used them in meals. Men zip back and forth to the fields on their motorcycles, but we have nowhere to rest with all the trees gone when it is 45 degrees Celsius. Our native trees lined all the farms and provided a shady pathway to walk from the village to the fields. The poplars and the eucalyptus may generate money for the farmers, but without shade or fruit they are barren for us."

Only poplar and eucalyptus trees are visible across large swathes of farmland now. These are grown commercially, particularly by absentee landowners that have emigrated. Their cultivation is not labour-intensive and provides a substantial income every few years. The practice of burning of fields post-harvest to get rid of crop residue, which I discussed in chapter 1, is also responsible for the elimination of flora, fauna and friendly insect species. Criticisms of this practice have focused on land and environmental degradation and the economic compulsions that force farmers to do so. The detrimental effects on social reproduction possibilities of landless households within the villages, however, are not a part of this discourse. Women from landless households historically gleaned grain, especially wheat, from the fields post-harvest. After manual harvesting, they were often able to gather enough for household consumption for one-two months. The amount of grain left reduced drastically after the coming of combine harvesters, and gleaning became impossible since the practice of burning has become widespread. Initially practised by large landowners, use of combine threshers and burning crop residue soon became the norm. Eighty-year old Sukhjeet Kaur explains,

> "When wheat was harvested by hand, women from labour households would go together to glean grain in large groups after the harvest. We went from one field to another and then divided the collected grain, depending on the number of people in everyone' household. I also remember carrying baskets full of sorghum and grams home from the fields. One woman could pick enough grain to last 5 months for a family of four. But since machines began to be used for harvesting, the practice of gleaning stopped. The combines cut the wheat in such a way that it is not

> possible to glean anymore, there is no whole wheat grain left, just plant stubble. The fields are set on fire post-harvest to get rid of the stubble, burning whatever leftover grain there is. For my generation, it is a sin to burn food."

While gleaned wheat was used for household consumption, rice was sold in the market, as rice is not a part of the local diet. In villages where cotton is sown by a majority of the farmers instead of rice, farmers' tend to not burn the fields post-harvest. Therefore, women from landless households continue with the practice of gleaning wheat and left-over cotton from the fields. It is well known that in the North Indian Green Revolution belt the most significant impact of mechanization has been on the availability of farm work for women (Chowdhary 2010). Women were employed as wage labour on farms in Malwa for manual weeding (which is now done through the application of weedicides) and for manual harvesting of wheat, along with cotton-picking. As women from landowning households stopped working in the fields, as a status-norm among upwardly mobile agrarian castes, it also became difficult women from landless households to work as wage labour as they often worked under their supervision.

Women's presence in the fields was concurrent with many practices that linked farming to social reproduction directly. Unlike paddy and the hybrid varieties of cotton, indigenous cotton varieties were intercropped with vegetables, millets and gram. Landless women gathered fodder and wood for fuel from the farms for household consumption. This allowed them to keep milch cattle and goats at home, which is not possible anymore. Without land, the fodder has to be bought from the market. Landless households, as well as small and marginal farmers, are unable to afford milch cattle because of the disappearance of common grazing lands from villages, which were gradually occupied for cultivation. Known as *shamlat*, the common grazing patches allowed landless households to keep goats for milk.

Goats, like occupational herders who took everyone's animals for grazing in exchange for wheat and milk, are now rare in Punjabi villages. The absence of goats is also another phenomenon that reflects the strong grip of new status markers that have emerged with the deepening of the cash economy and commodification of cultivation practices. As one woman points out, her young sons were embarrassed that they had goats at home, and so she got rid of them.

Experiences of older women from landed and landless households share several commonalities. They highlight the relative freedom of mobility and social belonging associated with working in the fields collectively and with living in joint households. It was common for women from extended kin and caste networks to work collectively on and off the farm. Cooking, spinning and weaving cloth from indigenous cotton, winnowing grain, were all done together by women from extended caste and kin networks. With the increasing trend toward nuclear households, the mobility of women from landed households became severely restricted to the confines of the household yard. Like many other women from landowning households, Amarjeet Kaur draws attention to the lost collective work practices; the system is locally known as '*veedi*', as its disappearance coincides with their own banishment from the fields. She says, "Until about 20-25 years ago people did not want to spend on hired labour – so they worked on each other's farms taking turns - spraying fertiliser, manually harvesting wheat and cotton." Several older women mention that their daughters-in-law have never even seen the family farm. Landless women, however, continue to work collectively whether it is with family members or with women from other landless households during transplantation of rice, cotton-picking, and gleaning grain post-harvest. They also tend to go for off-farm wage labour collectively, primarily through the

government's employment guarantee scheme –MGNREGA, which involves cleaning village pathways and ponds and maintenance of canals.

Working in groups also makes more economic sense, particularly while transplanting of paddy, one of the few remaining labour-intensive tasks in the cropping cycle. As I talk to a group of six (3 men and 3 women) from the same extended household transplanting paddy in July, one of them, Ram Singh contends,

> "it makes a big difference in terms of income and getting work if the entire family is working versus if only one person is working. For transplanting, we get about 2400Rs per acre, which takes roughly one day for 6 people. In one season we manage to transplant about 20-22 acres together and are able to make roughly 50,000Rs. 'Bhaiyas'[57] however are pushing the wages down. They come together during the transplanting season in large groups, so it is more convenient for the bigger farmers to hire them. Until a few years ago, they came to work on farms seasonally, but now they are working in our factories too."

Farmers prefer migrant workers, who come from traditionally rice growing Eastern states because they are perceived to be better and quicker at transplanting. In the weeks before transplanting begins, farmers flock to railway stations with signage to attract incoming migrant labour to their fields. Paddy cultivation introduced in Punjab during the Green revolution continues to be considered as an alien crop even after decades of cultivation. While valued by farmers because of the assured support price and procurement by state agencies, local farm workers have an antagonistic relationship with the crop. They associate it with migrant workers who push down wages and take away their work. Local workers also consider transplanting rice in flooded fields to be unpleasant and hard physical work.

[57] A derogatory term used to refer to migrant labour from the Eastern states of Bihar and Uttar Pradesh.

As Vinay Gidwani (2008) argues the preference for group or task based work among farm workers, like the landowning farmers' withdrawal of family labour from cultivation, is illustrative of the interruption of economic rationality by cultural logics. The recognition of living labour embedded in social and ecological relations, despite disciplining via technology and commodification, allows for the possibility of imagining a politics beyond conventional forms. He, therefore, makes a typological distinction between the politics of labour, that is struggles for better wages and working conditions, and the politics of work practised by both landowning agrarian castes and landless labour. The politics of work draws on valuations that are not just economic, that is a distinction in terms of caste norms but also prioritization of non-alienated form of labour. Whereas de-valorisation of labour is a costly move to achieve social distinction for landowning farmers, group work is an expression of an aspiration for autonomy by workers. By being able to control the tempo of work, workers can exercise autonomy in small measure, and partially alleviate the sense of alienation that comes with working in isolation.

Ram Singh in his narrative above though highlights task-based work of transplanting in terms of tremendous constraints imposed by the changes in cultivation practices on landless and lower caste communities. Cultural logics also combine with economic rationales to deepen the exploitation of landless workers. While patrimonial relations no longer provide security of subsistence, in their new form they inhibit the 'politics of labour', by constraining the ability of workers to bargain for higher wages.[58] Echoing a common sentiment among

[58] A substantial body of literature on caste politics in India has elaborated on new forms of insecurity and exploitation that have accompanied breakdown of older patrimonial caste relations. While statist interventions and greater availability of non-farm work have enabled political struggles for emancipation by landless castes vis a vis locally dominant landowning castes, deepening commodification has also created conditions of isolation and economic insecurity (cf. Breman 1993; Harriss 1982; Carswell and De Neve 2014; De Neve and Carswell 2011). The redistribution of resources is mediated by the state through social

landless labourers, he suggests that while the possibility of upward mobility was non-existent in the days of entrenched patrimonial relations, existence of village commons, both material and social, made social reproduction easier. Ram Singh goes on to compare paddy with cotton cultivation and says,

> It has been 20-25 years since farmers started replacing cotton with rice because it provides a more secure income and the chances of crop damage are less. For us though working in rice fields is hard work. As you can see standing in flooded fields all day when it is 40 degree Celsius is difficult. The sun is beating down on your bent back and the flooded water is hot and full of chemicals. For the rest of the year, there is roughly another month's work available on the farms only for men - mostly weeding or applying urea and spraying chemicals, and the daily wage is about 300Rs a day. With cotton, there was more fodder, so farmers passed it on to us and we could keep milch animals at home. When we cannot find work here we go to Bathinda or Gidderbaha (neighbouring districts) during the cotton-picking season. Once I travelled with my whole family to as far as Rajasthan to get work. In other villages, the rate is 2700Rs per acre but in our village, it is just 2400Rs. We cannot protest because we need to borrow money from these *zamindars* and ask them for wheat in lean months. About 5-6 years ago the daily wage rate was 200Rs but they also provided meals, now it is 250Rs but they don't provide meals so it is in effect the same.

Narratives of change suggest not just the loss of the village commons in the form of grazing grounds, tree species that generated food, shade and wood for fuel, but ruptures in social relations and cultivation practices that linked work with social reproduction, particularly for labouring households. Collective work practices and patrimonial relations are an integral part of the memory of 'lost commons.' The reshaping of patrimonial relations with changing cultivation practices is clearly not simply a linear transition from the good to the bad days, as labouring communities recall the of caste discrimination in everyday practices such as eating and drinking from separate utensils in the farmers' households.

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provisioning policies, but structural reforms enabling secure livelihoods such as redistribution of land are no longer on the political agenda.

Struggles against caste-based discrimination and indignities were enabled by the increased everyday presence of government in the village and through access to non-farm livelihoods. Unlike public health or education, substantial investments were made in improving transport infrastructure necessary for transporting food grains. Easy connectivity with nearby towns and cities enabled men from landless households to commute for work in construction and transport. For landless Dalit men, upward mobility became a real possibility albeit for a very small minority via non-agrarian livelihoods, particularly government jobs, or through leasing land and farming independently. Pirphi Singh, a 78-year-old Dalit cultivator, started leasing land, after working as a *siri* on a crop-share basis for 25 years for one *zamindar* family. He says,

> "I could never work like a daily wage farm labour with indifference and no attachment to the land after I was let go as a *Siri*. So, I took a loan and started to farm on about 4 acres of leased land. With leased land, there is very little income after paying the rent, but we have wheat for our household and dry fodder for our cattle for the whole year. My brothers could study more than I did, and two of them became schoolteachers, and one went into the army. They have big houses now, whereas my sons and grandsons ended up working as daily wage labour in construction."

His narrative crucially points to the relationship between changes in cultivation practices and the organisation of labour relations. Within the older organisation underpinned by patrimonial relations, farm workers like him had long-term relations with the land and played a key role in the generational transfer of knowledge.

> The *Siri* system disappeared with the coming of tractors and combines. Farmers with large landholdings began to hire daily wage labour, along with one or two farm workers on contract with fixed annual wage. The *Siri* system was more beneficial for us because we got one-sixth share of the crop. We worked hard because if the yields were good, we got a higher share as well. But there were also many instances of farmers firing the *Siri* on some pretext, just before the harvest, when the crop yields were expected to be really high. The thing is for people of my generation - our

> bodies do not know how to do anything else except work hard. Our aspirations were limited to running our household without any scarcity and being able to eat two good meals a day back then. My entire family was involved in working for the farmers' household when I was a *Siri*. Before tube wells became common since the supply of canal water was limited my wife and daughter carried buckets of water to the farm from the village tap or the pond. I also taught the farmers' sons everything they know about farming.

He adds that when the *zamindar's* son decided to experiment with organic production, he was able to contribute his knowledge. But as the wheat yields reduced substantially in the first few years, his share reduced as well and it was hard for his household to survive. He continued to work for the farmer, but only when he began to give him 50% of the crop as opposed to the standard one-sixth.

Like Pirphi Singh, Bhaag Singh now in his 80s started leasing 5 acres after working as a *Siri* for 25 years. In contrast, though he equates being a *Siri* with being a slave. While working in his leased plot at 5.30 am which he manages by himself he says,

> "You have to do as the *zamindar* says and work whenever they want you to work. I remember when my daughter died when she was 5-7 days old, I could not even go home. I am extremely fortunate I that I could leave. When you lease land, at least you are not a slave to anyone, and you can manage and cultivate the land on your own terms. I have leased the same piece of land for 15 years now. The owner works as a bank manager in Bathinda and he feels secure that I will not try to grab the land."

Even as leasing land is extremely risky, older landless workers construe it as upward mobility because it comes with self-sufficiency and autonomy, whereas others associate labouring on a crop share basis with more secure subsistence. From the standpoint of women and Dalit landless households, with the transformation of cultivation practices, the separation of work and social reproduction is apparent. Given the precarious availability of farm wage labour, the erasure and contamination of village commons, and commodification of resources such as

fodder and wood, are perceived to be a more potent form of exploitation than the indignities of caste based discriminatory practices. This is particularly true for women and older men who are unable to access off-farm daily wage labour in construction and transport because of restricted mobility and/or the inability to operate machinery. The dispensability of labour with mechanisation, use of agrochemicals, and with increasing acreage under wheat-paddy rotation, has made labouring households more dependent on landowning farmers for loans during lean periods of employment. The dependence forged through these loans is unlike the share of fodder, wood, and gleaned grain gleaned that were seen as entitlements. Rights based entitlements available now through government schemes such as universal demand-based employment guarantee scheme are often inaccessible in practice at the village level. Interviewees in all the villages pointed out that in the last few years they could obtain only 15-30 days of work through the MGNREGA, and payments for these workdays were delayed by several months. Many suggested that landowning farmers deliberately block the scheme at the *panchayat* level so that labour is available for farm work.

As Rita Brara (2006) argues, in her ethnographic account in a village in the neighbouring state of Rajasthan, the substitution of informal practices of open access to the village commons by the codification of entitlements and institutionalisation has reinforced the marginalisation of women and lower castes. Eighty-year old Maninder Kaur from a lower caste household, who now occasionally works cleaning dishes and doing other chores in a farmer's household that employed her husband as a *siri*, remembers this process in the following way.

> "The *shamlat* (common) land of the village was a grazing ground for cattle. There were specific people in every village – the Baghi community- that would take everyone's cattle for grazing there. When *panchayats* (elected village council) came into existence, that common land became *panchayati* land. Now the *sarpanch*

> (elected head of the village council) rents it to *zamindars* (landowning farmers) for cultivation."

The Punjab Village Commons Land (Regulation) Act of 1961 allows *panchayats* to rent village land to the highest bidder, on the condition that one-third of this land is reserved for the scheduled castes and auctioned separately. Unsurprisingly though, this stipulation is often subverted by Sikh-jat farmers by using Dalit proxies or using their influence over panchayat members. Within the law leasing for purposes of cultivation and for homestead plot is only one of the 26 prescribed uses, making it extremely flexible and susceptible to misuse. One-third panchayati land mandated for Dalit households in any case can only be leased out by paying an annual rent, which is unaffordable for most.[59] In recent years there have been several instances of struggles for accessing the panchayat land, particularly by Dalit youth, in the Sangrur district of Malwa (Sethi 2014; cf. Martin 2015). The conversion of village commons into government land has not only limited access for landless households, but they have to struggle to even enforce this limited access via rent that is prescribed by law. This process of usurpation of common land is illustrative of the narrowing of the political space with the shift to a techno-political regime.

While the sustainability discourse and practices at the institutional level are solely focused on technical fixes (as described in the previous chapter), the sustainability politics of KVM invokes the lost 'village commons and the associated sociality' in terms of restoring harmonic human-nature relations that are transcendental moral/ethical values.[60] These values

[59] http://www.pbrdp.gov.in/documents/6205745/0/1332145804780_The_Punjab_Village_Common_Lands_Rules_19645915.pdf

[60] As Ann Gold (1998) suggests environmental activism since the 1990s has employed the relation between moral decay and environmental degradation commonly made by rural agrarian subjects in its rhetoric. Inspired by Gandhian political thought, environmental movements in India have drawn strategically in the past to construct a critique of industrial modernization, where the rural represents an emancipatory utopia of self-sufficiency and

can be inscribed on the material landscape by radically altering the current cultivation practices and the decision-making capacity for changing cultivation practices even though severely constrained rests with landowning farmers. The understanding of change from the standpoint of labour, as Ann Gold writes, is 'fundamentally ecological in its sensitivity to the web like interconnectedness of concurrent transformations' (1998:168). While Gold suggests that this sense of human morality being interdependent on natural surroundings extends beyond class differences, those lower in the social hierarchy experience the material effects of the rupture more intensely and consistently. These include women from landowning households, landless communities and elderly farmers in small and marginal landowning households who no longer have decision-making powers. Therefore, even as the remembered commons are present in the memories of labouring subjects the labouring classes themselves are excluded from the politics of sustainability as well. The new imaginary of sustainability is expanding the political space by foregrounding the need for changing production and consumption practices but also operates within its limitations, as the agenda of land redistribution active in the 1960s and reclaiming the village commons continue to be invisible in the landscape of resistance.

V. The Subalterns Within Sustainability Politics

At a time when small and medium landowning households are trying to move away from farming, some landless households are renting land for cultivation at exorbitant rates.[61]

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village democracy. This vision of emancipation was ahistorical in the Marxist sense but nevertheless political.

[61] It is not just the absentee landowners leasing out the land, but also small and medium cultivators who are indebted and unwilling to bear the risk of cultivation. Rents provided the much-needed cash for household consumption expenditure. They are also leased out by those who have emigrated and have no remaining kin in the villages but are reluctant to sell their land, or by those households where the younger generation has found stable jobs and there is no one in the family to tend to the land.

Despite the tremendous risk this entails, cultivation on leased land is preferred to the ordeal of looking for daily wage labour by many landless households. Cultivation at the very least generates grain (mostly wheat) for household consumption, fodder for livestock and some supplementary cash income in a good crop year. These tenant cultivators are trading the insecurity that comes with constantly having to look for wage labour, with the risk entailed in leasing land at an exorbitant annual rent. The growing trend toward leasing land by members of the Bauria Sikhs, a historically nomadic hunting tribe, that were dependent on the village commons is illuminating for understanding the exclusion of sustainability politics.

Notified as criminal tribes, the Baurias were forced to work in canal colonies as part of the colonial state's civilizing mission. Unlike the landless Dalits integrated within the agrarian social relations of production and hierarchy, Baurias have been historically outside the village agrarian social structure. Their distinct dialect is incomprehensible to others within the region which they use exclusively to communicate within the community.[62] De-notified five years after independence in 1952, the social stigma continues to persist which makes it hard for them to find jobs even today. Bauria houses are generally situated on the periphery of the village.[63] Unlike the Dalit landless households, they are invisible not just on the political landscape but also in scholarly analyses of the Green Revolution decades.

With the shift toward rice cultivation and increasing economic distress, farmers are leasing out their land for three months between the wheat and paddy crop to make quick money through rent. Leasing out land for three months is more common among those farmers who grow Basmati rice, which is a shorter duration crop compared to other paddy varieties. Bauria

[62] Swaroop Singh, a Sikh Jat farmer, suggests that Baurias are a closely-knit community that closely guard their dialect and have deliberately kept it alive as well as confined within the community.
[63] For a detailed history of 'criminal tribes' in colonial Punjab see Major (1999).

community households rent land for these three months to grow vegetables, and many report earning more in these three months than they do in the rest of the year. An elderly cultivator from the community suggests that the preference for growing vegetables is because Baurias have no ancestral knowledge about cultivating food grains. Some have one-two acres of their own in addition, that their ancestors bought during the imposition of the land ceiling in the 1960s when large landowners were selling their land at nominal prices to avoid confiscation by the state. Up until two-three generations ago, many in the community were herders who kept goat and sheep for meat and took cattle from other landowning households for grazing.[64] These practices disappeared with the loss of common grazing lands.

The Baurias earn a reasonable income in these three months because unfettered by caste norms, they employ family labour including children for farm work and sell the produce directly in nearby towns. Farmers generally comment that Baurias' are a very hard working community. They are in the fields from dawn to dusk, even when the sun is at its peak in the afternoon when everyone else is resting. I speak to Joginder Singh, a young Bauria tenant cultivator while he is working with his wife and two young sons in the fields. They have leased 3.5 acres, out of which 1.5 is for the whole year, and 2 acres is for three months. In addition, he also works as daily wage labour seasonally to pick cotton and transplant paddy in other's fields. The amount of land they are able to lease every year varies based on rents and availability, and usually, it's a different field every year. He says,

> "We grow only vegetables because you can sell them in the market directly, and that is the only way to make some income. I take them to nearby towns every day on my motorcycle, while my wife and sons look after the farm. Shopkeepers have designated spaces in the towns, and do not allow us to sit in those spaces so I keep rotating between different markets. When we lease land, the entire family has work, so it is worth paying the high rent, even though

[64] The responsibility for taking care of milch cattle passed on to women and stall-feeding within the house became the norm.

> there is not a lot of profit to be made. With daily wage labour, only one person within the family can go and make money, and you have to constantly look for work."

Tenant cultivators from the Bauria Sikh community value working autonomously as a family unit. Those who grow wheat contend that having enough grain for household consumption and fodder to keep cattle is their primary motivation for leasing land.

On the other end, more and more landowning households are leasing out land to earn stable cash income without having to bear the risks and the cost of cultivation. In the event of crop failures though, tenant cultivators are pushed into chronic indebtedness as they take loans to pay the rent. However, indebtedness and the inability to repay loans is not associated with social shame among the Baurias like among landowning *Jats*, for whom fear of losing land is paramount. In the event of crop failure Baurias return to working as wage labour. Their particular historical consciousness produced differentially within this regional landscape does not reflect aspirations for accumulation. Their developmental aspirations are also more circumscribed than that of landowning *Jats* as well as Dalit landless households. The younger men and women within the community do express the hope that their children will study and obtain salaried employment. But they are confined to sending their children to government run schools in the hopes that they would get public sector jobs. These expressions of hope are tinged with fatalism, not a sense of entitlement and are far removed from the strategic choices that landowning and increasingly many Dalit households are making in terms of ensuring non-agrarian futures for their children.

Gurpyar Singh, a young Bauria in his 40s says his three children go to the village primary public school, adding unprompted that many people in the community now are beginning to send their children to school. Among the 50 Bauria households in their village, he says,

"there have been one or two instances where young boys have managed to get jobs – one in the army and one as a bank manager. But, this has only started happening very recently - earlier no one in our community was able to get any jobs because people still mistrust us." His grandmother interjects and insists unequivocally that the situation has improved for their community. Recalling her childhood when they did not have enough food, she says,

> "I worked on farms harvesting wheat, picking cotton for just 25 paise per day wage. We picked the fruit of the *van* tree as grain was scarce. The yield of wheat was very low in those days barely sufficient for the *zamindar's* (farmer) own family. Only manure was used to grow rain-fed wheat, millets and pulse. The land was left fallow for a part of the year. In those days, the *zamindars* did not give us anything, now at least if we need something they help sometimes. There was nothing else to do except daily hard labour on the farms."

She recalls stealing butter from the *zamindar's* house and selling it to others in the village to make ends meet. Thus, for her higher yields because of fertilizers have translated into more food but only through the benevolence of landowning farmers. Gurpyar Singh and his wife worked as daily wage labourers on farms but started leasing land about four years ago. He has been farming since childhood alternating between wage labour and working on rented land with his family. In the first two years, they leased land for 3 months to grow vegetables, and then after accumulating some cash, they leased 2 acres for the whole year. They grow wheat and paddy and plant vegetables in the intervening months between the two crops. After suffering losses due to crop failure last year, and because rents are spiralling upwards in this area, they decided not to rent land this year. His wife says that is why they are at home now in the middle of the day, unlike all their neighbours who are in the fields. Gurpyar Singh says the whole family, including his children, work in the fields when they rent land and he goes to Jalandhar (one of the largest cities in Punjab) every day to sell vegetables. The wheat they grow is sufficient for home consumption all year and is grown without any fertilizer or pesticides. With vegetables, however, he says spraying is done almost every day and adds

"because we grow three crops in a year, more fertilizer and sprays are required. The PAU people say use fewer chemicals but nothing grows without them." [65]

The Bauria community historically referred to as tribes, but now officially classified as Scheduled Castes, has not only been invisible in scholarly analyses of the Green Revolution. Despite being almost completely dependent on farming livelihoods even today (perhaps the only social group in this region to do so) they have been invisible on the landscape of postcolonial agrarian politics including in mobilizations around land redistribution and agricultural wages. Their struggles in the post-independence years were confined to a demand for de-notification as a 'criminal tribe', and inclusion in affirmative action policies for accessing welfare provisions (Singh 2008). This invisibilization partly stems from their small numbers (which are however concentrated in certain pockets), relative isolation from the village social organization. The critical factor though is their association with pastoral and nomadic livelihoods, which was at odds with Punjabi regional ecology and identity produced intensively through agrarian modernization.

The current crisis has spurred new forms of tenant cultivation through short-term leasing in the last decade, which has provided many among the Bauria community an opportunity to farm autonomously although under very risky conditions. The risks of cultivation are being passed on to the most marginalized group. The Baurias nevertheless construe tenancy as an opening up of a pathway for upward mobility, which reveals the severe constrictions imposed by their historical trajectory. Social stigma resulting from the colonial legacy of being labelled 'criminals' for their nomadic practices has persisted, manifest in discrimination

[65] The insecticides he names include the most highly toxic ones such as Monocrotophos and Fenvalerate.

against the community in job recruitment in the public and private sector. They are also vilified within the discourse of sustainability. KVM activists, natural farmers, as well as state extension officials often cite the Baurias as an example of cultivators who use the most toxic pesticides and insecticides, and in large quantities, even though the amount of land they cultivate is minuscule.

While KVM activists, like government extension officials, often make unsubstantiated claims about Bauria community using an indiscriminate amount of agrochemicals, more than other farmers, in order to get the highest possible yields in three months, they are excluded from mobilisation efforts for shifting toward sustainable farming practices. As one Bauria cultivator points out, ‘whether it is the agrochemical company representatives or the extension agents –they all leave us alone. They are only interested in those who own the land.' The Baurias make a substantial profit through short-term leasing, not because of higher yields, but primarily because they cultivate as a family with no hired labour and sell directly in the market bypassing the intermediaries.

VI. Conclusion

In this chapter, I have argued that experiential narratives and the collective shared memory of transformation of agrarian work reveal the foreclosures of the techno-political regime enacted through Green Revolution practices. These foreclosures are replicated analytically in compartmentalized bureaucratic, economic, agronomic, and social science accounts of the Green Revolution. The analytical departure point of transformation of labour practices is useful for understanding how the knowledge-labour rift shapes socio-ecological relations, and the interconnectedness of production and social reproduction. The processes through which

the technological treadmill was instituted, resisted and normalized, and the simultaneous erasure of material and social commons is flattened in critical scholarship on the Green Revolution which largely discusses the impact of Green Revolution in terms of rising inequality and ecological degradation. Narratives of transformation in practices show the constitution of subjectivities at the intersection of class, caste and gender, instead of inferring agrarian politics through pre-configured sociological categories.

Differentiated conceptions of autonomy, risk, security, aspirations and entitlements persist even within this relatively standardized social ecology produced through technocratic practices. The case of the Bauria community is emblematic in this context. Absent from analyses of the Green Revolution and of agrarian politics more broadly, they have become token offenders within the narrowly framed narrative of ecological degradations. The elisions structured through techno-politics in the development decades thus delimit political mobilisation despite the recognition of these elisions. This complex and nonlinear history of transformation of agrarian work and attendant social reproduction practices is critical for understanding the specific form of prefigurative agro-ecological politics in Punjab, in addition to how the key protagonists, small and medium farmers, are framing and experiencing the present crisis which I discuss in the following chapter.

The self-conscious deployment of ‘culture’ and ‘practices’ in the grassroots politics of sustainability is a strategy of inversion as resistance against such techno-power. However, as the previous chapter suggests the material and structural constraints within which this politics is actualized has led to a narrow focus on ecologically sustainable production practices. These diluted agro-ecological politics excludes the agenda of social equity, hoping for a trickle-down. Collective social memories and gendered narratives of the transformation of agrarian

work reveal the erasures from the socio-material landscape and the voices of those who are marginalised on the landscape of organised resistance. In recalling the connectedness of production with socio-ecological reproduction, these narratives illustrate the fuller potential of a politics of agroecological practice.

CHAPTER THREE

THE UNMAKING OF THE 'PROGRESSIVE' PUNJABI FARMER

PRECARIOUSNESS AND DOWNWARD MOBILITY

I. Introduction

A recent editorial in a popular Punjabi newspaper running a series titled Field Reports on the Agrarian Crisis came to the following conclusions. "*The folly of (1) taking a loan to buy a tractor and selling it to fund a wedding, (2) wasting the state's precious resource, water, to grow rice for consumers outside the state, (3) installing expensive submersible pumps to extract sinking groundwater, (4) abandoning less water-consuming crops and (5) pursuing unhealthy food habits and a laid-back lifestyle needs to be realized. One needs to be extraordinarily dumb to do such self-damage."*[66] This sentiment is heard repeatedly in the region – that Punjabi rural households are afflicted with the disease of excessive consumerism and greed. Indiscriminate use of water and agrochemicals, high expenditure on weddings and farm machinery, chronic indebtedness, and unwillingness to personally labour in their own fields are cited as evidence. The present agrarian crisis demarcated as a post-1990s phenomenon, manifest in stark forms with severe ecological degradation and unravelling of the subsidy regime with the neoliberal restructuring of agriculture, reflects the material unsustainability of the technocratic regime that has been unfolding since the late colonial period in Punjab. Discursive recasting of the Punjabi landowning farmer from being 'industrious' and 'progressive' to being 'irresponsible' and a 'wastrel', particularly when articulated by political elites, media and public officials such as agricultural scientists and extension officials, shifts the blame for the present crisis onto farmers, and away from the

[66] Sandhu, Nirmal (2016, February 2). Simply put, radical change is the only way out. *The Tribune*. Retrieved from http://www.tribuneindia.com/news/punjab/field-reports-making-sense-of-it/190859.html

technocratic regime of agricultural intensification, known as the ‘Green revolution', propped through subsidies and pushed aggressively since the 1960s.

Rural landowning households themselves, however, also echo this shared public discourse within the region. In this chapter, I focus on the lived experiences of the agrarian crisis articulated by rural landowning cultivators, and how they reference this discourse of cultural/moral decline. I argue that these narratives of crisis reveal an understanding of precariousness that goes beyond the political economy of agriculture. Actively attributing the crisis to government policies that instituted the technological treadmill, these narratives, however, do not isolate the realm of production from the social and cultural dimensions of precariousness. While agricultural livelihoods have always been precarious for a majority of Indian cultivators, the present precariousness in Punjab for landowning farmers follows a period of relative stability structured through the state input subsidy regime and minimum support prices for designated crops – wheat and rice. Recent policy recommendations also indicate that in the near future, the central procurement agency Food Corporation of India will move out of Punjab to set up operations in Eastern states that were marginalised through the ‘Green Revolution’ decades – further depleting support for Punjabi farmers (Kumar, 2015). Additionally, farmers also fear that widespread perception of excessive chemical residue on food crops coming from Punjab would make them uncompetitive in the open market.

Currently, less than six per cent of Indian farmers, mostly concentrated in the North-Western Green Revolution belt, are able to access the national state food grain procurement system (Kumar 2016). The majority of landowning farmers in Punjab, including small and marginal farmers who produce a surplus, sell wheat and rice to central procurement agencies through

commission agents and a well-established network of market yards across the state. This privileged position of farmers in Punjab and the Green Revolution belt is often highlighted in scholarship on agrarian crisis in India, with a selective focus on incomes. For instance, Kannan (2015) in a comparative analysis of four states in India concludes that Punjab is the only state where farm incomes have not fallen in the post-1990s period and real wage rates for agricultural labour have shown an increasing trend. Such economistic analyses, however, present a partial picture, which does not capture the precariousness experienced by rural households. For landless households, this takes the form insecurity due to the irregularity of available work on and off the farm for landless households, exacerbated for women and the elderly, who are unable to commute to cities for work. And for small and medium landowning farmers chronic and widespread indebtedness that underpin the cultivation cycle means lack of access to cash.

While small and marginal farmers, as well as landless rural communities experienced the Green Revolution as a crisis since the beginning, medium farmers who enjoyed a short period of prosperity are now experiencing a decline in well-being. As scholars have pointed out farmer suicides in India are occurring in regions of capital-intensive agriculture (Vasavi 2012; Dandekar and Bhattacharya 2017). Dwindling profits from agriculture in a context in which in Thorstein Veblen's words, ‘everyday life is an unremitting demonstration of the ability to pay' (1965:41), means that loans are increasingly drawn not only for meeting costs of cultivation but for everyday consumption needs, and meeting socio-cultural obligations. Even households with significant assets such as land and livestock have little disposable cash through the cultivation cycle.

In this chapter, I examine how precariousness is shaping subjective perceptions of well-being and status, in this distinctive context of downward mobility of the rural 'middle class'. The narratives of crisis articulated by cultivators that go beyond production practices broadly centre on three themes. First, the insecurities generated by insurmountable debt, increasing incidence of diseases and a dysfunctional public health care system, and the heightened economic risk involved in cultivation, resulting in the trend toward leasing out land to generate secure incomes in the form of rent. Second, the cognition that aspirations produced through the development decades, are unrealizable for the majority of youth. The capacity to obtain what is considered dignified work and urbane lifestyles has been diminished for the majority. And finally, the tension arising from downward mobility, pervasive individuation ethic combined with social obligations that are perceived as essential to maintaining status associated with dominant landowning agrarian castes. I end by briefly reflecting on how these sociocultural dimensions of precarity are shaping conceptions of political agency. I aim to show that people enter conditions of precariousness from class, caste, generational and gendered positions which shape their notions of well-being and the strategies of coping with the crisis in a relational framework. These different experiences of the crisis are essential for understanding the current landscape of resistance, and the possibilities and constraints for the formation of political alliances across social groups.

Several scholars have usefully examined the unfolding of neoliberalism in the form of withdrawal of state resources from agriculture and deregulation of trade barriers that have led to agrarian and rural distress in India (cf. Walker 2008; McKinney 2013; Banerjee 2015). Neoliberal political rationality, however, goes much deeper in creating conditions and subjectivities that enforce individualised strategies for coping with the crises. As Wendy Brown suggests neoliberal political rationality is a constructivist project that encompasses but

goes beyond state practices, and involves ‘producing individuals as rational, calculating creatures whose moral autonomy is measured by their capacity for "self-care" - the ability to provide for their own needs and service their own ambitions’ (2003: 6). The Green Revolution decades instituted state support primarily in the economic domain in order to incentivise increasing productivity in cereal crops, with little attention to public health and education infrastructure even in ‘prosperous’ states like Punjab. The period of relative stability, when medium and large farmers were able to accumulate, was also characterised by dismantling of the material and social commons. It is important to note that in the developmental decades, state support was confined to the economic domain, leaving rural households to fend for themselves in the realm of education and health. The current crisis on the surface is a function of the withdrawal of state support for chemical-intensive agricultural production, which leaves farmers in regions like Punjab to continue to sustain capital-intensive production on their own. However, the crisis is also a manifestation of the lack of basic public amenities, monetized consumption practices and everyday life that was structured through this period. The so-called ‘Green Revolution' not only transformed farming practices but also monetized social reproduction compressed within a few decades.[67]

The scholarship on precarity that primarily addresses the experiences of the working classes in the post-industrial Global North also highlights the specificity of experiences of downward mobility. Insecurity of work is accompanied by a loss of occupational identity as well as normative expectations of self-care and self-sustainability, resulting in de-sociality in various forms (Allison, 2013; Lorey, Derieg & Butler, 2015). Critiques of such a formulation though rightly suggest that such precariousness is not a state of exception but has been the norm for the majority in the global South. But this literature implicitly or explicitly mostly references

[67] I discuss this process through oral histories that recall the transformations since the 1960s in Chapter 2.

the experiences of urban informality and those already dispossessed from land (Breman & Van der Linden 2014; Davis, 2004; Chatterjee, 2004; Denning 2010). Two contradictory tendencies are visible in this literature. One strand suggests that increased risk and insecurity has weakened the social fabric, dismantling the possibility of collective politics or has led to the rise of regressive reactionary forms of populist mobilization. The other strand suggests that conditions of precariousness have opened up space for different ways of being political (cf. Dinerstein 2014). Such prefigurative politics which does not resemble traditional forms of labour struggles or struggles for mediated redistribution through the state holds the possibility of forging previously unlikely alliances across social groups. The Punjabi 'bullock capitalists' practising capital intensive farming, occupy an exceptional position in the agrarian South. They share the experience of downward mobility with working classes of the post-industrial North with the retreat of statist protections. The current agrarian crisis, manifest following structural reforms in India, has expanded the net of precariousness to engulf them in common conditions of exploitation experienced by small and marginal farmers, the majority of petty commodity producers, and workers in the non-farm economy. Hence, they provide a unique standpoint for reflecting on emerging forms of political, and for situating struggles of agrarian classes in relation to other forms of precarity politics at the neoliberal conjuncture. The present landscape of resistance in Punjab is particularly apt for examining the question that underpins the debates on precarity, which Isabell Lorey (2015) succinctly frames as whether the crisis of the collective, that is of the welfare state, will pave the way for the emergence of the commons?

II. Precarious Livelihoods and Lives

The Debt Economy

Within collective social memory among Punjabi cultivators, debt has always been a part of the farm economy particularly since the late colonial period that is the mid-nineteenth century. In the last few decades, however, chronic indebtedness has begun to cripple everyday life, resulting in partial or complete dispossession from land for many small and marginal farmers. Landowning cultivators trace the beginnings of this chronic state of indebtedness to investments in irrigation and farm machinery, specifically submersible pumps and tractors in the 1970s and 1980s. The level of indebtedness can be gauged from tractor ownership data in Punjab. In 2003 there were 714 tractors per thousand hectares of net-cropped area, as compared to the all India average of 168 (Kannan 2015). Ownership of high-powered tractors and other machinery, such as combine harvesters and laser levellers, have been actively promoted by government agricultural extension through subsidized loans. Over the Green revolution decades, ownership of tractors, in particular, has become a new status symbol for landowning households.

With mono-cropping, increasing expenditure on food and other basic needs became essential, deepening the reaches of the cash economy into the sphere of social reproduction. As elderly men and women note, before the 'Green Revolution' the only commodities bought from the market on a daily basis were salt and tea. Everything else was produced on the farm, including indigenous varieties of cotton that was spun into cloth for the household needs. The need for disposable cash income was extended further with the growing value placed on higher education, within rural households for obtaining salaried non-farm jobs. Higher education for the majority of rural youth can only be accessed through private institutions.

Availability of cash, however, is scarce even in households with adequate landholdings as they service long-standing debts combined with dwindling income from agriculture. While consumption expenditures have grown, farm incomes continue to fall which makes repayment of loans as well as meeting everyday consumption needs difficult (Singh et al 2017).[68] The minimum support prices (MSP), while providing a stable income, barely cover the cost of production. According to the Swaminathan Commission Report in 2005-2006, in Punjab, the MSP for rice was marginally higher than the cost of production, and in the case of wheat, it was lower than the cost of production.

Along with the purchase of machinery and investment in irrigation, medium farmers attribute accumulation of long standing debt to persistent failure of the cotton crop in the 1990s from which they have been unable to recover. More than usual loans were taken by farmers to buy pesticides that were sprayed in larger quantities. As the crops continued to fail, farmers were unable to recover the costs of cultivation and accumulated insurmountable debt. Small farmers use most of the wheat crop for household consumption and rely on the cotton or paddy crop for cash income. Nagaura Singh, a farmer in his 50s who cultivates 2.5 acres with his son, who also works as an electrician in the village, suggests that at any given time of the year, they have very little disposable cash.

> "I buy seeds and sprays from the *arhatiya* (commission agent) on credit and then he deducts the amount when I sell the crop to him, which means that I end up with very little cash in the end. The whole system runs on loans and the cycle is endless once you get trapped in it. The rate of cotton has been fluctuating a lot, which has pushed farmers further into deeper debt. With wheat, there have been difficulties in procurement in the last few years because

[68] A recent study suggests that as many as 85.9% of farming households and slightly more than 80% of agricultural households are under debt in Punjab, where a majority of the share of loans taken by households comes from non-institutional sources (Singh et al 2017:53). The study also suggests that while small and marginal farming households and agricultural labour incur debt primarily for domestic expenditure, medium and large farming households incur a larger share of their debt for purchasing farm inputs and for educational expenditure.

> of quality issues. Unseasonal rains mean the moisture content of wheat is high and it lies in the market yard for weeks before it is procured. Even once it is procured, there are delays in payment."

Lack of cash is a common grievance articulated by most small and marginal farmers like Nagaura Singh as well as households with medium sized holdings that are mostly dependent on farming. Nagaura Singh goes on to suggest that while regulation of the usage of agrochemicals and their prices is important, the crux of the problem is increasing the price of crops so people can make a decent living from farming.

> The MSP has increased minimally and is not commensurate with the rise in costs of other products. Farmers borrow from *arhatiyas* instead of Banks because they are willing to give fertilizer/sprays and food along with other daily consumption goods on credit. But they also charge higher interest rates, especially from small farmers. They cannot afford to offend the big landowners because they bring substantial business, and the very large ones even lend money to *arhatiyas*."[69]

A recent study suggests the extent of dependence of farmers on commission agents through the cultivation cycle from buying inputs on credit to selling their produce through them to state procurement agencies across Punjab (Singh, Bhogal & Singh 2014; Singh & Bhogal 2015). What is most striking in the study, however, is the extent to which farming households are now buying everyday consumption goods from commission agents on credit. Many farmers in their interviews point out that being able to get necessary consumption goods on credit from commission agents, with whom they often share long-term relationships, provides some relief given the non-availability of cash. The infractions of commission agents are no longer perceived as the dominant mode of exploitation by farmers. Instead, cotton farmers in

[69] Traditionally dominated by trading castes, many large farmers joined the commission agent business during the 1970s and 80s when productivity and profitability were highest. These few farmers who diversified their agricultural surplus into other businesses are the ones unaffected by the current agrarian crisis. For a detailed account of how the commission agent system works in Punjab see Sukhpal Singh, & Tejinder K Dhaliwal. (2011). The status of commission agent system in Punjab agriculture. *Indian Journal of Agricultural Economics, 66*(4), 662. interesting exception

particular attribute the crisis, which they are experiencing to the volatility of prices, increasing costs of cultivation with no guarantee of assured return, processes over which they have no control, and to the inaction of the government and political ruling classes.

Public policy discourse in the last few years has discussed measures for removing these local intermediaries, which is premised on the notion that they engage in exploitative practices that are detrimental to farmers' well-being. Exploitation by local intermediaries is used as a justification for allowing international food retail chains into the country that will 'fix' the inefficiencies that plague the agricultural markets and supply chains.[70] However, as Richa Kumar (2014) suggests based on her study of soya bean in Madhya Pradesh, the deployment of technological solutions such as providing market price information to farmers, and eliminating local intermediaries from the supply chain, is unlikely to 'empower' farmers given the global structures that create the conditions of exploitation. Unlike the world of online commodity trading and global retail chains, she argues the government regulated market yards and commission agents are accessible to farmers, retaining the possibility of enforcing some accountability. Cultivators who grow both cotton and wheat, the former governed by global actors both in terms of cost of inputs and prices which has generated a series of crises in the past two decades, and the latter sold to the state which is a relatively stable process with low but assured incomes, are aware of the lack of accountability that comes with foreign actors entering the agricultural system (cf. Clapp 2014). In this context, farmers are articulating demands for retaining state support, although the forms in which state support is expected has changed, a theme I return to later. Meanwhile, farmers are adopting

[70] The Indian government is opening food processing and retail to global companies like Walmart in an incremental fashion. These companies are now pushing back on local-sourcing regulation (Roy 2016).

individualised strategies of coping with precariousness such as leasing out land or investing scarce resources in attempts to secure jobs for their children.

Burdened by debt, and given the heightened risk entailed in cultivation, a significant number of small and medium farmers are leasing out land with exorbitant rents. Leasing provides secure income in the form of rent, which is often supplemented by off-farm employment by some members of the household. Since, land ownership is deeply tied to status among Sikh-Jats, selling land is the last resort as it incurs social shame. The land is leased in by large farmers who want to increase their operational holdings or by landless households to farm autonomously. Landless households are even taking on loans to lease lands as some studies have suggested (Singh et al 2017).

Thus, the risks of cultivation are being passed on to landless households who are for the most part from lower castes. Landless households incur this risk in an attempt to secure subsistence and to avoid the uncertainty that comes with looking for daily wage labour on and off the farm, evident with the tenant cultivators among the Bauria Sikh community that I discuss in Chapter 2. Leasing small parcels of land makes it possible for the entire family to work collectively instead of being dispersed, and a sense of autonomy over the labour process, which is valued highly. Inderjeet Singh, a young tenant cultivator has leased in 16 acres this year. He contends that even though the annual rent for an acre is as high as 45,000Rs and there is barely any scope for making a profit, cultivation generates enough wheat for household consumption and fodder which enables them to keep milch cattle. When I ask, why lease land if there is no profit, he says,

> "what else is there to do for someone like me who is barely literate. The few private jobs that exist are insecure and pay only 5000Rs a month which is hardly enough for meeting the needs of the entire family. With 16 acres, all of us in the family have some work to

> do, we do not have to go out of the village or work as daily wage labourers. The farmers are leasing out their land because they get 60000Rs as rent sitting at home and doing nothing. Why would they want to work and bear the risk of cultivation?"

With irregular work available on farms and within the village, male members from landless households often commute to nearby towns and cities for daily wage labour in construction and transport.[71] Unlike many other parts of rural India, the Green Revolution decades facilitated the creation of adequate transportation infrastructure for moving grains, providing easy connectivity between village and towns and cities. Women and the elderly from landless households, unable to commute, work in the village at minimum wages, under the government's employment guarantee scheme (MGNREGA). Tenant cultivators who lease land express a preference for cultivation, even as it entails tremendous risk and little profit as opposed to these other livelihood strategies because it provides dignified work and working conditions. In the event of crop failure, though, they have to incur loans to pay exorbitant rent in addition to inputs costs, which pushes them into poverty.

Sukhpreet Kaur's extended household that includes her husband's family, for instance, leased about 10-12 acres, to grow cotton and guar beans. While the vegetable production was good, and they produced enough wheat for their household consumption for the whole year, the cotton crop, for which input costs are high, was damaged and they have a debt of about 2 lakh rupees (about USD3000). Now they have opened a small grocery shop in the village to supplement income from daily wage labour and get rid of the debt. Government compensation in the event of crop failures, when available, is inaccessible to tenant cultivators. After the large-scale destruction of cotton crop due to whitefly (a sucking pest) attacks in 2015, while compensation was offered to landowning farmers in the region after

[71] In the North-western Green Revolution states, labour use per hectare declined in the 1990s and is particularly low in Punjab (National Commission for Farmers 2006: 91).

massive protests by farmers unions, tenant cultivators reported receiving no compensation or it was diverted to those who owned the land. Sukhpreet goes on to add,

> "Most young people in our (landless, lower caste) community end up doing odd jobs –they sell things in distant places –for instance, buy onions in bulk and sell it to customers in towns, work as daily wage labour in construction, sell jute cots, or work as rickshaw pullers, barbers. Most children study these days until 10-12th grade, but very few get jobs. Not many of them work on the farms either."

For young people from landowning households, securing livelihoods through off-farm employment is also difficult for different reasons. They aspire to jobs that are commensurate with their higher education levels and conception of status associated with the regionally dominant caste of Sikh *Jats*. Such jobs, however, are few and rural youth are unable to compete with the cultural capital and skills of urban educated classes in a predominantly service sector economy. Social stigma and shame are associated with performing daily wage labour or accessing the government employment guarantee scheme, which despite being a universal demand-based scheme is perceived as being for the 'poor and labouring classes'. Unwilling to work on their own family land, or in construction and transport as daily wage labour, and unable to access the jobs they desire, a majority of the rural youth from small, marginal and medium landowning households are unemployed or investing in expensive but poor quality technical education.[72] Private engineering institutes with dubious credentials that have emerged over the last decade, dot the rural and urban landscape all over Punjab. Aspirations among the Sikh Jats shaped by a history of dominance by virtue of land ownership and pride in occupational identity, as well as the development trajectory, pushed through the Green revolution decades, no longer align with their extant material conditions, generating deep discontent (cf. Jeffery 2010; Jeffery et al 2008).

[72] I discuss the experience and enactment of de-valorisation of agrarian work, once at the core of Sikh *Jat* identity along with land ownership in chapter 2.

Lauren Berlant (2011) terms this phenomenon of holding on to conventional fantasies of good life even in the face of evidence of their unattainability as 'cruel optimism'. While her analysis is situated in the context of neoliberal structuring in Europe and the United States, it provides a way of thinking about precarity and aspirations in a relational conceptual framework within the particular historical trajectory of agrarian societies in the Global South. She draws attention to the significance of understanding what it means to enter insecurity or a state of precarity from different class positions. Methodologically, this means employing the lens of crisis to track the process of adjustment to the 'transformation of what had seemed foundational' (2011: 3). In postcolonial Punjab, for a majority of the landowning households this moment of crisis has not only brought to a halt the process of accumulation through farming and maintaining their dominant caste status materially, but also interrupted the process of upward mobility toward transitioning to 'white collar jobs' for the younger generation that was seen as 'natural' just two decades ago.[73] The notion of 'inflated aspirations' used to describe rural youth in regions like Punjab, sharply highlights the contradictions of the 'transition' discourse of development (Gill 1988). Generational shifts in the meanings of agrarian work illustrate how aspirations are produced through politically structured conditions that also constrain their realization. While the national developmental discourse about transitioning out of agrarian and rural spaces shapes subjectivities in powerful ways, the dissonance created by unmet aspirations also opens up space for critical rethinking.

[73] As Gill (1995) pointed out some of the core activists and militants of the farmers' unions that rose to prominence in the mid-1980s were farmers' sons who were denied urban government jobs, which they thought were commensurate with their educational attainments.

The Political Ecology of Health

New forms of risks are becoming visible in pronounced ways in the domain of health. Unsurprisingly, the public health crisis is most pervasive in the cotton belt, notorious for the highest use of agrochemicals. After more than a decade of campaigning by NGOs and civil society groups, the government is acknowledging the relationship between public health crisis and excessive use of agrochemicals.[74] The health crisis gained widespread attention with the regional and national media's coverage of the 'cancer train', which has now become a widely known symbol of the agrarian crisis in Punjab. The Bathinda Express train is now colloquially called the 'cancer train', as most of its passengers are cancer patients travelling from the Malwa belt in Punjab to the neighbouring state of Rajasthan for treatment at a state-run cancer hospital (Bariana 2016). The Punjab government is now in the process of setting up a cancer hospital in partnership with Tata Corporation, which ironically is one of the key players in the agrochemicals market.[75]

Increasing incidence of diseases, particularly cancer and reproductive disorders has led to significant medical expenditures among rural households. Privatisation of health care was a part of neoliberal reforms in the 1990s in Punjab, despite being a state with relatively high GDP in the national context (Gill and Ghuman 2000). The number of public medical institutions in the state declined in the 1990s, and rural health centres often lack essential supplies. According to the government's National Sample Survey in 2015, Punjab had the

[74] *Twenty-ninth report Impact of chemical fertilizers and pesticides on agriculture and Allied sectors in the country.* Standing committee on agriculture (2015-2016). Ministry of agriculture and farmers welfare (Department of Agricultural Research and Education)

[75] Federation of Indian Chambers of Commerce and Industry. Ushering in the 2nd Green Revolution Role of Crop Protection Chemicals: A Report on Agrochemical Industry. November 2015. Retrieved on November 1, 2016. http://ficci.in/spdocument/20662/Agrochemicals-Knowledge-report.pdf

highest expenditure on private healthcare in the country. Medical expenditure is one of the most frequently cited reasons for selling land by rural households. Some scientific studies corroborate the relationship between agrochemical contamination and rising incidence of diseases, which is a part of everyday discussions in the villages (Mittal, Kaur & Vishwakarma 2014; Blaurock-Busch et al. 2014).

While the cancer epidemic has attracted the most attention in the media, conversations in the villages, particularly among women revolve around growing incidence of reproductive disorders. These discussions around health frequently go beyond expressing frustration with the poor state of public hospitals. They delineate changes in dietary practices, pointing out the correspondence between agricultural intensification and declining health and well-being. Going beyond agrochemical contamination, increased prevalence of certain diseases is understood in the context of the broader transformation of the food culture with deepening commodification of production and consumption practices, and attendant changes in work practices. Amarjeet Kaur, who has been growing organic vegetables for household consumption for the past four years and even convinced her husband to convert a part of their land to organic production, suggests like many others, that the older generation ate more nutritious food, performed much more physical labour and were, therefore, healthier and lived longer lives.

> "As long as we ate *bajra, jowar* (pearl millets and sorghum), and worked with our hands, there were no diseases. Now all that we eat is wheat. The *rotis* made from bajra in those years were tasty, now the bajra that is available is often bitter and hard to digest. My husband says it is because the indigenous varieties have disappeared, and the hybrid varieties do not suit our bodies. People buy American cows because they yield more milk, but I do not like the taste of that milk –the tea tastes different as well. In my parent's house, we still have indigenous cows and there is plenty of milk. The American cows require bathing twice a day, and fans in

> their shelters because they cannot tolerate high temperatures. I decided to keep buffaloes instead. They do not produce as much as the American cows, but enough for our household consumption of milk and butter. Nothing beats the milk of our indigenous cows, it is great for preventing diseases and even the doctors recommend it."

Her husband Kesar Singh adds that the rampant problem of drug addiction among youth in Punjab is also a consequence of poor diets.

> "Their food is full of chemicals, and so they get tired easily when they work and resort to addictive substances to relieve fatigue. People talk about drug addiction among young people, but almost everyone is popping pills for something or the other. Very often people avoid going to the doctor because it is expensive, and instead just ask the chemist to give them something for their ailments."

He then shifts to talking about monocrotophos, a highly toxic insecticide implying a connection between its spraying and the increasing incidence of diseases and use of drugs. "There has been a reduction in the use of monocrotophos as people are becoming more aware, but when farmers see *sundi* and *tela* (aphids) on wheat plants they sometimes still spray it because it produces better-looking wheat. I have been constantly telling my brother to not use it, but he still sprays it sometimes. It's like the warnings on alcohol bottles that do not stop people from drinking."

The interconnections charted by Amarjeet Kaur and Kesar Singh between disease, food production and consumption are common knowledge that continuously circulates within village public discourse. The sense of inevitability expressed by Kesar Singh suggests an inability at the level of individual households to address the problem, given its enormity. Apathy regarding bodily harm caused by agrochemicals is in stark contrast to the fear and reluctance encapsulated in the narratives recalling the early years when pesticides and

insecticides were introduced. The highly toxic first-generation pesticides and insecticides in the late 1970s and early 1980s had visible and immediate effects that ranged from dizziness and foul smell to death. Hence, they evoked caution and fear and were recognised as poison. Most elderly people remember instances of death in their village due to pesticide poisoning, and some attribute women's withdrawal from the fields to this period as well. Women recall the anxiety with which they monitored the sleep patterns on days when male members of the household came back after spraying chemicals in the fields.[76]

Toxicity levels were readjusted with second-generation agrochemicals to address these visible effects, enabling the gradual normalisation of the presence of agrochemicals in the fields and beyond. There is no provision for disposal of empty containers, and people use them for bathing animals, lighting lamps, to store household items including water. When DDT was freely available in the 1980s and 1990s, many women recall using it to kill head lice among children. Unlike the initial years, where avoidance or extreme caution was practised by cultivators and by farm workers whenever possible, the masked and unknowable effects in the short-term combined with increasing crop failures due to pest resistance have led to the aggressive use of pesticides with normalization of their presence. None of the numerous field visits by company representatives every cropping season to demonstrate new products include dissemination of safety information. Pesticide shopkeepers argue that they do not need to provide safety information as farmers have been using these chemicals for decades and know their effects. However, most farmers I interviewed were not aware of the colour codes that indicate different levels of toxicity, and very few are able to read

[76] Data on occupational pesticide poisoning is rarely collected and unreliable as it is largely obtained from hospital records as the WHO study (2009) on health implications of monocrotophos use in India suggests, further complicated by the fact that the available data does not separate occupational accidental poisoning from self-intentional poisoning among farmers. It is also worth noting that pesticide poisoning has been completely neglected in the literature on the Green revolution in India, given the lack of attention to work practices.

instructions that are not in Punjabi. In one pesticide shop in Bathinda, none of the products that I asked for had attached instruction manuals. The seller had to search through his stock to find one of the manuals and contacted another seller to gather leaflets for the rest of the products.

The long-term effects of the pervasive presence of agrochemicals in the environment and food are becoming visible with the cancer epidemic and rise in reproductive disorders over the last decade. Although visibility enables cognition of agrochemical contamination, farming households feel that they cannot control or resolve the problem. Distancing of costs in this way produces quiescence. Temporal lag in the manifestation of effects also allows for effective obfuscation through techno-political framing by experts to explain and address the health crisis. Such obfuscation is, ironically, articulated through claims of precision. Scientists and the public policy discourse more broadly focus on identifying singular causal factors for the growing incidence of diseases. For instance, an agronomist at the state university claims that

> 'pesticide residue is not an issue with wheat or rice in this region, but largely with vegetables and fruits that are generally grown by migrant labour from UP and Bihar on the outskirts of the city and consumed domestically. They lease land around urban centres. They also grow off-season vegetables as it fetches a good price and therefore the use of excessive chemicals for ripening including banned pesticides is common. And because vegetables are not always cooked before eating, they are the main source of diseases. With wheat, the pesticide residue evaporates by the time it is harvested and consumed.'

The health impact is thus narrowed down to pesticide residues on food crops without accounting for environmental pollution, the possibility of long-term effects or even direct exposure to chemicals while spraying. On further reflection he suggests,

> ‘the hue and cry raised by activists against pesticide spraying on cotton crop and the claim that it is responsible for rising incidence of cancer are misplaced. A lot of the chemical pollution in this belt, particularly ground water contamination, is due to waste generated by the industries, but no one focuses on that. It is true that groundwater has also been contaminated from excessive use of nitrogenous fertilizer in paddy and wheat. The plants can only absorb a certain amount and the rest seeps into the ground.'

Echoing the common narrative among scientists and extension officials, he concludes that excessive use of agrochemicals is a consequence of ‘lack of education among farmers who follow each other or the advice of shopkeepers and agrochemical company representatives instead of university recommendations.' The ahistorical understanding of the crisis, and therefore the solutions he proposes, reflect an epistemic framework that clearly separates the social and the ecological domain, and attribute no responsibility to institutional mechanisms that aggressively promoted Green revolution practices. The corrective to ecological degradation, when the problem is framed in this way, are technical fixes, for instance promoting the need-based use of inputs by farmers through making available mechanisms for soil testing. According to him, further mechanisation can resolve the crisis of profitability as it would reduce labour costs for farmers, and more generally with occupational diversification and creation of more off-farm jobs. Practices aimed at place-based socio-ecological rejuvenation are not within the realm of what is ‘possible’ in this framework.

Technopolitical obfuscation has also been the centrepiece of the debate surrounding farmer suicides, which have been critical to foregrounding the agrarian crisis in the national public consciousness. In 2015, a Punjab-based NGO filed a Public Interest Litigation (PIL) in the Supreme Court of India seeking court’s intervention on the matter. In response to the PIL, the central government said that farmers' suicides were not due to agrarian reasons alone but also for factors like "family problems, illness, drug abuse/addiction, unemployment, property

dispute, professional/career problems, love affairs, barrenness/impotency, cancellation/non-settlement of marriage, dowry dispute, fall in social reputation and other factors".[77] This disassociation of 'social factors' from 'economic distress', and what specifically constitutes 'agrarian crisis' has become a point of contention within the scholarly literature as well, specifically with reference to farmer suicides attributed to the cultivation of genetically modified cotton (Kaushal 2015; Munster 2012). The expert discourse that seeks to establish precise causal factors responsible for farmer suicides, and for ecological degradation is premised on a narrow framing of the agrarian crisis. Such techno-political discourse externalises 'nature' on the one hand and compartmentalises production from socio-cultural reproduction on the other, disregarding the ways in which crisis is experienced by farming households.

Consuming pesticides has been the most common method among farmers to commit suicide, which is a deeply tragic culmination of the trajectory, which began with deaths due to accidental pesticide poisoning in the early years, followed by the less visible slow degradation of bodies and the regional social ecology as agrochemical use became normalised. In a group discussion with farmers in a village in Bathinda, everyone could recall instances of injuries during spraying pesticides. In response to a question from a researcher from Pesticides Action Network about whether they complain about agrochemical products that cause rashes or burning, one farmer remarked sardonically, 'we do not complain to the company, but drink the product instead.' Another farmer notes that while he knows that the insecticide monocrotophos and other products with red triangles are extremely dangerous and harmful, he uses monocrotophos on his wheat crop because one spraying is sufficient, to avoid purchasing 2 or 3 less toxic chemicals which would cost more. 'The prospect of crop

[77] http://www.ndtv.com/india-news/no-farmer-should-commit-suicide-supreme-court-tells-government-1209745

failure and no income to sustain the household is more immediate. People are more cautious with food crops, but with cotton, we sometimes use ten times the recommended dosage of monocrotophos', he adds.

Farmers' articulations centre the labouring bodies as being embedded in the social ecology where both are sites of mutually constitutive degradation. The history of health is indeed where the story of the separation of humans from nature, critical to the narrative of modernity, is starkly undermined (Nash 2006: 209). As Nash suggests the 'material connections between bodies and environments to which they attest, ironically, have been the most clear in the most industrialized landscapes – those landscapes that are typically taken as symbolic of human alienation from nature' (2006: 210). This connection, however, becomes visible only when the socio-ecological resources to address it have already eroded significantly. My questions about the availability of protective gear, or precautionary information about high toxicity chemicals were often met with laughter from farmers that implied the incredulity of such a possibility. On further reflection, a few older farmers and farm workers recalled the prevalence of some precautionary measures, and the specialists in protective gear who sprayed in the fields, in the few years after pesticides and insecticides began to be used. Further, landless workers who laboured in the fields, and for whom the effects of chemicals were visible most starkly on their bodies have no voice in making decisions about farming practices given their alienation from and transitory relation to land. The basic level of protection in the form of masks, gloves and other protective gear is not available to farm workers while transporting, spraying and storing pesticides (Mittal et al 2014). Perhaps the most voiceless victims are children. Studies have reported effects of pesticides among rural children that range from premature greying, discolouration of teeth to inability to perform developmental tasks particularly in cotton-growing areas of Bathinda,

and traced pesticide residues in human milk (Thakur *et al*., 2008; Halder 2007; Kalra et al 1994; Mittal et al 2014).

Apathy results from the enormity of the health epidemic, and the lack of capacity to address it at the individual or the household level. While the connection between the health epidemic and excessive use of agrochemicals is a part of the common-sense in the region, the almost complete erosion of other ways of farming over five decades has produced a sense of inevitability, reinforced by the degraded material environment. And yet, as Nash argues, 'from the vantage point of health, human alienation from the landscape even in highly industrialized spaces remained incomplete (2006:213). Ecological understandings of the body, health and land survive in collective memory that offers a counterpoint to techno-political framings, and more critically resources for overcoming apathy. For instance, people often draw an analogy between widespread drug addiction among rural youth in Punjab and the addiction of land to agrochemicals. Infertile lands, with dead soils without any microorganisms, are compared with reproductive disorders among humans and animals. People cite the elimination of nutritious coarse grains from the fields and hence from diets, as well as reduced consumption of milk and milk products, as reasons for younger generations' inability to perform manual labour in the fields or withstand high temperatures. The tension articulated by notions of bodily degradation over subsequent generations, and the increasing requirement of agrochemicals for maintaining current levels of agricultural intensification opens the space for challenging the encrusted developmental paradigm of increasing productivity (cf. Nichols 2015).

III. Aspirations, Status and the problem of 'Conspicuous Consumption'

Crisis discourse is by no means uniform, and its contradictory claims reveal the ways in which decline in well-being is experienced in the realm of production and social reproduction, and the categories through which people examine their own life-worlds. On the one hand, the agrarian crisis is explained in terms of precarious livelihoods and consequently precarious lives that require loans to meet everyday needs, with no realisable alternative futures. On the other hand, 'conspicuous consumption' and greed of the Punjabi landowning households is also a part of the narrative of decay and crisis. In the narratives of 'experts', whether it is the urban-centered regional and national media or public extension officials, bureaucrats and scientists, the rhetoric of 'conspicuous consumption' is employed as an essentialized cultural attribute of Punjabis and the Sikh *Jats* in particular. This essentialization seeks to shift the blame onto the farmers for the present crisis, without acknowledging the role of structural policies that enabled the Green Revolution practices, as well as the associated consumption practices and social reproduction strategies. An agronomist at PAU, for instance, argues,

> "The problem of rising debt among farmers has to do with extravagant lifestyles. Consumerist culture has consumed Punjab, which is also partially responsible for the crisis faced by rural households. The young people crave branded products because they see it on television and to fulfil these desires people take loans that they cannot repay. When the cotton yield was high two to three years ago and people made a lot of money, the standard of living went up. But it does not go down when the yields or income are not as high."

He goes on to suggest that not only do farmers lack financial prudence, but their greed is responsible for the ecological crisis as well.

> "They do not use recommended doses of agrochemicals, and farm with the mentality of extracting as much as possible from the land. People in Malwa overall have larger landholdings, and their psyche

> is that of the big farmers regardless of how much land they have. They constantly want more yields and tend to, therefore, use fertilizer and pesticides indiscriminately."

On further prodding, though he admits that monocultural cropping is bound to create ecological problems in the long run. Defending the role of the scientific establishment nevertheless, he says,

> "the need of the hour in the country in the 1960s to produce food grain and prevent famine, which we did successfully. The university or extension agents did not prescribe over-fertilization, which is a consequence of farmers' economic compulsions, which in turn have been shaped by government policies. When the farmers' land loses its productivity, the government should compensate them to help them rejuvenate the soils. Over time the cost of living has increased exponentially, and farmers' incomes have not increased correspondingly. The farmer does not get adequate returns for his crops, and the prices of other things that he has to buy from the market keep increasing."

Another scientist provides a less nuanced analysis by arguing that "excessive spending by farmers to maintain social status is the primary cause of indebtedness. Even small farmers buy tractors, which is not very efficient, and spend on lavish weddings, alcohol and unnecessary consumption practices." He also attributes this 'cultural decline' to the influx of migrant labour from Bihar and UP, particularly widespread drug addiction and rise in crime rates. Adding that paddy cultivation, "would not have been possible without their knowledge and skill with transplanting, which has been detrimental for the social ecology of Punjab given that paddy is the main culprit as far as depleting water resources are concerned."

'Conspicuous consumption' is thus employed in expert narratives, as a means of 'othering', signalled explicitly in the above quote by holding migrant labour responsible for moral and ecological degradation. Punjabi cultivators are framed as purely economic subjects, and their sociocultural obligations and practices are considered irrational and a matter of individual choice. With no self-reflexive engagement about their own urban lifestyles and consumption

patterns, these narratives display what Kaushal (2015) calls an assumption of epistemological superiority, that have pervaded urban middle-class responses to current agrarian distress. Such ‘epistemological superiority’ is also visible in scholarly analysis of consumption patterns that conclude with prescriptions for behavioural development interventions (cf. Cavalcante 2015).

These expert narratives are reminiscent of discourse that accompanied the commercialisation of agriculture and efforts to increase productivity through a restructuring of land tenure arrangements and building of irrigation infrastructure in Punjab province in the late colonial period. Malcolm Darling (1977: 225-227), a British administrator writes in the mid-1920s, for instance, that while the colonial state's interventions brought material prosperity to Punjab, it led to a decline in the ‘moral character of the peasant'. He cites indebtedness, excessive drinking, the rise in expenditure on weddings, and female infanticide as evidence of this ‘moral decline’ particularly in the more prosperous districts within the province. All of these themes have resurfaced in the narratives of ‘cultural decline' at the present conjuncture that is used to explain rural distress. Darling astutely though also makes the observation that the few with largest landholdings derived greatest advantages from colonial policies and acted as trendsetters for these ‘detrimental' consumption practices, arguing that ‘herd instinct' is particularly strong in the close-knit village society. He writes,

> A ‘want’, therefore, that starts as the luxury of the few, is apt sooner or later to become the necessity of many; and when the rise in value of land has made it possible for most to borrow as much as they please, it is generally sooner than later…formerly, in bad years a self-acting law compelled (peasants) them to live on what was actually produced, as they had no credit to supplement it. Now

> they find it easier to borrow than to alter their 'scale of living' (1977:215).[78]

Unlike the expert narratives that are framed in moralistic terms or attribute cultural essences, emic critique of social pathologies and 'conspicuous consumption' refer to government policies that instigated the preoccupation with increasing productivity, images in the media that sell a particular way of life, and the influx of consumer goods in rural markets which are the new frontier for expansion. KVM activists, as well as members of farming households, particularly the elderly who have lived through the early Green Revolution period, formulate such critiques most cogently. Gaganpreet, a young activist from a landless family, working with KVM, frames the issue in the following way while addressing farmers at a village meeting:

> The Green Revolution did not only transform our way of farming, but money was infused in our everyday lives. Earlier weddings were simple affairs, where the boy's family provided expenses for the food and the girls' family made the arrangements. Gradually, the girls' family was expected to make arrangements and provide the food. Then, as some families became wealthier with increasing productivity they also began to demand dowry. Earlier the practice of dowry giving was confined to extremely large landowners. Now, our society has degraded to the extent that women are killed for not bringing enough dowries, and we kill our girls in the womb, even before they are born to avoid bearing the burden of dowry. Or, if they happen to survive and grow up, parents push them to take IELETS (International English proficiency test), as girls are generally good at studying and clear them more easily than boys. And then they are married off to strangers in Canada/America without any concern for their safety, in the hopes that they will enable the entire family to emigrate in a few years. Does anyone ever ask them if they want to go to a strange country with no family or kin...we have to understand and reflect on this whole picture in order to be able to come out of it. These societal trends are not unrelated to the Green Revolution.[79]

[78] Interestingly, Darling in his conclusion proposes 'cooperative farming' as a solution to the dilemma of rising debt that accompanies material prosperity.

[79] Punjab has very high rates of female infanticide which as Ravinder Kaur (2008) among others have argued is not just a reinforcement of traditional cultural norms, but a

Gaganpreet then raises the issue of the aspirations to exit farming, and villages more generally. Government jobs continue to be the most coveted jobs, particularly in the army and the police, followed by attempts to emigrate.[80] Households often sell parts of their landholding to gather money for bribes for securing government jobs, or to pay brokers who can facilitate emigration. Emigration, which was widespread in other parts of Punjab, has gathered momentum in the Malwa region more recently in the last two decades, that is the post crisis period, particularly after the persistent failure of the cotton crop in the 1990s. Referring to the unwillingness of young people to farm, and the attempts of landowning households to secure jobs, Gaganpreet says,

> This is one of the big reasons people end up putting their land as collateral or selling it. Young people who stay in the village and farm are only those who do it under compulsion. The farmer with 2.5 acres tries to send his son to Dubai, for daily wage work, the one with 20 acres sends their sons to Canada or Australia. What we do not realize is that land is our only wealth, and if we lose it, we will have nothing left. People who sell seeds, chemicals, fertilizer, petrol and diesel live comfortably in Bathinda, Delhi and Mumbai. So, it is not that farming is intrinsically an unprofitable enterprise, everyone is making money out of it except farmers. If it was a losing enterprise, would the commission agents/banks be making so much money from it? We (farmers) are incurring losses because the system is against us and we collaborate with it and sustain it. If there is no one to farm, the land is meaningless. The whole system will crumble without the farmer.

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manifestation of the increasing precarity of agrarian livelihoods. Similarly, Radhika Chopra (2011) examines household decision making in rural Punjab to suggest that precarity of agrarian livelihoods explains the systematic investment in cultivating material resources and networks to enable migration of some children in landed households.

[80] The army and the police seem more accessible, as a significant number of people within people's social networks or from the previous generations in a majority of the households are enrolled which is a colonial legacy. Nearly, 50% of the British India army was recruited from the relatively small Punjab province given its geopolitical location and the labelling of the Sikh Jats as ‘martial races' by the colonial state. Employment in the army also initiated the first wave of immigration in the early twentieth century. The large Punjabi diaspora has continued to facilitate the immigration of young people from their villages and extended social networks (Chopra 2011).

Providing another perspective, Jaswant Singh a school teacher in the primary government school in the village who also farms 4 acres of land, says,

> The issue of debt, in my opinion, is not limited to agriculture and has to do with the media. It is not just the failure of agriculture, but the development model that is being touted by the media that is responsible for the high levels of debt. Media has created this culture of hero worship, where the heroes are movie stars or people who are unlike the hard working labour in this country. The real development of any country, the revolutionary spirit is attached to its younger generation. Media has captured their imagination with mobiles, cars, branded clothes. Rural households need money to buy those things and they take money from wherever they can get it to fulfill that aspirational living standard. Punjabis, in particular, are susceptible to this consumerism because many people from here have gone abroad. They come back and build bungalows in the villages. This tendency to show off your status with big houses and tractors even at the expense of being in debt has harmed us the most.
>
> Ninety per cent of our young people do not want to be farmers. They do not want to go to the fields and do backbreaking work. There is no profit because people stopped working with their hands. Those who are working with their hands are still making some money. If there is a household with 2 acres and two members are available, should they not harvest wheat by hand? But, they will also rent a combine harvester. If they harvest manually, they will produce about 100-quintal straw. The rate of dry fodder right now is about 200-300Rs per quintal. In most households, the farmer is sitting in the field or the market yard after harvest, while the son is napping or sitting idle somewhere in the village or sniffing drugs in some cases. With weedicides and other agrochemicals, the money that was supposed to go to labour now goes to the companies. Everyone is caught in the trap of the 'living standard' that we are all supposed to have but cannot. I watch the *basti* (colony of Dalit landless households), which is in front of my school in the village. If every farmer household has a car, every labouring household has a motorcycle, even if it means taking a loan.

As Jaswant Singh highlights, perceptions of place and subjectivities are transformed through development discourse refracted in media images, and in the case of Punjabi youth through the imagined lives of those who have emigrated from their villages. These 'virtual' interactions and experiences combined with the infusion of consumer products in rural

markets transform social relations and notions of self, along with devaluation of agrarian work. Consumption practices acquire a pronounced become a site for asserting status, particularly for Sikh Jat young men with the dismantling of agrarian occupational identity and loss of autonomy over production. For landless Dalit youth, consumption can be a means for asserting equality. It is easier to take a petty loan and buy an expensive phone or motorcycle than to acquire or access land or find a stable job with a livable income. Across these social classes though, aspirations for a better life are displaced from the realm of work to consumption, as the former seems unrealisable.

Gupta and Sivaramakrishnan (2003) argue that rural cosmopolitanism forged through experiences of migration for work by landless and lower caste workers produce an oppositional consciousness with the potential to challenge local subordinating relations, particularly caste hierarchies. Moreover, with the agrarian crisis, dominance exercised by landowning agrarian castes like the *Sikh Jats* has weakened within the village social structure to a limited extent (cf. Martin 2015). However, emancipation experienced by Dalit landless workers through moving out of exploitative agrarian social relations is severely limited in that they transition to insecure forms of livelihood and economic forms of exploitation (Roy 2014; Vasavi 1998). Neoliberal practices in the postcolonial global South are being deployed by states as a development strategy, reconfiguring the consolidation of insecure livelihoods as the normal state of being not as a transitory stepping stone toward something else (Connell and Dados 2014; Gupta 2012). Even as Dalits have gained more formal political representation, rural structural reforms such as land redistribution have become invisible on the political agenda in a state like Punjab, which has one of the highest percentages of landlessness among rural households in the country. The 32% Dalit population is largely landless (Socio-Economic Caste Census, Government of India 2011). The crisis of the

agrarian economy has made farming unprofitable but access to land continues to be important for coping with a crisis in the short term (for instance paying medical expenses by selling a parcel or taking on a loan as many households do), and more fundamentally holds the potential for meeting household food consumption. As I discussed earlier, landless households that are leasing land for cultivation, despite the tremendous risks it entails, are doing so for an opportunity to labour autonomously and generate wheat and fodder for household consumption. Struggles for land redistribution and village commons among Dalit communities, however, have largely been displaced to struggle within political institutions such as *panchayats* for greater access to state resources. A prime example is the struggles over the implementation of the National Employment Guarantee Scheme, MGNREGA, which is accessed mostly by landless households in Punjabi villages. Resistance by Dalit communities has been largely in response to the funds being blocked by landowning farmers at the *panchayat* level, in order to ensure that labour is available for farm work.

IV. Gendered dimensions of the agrarian crisis

While landless workers move back and forth between the cities and the village, for young men from landowning households the dissonance created by unmet aspirations and unemployment, has not only kills their 'revolutionary spirit' as Jaswant Singh argues, but has led to pathological behaviours. The extensive addiction to opioids among young men, in particular, is widely acknowledged as a symptom of such dissonance.[81]

[81] A recent study confirmed the high rate of addiction, which had been widely known informally in the region. The study conducted by the All India Institute of Medical Sciences in 10 districts of Punjab in 2015 shows that 1.2% of the adults are hooked to opioids in Punjab. It was conducted within the age group of 18-35 years and 99% of the drug dependents were men. This is much higher than the global average of 0.2% determined according to a study in 2010, and the national average in India, which was 0.7% in 2001 (Kanwari 2016).

Tensions and the weakening of support structures are becoming visible within the familial domain, including how gendered norms mediate the experience of crisis. Drug addiction predominantly among men, high expenditures on weddings and high rates of female feticide reflect the regressive restructuring of social relations through the Green Revolution decades. Multiple processes such as the shift away from collective work practices with extended kin, from joint cultivation and residential households to nuclear households, withdrawal of women from the fields, which became another marker of status, and the disassociation of the younger generation from the farms, have worked to isolate the work of managing the farm for men. Economic distress, crop failures and inability to repay loans are experienced as individual shame.

Sukhjeet Kaur, an elderly woman who lives with her son and his family expresses this as she talks about how her son cultivates their 6 acres on his own. Contesting the claim that chemical-intensive agriculture and machinery decreased required work on the farms, she says,

> Men's work burden has increased with machinery. Before mono-cropping, we would sow crops according to seasons, and the quality of the land. Sandy hillocks were good for some crops, more fertile land for other things. Now with paddy, everything needs to be done at precise times, the machines and labour have to be available at just the right time. My son is always under tremendous pressure, while my grandson sits in the house with the cooler switched on, listening to music with earplugs. The expenses have increased exponentially. When men in our households come back from the commission agents at the end of every season, they are on the verge of tears. No money is saved, we only save our lives to give each other courage and carry on, I suppose. The entire farming system runs on loans. You need money for everything –for

> school fees, food, medical expenses and social obligations. The burden for generating cash income to meet all these expenses falls on one person."

With joint family cultivation, women were active participants in the fields. In some instances, in large landowning households, women's work was confined to delivering food and tea to the fields and saving seeds at home for the next season. But a majority of women helped with post-harvest processing, with picking cotton, weeding and gathering fodder. Sukhjeet Kaur goes on to highlight gendered and generational tensions that are emerging with changing social norms and individuation ethic, specifically the increasing nuclear households in the village.

> A girl was given just as much as she needed to start a new life at the wedding – a trunk with clothes and utensils. Now, young women must bring all kinds of things – refrigerator, air conditioners, motorcycles, cars as part of their dowry. People spend so much on weddings that the next five generations are under debt. What old people who demand dowries for their sons do not realise is that sooner or later the daughter-in-law will keep these things in her own private room in the house and lock them out.

The gendered dimensions of how the agrarian crisis is being experienced by rural households have largely been absent in the burgeoning scholarship. An exception is Ranjana Padhi's (2012) study that examines the consequences of farmers suicides for the remaining family in Punjab. Padhi also points to the withdrawal of women from the fields as a critical component that explains men bearing the stresses of the current agrarian crisis as individuals. Women's presence in the fields, performing manual labour, is perceived as shameful and a reflection of the household's economic distress. Women in households where there have been suicides are often not aware of the level of indebtedness until after the suicide has occurred. They have to cope with the situation without any knowledge of farm operations, make decisions within the

familial and public domain, which they have not been allowed to do until that moment. Social stigma and shame attached to working in the fields or as wage labour, and they are often forced to sell the land to pay the debt. Patriarchal norms structured the division of labour in specific ways during the Green Revolution decades, which continue to impose tremendous constraints on both men and women in farming households under the present conditions of distress, where the task of 'maintaining families' becomes an ordeal (Padhi, 2009: 59).

A narrow economic focus on stagnant agrarian productivity or declining farm incomes, thus, is misreading the crisis, which reflects the 'individualization of risk', but without a concomitant individualization of social and cultural life' (Vasavi 2012:125). Examining the social landscape in areas of widespread farmer suicides in India, A.R. Vasavi (2012) suggests that the crisis has to be understood as an experience, which in addition to being caught in cycles of indebtedness, is shaped by thwarted aspirations for upward mobility, commercialisation of ritualistic and social practices, concurrent with rural areas becoming sites for further expansion of a consumer market.

Deconstructing the narrative of 'conspicuous consumption' thus reveals that growing risk and insecurity is translating into lack of hope for the future particularly among the younger generation. Unable to find meaningful work commensurate with their aspirations, and losing the privilege enjoyed by landowning agrarian castes within the local milieu, the narrative of progressive modernity is being displaced with apathy or individualized coping strategies such as taking on the risk of pooling all resources to enable an exit. This experience of downward mobility is pronounced in a national context of spiralling economic growth, where images of 'conspicuous consumption' of an urban minority have captured the public domain and imagination.

V. Conclusion: The Politics of Precarity

Conceptions of precarity that reference the risk and insecurities of everyday life at the neoliberal conjuncture for the majority in the Global South, and increasingly in the global North, hold the potential of being politically reclaimed as affirming and valuing social interdependence. As Allison (2013) notes precarity can mean connection, in the sense of social dependence on others for fundamental sustenance, and therefore can provide the basis of a new politics of communing that centres sustainability and human connection. However, in the context of an agrarian crisis in sites of capital-intensive agriculture, where farming households are adopting individualised strategies of coping, the possibilities of collective organising seem bleak. As Vasavi (2012) argues even the influence of populist agrarian movements, dominated by medium and large farmers that emerged in the 1980s in the Green Revolution belt, has been waning. These movements have been unable to enforce any policy changes since the 1990s. Further, the 'palliative politics' of the state in the form of welfare governmentality pacifies any search for alternatives or the construction of a fundamental challenge to the status-quo (2012:126). The social welfare measures, however, enacted by the neoliberal Indian state are largely a response to grassroots social and political struggles (cf. Harriss and Scully 2015).

The landscape of resistance in contemporary rural Punjab though is complex and does hold the promise of paving the way for a politics of commons. The various factions of the populist farmers union the Bhartiya Kisan Union (BKU) are making a comeback as the crisis has deepened. In the last few years, there have been periodic street protests organised by BKU to protest delays in procurement of grain and payments, demanding compensation for failed

cotton crop, and for families of farmers and farm workers who have committed suicide, as well as against land acquisition. The government's decision to impose a cap on Bt cottonseed prices, despite Monsanto's threat to exit the Indian market is partially a result of this visibly growing discontent. The issue of compensation for suicides due to agrarian distress has also generated a hitherto unlikely collaboration between the farm workers unions and the farmers' unions. Farmers organisations are fighting agricultural land grab or at the very least for just compensation which is not simply the price of their land but accounts for their future livelihoods. This process of determining adequate compensation becomes extremely difficult in a context where having access to land no longer guarantees livelihood security. Yet, landless households are willing to cultivate on leased land even by paying exorbitant rent because it provides an opportunity for dignified work and achieving food self-sufficiency to a limited extent, illustrating that people enter conditions of precariousness from a variety of structural locations which in turn determines and constrains their aspirations for well-being.

While the majority of mass protests are confined to immediate issues of compensation, since 2006 the farmers' unions nationally including in Punjab have consistently raised the demand for a livable income. More concretely, from the list of recommendations made by the National Commission of Farmers in 2006 led by M.S. Swaminathan, which mostly focused on strategies for further sustainable intensification through technological measures, the unions picked up the isolated recommendation for an increase in Minimum Support Prices which are 50% above the cost of production. The mobilising discourse employed to justify these demands highlights the valuable service farmers perform for the nation. Mobilisations in Punjab also deploy a regionalist discourse, which contends that the exploitation of their natural resources and farmers' labour has ensured the food security of the nation. Activists draw attention to the consistently rising salaries of public sector employees in comparison to

dwindling minimum support prices necessary to keep food inflation in check, which is a re-articulation of the 'urban bias' discourse of the 1980s. While farmers experience precariousness associated with farming, both economically and ecologically, BKU continues to confine its agenda of demands to the economic domain. The mobilising strategies of the BKU, reflect no long-term vision for transforming the agricultural system but are primarily geared toward preventing the dismantling of state protections.[82]

The emergent grassroots politics of sustainability, on the other hand, offers a fundamental critique of the Green Revolution model of farming. Like other prefigurative movements that reject the development paradigm, they use the vocabulary of hope, autonomy and dignity with a particular emphasis on nurturing socio-ecological relations, instead of class and identity. It has been rightly argued that such prefigurative movements do not exist in isolation from existing statist and market structures, rather they are attempting to create a distance from such structures to carve out alternative spaces (Escobar 2008; Dinerstein and Deneulin 2012). But attention also needs to be paid to forms of subjectivities forged through other struggles that have preceded and coexist with such movements structuring the broader political field within which they operate. Participants in KVM's endeavour to restructure everyday practices variously express and understand their grievances through class, caste, gendered and/or regionalist forms of exploitation. The particular forms in which they experience precariousness enable or dissuades them from participating. Unlike the occasional protests organised by farmers' unions or labour unions for achieving specific ends in which

[82] In the past few years several dominant agrarian castes in other parts of the country, with similar economic and cultural constraints as Sikh-jat Punjabi landowners have been agitating for a share in affirmative action quotas in public sector jobs. As upwardly mobile rural classes, they once expressed disdain for such statist welfare politics. These agitations by landowning farmers can be seen as what James Ferguson (2013) calls a 'declaration of dependence' reflecting the shift in political subjectivity brought about by their relatively new inclusion among the 'precariat'.

people participate depending on their particular circumstances, the work of restructuring everyday practices is ongoing, requires a deeper commitment and resources including time, labour and knowledge. The economic constraints faced by indebted small and marginal farmers prevent many of them from taking the risk of shifting to organic practices within the present policy structure, even as they express support for KVM's agenda. As I have discussed in this chapter precariousness is experienced as more than economic risk and uncertain livelihoods. Notions of status, dignified work and life constituted historically, shape aspirations which for the majority of the younger generation among Sikh-jat households are unrealisable. Consumption practices and the so-called pathologies of affluence such as opioid addiction, family breakdowns and increasing frequency of suicides are manifestations of cruel optimism produced by the visible unattainability of the developmental promise. While the shift toward agroecological practices produces an alternative imaginary that is beginning to take root among some medium scale farmers, and women from landless households, the pervasive ethic of individuation and apathy pose a significant challenge to the task of engendering collective work practices. Whether the politics of sustainable agroecological practice is able to transform into a politics of communing remains to be seen.

CHAPTER FOUR

AGRO-ECOLOGICAL PRACTICES AND THE POLITICS OF SURVIVAL

I. Introduction

I began this dissertation by examining the conditions that led to the emergence of prefigurative politics spearheaded by KVM. The mobilising discourse and organising practices employed by KVM activists articulate the manifest symptoms of the agrarian crisis at the neoliberal conjuncture with a critique of statist development practices of the Green Revolution decades. The present crisis thus stems not simply from the dismantling of the protectionist development state with economic liberalisation since the 1990s. Rather, the crisis is a consequence of developmental state practices that facilitated extractive agricultural modernization and transformed the regional ecology of Punjab since the 1960s. While stark manifestations of socio-ecological degradation have created conditions that are ripe for imagining alternatives, they pose tremendous challenges to charting agro-ecological transitions and the formation of a sustainable localised food system. To recall briefly, these challenges included material constraints such as loss of indigenous seeds and biodiversity, degraded soils, contaminated and depleting groundwater, and disruption of transfer of embodied knowledge practices. Increasing incidence of diseases and medical expenditures has compounded the constraints faced by farming households, along with social pathologies and a general lack of interest in farming among the younger generation. In this chapter I further explore the politics of agro-ecological restoration through the diverse ways in which men and women from rural households are engaging and responding to KVM's organising practices, and how these diverse forms of engagement are reshaping KVM's own agendas. I focus on the varied forms of participation, why people choose to participate or not, the factors

that enable people to enact alternative agroecological practices, the meanings they attribute to them and the ways in which they cope with resource constraints.

In chapter two and three, I examined how men and women from rural households (small and medium landowning cultivators as well as landless households), who are not engaging with KVM's agroecological politics, experience transformations in labour practices and articulate the current crisis. These narratives of crisis and oral histories of transformations of production and reproduction reveal the shared regional moral economy of Punjabi cultivators. Entrenched in the ethos of commercial cultivation, the process of shifting toward sustainable agroecological farming and consumption seems radical, risky and almost impossible to a majority of farming households in the current institutional and policy environment. The presentism and commoning ethic of prefigurative politics have to confront subjectivities produced through developmental practices over the past six decades. Agricultural intensification brought short-lived monetary gains for landowning farmers and cultivated individuated relations of production and reproduction. Thus, the slow decay was enacted through ‘distancing' of costs over time and to marginal social groups for landowning cultivators. Enactment of agroecological practices requires forgoing short-term gains and restoring collective autonomy premised on building cooperative and reciprocal relations. The relationship between declining health and excessive use of chemicals, contamination of groundwater, food and environmental pollution is widely recognized and is a part of the ‘common sense'. Yet, precisely because it is pervasive, this sense of crisis breeds apathy and is expressed with a sense of inevitability. Within this context, KVM’s interventions are significant for introducing a constructive practical program of transformation that expands the horizons of what is possible. Therefore, understanding the motivations and trajectories of

the few farmers who are adopting sustainable agroecological practices reveals the possibilities for change.

Within the scholarship on collective mobilisations for sustainable agro ecological farming and food systems, the focus has either been on delineation of exemplary practices and the ways in which they critique and provide an alternative to the mainstream industrial food system (Van der Ploeg 2010; Meek 2014; Rosset & Torres 2012), or on how such initiatives have reinforced the exclusions engendered by industrial food system (cf. Guthman 2004; Arora 2012; Louis 2015). I argue that the exclusions of agroecological politics, however, cannot simply be explained based on predefined social class categories, but have to be understood in terms of processual challenges, as well as how conditions and subjectivities are altered through critical praxis within specific socio-material configurations (cf. Patel et al 2015). I, therefore, chart the process of agroecological transition through narratives of individuals and households that are drawing support from KVM activists and have diverse levels and forms of engagement.

As outlined in chapter 1, after the initial village level meetings and training sessions conducted by KVM, activists interact with individual cultivators and households and support them through the transition to agroecological farming. But, they have been unable to forge self-sustaining collective practices at the village level. Exchange of knowledge and of indigenous seeds among farmers exists but is extremely limited. Even as there are a substantive number of farmers practising natural farming or moving towards sustainable ago-ecology associated with the movement, in any given village their numbers are small which makes it difficult to form autonomous collectives. The numbers of women growing vegetables organically at home within a village tend to be larger which also partly explains

the greater level of collective engagement among them. The spatial arrangement of fields that are located outside the village also means there is minimal interaction among farmers at work. Unlike a few decades ago when men and women walked to the fields generally in groups, farmers use motorcycles to go to the fields, where their interactions are generally only with hired farm workers. Villages that are a part of this study, like the majority of Punjabi villages, are large (with 500 - 2500 households) and semi-urbanised spaces. Kharif natural farmers and those reducing agrochemicals on their farms with the support of KVM range from only 2-15 within any village, whereas organic kitchen gardens were present in 50-200 households in villages. However, most interactions, including knowledge and seed exchanges, continue to be mediated by KVM activists without much village-level autonomous collective activity. moong These experiences are not meant to highlight differences at the level of the individuals as 'rational intentional actors', but to outline the formation of subjectivities capturing both the macro structural determinants and possibilities for collective agency and action.

Following Wolford (2010) and Edelman (1999), I draw attention to the internal differences within KVM that continue to reshape its agenda. These internal differences reflect historical consciousness shaped through the Green Revolution decades, as well as the constraints imposed by the neoliberal political conjuncture. They also reflect the lived experiences of participants positioned differentially within the social hierarchy, as well as the specific practices and interactions that enable or foreclose agro-ecological transitions. One of the key ways in which KVM has transformed over the last decade is to embrace the range of practices that have unfolded under an overarching umbrella of forging an ecologically sustainable and autonomous food system. Leaders affirmatively claim the movement to be 'non-ideological',

which renders the possibility of addressing multiple dimensions of the crisis and forging a cross-class alliance open.

The non-coherence of unfolding forms of agroecological social change also stems from the hybridity of labour practices in regional ecologies produced by Green Revolution practices (Gupta 1998). Recovering ‘traditional knowledge' in such contexts has little meaning. In the North Western Green Revolution belt of Punjab, Haryana and northwestern Uttar Pradesh agrarian and rural resistance since the Green Revolution decades has been examined through the analytical lenses of class and rural exploitation shaped by statist technocratic interventions, particularly the politics of resource allocation through price regulation and subsidies. The question of how the transformation of labour practices and the material landscape through technological interventions shapes political agency remains unexplored. As Nancy Fraser writes though ‘historically specific conjunctural struggles are the agenda setters for critical theory” (Fraser, 1989:2). Hence, the emergence of nascent agro-ecological politics in the Malwa region in Punjab allows for refocusing attention on labour practices, and how socio-ecological relations shape political agency.

In rural Punjab, the process of ‘accumulation by displacement' that is spatial and temporal displacement of ecological costs are reaching a point of saturation. The in-situ displacement of costs socially is also saturated as the crisis has spread from landless, small and marginal farmers to include the majority of medium farmers as their capacities to sustain agrarian livelihoods have been diminished. Secure non-agrarian livelihoods have only opened up for a select few. The failure of promises of developmentalism, that is, the promise of generational upward mobility through secure white-collar jobs, along with manifest economic and ecological crisis means that masking of displacement is no longer possible. Nevertheless,

unlike collective rebellion against the state that has erupted in response to direct dispossession from land (Levien 2013), masking or processes of distancing of costs has forged a different conception of political agency. KVM's critique of techno-politics names the collusion between state and corporate capital as well as how farmers are themselves implicated in the commodification of labour process and social reproduction that has transformed them into 'propertied wage labourers' and consumers. In this context, while some movement participants view the agroecological transition as 'constructive resistance' (Kumbamu 2009) others more constrained by their material circumstances have adopted some practices as a part of the assemblage of mechanisms for coping with the present crisis.

The competing discourses within the movement reflect the power of the compartmentalising logic of techno-politics that has produced the regional landscape and subjectivities in particular ways. The debate over whether the focus of organising should be to develop regionally specific practices through experimentation among a small section of farmers who have the capacity to do so, or whether engagement with larger numbers of farmers should be prioritised by adopting an economistic logic that stresses low costs of cultivation and comparable yields through the use organic inputs is ongoing. The increasing emphasis on the latter is viewed by the few natural farmers within KVM as a dilution of the core philosophy of the movement, while activists who do most of the everyday organising work contend that more flexibility is making the movement more inclusive.

In what follows, I begin by examining the motivations and challenges faced by farmers who practice sustainable agroecology, and those who are in the process of transitioning. The practices of these farmers occupy a spectrum that includes natural bio-diverse farming, organic cultivation without synthetic agrochemical inputs but continued mono-cropping, that

is the wheat-rice/cotton rotation, and those who are reducing agrochemicals along with selective ecological management practices for reducing water consumption and minimising pest attacks. The dissident voices emerging within KVM, as it is scaling up its organising efforts are articulated by a small group of natural farmers who adopt a more radical stance on what constitutes agro-ecological farming. Their resistance foregrounds the tension between social justice and ecological sustainability in the short run that has to be negotiated in devising mobilising strategies. Finally, I explore the engagement of women in cultivation for household consumption on homestead land, which was initially a marginal endeavour within KVM but has gained prominence over the years.

II. The Turning Point for Natural Farmers

Farmers practising agroecology in various forms aim to reduce dependency on market inputs while maintaining their current level of income. A small number among this subset are committed to the principles of natural farming and are willing to take greater risk and forgo yields and incomes in the short-run for engaging in agroecological innovations. Through experimental farming, over several years they are integrating labour practices with knowledge production on the farm, but face constraints on the marketing front. Associated with KVM since its inception, these natural farmers are cited as examples that show the viability of sustainable agroecological farming in Punjab in outreach activities. Many of them, while affiliated with KVM, had begun this journey independently. Questioning the viability of chemical-intensive farming for them began with the devastation of the cotton crop due to pest attacks in the late 1980s and in the 1990s. During these episodes, pesticides had very little effect in controlling the American bollworm. Others cite health concerns as the main trigger for making the transition, particularly the increasing incidence of cancer. The

predominance of elderly farmers in this group who are not necessarily large landowners but have other stable sources of non-agrarian income in their households is suggestive of two things. One, that the memory of the early Green Revolution period is a critical resource for imagining a different way of farming. These memories and embodied knowledge enable them to translate the cognition of the failure of agrochemical agriculture witnessed in the form of declining health and the on-going cotton crop failure over two decades, into transformative agro-ecological practices. Two, non-agrarian income was critical in allowing them to bear the short-term losses in the process of transition.

In a village of approximately 200 households in Bathinda district, where a significant number of farmers continue to grow cotton because of brackish groundwater, Swaroop Singh, an elderly farmer in his 70s is perhaps the only farmer practising natural farming. He conjectures that there may be one or two other farmers who intermittently experiment with organic farming on some part of their land. His 7-acre farm visually stands out amid surrounding fields with densely planted straight rows of Bt cotton at the beginning of the *Kharif* (summer) season. Lined with several trees species on its boundaries, his farm, by comparison, looks disorderly, with a variety of vegetables and indigenous cotton plants sown haphazardly, empty patches and overgrown weeds. For 30 years, Swaroop Singh was also in his words, a 'chemical farmer by the book'. After years of reading and research by travelling to other states, he began experimenting with organic production in 2002 on 2-acres. Two years ago, he converted the entire farm to organic production. Describing his motivations for transitioning he says,

> In the mid-1980s, recurrent bollworm attacks on American hybrid cotton destroyed the crop year after year in this region. None of the pesticides recommended by the University were effective. Farmers were desperate–they used cocktails of pesticides and even sprayed

> alcohol in the fields but nothing worked. One year, my wife and I, picked only 3 kgs of cotton from our entire farm. That was when I realised something was wrong with our farming system and I began my search for alternatives. I think I became a thinking human being at the age of 40. Before that I was working like a machine, just blindly following what everyone else was doing."

Swaroop Singh is like the majority of medium landholding farmers in this village who own 5-7 acres of land. Despite the commonly acknowledged harmful effects of agrochemicals on the environment and health in the village, he is unable to convince others to move towards organic practices. While he attributes this to lack of education and awareness, what clearly distinguishes him from other medium landholding households in this village is the absence of debt and a son with secure employment in the merchant navy. The cognitive dissonance with chemical agriculture is stronger among those who followed the recommendations of the Punjab Agricultural University religiously through its publications and through interactions with extension agents and scientists.

These farmers constitute what Van der Ploeg (2010) refers to as the 'new peasantries', that is, farmers who followed the 'modernisation script', and have been disillusioned with the consequences, realising that it is materially impossible to continue with the script. However, while such disillusionment is common among Punjabi farmers, and most people attribute rising health concerns to excessive chemicals in the environment and in their diets, not all of them are able to or willing to adopt non-chemical or natural farming. Their landholdings range from 4 acres to 15 acres, and in the context of Punjab, they are part of the medium strata of farmers. However, it is not the size of landholding that is the critical enabling factor that would allow them to bear the risk of transition from chemical-intensive agriculture to organic practices. Rather, it is the presence of non-farm income sources from salaried jobs in

the formal sector within the household, which defines the stability and economic resilience of rural households.

Like Swaroop Singh many of these natural farmers methodically followed the scientific methods recommended by PAU and the extension system before committing to natural farming. Such farmers do not attribute crop failures to faulty implementation of scientific ways of application of chemical inputs and practices but have come to believe based on their experiences that they result from fundamental and systemic shortcomings of the Green revolution model. Harjant Singh, a farmer in his mid-50s began the transition toward natural farming in 2001 on his 30 acres, after actively engaging with the government extension system for several years. As he says,

> I finished my studies in 1985 at PAU and immediately started chemical farming. Like others in the village at the time I shifted to rice cultivation as pesticides were unable to control the pest attacks on cotton. I used to actively seek out new techniques, seed varieties - both indigenous and those produced by the University, read a lot of farming literature and interacted with PAU extension officials frequently by going to the Ludhiana campus every six months or so. I was even involved with trials conducted by PAU on new seed varieties and agrochemical products. For instance, in 1999 they had conducted soybean trials on 1000 acres in our village. This was the time when the cotton crop had into was the time when cotton crop had failed and they were trying out new crops that could be used to substitute cotton. This trial was a failure, as the tobacco caterpillar destroyed the soybean crop. There are serious people who work at PAU, but it is a salaried job for them to execute commands and work within the rules of the existing system. They are not allowed to think about what they are doing and how it is affecting farmers. Because of my association with PAU since my undergraduate studies, I went on farmers' tours to other states - Bangalore, Mysore, Chennai and Pondicherry. This exposure led me to think more critically about farming. I began to reflect on all the chemicals, seed varieties, and techniques that involved mechanization being pushed on farmers, and if they were actually required, and came to the conclusion that most of them were unnecessary. In the late 1980s when new pesticides and seeds were flooding the market, private medical shops were increasing as well.

> I kept thinking to myself there has to be a connection between the two. In 2001, I met a farmer from Rajasthan who practices the zero budget spiritual farming methods developed by Subash Palekar. I was inspired and decided to make the shift to natural farming. It took 4-5 years of training to learn the principles behind natural farming. I went to Rajasthan and some of the Southern states to learn practices from organic farmers. Chemical companies and the government have trained us so well that it is really hard to change your mindset.[83]

The story of Hartej Singh speaks to the motivations and processes adopted for transitioning to natural farming. Most of these natural farmers are in the age group 50-70 years, with some recollection of early Green Revolution decades when there was a multiplicity of farming practices. They have witnessed the short-lived peak of Green Revolution followed by the unfolding crisis. Hartej Singh's journey also reflects the structural and social constraints faced by farmers in making the transition. Despite owning significant undivided acreage as the only son in his family, practising natural farming was a constant struggle. After 15 years, he has now decided to give up on natural farming and rented out his land instead. Biodiverse cropping is at the core of cultivation for farmers like him, but marketing their produce is difficult as there is no organic supply chain given the lack of sufficient volumes. Harjant Singh says that his commitment to natural farming has come at the expense of tremendous losses.

> "From 2001- 2015, I have been running losses because of farming organically. Farming following natural principles means having a diverse portfolio of crops. But it is not easy to sell anything apart from wheat and rice, which is procured by the government. There is no provision for marketing and they do not get good returns despite being quality products. Wheat is the only exception, which sells for 2800-3400Rs per quintal, which is higher than regular wheat. But even with wheat now there is competition from other states like Madhya Pradesh in Delhi markets. Even though farmers

[83] For a detailed description of Zero Budget Natural Farming (ZBNF) movement and methods developed by Subhash Palekar, a farmer from Maharashtra, see Khadse et al (2017); Munster (2015). These methods are popular among several grassroots organizations and farmers across the country and are often referenced as an example of a system based on indigenous agronomy and culture.

> in these other states grow it chemically, it is considered good quality, as they are indigenous varieties and grown with less amount of chemicals. The wheat is not almost blackish in colour like the wheat grown in Punjab. It is becoming difficult to sell cotton as well because the prices are fluctuating. I planted F1378 cotton variety (a PAU variety) for 4 - 5 years on 5 acres. The yields were great without using any chemicals. I sowed poppy plants in between the cotton seeds, and after a month and a half used the poppy plants for mulching. The yield was about 5-6 quintal per acre and no weeding was required. In my fields, you will see that birds build nests in the cotton crop because there is sorghum sown nearby. The bird ate all the insects. It built a nest there only because my fields are free of chemicals. The cotton price for the farmer keeps fluctuating, but the prices of manufactured clothes keep going up. Basmati rice prices have also not been stable even though it is supposed to be a commercially viable crop. It was 4000Rs per quintal last year, and this year it is only 2000Rs per quintal. Production is our responsibility but it is the government's job to regulate prices. I grow indigenous cotton, which gives lesser yields, but there are no premium prices or specialised supply chain to sell it. In the market, traders do not buy it because it looks unrefined. Pests rarely attacked the indigenous cotton that was grown in this region before the hybrids and was a part of the mixed cropping cycle suited to the dry climate. It was also used at home to weave cloth and meet household needs. But now if there is no market for naturally grown produce, how can it be sustainable. There is high demand for some crops like mustard oil and sugar cane but it is hard to sell them in small quantities. You cannot go to Bathinda city just to sell 10kg of organic milk every day, but the demand is there. There has to be a significant number of organic farmers in the village to build a supply chain."

Pondering on the problem of volume he adds that some farmers in his village did begin to experiment with natural farming after watching him, but these experiments did not last long or were confined to cultivating organic produce for household consumption. The only farmer who visited his farm and is now farming organically and running a profitable business owns 137 acres. "His farm is successful because of large scale production. I cannot lease land to expand production because it is risky and impossible for me to manage more acres on my own." The lack of marketing infrastructure that supports mixed cropping system is one of the primary reasons that majority of the farmers are only growing wheat organically which is

easy to sell at a premium price locally. Randeep Singh, one of the few young natural farmers in another district also outlines a similar dilemma.

> Organic wheat can be sold at premium prices, almost double the price of regular wheat. But with every other crop, it is difficult, especially vegetables. Some of us tried to set up a collective and sell directly in nearby urban markets but it was time-consuming and did not work. You need to produce in large quantities to sell in the retail market, which is not possible for medium farmers practising mixed cropping as they only produce a limited quantity of any given crop at a time. So, apart from wheat everything else is sold in the open market, sadly mixed with chemically grown produce. 90% of my wheat though is sold even before it is harvested through informal personal networks. What is unfortunate, however, is that a majority of the buyers are other farmers owning between 5-40 acres who produce wheat with agrochemicals for the market. And buy organic wheat from me or from others states for household consumption."

Randeep argues that it is unreasonable to expect that farmers should also bear the additional responsibility for marketing. The current official discourse of the government and PAU, he says is also coaxing farmers to become entrepreneurs and focus on 'value addition' which is the government should facilitate. Others in the movement believe that it is critical to set up locally sustainable food systems without government intervention. They do however contend that the government has to be pressurized to create a conducive policy framework for promoting sustainable agriculture that benefits small and medium farmers. Farmers should be provided support in the first few years when they are transitioning to organic farming. Resources allocated to subsidising chemical farmers should be used to incentivise ecologically sustainable practices instead. In the absence of such a framework, only a niche organic market catering to wealthy urban consumers can exist. In the last few years, KVM has focused on setting up informal spaces and markets in some prominent cities of Punjab where farmers can sell organic produce. These markets are run primarily by a network of

urban volunteers and are based on trust.[84] KVM is opposed to organic certification systems, which are expensive and put an additional burden on natural farmers. Their position is that labelling should be implemented for food grown with synthetic agrochemicals instead, and accountability can be ensured if food systems are local and there is direct interaction between farmers and consumers.

Within the movement, there is a consensus that the primary focus should be on the availability of healthy food for rural agrarian households by encouraging production for household consumption. Some farmers like Sukhdev Singh committed to natural farming even advocate complete self-sufficiency. He contends that landowning households should go to the market only to buy salt, and grow most of the things they need on their land. "We are planning to form a group in our village of *zamindars* (landowners) who will produce food for home consumption, and only sell the surplus as a collective. We have to learn how to save money instead of being preoccupied with making more money." Needless to say, that such conceptions of self-sufficiency do not resonate with small and marginal farmers or landless households completely dependent on wage work and tenant cultivators who have to pay hefty rents. For landowning households' as well cash is always scarce and essential for education and medical expenses.

[84] As this initiative is new, its viability remains to be seen. A systematic analysis of KVM's marketing initiative was not a part of this research. It is evident though that organic cultivation is a viable livelihood strategy in the current policy framework if farmers can access markets to sell produce at premium prices. A recent survey of organic farming in India concluded that farmers who make a profit are the ones selling certified organic produce at premium prices who have lowered their costs of cultivation, that is, they are not purchasing their packaged off-farm organic inputs (Ramesh et al 2010). KVM is now employing participatory guarantee system (PGS) that does not rely on third party certification but structured through stakeholder participation of local producers and consumers.

Within the current institutional and policy setup, some farmers within the movement contend that the focus of organising should be to encourage healthy food production for self-consumption among rural households. Promoting organic farming as a livelihood strategy is simply not feasible under the current conditions. Amarjeet Sharma, for instance, is a committed natural farmer with 4 acres and believes that it is futile to try to retain young people on the land. His farm is often cited as an exemplary repository of tremendous biodiversity and is completely self-sufficient, and he also runs a seed bank with indigenous varieties in his village. He says,

> "Not any farmers are moving toward agroecological practices despite recognising the harmful effects of chemicals on health and the long-term sustainability of farming because it involves too much work, and there are losses in the initial years. Chemical farmers get subsidies, but there are no incentives for natural farmers. There is no profit and income with farming, so obviously, people want to leave. The youth see how selling wheat brings in Rs 50,000 that barely covers the costs of production, but they can get Rs 2000000 by selling an acre of land so they want to do that and move to other things. People like me continue doing this because we are old and don't know how to do anything else. Perhaps when the crisis deepens even further those who have no other options but to remain in the village will have to move toward alternative ways of farming."

He goes on to suggest that the crisis will indeed deepen in the coming years with further neoliberal restructuring: "when the government stops procuring wheat and rice, Punjabi farmers will be squeezed out. In the open market wheat coming from other states in India is beginning to be preferred by consumers because Punjab is notorious for the excessive use of chemicals. Produce from other states is exported, but not from Punjab because of concerns over pesticides and excess chemical residue. The groundwater currently at a critical level will soon become expensive. But if there is no support from the government, organics will remain a niche market catering to the rich consumer."

III. Confronting Socio-ecological Ruptures

While the marketing of organic produce is the primary impediment identified by farmers in adopting bio diverse natural farming, unavailability of workers willing to shift to qualitatively different forms of labouring is another critical issue. Labouring practices on natural farms require more physical effort and knowledge but there is no corresponding increase in workers' wages. Harjant Singh who has decided to quit natural farming after 15 years and rent out his 30-acres to a landless cultivator explains the problem in this way:

> "When the farmer does not earn any profits, how will they pay farm labour adequately? The landless labouring communities have been shifting to new forms of work for many years now. They prefer non-farm wage agro-ecological because it pays better and is available more regularly. The workers who are employed to operate farm machinery – combine harvesters, laser levellers, tractors, or spray chemicals using pumps earn about 20,000Rs as a lump sum and then do not return to farm work for 2-3 months. In 1985, the rate of hired labour was just 10Rs a day, and now it is 300Rs per day, but men from labouring classes spend that money at liquor shops. Natural farming requires a different kind of work ethic, working with one's hands and consistent knowledge of conditions through the cropping cycle. Unlike the old days, no one wants to become a *Siri* anymore, that is become attached to one farmer. Since I could only manage cultivation on 7 acres on my own I tried renting out the rest of my land through the hissa system (a form of sharecropping), where all the inputs and costs such as the tractor, diesel, water were provided by me. I attached the condition though that the tenant will have to farm organically – without any chemicals and they would get 25% share of the crop. I did not want to destroy my land, but people refused to farm organically as it was hard to sell a number of different kinds of agroecological. I once gave half an acre to a landless neighbour for cultivation without asking for any rent on the condition that they would grow vegetables without any chemicals. He informed me later that he used chemicals to ripen the vegetables quickly so I decided not to do it again the following season."

Another farmer Jagtar Singh remarks, "People do not like to lift cow dung for making organic manure. I was once sowing onions in my field and asked the hired labour to make green

manure using cow dung cakes, and he said he would do it this one time but I should not ask him to do it again in the future. Apart from the preparation of organic sprays for improving soil fertility and pest management, natural farming also requires manual weeding." Explanations offered by farmers like Jagtar and Sukhdev Singh along with economic compulsions reflect their unease with the loss of caste-based privileges as Dalits have gained more political rights through persistent struggle over the development decades. The reluctance of landless workers to perform certain kinds of labour, or become attached to particular landowning households is related to caste-based indignities associated with such practices in the past. The work of weeding manually and dealing with cow dung and urine has been traditionally relegated to lower caste landless workers or women. Women continue to be primarily responsible for the upkeep of milch cattle. KVM activists refer to organic preparations using the term *Jeev Amrit*, which denotes immortality or life and emphasise the sanctity of cows and their products as a part of traditional knowledge and practices. And yet the lower status associated with such practices is pervasive.

While lower caste workers' refusal to perform them is a form of resistance, Sikh Jat natural farmers are also ridiculed for performing these tasks. As Harjant Singh narrates his struggles in practising natural farming over the past decade to me, his elderly mother sitting next to him adds that relatives and neighbours thought her son was crazy when they saw him collecting cow urine and dried dung cakes for manure. "That is not appropriate behaviour for someone from a prominent *zamindar* household with 30 acres," she said. Familial and social pressure to maintain status is a significant part of Harjant Singh's decision to quit. They have just constructed a new house on their farmland outside the village and his daughter is of marriageable age, so he says he cannot continue to incur losses. Familial pressures are particularly strong for farmers who have joint operational landholdings with extended kin.

Farmers who plant crops other than wheat, rice and cotton also complain of neighbours stealing sugarcane, mustard and vegetables from their fields. Given the near absence of forest cover, and native tree species, attacks by wild animals particularly *nilgai* (blue bulls) are frequent on non-grain crops as well.

Natural farming practices are not simply more labour-intensive, but agrarian work qualitatively transforms in complex ways that are not aligned with the extant structuring of social relations of production. It requires more physical work as well as cumulative knowledge generation through experimentation. While daily wage labour is hired for some discrete operations such as manual weeding, other kinds of work require sustained attention and engagement. Ravdeep who practices natural farming on 12 acres of his family land says he is able to do it successfully because he has contracted a worker on a permanent basis. They plan the cropping cycle and are able to take care of most of the work on the farm.

The shift from a long-term attachment of landless workers with particular landowning families toward monetized contractual labour relations and increased mechanisation was accompanied by the transformation of work to an execution of discrete manual labour by different people devoid of knowledge making and decision-making. When workers received a share in produce and worked on the same land over several decades they were invested in the sustainability of land and its value for sustaining their lives, but their attachment was also predicated on caste-based patrimonial relations and indignities. While many KVM farmers refer to the dismantling of the *Siri* system as a breakdown of farmer-labour relations that adversely affected ecologically sustainable farming, this shift is viewed in ambiguous ways by those located at the bottom of the social hierarchy. Elderly farm workers recall more secure subsistence in terms of food, but also caste-based discrimination as well as a future

devoid of any possibility for upward mobility. Younger men from landless households' express disdain for the *Siri* system (described in detail in chapter 2) with more certitude and associate farm work with caste oppression more generally. They also conceive non-agrarian urban wage work as holding some possibilities for providing a better life in the future. The sense of futurelessness is more visible among youth from small and medium landowning households, who think of petty wage work as demeaning and incongruent with their caste status and view farming as a non-viable livelihood as well.

Contrary to the conception that organic farming is labor-intensive, farmers like Randeep and Swaroop Singh who want to continue to move towards deeper forms of natural farming also foresee a decline in the labour requirements. Ravdeep says, "Occasionally, I hire daily wage labour for weeding in vegetables and transplanting paddy. But my use of labour over the years in organic farming is going to decrease I think. In the first year, we hired labour for manual weeding and the yield was good. This year I got the weeding done only once, and next year I am thinking of not getting it done at all, moving closer to natural farming practices where no plants are seen as 'weeds'." He points to a small weed-removing machine that he purchased recently and says that he is ambivalent about small machinery. "On the one hand, it is better than using harmful chemicals or large machinery which has bankrupted many small farmers and led to consolidated landholdings, but on the other hand encouraging the use of small machinery will lead to the complete eviction of landless workers from the fields and eventually from villages." The possibility of small machinery being employed by farm workers to reduce the drudgery seems implausible to him given the hierarchical agrarian social relations and norms. Farmers perceive small machinery as a means for saving labour costs and that is how it's being promoted by extension services as well. Hired workers often complain that farmers delay the payments. Once they have performed the tasks for the day,

they are told by farmers to come the following day or a few days later to collect wages. Given the scarce cash flows, farmers prioritise expenditures on seeds, agrochemicals and renting farm machinery. Workers have little incentive to perform beyond the mandatory requirements of the discrete tasks for which they are paid -- generally weeding, transplanting paddy or picking cotton, unlike the older generation who received a share of the crop and worked for a long period of time on the same farms which enabled them to acquire knowledge about the entire cropping cycle. In this context, the question of how landless workers configure in the politics of agroecology remains unresolved. Unlike Ravdeep, for most natural farmers landless workers are outside the ambit of their conception of restoring autonomy. There is an uneasy conjunction of agroecological politics with the logic of developmentalism in this context as farmers argue that the movement of landless workers to non-agrarian precarious unemployment is inevitable. Sustainability of these few natural farms is uncertain as in most instances the younger generation in these households has stable salaried non-agrarian employment, which in turn enabled these farmers to bear the risk of transitioning in the first place. It is difficult for natural farmers to hire workers for the reasons discussed above, nor is it likely that tenant cultivators will be able to practice natural farming given their material constraints and their exclusion from ecological sustainability outreach activities.

The incremental process of agroecological transition required in the context of degraded soils in Punjab is possible for these farmers as they are not concerned with generating surpluses to invest in the education of the younger generation. They begin with organic cultivation on one-two acres, experimenting with various crops and methods, and have then expanded gradually. Bio-diverse farming over many years has improved the fertility of their land, reducing the incidence of crop failures and has created a complex and resilient ecosystem

with which they are able to meet many of their everyday consumption needs. Swaroop Singh describes the process of reversing 'simplification' on his 7-acre farm since 2002 as we pick vegetables for the day's meals.

> The University recommends 'clean farming', that is, only one crop at a time. They also recommend high-density sowing for increased yields. Cultivation in this way requires large amounts of water and fertilizer for it to work. The seeds required for sowing has gradually gone up from two and a half kg per acre to almost 12 kg per acre. People think I am lazy because of the way my farm looks – right now some land is fallow after wheat harvest, another patch has vegetables and medicinal plants grow everywhere that are often classified as weeds and removed by most people. I sow seeds haphazardly with a lot of space in between. Before 2002, like everywhere else there were hardly any trees on my farm. When my wife came with tea and food, we had to walk several kilometres to find a shady spot to sit down and eat. Now the farm is lined with rows of native tree species. It took many years to raise these trees gradually, one by one. On every auspicious occasion in the family, we planted another tree on the farm.

Inspired by Japanese naturalist Masanobu Fukuoka, after having recently discovered a Punjabi translation of "One Straw Revolution', he plans to start moving from organic to natural farming. This year he will begin experimenting on 1.5 acres with no ploughing or weeding, without using a tractor, and planting crops strictly according to seasonal variations and without any organic manure. "Masanobu's formula is simple and straightforward – just go with nature and do not try to control it", he says.

> Even with organic farming- with the *Kharif* crop of wheat there is not much to do. The organic wheat sells for a higher price so I have sufficient income in one season, and I can experiment or leave parts of the land fallow during the *rabi* season. Based on the methods of "One Straw Revolution', I have sown *barseem*, a fodder plant in October, after cotton was harvested. Then one month later I sow wheat in that field after removing the stubble of the cotton crop. I realised the benefits of sowing barseem simply through observation. About two years ago I noticed that on a small portion of my field the yield of indigenous cotton was much higher than in rest of the field. This was the plot where barseem preceded cultivation of cotton. Even the next crop of jow (millet) after cotton had high yields. It is important not to interrupt nature too much but to understand its workings and then work accordingly.

> But for that to happen one has to be connected with the farm, observe carefully what goes on there, the relationship between all the living organisms-plants, 'weeds', insects and how they respond to each other."

Unlike Swaroop Singh who charted the transition largely through self-learning, Buta Singh a young farmer was influenced by a relative actively involved with KVM who has guided him through the transition since 2013 and is more circumspect in his approach. In the first year, he practised organic cultivation on 1.5 acres out of the17 acres jointly owned with his 2 brothers and father. Now he grows organic wheat on his entire farm one season, and in the next season continues to practice natural farming on 1.5 acres.

> "I plant moong, maize and vegetables for our own household consumption. The yields are good, I have got as much as 30 *man* (1 man is roughly 37 kgs) of wheat from 6 *kanals (1 Kanal =1/8 of an acre)*. However, in the first year, the yield was very low - it was only 14 *man*. I had used fewer seeds than I should have. There was too much distance between the rows. Next year I reduced the distance and had better yields. I realised the mistake on my own while harvesting, as the machine did not work well. Initially, I decided to grow organic food just for self-consumption. I asked my uncle who has been associated with KVM for indigenous seeds, observed his methods and practices in his fields. In the first year - I planted methi, gram, mixed with a few different varieties of wheat. I carried out weeding and mulching twice, and sprayed *gurjal amrit* (organic growth preparation recommended by KVM). There were no pest attacks. Next year I did not even use any organic spray - just did some weeding, and used cow dung manure, and mild spraying of sour buttermilk for sucking pests. There were beetles in my fields and they ate most of the sucking pests. I think the beetles were thriving because of the mixed cropping of wheat with gram and methi. During the *Kharif* season, I planted moong, maize, sugarcane and vegetables. I use a mix of indigenous and hybrid seeds both bought from the market, but I am never sure if the ones that are being sold as indigenous seeds are actually so. For maize next year, I am planning to make my own seeds and store them. But I currently do not have any plans to expand organic cultivation to the rest of my land. With organic cultivation, the yields are less, but so are the harmful pests and insects and it requires more manual work, particularly weeding. The cost of cultivation remains the same - but instead of paying for pesticides, the money is going to hired labour." On further reflection, he

> contends, "fertilisers, which cost 7000Rs per acre and sprays I have lost count of (pesticides/insecticides/weedicides and fungicides), definitely cost more than what it would to employ labour and cultivate organically. In the first year, my brothers and father were reluctant and not very supportive, but now they are convinced as well that this is the right path. We do burn the fields after the rice harvest to get rid of the residue but not after the wheat harvest like other farmers. And I do not grow any paddy in the organic patch. The burning is essential because the quantity of straw is too much and it cannot be suppressed by ploughing. With wheat residue, we make dry fodder and the rest is mixed back into the soil."

Buta Singh's cautious approach in devising ecological management practices reflects a careful balancing act between maintaining economic profitability, household consumption needs and health of the soil. This approach is closer to the experience of most farmers associated with KVM that employ an assemblage of practices. Farmers begin with a gradual reduction of chemicals particularly in the wheat crop which is often consumed at home as well, and many quit after the first season if there is a significant decline in yields. Activists concur that yields remain the primary metric by which farmers evaluate the viability of agroecological practices in the initial phase, which makes it difficult to convince farmers to persist for several cropping cycles. Farmers persuaded by KVM to experiment initially think of agroecological farming in formulaic terms as reducing the use of fertilisers, replacing pesticides and insecticides with organic sprays that KVM activists prescribe, and replacing the use of weedicides with manual weeding by hired or family labour. The few who do manage to persevere for a few years go on to expand the ambit of their practices to include bio-diverse farming going beyond the wheat-rice or wheat-cotton rotation, which in turn generates greater yields. They also rely primarily on selling organic wheat at premium prices to maintain or increase their current level of incomes.

The risk of loss of yields and monetary income in the short run makes it impossible for tenant cultivators to adopt agroecological practices. Apart from the economic compulsions

stemming from having to pay annual rents, tenant cultivators for the most part lease different farm land every year which provides little incentive for investing in restoring its ecological viability. With leasing, the constant rotation of land between different cultivators is likely to accelerate in the foreseeable future. Landowning households are leasing out land to earn cash through rents for investment in building non-agrarian livelihoods for the younger generation, or when young people are unwilling to work on the farm, the elderly are unable to manage the farms. In other instances, sustaining the household solely with farm income becomes impossible, as land is fragmented through inheritance with successive generations into extremely small operational parcels of less than 2 hectares. Randeep suggests that in his village which is close to the highway many households are keen to sell their land if they can negotiate lucrative compensation, which indicates the deepening of the agrarian crisis in the last decade.

> "People here want their land to be acquired. In the late 1990s, the agitations were genuinely against land acquisition. The agitations and protests that are being held now are just to push up the compensation rates. Most farmers today are disconnected from farming. They are just doing it for time pass, or out of compulsion, not with any interest or joy, or hopes for making a decent living for their families. Not many young people want to farm. For the past few years, even the rents have been declining because fewer people are leasing land, as there is no profit in cultivation. Small farmers, who were leasing land, even lost their one or two acres in the process. The only reason I was able to start farming and then transition to natural farming is that there was no existing family debt. My father was a government employee but kept his farm going on the side even though it was running into losses. I wanted to be in the army, like everyone else it was my first preference but when that did not work out, I decided to farm after finishing my Masters."

Randeep's testimony speaks to the conjunction of economic non-viability of farming with the deep-seated devaluation of agrarian work produced through the developmental discourse. Yet, his decision to practice farming and subsequently shift to natural farming also reveals

that contingent factors can create alternate possibilities. He, unlike some other natural farmers, has also been able to strategically manage the qualitative transformation of work on the fields. Such qualitative transformation requires the cumulative in-situ production of knowledge through experimentation and recovering the value of certain material practices such as manual weeding and channelling organically available inputs back into the farming ecosystem. The division of labour enacted on his field, between him and his permanent employee is not managerial and manual. Instead, it is an exceptional form co-management or work practices that integrate knowledge and labour seamlessly. Reminiscent of the *Siri* system described by the earlier generation, such an arrangement is distinct in being devoid of caste based discrimination it represents a secular revaluing of agrarian work. In this way, Randeep's farm is different from that of elderly natural farmers, who have difficulties in employing and retaining hired workers who as they say are unwilling to perform 'manual labour' required for natural farming. While elderly farmers are repositories of embodied knowledge, this knowledge is embedded in hierarchical caste and class relations. Systemic barriers such as the presence of significant debt that carries over generations that foreclose alternate trajectories are coupled with barriers to qualitative transformation of work practices on account of caste and gendered norms that are now conjoined with developmental notions of mobility and status.

IV. Dissident Voices within KVM

The more committed natural farmers associated with KVM have charted the agro-ecological transition through self-learning and experimentation and not through exchange of knowledge and resources in deliberative collective networks. They draw on diverse range of literature procured through contingent encounters, occasional interactions with natural farmers from

other regions in the country but primarily rely on ongoing experimentation on their own fields to develop apt methods and cropping systems. These cropping systems are not only tailored to their fields but also to their household consumption needs, availability of labour and economic compulsions. While occasionally engaging in advocacy on behalf of KVM, facilitating meetings in their own villages, sharing their experiences through different platforms they are not involved with everyday organising. Several of them are critical of KVM's organising model. At the center of these criticisms is the pedagogy of agro-ecological farming. Based on their own experiences these farmers argue that KVM should invest time and resources in creating functional agro-ecological farms that can become demonstration plots as well as hubs for learning and exchange. As Sumit Singh argues, "In all these years KVM has not been able to develop a good model for natural farming. There are of course financial constraints but there is also a lack of coordination amongst KVM workers and farmers. If we had spent a fraction of the money that is spent on organising trainings, printing pamphlets and organisational literature, on developing just 5 model farms it would have convinced more people that natural farming can be viable." Referring to the remarks made by the Chief Minister of Punjab at the National Organic Convention in 2015, Sumit Singh further elaborates:

> Even Badal said at the convention that meetings will not achieve anything -we will give you land on lease in five blocks and 'show' us how to do it. The Chief Minister did a very typically *jat* like thing. On being asked for funds he responded with 'show us first then we will believe you.' Regardless of his intentions, there is power in illustration. Knowledge on paper and expressed through words will not achieve anything. So far, we keep bottling the methods of successful farmers from other states and distributing them –first it was Subhash Palekar (ZBNF), then OP Rupela, now Subhash Sharma. This has not been fruitful. We have to develop a model suitable for our climate and ecological conditions. The crops they work with are different, we have to develop a cropping cycle apt for conditions in Punjab. One should not confuse natural farming with organic farming – KVM keeps changing its stand.

> Now they are advocating reducing costs of cultivation by using less fertilizer and chemicals. If we focus simply on cost reduction we will forget the real purpose and principles behind natural farming."

In a similar vein, Jaswant Singh, a primary school teacher who practices natural farming on 2 acres argues:

> When Subhash Palekar, a natural farmer from Maharashtra, came in 2007-2008 at an event organised by KVM, he introduced us to new organic techniques. I experimented with those techniques and suffered losses. His methods were based on his experiences in Maharashtra. They were not suitable for our environment. Unlike in Maharashtra our weather pattern is not very stable and we comparatively have more water for irrigation. But I also noticed from his talk that because of less availability of water, farmers were not using fertilisers, so I was able to make the connection between the two. Subhash Palekar's methods and practices were based on sound logic but just not suitable for blind adoption in Punjab and not compatible with our socio-environmental conditions. His method of *Jeev Amrit* preparation (an organic preparation key to the methods advocated by KVM) was useful if you had certain kinds of insects, which were not found on the farms in Punjab, so why would it work here? There is need to be consistent with principles advocated by the movement. From talking about natural farming one day, we moved to organics. We should have invested in developing our own model and practices, based on how farming was practised in Punjab prior to the Green Revolution."

These dissident farmers question the model of replication and even adaptation of natural farming practices developed elsewhere, strongly asserting the value of place-based innovation. Harpal Singh's views also reinforce the significance of harnessing 'traditional knowledge', that is knowledge of pre-Green Revolution ways of farming in Punjab for restructuring production practices. While asserting 'cultural autonomy' by revaluing the past is rhetorically emphasised by KVM activists in their everyday organising, it is not imbued with any concrete meaning in terms of specific practices. The agro-ecological practices and formulations that are advocated in trainings are rarely derived from any knowledge of cropping patterns or practices from pre-Green Revolution years. As oral histories of elderly men and women in chapter two suggest such knowledge is present in collective memory, but

not on the material landscape or even as marginal lived practices. Ruptures in the inter-generational transmission of such practices make it difficult to reenact them in altered socio-ecological conditions, and by people who have a different set of embodied experiences. There are a few discrete practices that have survived as tacit knowledge and are being revived such as practices of saving seeds and traditional forms of food preparation. As women largely performed these tasks they come up during women's meetings, which are focused on growing vegetables for home consumption.

Agro-ecological transitions on the fields require long periods of experimentation to develop new place-based practices and the reconstruction of social and ecological interdependency, which formed the basis of 'past' practices that are invoked as being valuable. Therefore, natural farmers like Jaswant Singh also object to the turn toward economistic reasoning deployed by KVM activists to enrol a larger number of farmers with the movement.

> Advocacy for natural farming practices means talking about the reality like it is - it is not sustainable to enrol farmers based on false promises of equivalent yields. They will eventually realise it's not true and it will prove counterproductive for the movement. Now my farm is thriving, but I made a lot mistakes in the beginning. Getting it right requires experimentation, which creates a better understanding of your soil and farm, environmental conditions. But it is not sustainable to attach people when they are not convinced about the fundamental principles. That's why we have not been successful in all these years. Farmers do not understand the logic behind natural practices when they are doled out as formulas. For instance, it is often recommended that *Jantar* (a leguminous plant used for fodder) should be planted between main crops to increase the fertility of the soil and reduce the use of urea. But it is not explained that *Jantar* only gathers nitrogen until it flowers. After that, it starts using Nitrogen and will even take up all the existing Nitrogen in the soil leaving nothing for the following crop. When farmers do not understand the logic behind processes they will fail and become disillusioned. The logic is never communicated to the farmers, which will also clarify the time required for enacting such a transition in our degraded landscape. The focus of advocacy so far is just on positive

> outcomes in terms of yields and lowering costs of cultivation and on fear of disease.

Farmers like Jaswant Singh also believe that paid worker activists at KVM do not really understand the principles of natural farming and are therefore confined to communicating formulaic practices, working more like agricultural extension agents. He further continues to argue that in order to allow farmers to endure the short-term risks, it is important to push for a change in government policies.

> The government has to support farmers in the first three years or so when they make the switch to organic practices. It is a fact that organic producers are suffering as compared to chemical farmers economically. If someone works really hard to produce organic crops and takes them to the market only to discover that they are going to be sold along with everything else grown chemically, why would they continue? This path is not viable for those who are completely dependent on farming for their livelihood. In my understanding, it is mostly the middle classes that have brought about the revolution anywhere. The small farmers cannot take the risk; the big ones do not care as they are making profits. It is the medium farmers who have to lead the way and as some of us are beginning to realise if we do not demand change we will be pushed down the class hierarchy.

The pathway to autonomy for these farmers does involve demanding support from the government in the form of compensation that would enable farmers to bear short-term monetary losses and a policy environment that does not disadvantage organic and natural farmers. KVM is engaged in oppositional politics, to a limited extent, that targets government policies to create a more conducive institutional context for facilitating agro-ecological transitions. But this is confined to the leaders of the organisation supporting and participating in the campaigns of ASHA – the national coalition of farmers' organisations and civil society groups from different parts of the country advocating for socially just and ecologically sustainable food systems and agrarian livelihoods. These efforts are disconnected from KVM's organising practices in the villages and are carried out mostly by non-farmer leaders within the movement. They focus on resisting further government intervention or policies

enabling corporate intervention in the food system. Most prominently, KVM has campaigned against recent attempts to allow the introduction of genetically modified food crops (particularly the ongoing resistance to GM mustard most recently, produced by scientists at a public university), and occasionally articulating demands for resources to incentivise organic farming. Farmers are not directly mobilised however to participate in these kinds of interventions. In fact, KVM activists associate forms of mobilisation, such as mass rallies and protests, with farmers' unions like the BKU and are critical of its episodic and inconsistent character.

The perceived dilution of KVM's organising strategies, which farmers like Harpal Singh and Sukhdev Singh suggest is a consequence of NGO-isation, is partly symptomatic of deeper democratisation of agro-ecological politics. This democratisation partly stems from KVM's engagement and interactions with grassroots groups and organizations from other parts of the country as part of the national coalition ASHA (Alliance for Sustainable Agriculture). But more significantly, it stems from the involvement of paid worker activists from socio-economic backgrounds other than Sikh-jat households, particularly women and men from landless households. These activists are more attuned to socio-economic concerns of rural households. They view the purist approach of natural farmers to agro-ecological transition in the realm of production practices as unfeasible from the standpoint of organising. Their interactions with a diverse set of people in the villages are expanding the discussion within the movement beyond the concerns of the medium landowning *Sikh Jat* male farmer to focus more on sustainable livelihoods and social reproduction.

Undoubtedly though constraints imposed by the neoliberal policies and rationality are also constitutive of the shifting agenda of the movement. For instance, the struggle to garner

resources that can enable the employment of paid workers and other operational expenses requires demonstration of success in concrete terms such as the number of farmers enrolled. So far KVM has largely sought individual donations from urban Punjabi citizens that come without any attached conditionality, but the growing scope and the scale of work require the acquisition of more stable project based funding.[85] The inability to foster a collective work ethic and material commoning suggests that organising practices in the villages are constrained by the 'individualization ethic' that AR Vasavi (2012) has identified as a key process shaping the agrarian crisis particularly in sites of capital-intensive agriculture. Thus, reinforcing notions of 'self-care' that scholars like Wendy Brown (2003) and others have argued are constitutive of neoliberal political rationality (cf. Guthman 2008). For instance, when KVM activists distribute indigenous seed varieties that they procure from other states, they expect farmers to save these seeds for sowing next year and also generate a culture of seed exchange. Activists complain however that most farmers simply expect them to provide seeds and they have not been able to create a self-sustaining cycle of seed production and exchange.

V. The 'Place' of Women in Socio-ecological Restoration

Organising among women is aimed at ensuring growing on small plots to promote healthy food consumption among farming households. This approach is premised on an instrumental logic that seeks to build on existing gendered norms. Meetings with women are primarily centred on health concerns, as they are deemed responsible for food preparation, and making

[85] For instance, during a meeting among activists, it was proposed by one of the leaders that they should initiate the formation of women's self-help groups (SHGs) in villages, which would enable KVM to apply for a range of grants. However, there was substantial push back from grassroots activists who argued that it would divert attention from their agenda. Some of the women activists also complained about being overworked and that they would be unable to create SHGs while continuing with the work of expanding kitchen gardens.

decisions about meals. Activists specifically draw attention to the health crisis, particularly increasing the incidence of cancer and reproductive disorders during village meetings. They argue that since women care more about the health and well-being of the household, unlike men, who tend to focus solely on higher yields and monetary incomes, they have to take action. Women are encouraged to grow vegetables on homestead land for household consumption, as gendered norms restrict them from going to the farm, which is generally at a certain distance from the village. Growing vegetables on homestead land is a way of reconnecting women particularly in landowning households with farming, as their attachment with family farms was severed with the onset of mechanisation and chemical intensive agriculture.[86] On the part of activists, the process leading towards reconnection is a cautious one that does not confront gender hierarchies.

The issues raised by women especially at the first few meetings in a village nevertheless break through such compartmentalisation between agro-ecological practices and social power relations that structure them. Women bring up the lack of time, particularly younger women who have to look after children, livestock and perform other household chores. Additionally, women from landless households also work as hired labour or on NREGA sites. Many also talk about opposition from men and sometimes from elderly women within the household to their participation in such meetings, and to their taking on a more active role in cultivation even it is within the confines of the house. Other who have existing kitchen gardens suggest that the men in their family ridicule the idea of growing vegetables without using any agro-chemicals. Material constraints such as unstable and inadequate water supply, difficulties in accessing indigenous seeds and organic matter such as dried dung cakes for manure in large

[86] Vegetables arguably have the worst health impact in terms of pesticides. Unlike grains where there is a time lag between spraying and consumption, vegetables are often consumed within 1-3 days of spraying. In addition, they are injected with chemicals for quicker ripening.

quantities, also make it hard to sustain cultivation. The airing out of these issues at village meetings remains just that. Activists do not facilitate discussions about ways to negotiate or collectively take action to resolve such issues. Instead, such meetings are simply followed by trainings on organic methods and individual support for women who decide to persist despite such constraints. Activists periodically visit their homes to observe and examine their kitchen gardens and offer help with preparing the beds, sowing and pest control methods, and occasionally facilitate seed exchanges.

The lukewarm response to investing time and labour in growing vegetables needs to be understood in the context of how women understand and experienced the transformation of agrarian work and social landscape of the village in the last few decades. As I have discussed earlier, elderly women's narratives of the transformation and experience of the crisis suggest two things. They point at the increasing vulnerability and instability of agrarian livelihoods, as well as a decline in the general sense of well-being in terms of quality of life. This decline is primarily referenced in terms of growing requirement of cash for education, health expenses and consumer goods, without a commensurate increase in cash incomes, in contrast to greater self-sufficiency in meeting needs earlier. Subsequently, they also bring up the higher incidence of health problems, less social interaction among people in the village, their own exclusion from working in the fields which are correlated with restricted mobility and confinement at home. Breaking down of joint-family households is often also included but there is more ambiguity around it.

While a decline in overall well-being is asserted, elderly women also claim that the lives of young women today is easier. They recall that domestic violence was a normal part of their everyday lives, and they had to work very long hours, taking care of chores within the

household and in the fields. They had little to no autonomy within the household that included extended kin. However, the narratives around the transformation of gendered norms and practices are not always linear. The withdrawal of women from work in the fields and lessening of sociality within the village has contributed to a heightened sense of insecurity in public spaces for women. Further, women also suggest that men bear the disproportionate burden of labouring to feed the entire family with the deepening of the money economy, which has led to tremendous stress in the context of the volatility of crop prices and increasing indebtedness. As younger women are not aware of decisions about farming operations, they find out about the strained financial conditions or indebtedness under extreme situations. This is an observation that has also been made by Ranjana Padhi (2012) in her study that looks at the impact of farmer suicides in Punjab on women.

I quote extensively from an interview with Sukhjeet Kaur who is in her 60s, which is indicative of the experiences of women in *Jat* Sikh medium landholding households. Their household owns 6 acres, which is managed by her only son. Her interview reveals the ambiguities surrounding organic production but more significantly shows the interconnections between transformations of agrarian work and gendered familial relations. Sukhjeet was married when she was 14-15 years old. She recalls that in the years just after her marriage she went to the family farm to pick cotton, peanuts and vegetables in the mid-1970s. She also carried food for her husband and other male family members. Before wheat-rice cropping rotation became widespread, with mixed cropping, women helped in the manual harvesting of wheat, maize and millets. They would also cut fodder and bring it home for feeding the animals. In their field, during the *Rabi* season, the crop in the mix were grams, millets, wheat, mustard, and a variety of fodder crops. In the *Kharif* season, they grew

indigenous cotton and hybrid American cotton, paddy, pulses and millets. Parts of the land were also left fallow in a rotation.

> At that time, farmers had started using fertiliser but in very small quantity. Gradually with the increase in the use of fertiliser, other crops were eliminated, and now there is just wheat, paddy and cotton in the fields. In those days when maize was grown, there were so many birds especially parrots in the fields. We have made our life convenient. There is no need to stand guard because there are no birds to eat the grain and extracting grain from maize was time-consuming hard work performed mostly by women. Some women still go to pick cotton on their own farms, but the practice of '*veedi*' (labour sharing) among farming households has disappeared. It is considered shameful now to work on someone else's farm. For women, it is unthinkable. People will see you and equate you with daily wage labour if you are working on someone else's farm. Women do not even go to their own farms. It is a matter of status for farmers to be able to hire labour for picking.

Describing how she came to be associated with KVM, she emphasises that it has been relatively easy for her to grow vegetables as their family farm is attached to the house. Apart from easy access as a woman, cultivation on farm land also means there are fewer material constraints such as lack of water and appropriate soil. But she concludes by saying that organic production only works for home consumption, it is not economically feasible to transform commercial cultivation.

> We have been growing vegetables for as long as I can remember. Fortunately, our farm is attached to the house, which makes it easy for us (women) to work there. Earlier my son and husband would grow vegetables along with other crops, but now my daughter-in-law and I have taken over. My son works and manages the farm alone, so he welcomes all the help he can get. I began growing vegetables organically about three years ago. There was a meeting organised in the village by KVM. I liked what they said about health benefits and decided to experiment. When we cooked the first batch of vegetables we had grown organically, the difference was obvious. The vegetables cooked faster and tasted much better. In particular, when one of the activists talked about the irony of how we sell milk produced at home and buy vegetables from the market, which would never happen in Jat households some decades ago, it struck a chord with me. I realised we could use the money we would save, to fund our children's education. Small farmers are in a tough spot, we cannot work on other people's fields or do

> other wage work, so cash is always scarce, and saving money is important. We have also started making and saving our own seeds for vegetables. We use homemade sprays with organic ingredients to manage pests. These methods are generally good enough to take care of the plants, this time though there has been some damage because of unseasonal rain and hailstorms. Otherwise, most of our household's consumption needs are met from this patch. I experiment on my own as well. For instance, I sprayed wood ash on onions and garlic and wilting plants stood up again. But it is important to experiment with some knowledge. Not all ash is good for the plants, but only that generated by cow dung cakes. We do not buy vegetables anymore. Growing food without any chemicals though is not economically feasible. It works if you own some land and want to cultivate on a small portion for self-consumption, but not if you are leasing land and have to pay a high rent. It is not feasible to experiment on the commercial crops. It is too risky and they cannot afford lower yields on leased land.

Elderly women like Sukhjeet Kaur, who have more time and have also farmed in their early years, mostly agree to cultivate vegetable kitchen gardens and are more likely to keep them running. The exception to this is landless households where younger women who haves some experience of cultivation as hired farm workers although under very restrictive conditions. They are keen to grow vegetables in order to save money. Binder Kaur, for instance, who is her mid-20s has carved out a small bed in her home yard and started growing organic vegetables about three years ago. The arguments of the organic activist about saving money and eating healthier food appealed to her. She says,

> "I have been working as farm labour since I was very young, mostly transplanting paddy or picking cotton. It is different cultivating things on your own. As hired labour we just do as we are instructed, here I have to apply my mind. I can take decisions about what to do. Men negotiate for wages, so I do not really know how that happens or whether they negotiate at all. Women never say anything to the *zamindars*. We just go and work, and all the talk happens between men. This at home where I grow vegetables is my domain. When I began to do this, my husband was not happy. He said why go through all this trouble, but gradually he came around. I said to him if I am working in my own house, where is the trouble. It is not like I am going outside to work. It

> saves a bit of money. No vegetables today can be bought for less than 50Rs a day. They are becoming more and more expensive."

However, her vegetable plot currently is empty, as extremely high temperature in the last few weeks has killed all the plants. The waterworks supply in this village has been cut off for nearly 8 months due to non-payment of bills, and even drinking water has to be fetched from the village tap. While most landless households have small patches within their household yards sufficient for growing food to supplement household consumption, they struggle with access to means required for cultivation, particularly irrigation water and organic inputs for those who are unable to keep livestock. Binder goes on to say,

> Now that no vegetables are growing this year because of water problems, we have to buy them from the market. There is no other option. I can see there are significant differences between chemically grown vegetables and the ones we grew at home. Organic vegetables cook faster and taste much better. In our village, many women grow vegetables at home. We talk about them amongst ourselves too. If a disease affects someone's plants, they will come and ask others what to do. We often look at each other's plots to see what is growing. I will try to continue growing vegetables with the tap water as much as I can. But for indigenous seeds we are dependent on the activists. It's very hard, almost impossible to get them in the market. When I make seeds for anything, I share them as well, so that the KVM activist can pass it along to someone else.

As Binder Kaur's narrative suggests women from landless households value the savings that accrue from not having to buy vegetables. But they also value the ability to control the production process and the product of their labour. Further, KVM activist who reach out landless women also tend to be women from lower-caste, landless household, and therefore enjoy a better rapport based on shared mutual experiences. Activists like Sanjana, a young woman from a landless household, continuously expand the boundaries of KVM's agenda and confront gendered and caste hierarchies in their everyday work. During conversations with women from landed households, for instance, Sanjana challenges the insinuation that

labour is not easily available anymore because people do not want to work hard in the fields, and would rather make easy money through the government employment guarantee scheme (MGNREGA). She reasons that work available in the farms for hired labour is sporadic and therefore labouring classes cannot be dependent only on farming. They have to look after their own interests. Her extensive experience of working on land leased by her family, growing vegetables using agro-chemicals, prior to being employed by KVM has been useful in mobilising women. In the initial years, she faced stiff opposition. Women would often dismiss her by saying that there would be mosquitoes and snakes in the house if they had a vegetable garden, and that had no time. But she persevered and after several visits to households and villages, despite her young age they began to see that she had the knowledge and practical experience, and so they began to take her seriously. While she received formal training on organic methods and practices such as pest management, she had to learn the strategies for mobilising and convincing women on her own. This was particularly difficult given the culture of villages where young women are not supposed to be in public spaces on their own. She would seek help from women workers in schools and the *Anganwadi* (government run child care centres) to become familiar with people in new villages. In particular, she realised that elderly women were the most helpful and they would accompany her to different houses. And yet, they would also tell her that she should look for work that involves sitting in an office since it is unsafe for a young woman to 'roam around in villages and go to strange houses'.

Sanjana's own trajectory, since joining the movement and her experiences with organising within landless households, illustrates the potential for greater inclusivity. The inclusion of marginalised groups influences the broader conception of socio-ecological sustainability by explicitly raising questions of access and justice. Even as this is now being acknowledged

within KVM, organisational resources are disproportionately dedicated to training men farmers. Scaling up agro-ecological transformations means facilitating greater organic production within farmers' fields and increasingly creating avenues for selling organic produce within Punjabi towns and cities. Yet, greater success has been achieved with organising among women. There are a significant number of vegetable gardens in villages run largely by women with support from other members of the household (ranging from 50-200 in a village), in comparison with the number of male farmers shifting toward natural farming practices. In fact, senior activists conceptualise mobilisation among women in an instrumental fashion, in more than one way. Women are seen as the apt audience for raising health concerns as the gatekeepers of food consumed within the family. Further, work among them is also perceived as another way of making inroads into households for spreading awareness about organic methods.

Women who are involved in vegetable production, however, do not have the sense of being part of a larger movement. They often cannot identify KVM by its name, and their primary relationship is with the activist who comes by once every few weeks. After the preliminary group meetings in villages, the interactions with women are on an individual basis. Activists say it is difficult to get women to collectivise in any meaningful way. Issues such as irregular water supply jeopardize the sustainability of these kitchen gardens on the one hand, but also the dependence on the activists for seeds and information make their future precarious. Activists admit that if they do not go to a village for a few months, which is beginning to happen because the group is expanding to new villages, many women lose motivation and stop growing vegetables. Their recent efforts to devolve responsibility to some women in the villages of acting as facilitators, given the shortage of resources and staff within the organisation, have been unsuccessful.

Nevertheless, it has been relatively easier to engender exchange of seeds and information among women than men. As many women in their interviews point out men are often driven by competition for higher yields, which is partially responsible for the indiscriminate use of fertiliser and pesticides. They observe each other in the fields and spray products based on what other people are spraying, not based on the requirements of their own fields. Malkeet Kaur who is in her mid-80s and has been associated with the movement for almost 10 years growing vegetables organically in her home, says it has been impossible for her to convince men in her family to start using organic practices in the fields. "My sons tell me if everyone else is using chemicals, why should we change our practices. They condescendingly tell me to keep growing my vegetables but they will not shift. They talk to other farmers on the phone to check on how much fertiliser they are using or what new product they are spraying and then do the same. My farming knowledge means nothing to them."

While not many women are able to convince the men in their families or are even convinced themselves about adopting organic methods for growing commercial crops, in some instances working on organic kitchen gardens does open up the space for conversation about the harmful effects of chemical-intensive agriculture. Amarjeet Kaur who has been growing vegetables for three years now, for instance, said she often argued with her husband coaxing him to reduce chemicals on their 20-acre farm that he cultivates along with his three brothers. Finally, he agreed and visited a large commercial organic farm in a neighbouring village that he had heard about, to observe how things worked. Despite initial resistance from his brothers, he has now begun to cultivate one acre by drastically reducing the use of chemicals.

VI. Conclusion

Not only are farm workers, landless cultivators and women invisible in the institutional policy framework that seeks to address the agrarian crisis, but they are marginal within the landscape of resistance as well. Inability to access land and lack of decision-making power about agrarian practices makes it difficult for women and landless workers to engage with agro-ecological politics. Payment of exorbitant rents and movement from one piece of land to another prevents tenant cultivators from transforming their cultivation practices. To revive material and cultural autonomy, KVM activists argue that fostering cohesiveness within the village community is strategically essential. Therefore, addressing gendered and class power relations are low in the hierarchy of political battles, despite their framing of a 'civilizational crisis' where social, economic and ecological degradation is interconnected. While issues such as increasing dowry payments resulting in indebtedness, high rates of female feticide and other forms of violence against women are linked to the Green Revolution in the ideological narrative explaining the crisis; they are not addressed through organising practices. Bringing up social power relations explicitly is perceived as divisive politics that will further rupture the social ethos in villages.

KVM's official discourse of 'cultural autonomy' valorises a selective 'past' that implicitly refers to the practices of landowning dominant castes of Sikh Jats when they were powerful. The rhetorical deployment of culture in this ontological sense (cf. Mitchell 1995; Abu-Lughod 1990) or as an essentialized characteristic of peasant proprietors,[87] however, has not

[87] As critical perspectives within subaltern studies historiography have suggested attributions of essentialized cultural consciousness to a unified peasant subject excludes marginalised caste and gendered subjects on the one hand and is a 'back-door entry of the liberal humanist subject' on the other (cf. O' Hanlon 2000; Spivak 1985; Prashad 1999; Illiah 1999; Tharu & Niranjana 1999).

infiltrated the everyday organising practices that are centred on health, environmental and economic distress. Participation by women, particularly from landless households, and interactions with the broader coalition of movements nationally, acts as an antidote to the conflation of agro-ecological politics with nativist and conservative norms.[88] Organising experiences of activists among women suggest nascent pathways for more inclusive mobilisation. Activists reach out to a large number of landless households, and women from landless households are generally more receptive to their efforts. They value the savings that come with not having to buy vegetables from the market. The experience of working on their own homestead plots with some support from activists is greatly valued by many of them because they have control over the decision-making process and the final produce. The growing prominence of these practices within the movement is in turn due to the efforts of women activists from landless households. Their participation in the movement is expanding the agenda beyond repairing the socio-ecological rift in production practices to greater attention toward decommodified social reproduction. The revival of subsistence production by women, particularly from landless households, is a critical pushback against the reactionary traces in the organising discourse of cultural autonomy. It contains the possibility for shifting agro-ecological politics away from a conception of a valorised 'past' constituted by gendered privileges of dominant landowning castes, to creating new just norms of sociality.

[88] The proclivity towards nativist politics has been acknowledged within sustainable agro-ecological initiatives in other regions in India as well but has not been analysed substantively (see Munster 2015; Brown 2013; Khadse et al 2017). Marxist critiques of farmers' unions led by the middle dominant caste farmers also pointed at their conservative nativism (Brass 2007).

CONCLUSION

In this dissertation, I have argued that KVM's agroecological politics has emerged at the present conjuncture as a saturation of the process of social, spatial and temporal displacement of ecological costs. From the vantage point of the present, that is a manifest crisis of socio-ecological reproduction facing cultivators, Punjab is a degraded frontier regional ecology produced through extractive agricultural modernisation that was critical to postcolonial state formation. While the Green Revolution is predominantly understood as a state-led development project of agricultural modernisation that benefitted medium and large farmers in particular regions like Punjab, the provenance of the agrarian crisis in India are traced to the period of neoliberal reforms in the 1990s enabling penetration of corporate capital. The trajectory of agrarian transformation in the cotton-belt of Punjab, however, suggests a much more complicated picture. It highlights how state support aggressively promoted synthetic input-intensive mono-cultural farming since the 1960s until the technological treadmill became self-sustaining through a restructuring of the social and the ecological landscape. The material basis for alternative and autonomous forms of social reproduction were eroded through these decades. Thus, liberalisation reforms of the 1990s, that entailed withdrawal of government subsidies on electricity and fertilizer, institutional agricultural credit and un-remunerative minimum support prices that barely cover the costs of production, are not a critical rupture but a deepening of the techno-politics of the development decades (cf. Kumar 2016). The incentivising mechanisms that enrolled Punjabi farmers in the project of agricultural modernisation have transmuted into a pervasive internally disciplining regional social ecology. Critically, such a framing recognises the interconnectedness of socio-

ecological dynamics of the 'long Green Revolution' (Patel 2013), and this recognition is embodied in and has been made visible through the emergent movement for agro-ecological sustainability. To elaborate on this argument, I have employed two approaches.

The first is to privilege subjective oral histories of the Green Revolution that critique the technocratic isolation of production from social reproduction practices. This isolation is exemplified by Green Revolution practices. Exclusive emphasis on increasing productivity of wheat and rice, to provide cheap calories through the public distribution system, was underpinned by derailing of the agenda of land redistribution, and neglect of investment in rural health and education infrastructure. In focusing on the transformation of relations of production, particularly class differentiation, Marxist scholarly accounts of agrarian transformation have replicated the separation of production from social reproduction, without a critical analysis of the effects of such separation in governmental practices and rural resistance. Memories of the early decades of the Green Revolution, articulated by men and women from rural households, suggest that reluctance to adopt agrochemicals and new hybrid varieties was grounded in concerns for soil and human health. The relationship with agrochemicals was shaped by people's position in the social hierarchy. For instance, the restrictions prohibiting women from working in the fields in landed households were an assertion of status and upward mobility, but they were also partly attributed to the advent of pesticides and insecticides. First-generation, highly toxic pesticides were perceived as particularly harmful for women and reproductive health. Their impact was visible and immediate as is evident in the narratives of farm workers and cultivators, who recalled spells of dizziness, burns and even instances of death due to exposure. Many elderly people trace the roots of the current widespread opioid addiction, which is attributed in part to the prevalence of hopelessness about the future among youth, to the practice of mixing opium

with tea that was given to *siris*, the semi-attached farm workers, by landowners. This was said to quell the fatigue of hard work on the farms and ensure they did not quit working for particular households. These instances show how changes in labour practices with agrochemical intensification and mechanisation, reconfigured social relations, and the forms in which exploitation was experienced, contingent on the location in the class, caste and gender hierarchy. The foregrounding of these particular instances in memory-making through which shows how the current health crisis is shaping the significance and evaluation of past events.

These oral histories also highlight another process that has been conspicuously absent from the narratives of the Green Revolution – the marginalisation and erosion of the village commons. As I have discussed, the lost village commons were not only material – the open grazing lands that allowed all classes to keep livestock, native trees that provided uncultivated foods, shade and contributed to the sustenance of the ecosystem, but also collective work practices such as *veedi* – the reciprocal exchange of labour during peak season, and access for women from landless households to the fields for gleaning post-harvest. These practices, however, structured through patrimonial caste relations are not viewed unambiguously as advantageous. While some men and women from landless households point to easier access to healthy food, others particularly young people, highlight the indignities of caste oppression during this period of relatively de-commodified social reproduction. The growing presence of village-level government institutions through the Green Revolution decades enabled collective Dalit struggles against caste and class oppression locally. Men who worked as *siris*, or semi-attached workers, recall both the security of subsistence and the impossibility of upward mobility. With the shift to annual contracts for farm workers followed by casualisation of farm work, economic insecurity and

risk unfolded in conjunction with an assertion of formal equality and the opening up of possibilities for upward mobility through non-farm livelihoods.

The reconstructions of changing everyday practices through the early decades of the Green Revolution and the articulations of the lived experience of the present crisis show the devaluation of agrarian work as a historical process. The unprofitability of agriculture for farmers in India is widely accepted. Less attention has been paid to devaluation enacted through the loss of control of farmers over the production process through the separation of knowledge production from on-farm work. This incremental loss of control is exemplified by the vagaries of cotton cultivation in Malwa. Bt hybrids were introduced in 2005 on the pretext of fixing the preceding round of crisis emerging from the persistent failure of American hybrids and the inability of pesticides to control boll-weevil attacks. After a few good seasons, Bt hybrids are now succumbing to other pests like whitefly and mealy bugs. The crop failures are enframed by the expert narrative that blames farmers for lack of precision in following scientific methods, obscuring the socioeconomic and ecological constraints resulting from the preceding rounds of techno-fixes. This loss of control has contributed to de-valorisation of occupational identity along with economic unprofitability for Sikh-jat cultivators who have a long history of being recognised as ‘progressive farmers’. The derogatory expert narrative also invokes conspicuous consumption as an essentialized cultural attribute of Sikh jats to explain the crisis, drawing attention to expenditure on weddings, motor vehicles, construction of houses, and other non-essential consumer goods as examples of lack of financial prudence. Implicit in such essentialization is an epistemological superiority, as it is not a universal condemnation of growing consumerism, but only of rural consumerism, which ironically is also construed as a marker of ‘development’.

In contrast, men and women across social classes in rural Malwa emphasise how monocultural agricultural intensification unfolded simultaneously with increasing need for disposable cash to provision everyday consumption of food, for education and medical expenses. In these narratives, the social pressures with increasing commodification of ritualistic and cultural practices are construed as efforts to counter perceptions of downward mobility. The assertion of status in this way is in part a reflection of the disillusionment of young men from landowning households with farming, and their inability to realise their desired future with 'white collar' jobs in urban centres. A focus on lived experiences thus provides a relational understanding of production and social reproduction in a unified analytical field, foregrounding the significance of both political economy of production and the cultural politics of consumption, and vice versa (Yeh and Lama 2013; cf. Watts 1994). In this dissertation, I have employed this analytic to show the systematic de-valorisation of agrarian work and rural places in Punjab, a region ostensibly privileged through post-colonial development practices, where all the ills said to be afflicting Indian agriculture – low yield productivity, dependence on rainfall, under utilisation of agrochemicals, have been overcome. The regional division of labour was not simply a division of nature, but the displacement of costs of environmental degradation through extractive agricultural intensification, over time, and to marginalised social groups. The surfacing of ecological degradation on the political agenda in Punjab reflects the saturation of this process of displacement and masking of effects. Economic and ecological precariousness is no longer confined to landless households, or small and marginal cultivators, but is being experienced by landowning cultivators including medium scale farmers.

The second approach that I have used is an analysis of the unfolding mobilisation for enacting agro-ecological sustainability in Malwa led by KVM, in which a small number of

medium scale farmers are currently the most active participants. The privileging of constructive instead of oppositional politics advocates a community-led transformation of everyday practices of food production and consumption. The mobilisation discourse employs the idiom of a 'civilisational crisis' to emphasise the interconnectedness of the manifest social, economic and ecological degradation. The construction of an alternative imaginary of indigenous ecological holism challenges the compartmentalising logic of techno-politics premised on controlling 'nature'. It is a critique of the transformation of agrarian work, through separation of knowledge production from labour on the farm, and the disembedding of production from social reproduction through statist interventions since the 1960s. I argue that the discursive invocation of material and cultural autonomy by KVM is premised on a simplified western/indigenous binary that mirrors the techno-politics of the Green Revolution. In replacing economistic productivism with a valourisation of indigenous culture, such a discourse contains the seeds of conservative nativism that reinforce gendered, class and caste hierarchies. For instance, landless cultivators are excluded from outreach activities, and women are organised to grow food organically for home consumption without challenging the gendered hierarchies that structure their labour. KVM activists explain these exclusions, and avoidance of explicit confrontation of caste, class and gendered hierarchies, as a 'strategic essentialism' necessary for building a sense of community cohesion. The predominant focus on organising landowning farmers is predicated on the understanding that they are implicated in the structuring of the socioecological degradation. By analysing the competing discourses within the movement, the organising activities of activists from varied socioeconomic backgrounds, and the varied modes of participation by those associated with the movement, I show that the prefigurative mode of organising counteracts conservative and exclusionary tendencies contained within a culturalist discourse of autonomy.

The shift from a narrow focus on enacting natural farming practices, to a more open-ended approach that accommodates a range of practices such as low-input intensive cultivation, incremental reduction of agrochemicals in wheat, organic production on some part of the land for household consumption, has led to the inclusion of greater number of cultivators who are facing severe economic constraints. Organising among women, to grow vegetables organically on homestead plots, is moving from the periphery of KVM's agenda to the centre. Through this focus on producing for household consumption, a larger number of landless households are becoming involved with the movement. The changing trajectory of KVM's organising practices cannot be dismissed as NGO-isation as argued by some farmers within the movement or construed as being a part of the broader trend of disciplining oppositional and disruptive politics in India (cf. Gupta and Sivaramakrishnan 2011). Such evaluations are premised on conventional understandings of politics in terms of class-based mobilisation. The emphasis on constructive programs and prefigurative practical agenda of transformation is not simply shaped by 'neoliberal rationality' but has roots in the Gandhian strand of anti-colonial politics. The incursion of Gandhian modes of mobilisation in rural Punjab, which have historically been prevalent among 'environmental struggles' in regions dominated by subsistence production, I argue, a radical reshaping of political agency. The contradictory experience of techno-political transformation of agrarian practices through the Green Revolution decades, combined with structured marginality of the rural as a whole, is constitutive of this radical reshaping. Whereas direct dispossession is experienced as an exogenous encroachment of moral economy, the slower process of surplus accumulation through ecological extraction in which Punjabi cultivators were participants is less visible and fragmented. Attention to the unfolding of alterations of everyday practices of work and social reproduction is critical for understanding this emergent form of political agency. Organised agroecological politics, therefore, cannot be relegated to the sphere NGO-led sustainability

projects, distinct from the sphere of agrarian struggles. In Green Revolution regions, analytical attention continues to focus on agrarian populism and more recently has been on overt land conflicts. In fact, both anti-dispossession struggles and agroecological politics can be conceived as struggles for viable social reproduction, the latter explicitly incorporating ecological relations in its ambit.

It is clear that Punjabi cultivators, as dominant agrarian castes do not perceive themselves as a part of what Partha Chatterjee (2004) has defined as 'political society', inhabited by subaltern subjects who negotiate for accessing state welfare resources. Chatterjee argues that such governed populations are disenfranchised as citizens, and excluded from civil society as surplus populations that are dispensable to the needs of capital accumulation. As Chatterjee (2008) and other scholars have pointed out, the state welfare schemes that have proliferated in the post-liberalisation era in India, are meant to act as palliatives to increasingly aggressive forms of dispossession by preventing the outbreak of more disruptive resistance (cf. Gupta 2012). These welfare provisions, however, have resulted from grassroots struggles making demands for viable social reproduction in the wake of growing unemployment and precarious livelihoods (cf. Harriss & Scully 2015; Li 2010; Ferguson 2013; Gupta 2011). Ousted from the agrarian economy in large numbers, the struggles by landless are now enacted in the domain of accessing government resources. From the standpoint of landowning Sikh jat men and women, however, state welfare schemes such as MGNREGA are meant for Dalit households in the village. While the MGNREGA provides employment guarantee universally, men and women from Sikh jat households even those facing extreme economic distress are unlikely to enrol as workers. As political subjects, Punjabi farmers do not fit neatly into Chatterjee's binary framework of citizens and governed populations. Just as Punjabi peasant struggles in the early twentieth century, spurred by the project of agricultural

modernisation against the colonial state, were outside the purview of subaltern historiography (Bayly 2000). They did not quite fit in the conceptual framing that bifurcated elite and subaltern sphere of politics and exemplified the contradictory process of formation of a unified national space (cf. Mukherjee 2005; Fox 1985).

As the majority among Sikh-jat landowners are already engulfed among the precariat or are on the precipice of being dispossessed, their struggles have shifted from being aspirational to fighting for survival. In Punjab, the various factions of the farmers' union BKU have been mobilising sporadically against attempts at land acquisition. Farmers in Faridkot and Bathinda, that are involved with BKU activities either directly or through others in their village, argue that protests against land acquisition are largely driven by the agenda of driving up rates of compensation as farmers are keen to sell their land given the increasing unprofitability of cultivation and debt. In Michael Levien's (2013) terminology they are 'bargainers' and not 'barricaders'. Farmers' unions in Punjab do not offer an emancipatory vision but are protesting to mitigate the immediate effects of the crisis in the agrarian economy that are threatening the survival of farming households. In the last few years, various factions of the BKU have staged protests to demand compensation for crop failures (particularly cotton), for families where farmers' have committed suicides, against delays in procurement of wheat and rice by government agencies, and for an increase in minimum support prices for crops.

In this context, KVM's place-based restorative agenda provides an alternative political imaginary. The unfolding of KVM's organising practices, the responses it has evoked from participants and the emergence of internal competing discourses are animated by and reflect the tensions in the broader landscape of neoliberal resistance. They point at the broadening of

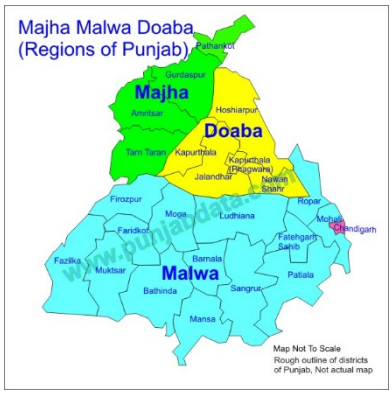
the political field from contestations over production to socio-ecological reproduction, as well as the beginnings of the displacement of developmentalism that has shaped the terrain for grassroots politics. As to whether the articulation of struggle in terms of socio-ecological reproduction dislocates class struggle is to pose a question that privileges theory over history (McMichael 2013; Smith 2016). The realisation of restorative agroecological production and consumption practices, however, is extremely challenging in a materially degraded landscape. The difficulties stem from economic compulsions of rural households, fragmented and weakened sociality, institutional infrastructure and the absence of ecological resources such as living soils, native seed varieties, and biodiversity. KVM activists have been unable to foster a collective work ethic, reciprocal knowledge and seed exchanges given the pervasiveness of individuated production and social reproduction practices structured through the Green Revolution decades. The revalorization of agrarian work privileged by KVM has limited resonance with the younger generation as their disillusionment stems from the broader devaluation of rural spaces. The politics of agro-ecological sustainability does not address the lack of investment in health, education and other kinds of infrastructure and rural economy beyond agriculture (cf. Edelman et al 2014).

The progressive possibilities in the agroecological movement are contingent on the more substantive inclusion of groups marginalised in the agrarian economy through Green Revolution farming. As cultivation by landless tenants is likely to become more prevalent in the foreseeable future in Malwa, agroecological politics will only flourish with their engagement, and will perhaps be reinvented to more aggressively address social hierarchies and issues of access to land. For now, the push within the movement to foreground healthy and de-commodified food consumption for rural households is making space for engagement by women and landless households, social groups marginalised through labour

transformation in the Green revolution decades. The association of a larger number of people, particularly those situated lower in the social hierarchy is stretching the agenda of the movement beyond enactment of agroecological methods. While perceived by some as dilution of their agenda, together, the organising practices in the realm of production and social reproduction have created an expanded field of 'constructive resistance' (Kumbamu 2009). 'Constructive resistance' that interweaves production and social reproduction ruptures the conceptualization of resistance as bifurcated into battles for survival and livelihoods versus sustained mobilisation for the achievement of long-term goals (cf. Scott 1979; Martinez-Alier 2014). Whether this 'constructive resistance' is able to reconcile ecological sustainability with agenda of social equity, in-place, is contingent on the ways in which alliances with other forms of rural struggles are forged within the region as well as the dynamics of engagement with the broader national coalition of agrarian struggles.

Figure 1: District Map of Punjab, India (Source: http://www.mapsofindia.com)
Research Districts: Bathinda and Faridkot in Malwa region

Figure 2: Regions of Punjab



References

Abu-Lughod, L. (1990). The romance of resistance: Tracing transformations of power through bedouin women. *American Ethnologist, 17*(1), 41-55. doi:10.1525/ae.1990.17.1.02a00030

Abu-Lughod, L. (1993). Writing women's worlds: Bedouin stories. Berkeley: U. of California P.

Agrawal, A., & Sivaramakrishnan, K. (2000). Agrarian environments: Resources, representations, and rule in India. Durham: Duke University Press.

Agrawal, Arun (2005) 'Environmentality: Community, Intimate Government, and the Making of Environmental Subjects in Kumaon, India'. Current Anthropology Volume 46, Number 2, April 2005

Akhter, M., & Ormerod, K. (2015). The irrigation technozone: State power, expertise, and agrarian development in the US west and british punjab, 1880-1920. *Geoforum, 60*, 123-132. doi:10.1016/j.geoforum.2015.01.012

Akram-Lodhi, A. H., & Kay, C. (2010). Surveying the agrarian question (part 2): Current debates and beyond. *The Journal of Peasant Studies, 37*(2), 255-284. doi:10.1080/03066151003594906

Alam, J. (October 01, 1986). Political Implications of Economic Contradictions in Punjab. Social Scientist, 14, 10, 3-26.

Alavi, H. (1975). India and the Colonial Mode of Production. *Economic and Political Weekly, 10*(33/35), 1235-1262. Retrieved from http://www.jstor.org/stable/4537329

Alavi, Hamza, 1973, 'Peasants and revolution', Kathleen Gough and Hari P . Sharma eds., *Imperialism and Revolution in South Asia,* New York and London: Monthly Review Press.

Allison, A. (2013). Precarious Japan. Durham: Duke University Press.

Altieri, M. and Toledo, M.V. (2011). "The agroecological revolution in Latin America: rescuing nature, ensuring food sovereignty and empowering peasants," The Journal of Peasant Studies, 38(3):587-612.

Amin S.,(1982) 'Small Peasant Commodity Production and Rural Indebtedness: The Culture of Sugarcane in Eastern UP, C. 188)-1920 in Guha, R. Subaltern studies I: Writings on South Asian history and society. (Subaltern studies.) New Delhi: Oxford university press.

Anand, Geeta (2016, November 2). *Farmers' Unchecked Crop Burning Fuels India's Air Pollution.* The New York Times. *Retrieved from https://www.nytimes.com/2016/11/03/world/asia/farmers-unchecked-crop-burning-fuels-indias-air-pollution.html*

Araghi, F. "Accumulation by Displacement: Global Enclosures, Food Crisis, and the Ecological Contradictions of Capitalism," REVIEW XXXII (1): 113-146, 2009.

Araghi, F. "Global Depeasantization, 1945-1990," The Sociological Quarterly 36(2): 337-368, 1995.

Arora, S. (2012) Farmers' Participation in Knowledge Circulation and the Promotion of Agroecological Methods in South India, Journal of Sustainable Agriculture, 36:2, 207-235, DOI: 10.1080/10440046.2011.620231

Arora, S., & Deshpande, R. S. (2013). *Agrarian crisis and farmers' suicides* Sage Publications.

Bajwa, B. S., et al., Uranium and other heavy toxic elements distribution in the drinking

water samples of SW-Punjab, India, Journal of Radiation Research and Applied Sciences (2015), http://dx.doi.org/10.1016/ j.jrras.2015.01.002
Banerjee, Arindam. Neoliberalism and its Contradictions for Rural Development: Some Insights from India. Development and Change 46(4): 1010–1022. DOI: 10.1111/dech.12173 ◯C 2015 International Institute of Social Studies.
Baranski, M. R. (2015). Wide adaptation of green revolution wheat: International roots and the indian context of a new plant breeding ideal, 1960-1970. *Studies in History and Philosophy of Biological and Biomedical Sciences, 50*, 41. doi:10.1016/j.shpsc.2015.01.004
Bardhan, P. K. (1984). *The political economy of development in India.* Oxford, UK: B. Blackwell.
Bariana (January 31, 2016). 'Heavy rolls the cancer train, still.' The Tribune. Accessed September 1, 2016 http://www.tribuneindia.com/news/spectrum/heavy-rolls-the-cancer-train-still/189297.html
Baviskar, A. 1995. In the belly of the river: Tribal conflicts over development in the Narmada Valley. Oxford: Oxford University Press.
Bayat, A. (2013). The arab spring and its surprises. *Development and Change, 44*(3), 587-601. doi:10.1111/dech.12030
Bayly, C.A., (2000) 'Rallying Around the Subaltern' in Chaturvedi, V. Mapping subaltern studies and the postcolonial. London: Verso.
Beckert, S. (2014). *Empire of cotton: a global history*. First edition. New York: Alfred A. Knopf.
Bera, Sayantan. (2017, May 26) GST rate: Fertilizers to come under 12% tax slab, prices likely to rise. Livemint. Retrieved from http://www.livemint.com/Politics/KQOY1h7dQrkOdbQKrMAI2M/GST-rate-Fertilizers-to-come-12-tax-slab-prices-likely-to.html
Berlant, L. G. (2011). Cruel Optimism. Durham: Duke University Press.
Bernstein, H. (2006). Is There an Agrarian Question in the 21st Century? Canadian Journal of Development Studies/Revue Canadienne D'études Du Développement, 27(4), 449-460.
Bernstein, H. (2010). *Class dynamics of agrarian change*. Sterling: Kumarian Press.
Bezner Kerr, Rachel (2014) Lost and Found Crops: Agrobiodiversity, Indigenous Knowledge, and a Feminist Political Ecology of Sorghum and Finger Millet in Northern Malawi, Annals of the Association of American Geographers, 104:3, 577-593, DOI: 10.1080/00045608.2014.892346
Bhattacharya, N. (2012). Promise Of Modernity, Antinomies Of Development. Yale University Program in Agrarian Studies Colloquium January 20, 2012. Retrieved on March 25, 2014 http://agrarianstudies.macmillan.yale.edu/sites/default/files/files/colloqpapers/15bhattacharya.pdf
Biekart, K., & Fowler, A. (2013). Transforming activisms 2010+: Exploring ways and waves: Transforming activisms 2010. *Development and Change, 44*(3), 527-546. doi:10.1111/dech.12032
Blaurock-Busch, E., Busch, Y. M., Friedle, A., Buerner, H., Parkash, C., & Kaur, A. (2014). Comparing the metal concentration in the hair of cancer patients and healthy people living in the Malwa region of Punjab, India. Clinical Medicine Insights: Oncology, 2014(8), 1-13. doi:10.4137/CMO.S13410
Brass, T (2007) 'A world which is not yet': Peasants, civil society and the state, The Journal of Peasant Studies, 34:3-4, 582-664, DOI: 10.1080/03066150701802918
Brass, T. (1995). New farmers' movements in India. Ilford, Essex, England: Frank Cass.

Brass, T. (2007) 'A world which is not yet': Peasants, civil society and the state, The Journal of Peasant Studies, 34:3-4, 582-664, DOI: 10.1080/03066150701802918
Breman, J. (1993). *Beyond patronage and exploitation : Changing agrarian relations in south gujarat*. India:
Breman, J. (1996). *Footloose labour: working in India's informal economy.* Cambridge [England]: Cambridge University Press.
Breman, J., & van der Linden, M. (2014). Informalizing the economy: The return of the social question at a global level: Debate: The return of the social question at a global level. Development and Change, 45(5), 920-940. doi:10.1111/dech.12115
Brown W (2003) Neoliberalism and the End of Liberal Democracy *Theory and Event* 7(1).
Brown, T. (2013). Agrarian crisis in punjab and "natural farming' as a response. *South Asia-Journal of South Asian Studies, 36*(2), 229-242. doi:10.1080/00856401.2013.776002
Brown, T. (2014). Negotiating the NGO/Social movement dichotomy: Evidence from punjab, india. *VOLUNTAS: International Journal of Voluntary and Nonprofit Organizations, 25*(1), 46-66. doi:10.1007/s11266-012-9324-7
Brown, T. (June 01, 2013). Agrarian Crisis in Punjab and 'Natural Farming' as a Response. South Asia: Journal of South Asian Studies, 36, 2, 229-242.
Byres, T. J. (1981). The new technology, class formation and class action in the indian countryside. *The Journal of Peasant Studies, 8*(4), 405-454. doi:10.1080/03066158108438146
Carney, J. A. (2001). Black rice: The African origins of rice cultivation in the Americas. Cambridge, Mass: Harvard University Press.
Carney, J., & Watts, M. (January 01, 1990). Manufacturing Dissent: Work, Gender and the Politics of Meaning in a Peasant Society. Africa: Journal of the International African Institute, 60, 2, 207-241.
Carswell, G., & De Neve, G. (2014). MGNREGA in tamil nadu: A story of success and transformation? *Journal of Agrarian Change, 14*(4), 564-585. doi:10.1111/joac.1205
Cavalcante, M. (2015). Feeling rich on an empty stomach: Agrarian crisis and rural consumption choices in Harriss-White, B. (edited). *Middle india and urban-rural development : Four decades of change*. New Delhi: Springer.
Cederlöf, G., & and K. Sivaramakrishnan, K. (2006). (Edited) Ecological nationalisms: Nature, livelihoods, and identities in south asia / edited by. Seattle: University of Washington Press.
Chakrabarty, D. (2008). *Provincializing Europe: postcolonial thought and historical difference.* Princeton: Princeton University Press.
Chand, R. (1999). Agricultural diversification in India: Potentials and prospects in developed region. New Delhi: Mittal Publications
Chatterjee, P. (2004). *The politics of the governed: Reflections on popular politics in most of the world*. New York: Columbia University Press.
Chatterjee, P. (2008). Democracy and economic transformation in India. Economic and Political Weekly, 43(16), 53–62.
Chopra, R. (2011). Militant and migrant : The politics and social history of punjab. New Delhi: Routledge, Taylor & Francis Group.
Chowdhry, P. (2010). Political economy of production and reproduction: Caste, custom, and community in North India. Oxford: Oxford University Press.
Clapp, Jennifer. (2014) Financialization, distance and global food politics, The Journal of Peasant Studies, 41:5, 797-814, DOI: 10.1080/03066150.2013.875536
Connell, R., & Dados, N. (2014). Where in the world does neoliberalism come from?: The market agenda in southern perspective. Theory and Society, 43(2), 117-138. doi:10.1007/s11186-014-9212-9

Corbridge, S. (1997). *'The merchants drink our blood': Peasant politics and farmers' movements in post-green-revolution india* Elsevier Ltd. doi:10.1016/S0962-6298(97)85595-3
Corsi, M. (2006). Communalism and the green revolution in punjab. *Journal of Developing Societies, 22*(2), 85-109. doi:10.1177/0169796X06065798
Cullather, N. (2010). *The hungry world : America's Cold War battle against poverty in Asia.* Cambridge, Mass.: Harvard University Press.
Darling, M. (1977). *The Punjab peasant in prosperity and debt.* New Delhi: Manohar Book Service.
Davis, M. (2004). Planet of slums. New Left Review, 26, 5.
Denning, M. (November 01, 2010). Wageless life. New Left Review, 66, 79-97.
De Neve, G., & Carswell, G. (2011). NREGA and the return of identity politics in western tamil nadu, india. *Forum for Development Studies, 38*(2), 205-210. doi:10.1080/08039410.2011.568185
Dhanagare, D. N. (1987). Green revolution and social inequalities in rural india. *Economic and Political Weekly, 22*(19/21), AN137-AN144.
Dhareshwar, V. (2010). Politics, experience and cognitive enslavement: Gandhi's hind swaraj. *Economic and Political Weekly, 45*(12), 51-58.
Dhiman, J. S., Kang, M. S., Parshad, V. R., Khanna, P. K., Bal, S. S., & Gosal, S. S. (2010). Improved seeds and green revolution. Journal of New Seeds, 11(2), 65-103. doi:10.1080/1522886X.2010.481777
Dutta, D. (June 19, 2012) Green Revolution Revisited: The Contemporary Agrarian Situation in Punjab, India Social Change 2012 42: 229 DOI: 10.1177/004908571204200205
Edelman, M. Peasants against Globalization: Rural Social Movements in Costa Rica. Stanford, CA: Stanford University Press
Edelman, M., Weis, T., Baviskar, A., Borras, S. M., Holt-Giménez, E., Kandiyoti, D., & Wolford, W. (2014). Introduction: Critical perspectives on food sovereignty. *Journal of Peasant Studies, 41*(6), 911-931. doi:10.1080/03066150.2014.963568
Ekers, M., & Loftus, A. (March 20, 2013). Revitalizing the production of nature thesis: A Gramscian turn?. Progress in Human Geography, 37, 2, 234-252.
Escobar, A. (1995). Encountering development: The making and unmaking of the Third World. Princeton, N.J: Princeton University Press.
Escobar, A. (2008). Territories of difference: Place, movements, life, redes. Durham: Duke University Press.
Fairbairn, M., Fox, J., Isakson, S. R., Levien, M., Peluso, N., Razavi, S., . . . Sivaramakrishnan, K. (2014). Introduction: New directions in agrarian political economy.*Journal of Peasant Studies, 41*(5), 653-666. doi:10.1080/03066150.2014.953490
Feldman, S., & Geisler, C. (2012). Land expropriation and displacement in bangladesh. *The Journal of Peasant Studies, 39*(3-4), 971-993. doi:10.1080/03066150.2012.661719
Ferguson, J. (2013). Declarations of dependence: Labour, personhood, and welfare in southern africa. Journal of the Royal Anthropological Institute, 19(2), 223-242. doi:10.1111/1467-9655.12023
Fitzgerald, D. K. (2003). Every farm a factory: The industrial ideal in American agriculture. New Haven: Yale University Press.
Fox, R. (1984). urban class and communal consciousness in colonial punjab - the genesis of india intermediate regime. *Modern Asian Studies, 18*(JUL), 459-489.
Fox, R. G. (1985). *Lions of the Punjab : culture in the making.* Berkeley: University of California Press.

Frankel, F. R. (1971). *India's green revolution: economic gains and political costs.* Princeton, N.J.: Princeton University Press.
Friedmann, H. and McMichael, P. 1989: Agriculture and the state system: the rise and decline of national agricultures. Sociologia Ruralis 29, 73-117.
Galt, R. E. (2013). Placing food systems in first world political ecology: A review and research agenda. *Geography Compass, 7*(9), 637-658. doi:10.1111/gec3.12070
Galvin, S. S. (2014). Organic designs and agrarian practice in uttarakhand, India. *Culture, Agriculture, Food and Environment, 36*(2), 118-128. doi:10.1111/cuag.12039
Gera, Komal, Amit., (2015, September 18) Punjab, Haryana cotton growers lose 40% crop. Business Standard. Retrieved from http://www.business-standard.com/article/markets/punjab-haryana-cotton-growers-lose-40-crop-115091800669_1.html
Ghuman, R.S., Singh, I., Singh.,L. (2007). Status of Local Agricultural Labour in Punjab. Study Sponsored by The Punjab State Farmers Commission Government of Punjab S.A.S. Nagar, Mohali
Ghuman, R.S. (2008). Socio-economic crisis in rural Punjab. Economic and Political Weekly, 47(3), 12-15
Gibson-Graham, J.K. 1996: The end of capitalism (as we knew it): a feminist critique of political economy. Oxford: Blackwell
Gidwani, V. (January 01, 2002). The unbearable modernity of 'development'? Canal irrigation and development planning in Western India. Progress in Planning, 58, 1, 1-80.
Gidwani, V. and K. Sivaramakrishnan (2003) 'Circular Migration and Rural Cosmopolitanism in India', Contributions to Indian Sociology 37(1/2): 339–67.
Gidwani, V. K. (2008). Capital, interrupted: Agrarian development and the politics of work in India. Minneapolis: University of Minnesota Press.
Gilmartin, D. (1994). Scientific empire and imperial science: Colonialism and irrigation technology in the indus basin. *The Journal of Asian Studies, 53*(4), 1127-1149. doi:10.2307/2059236
Gill, S. S. (October 15, 1988). Contradictions of Punjab Model of Growth and Search for an Alternative. Economic and Political Weekly, 23, 42, 2167-2173.
Gill, S.S., (1995) 'The farmers' movement and agrarian change in the green revolution belt of North-West India' in Brass., Tom., (ed) (1995) New Farmer' Movements in India. Taylor & Francis, Inc.
Gill, Sucha., Singh. Sukhwinder Singh, and Jaswinder Singh Brar. (2013) Functioning of NREGS in a prosperous state: a study in Punjab in Kannan, K. P., & Breman, J. (2013). *The long road to social security: Assessing the implementation of national social security initiatives for the working poor in India*.
Gill, Sucha., Singh. Sukhwinder Singh, and Jaswinder Singh Brar. (2013) Social security in Punjab: a blend of state and central schemes in Kannan, K. P., & Breman, J. (2013). *The long road to social security: Assessing the implementation of national social security initiatives for the working poor in India*.
Gold, A. G., & Gujar, B. R. (2002). In the time of trees and sorrows: Nature, power, and memory in Rajasthan. Durham, NC: Duke University Press.
Gold, A.G. (1998) 'Sin and Rain: Moral Ecology in Rural North India' in Lance E. Nelson, L.E. (Ed) Purifying the Earthly Body of God: Religion and Ecology in Hindu India. State University of New York Press
Gómez, L. F., Ríos-Osorio, L., & Eschenhagen, M. L. (2013;2012;). Agroecology publications and coloniality of knowledge. *Agronomy for Sustainable Development, 33*(2), 355-362. doi:10.1007/s13593-012-0109-6

Goodman, D., & Redclift, M. (1994). Constructing a political economy of food. *Review of International Political Economy, 1*(3), 547-552. doi:10.1080/09692299408434298
Smith, G. (2016). Against social democratic angst about revolution: From failed citizens to critical praxis. Dialectical Anthropology, 40(3), 221-239.
Gramsci, A., Hoare, Q., & Nowell-Smith, G. (1972). Selections from the prison notebooks of Antonio Gramsci. New York: International Publishers.
Griffin, K. B. (1974). *The political economy of agrarian change : an essay on the green revolution.*Cambridge, Mass.: Harvard University Press.
Gupta, A. (1998). *Postcolonial developments: agriculture in the making of modern India.* Durham, N.C.: Duke University Press.
Gupta, A. (2012). Red tape: Bureaucracy, structural violence, and poverty in India. Durham: Duke University Press.
Gupta, A., and K. Sivaramakrishnan. 2010. The state of India after liberalization: interdisciplinary perspectives. New York: Routledge.
Gupta, D. (February 19, 2005). Whither the Indian Village: Culture and Agriculture in 'Rural' India. Economic and Political Weekly, 40, 8, 751-758.
Guthman, J. (2004). Agrarian dreams: The paradox of organic farming in California. Berkeley: University of California Press.
Guthman, J. (2008). Neoliberalism and the making of food politics in california. *Geoforum,39*(3), 1171-1183. doi:10.1016/j.geoforum.2006.09.002
Halder A. 2007. Premature greying of hairs, premature ageing and predisposition to cancer in Jajjal, Punjab: A preliminary observation. J Clin Diag Res 1:577–80
Harriss, B. (1974). The role of punjab wheat markets as growth centres. *The Geographical Journal, 140*(1), 52-71. doi:10.2307/1797007
Harriss, J. (1980). Why poor people stay poor in rural south india. *Development and Change, 11*(1), 33-64. doi:10.1111/j.1467-7660.1980.tb00788.x
Harriss, J. (1982). *Capitalism and peasant farming: Agrarian structure and ideology in northern tamil nadu*. Bombay: Oxford University Press.
Harris, K., & Scully, B. (2015). A hidden counter-movement? precarity, politics, and social protection before and beyond the neoliberal era. Theory and Society, 44(5), 415-444. doi:10.1007/s11186-015-9256-5
Hart, G. "Household Production Reconsidered: Gender, Labor Conflict, and Technological Change in Malaysia's Muda Region," World Development 20(6), 809-823, 1992.
Holt-Giménez, E. (2006). Campesino a campesino: Voices from Latin America's Farmer to Farmer Movement for Sustainable Agriculture. Oakland, Calif: Food First Books.
Holt-Gimenez, E., & Altieri, M. (2013). Agroecology, food sovereignty, and the new green revolution. Agroecology and Sustainable Food Systems, 37(1), 90-102. doi:10.1080/10440046.2012.716388
Holt-Gimenez, E., Bunch, R., Vasquez, J. I., Wilson, J., Pimbert, M. P., Boukary, B., & Kneen, C. (2010). Linking farmers' movements for advocacy and practice. The Journal of Peasant Studies, 37(1), 203-236. doi:10.1080/03066150903499943
Holt Giménez, E., and A. Shattuck. 2011. Food crises, food regimes and food movements: Rumblings of reform or tides of transformation? Journal of Peasant Studies 38, no. 1: 109–44.
Ince, A. (2012). In the shell of the old: Anarchist geographies of territorialisation. *Antipode, 44*(5), 1645-1666. doi:10.1111/j.1467-8330.2012.01029.x
Jefferey, Craig. (2010) Timepass: Youth, class, and time among unemployed young men in India. American Ethnologist, Vol. 37, No. 3, pp. 465–481, American Anthropological Association.
Jeffrey, C., & Dyson, J. (2016). Now: Prefigurative politics through a north indian lens.

Economy and Society, 45(1), 77-100. doi:10.1080/03085147.2016.1143725
Jeffrey, C., & Dyson, J. (2014). "I serve therefore I am": Youth and generative politics in india.*Comparative Studies in Society and History, 56*(4), 967-994. doi:10.1017/S0010417514000462
Jeffrey, Craig, Roger Jeffery and Patricia Jeffery. 2008. Degrees without Freedom: Education, Masculinities, and Unemployment in North India. Stanford: Stanford University Press.
Jeffery, P., & Jeffery, Roger. (1996). Don't marry me to a plowman! : Women's everyday lives in rural north India. Boulder, Colo. ; Oxford: Westview.
Jodhka, S. S. (January 01, 2006). Suicides by Farmers - Beyond 'Crises': Rethinking Contemporary Punjab Agriculture. Economic and Political Weekly, 41, 16, 1530.
Johansen, B. E. (2003). *The dirty dozen: toxic chemicals and the earth's future.* Westport, Conn.: Praeger.
Judge, P. S. (1992). *Insurrection to agitation : the Naxalite Movement in Punjab.* Bombay: Popular Prakashan.
Kalecki, Michael 1972 Selected Essays on the Economic Growth of the Socialist and the Mixed Economy (Cambridge: Cambridge University Press).
Kalra R and Chawla R. 1981. Occurrence of DDT and BHC residues in human milk in India. Cell Mol Life Sci 37:404–5
Kalra RL, Singh B, and Battu RS. 1994. Organochlorine pesticide residues in human milk in Punjab, India. Environ Pollut 85:147–51
Kannan, E. (2015). Trends in agricultural incomes: An analysis at the select crop and state levels in india: Trends in agricultural incomes in india. Journal of Agrarian Change, 15(2), 201-219. doi:10.1111/joac.12068
Kanwari, Shimona (2016, June 9) 1.2% adults hooked to opioids in Punjab, reveals AIIMS study. The Times of India. Retrieved from http://timesofindia.indiatimes.com/life-style/health-fitness/health-news/1-2-adults-hooked-to-opioids-in-Punjab-reveals-AIIMS-study/articleshow/52667822.cms
Kaul, M. (1992). the commons, community and the courts of colonial punjab + common-land disputes in punjabi rural-communities under british-rule. *Indian Economic and Social History Review, 29*(4), 393-436.
Kaur. R., (2008) Dispensable Daughters and Bachelor Sons: Sex Discrimination in North India. Economic and Political Weekly, Vol. 43, No. 30 (Jul. 26 - Aug. 1, 2008), pp. 109-114. http://www.jstor.org.proxy.library.cornell.edu/stable/40277776
Kaushal, A. (2015). Confronting farmer suicides in india. Alternatives, 40(1), 46.
Kerr, R.B. (2014) Lost and Found Crops: Agrobiodiversity, Indigenous Knowledge, and a Feminist Political Ecology of Sorghum and Finger Millet in Northern Malawi, Annals of the Association of American Geographers, 104:3, 577-593, DOI: 10.1080/00045608.2014.892346
Kennedy, J., & King, L. (2014). and the political economy of farmers' suicides in india: Indebted cash-crop farmers with marginal landholdings explain state-level variation in suicide rates. *Globalization and Health, 10*(1), 16-16. doi:10.1186/1744-8603-10-16
Khadse, A., Rosset, P. M., Morales, H., & Ferguson, B. G. (2017). Taking agroecology to scale: The zero budget natural farming peasant movement in karnataka, india. *Journal of Peasant Studies,* , 1-28. doi:10.1080/03066150.2016.1276450
Kloppenburg, J. (December 01, 1991). Social Theory and the De/Reconstruction of Agricultural Science: Local Knowledge for an Alternative Agriculture. Rural Sociology, 56, 4, 519-548.
Kloppenburg, J. 2004 [1988]. First the seed: the political economy of plant biotechnology, 1492–2000. Madison: The University of Wisconsin Press

Kloppenburg, J. 2014. Re-purposing the master's tools: the open source seed initiative and the struggle for seed sovereignty. Journal of Peasant Studies 41, no. 6: 1225–46.
Kumar, R. (2014). Elusive empowerment: Price information and disintermediation in soybean markets in malwa, india: Elusive empowerment: Soybean markets in malwa, india.*Development and Change, 45*(6), 1332-1360. doi:10.1111/dech.12131
Kumar, R. (2016). *Rethinking revolutions: Soyabean, choupals, and the changing countryside in central india*. Delhi: Oxford University Press. doi:10.1093/acprof:oso/9780199465330.001.0001
Kumar, Shanta. (2015). High Level Report on Reorienting the Role and Restructuring of Food Corporation of India. Government of India. Retrieved on August 10, 2016 fromhttp://fciweb.nic.in/app/webroot/upload/News/Report%20of%20the%20High%20Level%20Committee%20on%20Reorienting%20the%20Role%20and%20Restructuring%20of%20FCI_English_1.pdf
Kumbamu, A. (2009). Subaltern strategies and autonomous community building: A critical analysis of the network organization of sustainable agriculture initiatives in andhra pradesh.*Community Development Journal, 44*(3), 336-350. doi:10.1093/cdj/bsp024
Kumbamu, A. (2012). The agri-food sector's response to the triple crisis: Sustaining local social initiatives in andhra pradesh, india. *Development, 55*(1), 104-111. doi:10.1057/dev.2011.101
Lachlan Gregory, Jagjit Plahe & Sandra Cockfield (2017): The Marginalisation and Resurgence of Traditional Knowledge Systems in India: Agro-Ecological 'Islands of Success' or a Wave of Change?, South Asia: Journal of South Asian Studies, DOI: 10.1080/00856401.2017.1336686
Lamont, M., & Swidler, A. (2014). Methodological Pluralism and the Possibilities and Limits of Interviewing. Qualitative Sociology, 37(2), 153-171.
Landy, F. (2017). Rescaling the public distribution system in India: Mapping the uneven transition from spatialization to territorialization. Environment and Planning C: Politics and Space, 35(1), 113-129.
Laslett, B. & Thorne, B. (Eds), (1997). Feminist Sociology: Life Histories of a Movement New Brunswick, NJ: Rutgers University Press. 286 pp. $50.00 cloth. ISBN: 0-8135-2428-8. $19.95 paper. ISBN: 0-8135-2429-6.
Leach, D. K. 2013. Prefigurative Politics. The Wiley-Blackwell Encyclopedia of Social and Political Movements. .
Leaf, M. J. (1984). *Song of hope : the Green Revolution in a Panjab village.* New Brunswick, N.J.: Rutgers University Press.
Lerche, J. (2013). The agrarian question in neoliberal india: Agrarian transition bypassed?: The agrarian question in neoliberal india. *Journal of Agrarian Change, 13*(3), 382-404. doi:10.1111/joac.12026
Lerche, J., Shah, A., & Harriss-White, B. (July 01, 2013). Introduction: Agrarian Questions and Left Politics in India. Journal of Agrarian Change, 13, 3, 337-350.
Levien, M. (2013). The politics of dispossession: Theorizing india's "land wars". *Politics & Society, 41*(3), 351-394. doi:10.1177/0032329213493751
Li, M. Tania. (July 01, 2009). Exit from agriculture: a step forward or a step backward for the rural poor?. Journal of Peasant Studies, 36, 3, 629-636.
Li, T. M. (2010). To make live or let die rural dispossession and the protection of surplus populations. *Antipode, 41*(s1), 66-93. doi:10.1111/j.1467-8330.2009.00717.x
Lorey, I., Derieg, A., & Butler, J. (2015). State of insecurity : government of the precarious. London: Verso.

Louis, E. (2015) “We Plant Only Cotton to Maximize Our Earnings”: The Paradox of Food Sovereignty in Rural Telengana, India, The Professional Geographer, 67:4, 586-594, DOI: 10.1080/00330124.2014.983590
Ludden, D. E. (1999). *An agrarian history of South Asia.* Cambridge, U.K.: Cambridge University Press.
Majeedi Shariq. (2016, November 10). ICAR secretary visits PAU to discuss straw burning issue. The Times of India. Retrieved from http://timesofindia.indiatimes.com/city/ludhiana/ICAR-secretary-visits-PAU-to-discuss-straw-burning-issue/articleshow/55353910.cms
Major, A. J. (1999). State and criminal tribes in colonial punjab: Surveillance, control and reclamation of the 'dangerous classes'. *Modern Asian Studies, 33*(3), 657-688. doi:10.1017/S0026749X9900339X
Mawdsley, E. (2006). Hindu nationalism, neo-traditionalism and environmental discourses in india. *Geoforum, 37*(3), 380-390. doi:10.1016/j.geoforum.2005.06.004
Martin, Nicolas. (2015) Rural Elites and the Limits of Scheduled Caste Assertiveness in Rural Malwa. Economic & Political Weekly. December 26, 2015 vol l no 52.
Martinez-Alier, J. (2014). The environmentalism of the poor. *Geoforum, 54*, 239-241. doi:10.1016/j.geoforum.2013.04.019
Makki, F. (2012). Power and property: Commercialization, enclosures, and the transformation of agrarian relations in Ethiopia. Journal of Peasant Studies, 39(1), 81-104.
Marx, K. and Engels, F. 1975: *Collected works, Volume 3.* London: Lawrence and Wishart
-1976: *Collected works, Volume 5.* London: Lawrence and Wishart
Mathur, Aneesha. (2016, December 16). Punjab crop burning released 9000 tonnes of PM2.5, Delhi HC told. The Indian Express. Retrieved from http://indianexpress.com/article/india/punjab-crop-burning-released-9000-tonnes-of-pm2-5-delhi-hc-told-4429407/
McKinney, K. (2013) Troubling notions of farmer choice: hybrid Bt cotton seed production in western India, The Journal of Peasant Studies, 40:2, 351-378, DOI: 10.1080/03066150.2012.709847
McMichael, P. (2017). *Development and social change : a global perspective.* Sixth Edition. Los Angeles: SAGE.
McMichael, P. (2013). Food regimes and agrarian questions. Halifax : Fernwood Publishing
McMichael, P. (January 01, 2006). Reframing Development: Global Peasant Movements and the New Agrarian Question. *Canadian Journal of Development Studies/revue Canadienne D'études Du Développement, 27,* 4, 471-483.
McMichael, P. D. (2013). Historicizing the agrarian question. Sociologia Urbana e Rurale. 102:14-33.
Meek, D. (2014) “Agroecology and radical grassroots movements’ evolving moral economies”, *Environment and society* 5(1), 47-65.
Mintz, Sidney W. 1986. Sweetness and power: The place of sugar in modern history. New York: Penguin.
Mitchell, D. (1995). There's no such thing as culture: Towards a reconceptualization of the idea of culture in geography. *Transactions of the Institute of British Geographers, 20*(1), 102-116.
Mitchell, D. (September 01, 2013). Labour's geography and geography's labour: California as an (anti-) revolutionary landscape. *Geografiska Annaler: Series B, Human Geography, 95,* 3, 219-233.
Mitchell, T. (2002). Rule of experts: Egypt, techno-politics, modernity. Berkeley: University of California Press.

Mitra, Ashok. 1977 Terms of Trade and Class Relations (London: Frank Cass).
Mittal, S., Kaur, G., & Vishwakarma, G. (2014). Effects of environmental pesticides on the health of rural communities in the malwa region of punjab, india: A review. Human and Ecological Risk Assessment, 20(2), 366-387. doi:10.1080/10807039.2013.788972
Mooney, N. (2013). The yeoman jats of punjab: Time, expertise and the colonial construction of jat sikh identity. *Anthropologica, 55*(2), 277-290.
Moore, D. S. (2005). *Suffering for territory : race, place, and power in Zimbabwe.* Durham [N.C.]: Duke University Press.
Mukherjee, M. (2005). *Colonializing agriculture : The myth of punjab exceptionalism*. New delhi ;Thousand Oaks, Calif.: Sage Publications.
Munster, D. (2015) Agrarian Alternatives: Agroecology, Food Sovereignty and the reworking of human-environmental relations in India. Rivista Degli Studi Orientali ,88(Supplement 2): 233–250.
Nanda, Meera. (2001) We are all hybrids now: The dangerous epistemology of post-colonial populism, The Journal of Peasant Studies, 28:2, 162-186, DOI: 10.1080/03066150108438770
Nash, L. Lorraine. (2006). *Inescapable ecologies : a history of environment, disease, and knowledge.* Berkeley: University of California Press.
Nadkarni, M. (1991). The Mode of Production Debate: A Review Article. *Indian Economic Review,26*(1), new series, 99-104. Retrieved from http://www.jstor.org/stable/29793540
National Commission for Farmers (NCF). 2006. Serving Farmers and Saving Farming. New Delhi:Ministry of Agriculture
Neumann, R.P. 2010. Political ecology II: theorizing region. *Progress in Human Geography,* 34, 368–374.
Nichols, Carly E. Shifting production/shifting consumption: A political ecology of health perceptions in Kumaon, India. http://dx.doi.org/10.1016/j.geoforum.2015.06.018
O'Hanlon, R. (January 01, 1988). Recovering the Subject: Subaltern Studies and Histories of Resistance in Colonial South Asia. Modern Asian Studies, 22, 1, 189-224.
Omvedt, Gail, (1995) 'We want the Return to Our Sweat': The New Peasant Movement in India and the Formation of a National agricultural Policy' in Brass., Tom., (ed) (1995) New Farmer' Movements in India. Taylor & Francis, Inc.
Padhi, R. (2009).On Women Surviving Farmer Suicides in Punjab. *Economic and Political Weekly,* Vol. 44, No. 19 (May 9 - 15, 2009), pp. 53-59
Padhi, R. (2012). Those who did not die: impact of the agrarian crisis on women in Punjab. New Delhi: SAGE.
Pal, Amaninder. (2016, April 6) Stung by whitefly, state promotes desi cotton. The Tribune. Retrieved from http://www.tribuneindia.com/news/punjab/community/stung-by-whitefly-state-promotes-desi-cotton/218361.html
Pandian, M. S. S. (1987). Rainfall as an instrument of production in late nineteenth-century nanchilnadu, india. *The Journal of Peasant Studies, 15*(1), 61-82. doi:10.1080/03066158708438352
Pandian, A. (January 01, 2008). Devoted to development. Anthropological Theory, 8, 2, 159-179.
Patel, R. (January 01, 2013). The Long Green Revolution. The Journal of Peasant Studies, 40, 1, 1-63.
Patel, R., Kerr, R.B., Shumba, L. & Dakishoni, L. (2015) Cook, eat, man, woman: understanding the New Alliance for Food Security and Nutrition, nutritionism and its

alternatives from Malawi, The Journal of Peasant Studies, 42:1, 21-44, DOI: 10.1080/03066150.2014.971767
Patnaik, U., & Bernstein, H. (1990). Some economic and political consequences of the green revolution in India. London: Earthscan
Perkins, J. H. (1997). Geopolitics and the green revolution: Wheat, genes, and the cold war. New York: Oxford University Press.
Peschard, K. (2014). Farmers' rights and food sovereignty: Critical insights from India. *Journal of Peasant Studies, 41*(6), 1085-1108. doi:10.1080/03066150.2014.937338
Pettigrew, J. (1975). *Robber noblemen: A study of the political system of the sikh jats*. London [u.a.]: Routledge & Paul.
Philip, Kavita. (2001) Seeds of Neo-Colonialism? Reflections on Ecological Politics in the New World Order, Capitalism Nature Socialism, 12:2, 3-47, DOI: 10.1080/104557501101244910
Pickerill, J., & Chatterton, P. (2006). Notes towards autonomous geographies: Creation, resistance and self-management as survival tactics. *Progress in Human Geography, 30*(6), 730-746. doi:10.1177/0309132506071516
Portelli, A. (1991) The Death of Luigi Trastulli and Other Stories: Form and Meaning in Oral History, Albany: State University of New York Press.
Prashad, V. (1999) Untouchable Freedom: A Critique of the Bourgeoisie Landlord Indian State in Bhadra, G., Prakash, G., & Tharu,. Subaltern studies X: Writings on South Asian history and society. New Delhi: Oxford University Press.
Punjab. New Delhi, India: Sage
Raj, K. N. I973 'The Politics and Economics of "Intermediate Regimes",' Economic and Political Weekly VIII no. 27, 7 July I973: I89-98.
Ramesh, P., Panwar, N. R., Singh, A. B., Ramana, S., Yadav, S. K., Shrivastava, R., & Rao, A. S. (2010). Status of organic farming in India. *Current Science (00113891)*,*98*(9), 1190-1194.
Reddy, D. N., and S. Mishra, eds. (2009) Agrarian crisis in India, New Delhi
Rosset, P. M., and M. E. Martínez-Torres. 2012. Rural social movements and agroecology: context, theory, and process. Ecology and Society 17(3): 17. http://dx.doi.org/10.5751/ES-05000-170317
Roy, I., (2014) Reserve labor, unreserved politics: dignified encroachments under India's national rural employment guarantee act, The Journal of Peasant Studies, 41:4, 517-545, DOI: 10.1080/03066150.2014.922551
Roy, Rajesh. (September 21, 2016). 'Indian Minister Says Global Retailers Want to Invest After Food Store Rules Relaxed.' The Wall Street Journal. url: http://www.wsj.com/articles/indian-minister-says-global-retailers-want-to-invest-after-food-store-rules-relaxed-1474456911
Roy, Vijay C. (2010, June 23) 'Happy-seeder' machines by govt to tackle paddy problem. Business Standard. Retrieved from http://www.business-standard.com/article/economy-policy/-happy-seeder-machines-by-govt-to-tackle-paddy-problem-110062300002_1.html
Roy, T., & Borowiak, C. (2003). Against ecofeminism: Agrarian populism and the splintered subject in rural india. *Alternatives: Global, Local, Political, 28*(1), 57-89. doi:10.1177/030437540302800103
Rudolph, L. I, & Rudolph, S. Hoeber. (1987). *In pursuit of Lakshmi: the political economy of the Indian state.* Chicago: University of Chicago Press.
Rukmini S (2014, December 22) Does it pay to be a farmer in India? The Hindu. Retrieved on December 5, 2016 http://www.thehindu.com/data/does-it-pay-to-be-a-farmer-in-india/article6713980.ece

Sathyamurthy, T. V. (1989). Impact of centre-state relations on indian politics: An interpretative reckoning, 1947-87. Economic and Political Weekly, 24(38), 2133-2147.
Schneider, M., & McMichael, P. (January 01, 2010). Deepening, and repairing, the metabolic rift. The Journal of Peasant Studies, 37, 3, 461-84.
Scott, J. W. (January 01, 1991). The Evidence of Experience. Critical Inquiry, 17, 4.)
Scott, J.C. (1979) "Revolution in the Revolution, " *Theory and Society* 7, no. 1-2: 97-134.
Scott, J.C. (1998) "Taming Nature: An agriculture of legibility and simplicity," in Seeing like a state: How certain schemes to improve the human condition have failed. New Haven: Yale University Press.
Sethi, Aman. (2014, June 28) The Ekta Club comes of age. Business/
Standard. Retrieved from http://www.business-standard.com/article/beyond-business/the-ekta-club-comes-of-age-114062701093.html
Shah, E. (2012) "'A life wasted making dust': affective histories of dearth, death, debt and farmers' suicides in India", Journal of peasant studies 39(5), 1159-1179
Shah, Alpa and Barbara Harris-White (2011): "Resurrecting Scholarship on Agrarian Transformations," Economic & Political Weekly, Vol 46, No 39, pp 13-18.
Sharma, M. (2012). Dalits and indian environmental politics. *Economic and Political Weekly, 47*(23), 46-52.
Shergill, H.S. (2007). Johl Diversification Scheme: A Critique in Khurana, M.R. (Ed). Panjab university. Research journal Volume XXXIV Nos. 1 & 2 April - Oct. 2007 (Diamond Jubilee Year) Panjab university Chandigarh
Shiva, V. (1989). The violence of the green revolution: Ecological degradation and political conflict in Punjab. Dehra Dun: Research Foundation for Science and Ecology.
Shiva, V. (1986). Ecology movements in india. *Alternatives: Global, Local, Political, 11*(2), 255-273. doi:10.1177/030437548601100204
Singh, B. P. (2008). Ex-criminal tribes of punjab. *Economic and Political Weekly, 43*(51), 58-65.
Singh, G. (1994). *Communism in Punjab : a study of the movement up to 1967.* Delhi: Ajanta Publications.
Singh, H. (2001). Green revolutions reconsidered: The rural world of contemporary Punjab. New Delhi: Oxford University Press.
Singh, L., & Singh, N. (2016). *Economic transformation of a developing economy : the experience of Punjab, India.* Singapore: Springer.
Singh, P. (2008). *Federalism, nationalism and development : India and the Punjab economy.*London: Routledge.
Singh, S. (January 01, 2004). Crisis and Diversification in Punjab Agriculture. Economic and Political Weekly, 39, 52, 5583.
Singh, S. (2013). Post-green revolution agro-entrepreneurship among capitalist farmers in indian punjab and andhra pradesh. *The Journal of Entrepreneurship, 22*(2), 161-180. doi:10.1177/0971355713490620
Singh, S., & Bhogal, S. (2015). Commission Agent System: Significance in Contemporary Agricultural Economy of Punjab. Economic & Political Weekly. November 7, 2015 Vol l. No 45
Singh, S., Bhogal, S., & Singh, R. (2014). Magnitude and determinants of indebtedness among farmers in punjab. Indian Journal of Agricultural Economics, 69(2), 243.
Singh, Jasdev, Grover, D.K., Dhaliwal, Tejinder K. (2012). State Agricultural Profile – Punjab. Agro-Economic Research Centre Department of Economics and Sociology Punjab Agricultural University. Retrieved December 15, 2015 from http://aercpau.com/assets/docs/Punjab%20Profile.pdf

Sivaramakrishnan, K., & Gupta, A. (2010). *The state in india after liberalization: Interdisciplinary perspectives* Routledge.
Sivaraman, B. (1991). *Bitter sweet : governance of India in transition : memoirs of B. Sivaraman.* New Delhi: Ashish Pub. House.
Skaria, A. (1999). *Hybrid histories : forests, frontiers, and wildness in western India.* Delhi: Oxford University Press.
Skaria, A. (2002). Gandhi's politics: Liberalism and the question of the ashram. *South Atlantic Quarterly, 101*(4), 955-986. doi:10.1215/00382876-101-4-955
Smith, G. (2016). Against social democratic angst about revolution: From failed citizens to critical praxis. Dialectical Anthropology, 40(3), 221-239.
Spivak, G.C., (1985) Subaltern Studies: Deconstructing Historiography in Guha, R. Subaltern studies IV: Writings on South Asian history and society.
Stone, G. (2007). Agricultural deskilling and the spread of genetically modified cotton in warangal. *Current Anthropology, 48*(1), 67-103. doi:10.1086/508689
Stone, G. (2011). Field versus Farm in Warangal: Bt Cotton, Higher Yields, and Larger Questions. World Development, 39(3), 387-398.
Stone, G., & Flachs, A. (2017). The ox fall down: Path-breaking and technology treadmills in Indian cotton agriculture. The Journal of Peasant Studies, 1-24.
Stone, G. D., Brush, S., Busch, L., & Cleveland, D. A. (2007). Agricultural deskilling and the spread of genetically modified cotton in warrangal / comments / reply. *Current Anthropology,48*(1), 67.
Thakur J, Rao B, Rajwanshi A, *et al.* 2008. Epidemiological study of high cancer among rural agricultural community of Punjab in Northern India. Int. J Environ Res Publ Health 5:399–407
Tharu, S., & Niranjana,. T., (1996) 'Problems for a Contemporary Theory of Gender' in Amin, S. M., & Chakrabarty, D., Subaltern studies IX: Writings on South Asian history and society. New Delhi: Oxford university press.
Thompson, E. P. (1964). *The making of the English working class.* New York: Pantheon Books.
Thompson, E. P. (1991). Customs in common. London: Merlin.
Van der Ploeg, J.D. (2010) The peasantries of the twenty-first century: the commoditisation debate revisited. Journal of Peasant Studies 37:1, pages 1-30.
Varma, S., & Bhattacharya, A., (2015, October 8) Whitefly destroys 2/3rd of Punjab's cotton crop, 15 farmers commit suicide. The Times of India. Retrieved from http://timesofindia.indiatimes.com/india/Whitefly-destroys-2/3rd-of-Punjabs-cotton-crop-15-farmers-commit-suicide/articleshow/49265083.cms
Vasavi, A. R. (1998). Provisioning transactions and the reproduction of agrarian social orders. *Contributions to Indian Sociology, 32*(1), 43-65.
Vasavi, A. R. (2012) *Shadow space: Suicides and the predicament of rural India,* Gurgaon.
Veblen, T. (1965). The theory of the leisure class. 1899. New York: A. M. Kelley, bookseller.
Walker, K. L. M. (2008). Neoliberalism on the ground in rural india: Predatory growth, agrarian crisis, internal colonization, and the intensification of class struggle. *The Journal of Peasant Studies, 35*(4), 557-620. doi:10.1080/03066150802681963
Walker, P.A. 2003. Reconsidering 'regional' political ecologies: toward a political ecology of the rural American West. *Progress in Human Geography* 27(1):7-24.
Watts, M. (1983) "On the poverty of theory: natural hazards research in context," in Kenneth Hewitt (ed.), Interpretations of Calamity: from the Viewpoint of Human Ecology. Boston: Allen and Unwin: pp. 231-262.
Watts, M. (1994). What difference does difference make? *Review of International Political Economy, 1*(3), 563-570. doi:10.1080/09692299408434300

Weis, T. (2010). The accelerating biophysical contradictions of industrial capitalist agriculture. *Journal of Agrarian Change, 10*(3), 315-341. doi:10.1111/j.1471-0366.2010.00273.x

Wells, M. J. (1996). Strawberry fields: Politics, class, and work in California agriculture. Ithaca, N.Y: Cornell University Press.

Wolf, Eric R., 1971, 'On Peasant Rebellions', Teodor Shanin ed., *Peasants and Peasant Societies. SelectedReadings.* London: Penguin Books.

Wolford, W. (2010). *This land is ours now: Social mobilization and the meanings of land in brazil*. US: Duke University Press.

Wolford, Wendy. and Keene, Sara., Social Movements (2015) in Perreault, T. Albert, Bridge, G., & McCarthy, J. *The Routledge handbook of political ecology.* Abingdon, Oxon: Routledge.

World Health Organization, Regional Office for South-East Asia. (2009) Health implications from monocrotophos use: a review of the evidence in India.

Yapa, L. (1993). What are improved seeds? an epistemology of the green revolution.*Economic Geography, 69*(3), 254-273.

Yeh, Emily T. & Lama, Kunga T. (2013) Following the caterpillar fungus: nature, commodity chains, and the place of Tibet in China's uneven geographies, Social & Cultural Geography, 14:3, 318-340, DOI: 10.1080/14649365.2013.765025