Article:
Bunce, B. orcid.org/0000-0003-4872-4238 (2023) A methodology for class analysis: agricultural investments and agrarian change in South Africa. Journal of Agrarian Change, 23 (2). pp. 404-432. ISSN 1471-0358

https://doi.org/10.1111/joac.12505

Received: 12 May 2020 | Revised: 9 May 2022 | Accepted: 4 July 2022

DOI: 10.1111/joac.12505

ORIGINAL ARTICLE

Journal of Agrarian Change WILEY

A methodology for class analysis: Agricultural investments and agrarian change in South Africa

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Funding information
Governing the Land-Water-Environment Nexus in Southern Africa, Fieldwork Grant (ESRC and NRF); National Research Foundation of South Africa, PhD Scholarship; The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at, are those of the author and are not necessarily to be attributed to the NRF

Abstract

This paper presents a class-analytic approach, which combines a "labour exploitation criterion" with class typologies developed for the South African context and the author's additions. The labour exploitation criterion distinguishes between rural classes based on the degree to which one employs others, works for others, or works for oneself. I combine the principal indicator of "labour exploitation" with the income contributions of social grants, ownership of farming assets and livestock, and the contribution of agricultural production to simple or expanded reproduction. Debates around class formation are explored in the context of a comparative analysis of two joint venture (JV) dairy farms, located in the Eastern Cape Province of South Africa, which involve residents as both landowners and workers. A class-analytic approach illuminates the emerging agrarian class structure that a JV-type intervention both reflects and in turn conditions, in dialectical fashion, with important implications for debates around agrarian change in South Africa.

KEYWORDS
agrarian change, agricultural investments, class dynamics, joint ventures, social differentiation, South Africa

1 | INTRODUCTION

A major and still unresolved challenge facing South Africa's postapartheid government is how best to overcome the historical injustice of land dispossession and the resultant poverty of communal areas in South Africa's former "homelands."[1] These regions' legacies of poverty and underdevelopment have sharpened in recent years, in part due to the failure of postapartheid land and agrarian reform to address land hunger, tenure insecurity, and livelihood precarity (Anseeuw et al., 2015; Cousins, 2015; Neves & Du Toit, 2013; Sender & Johnston, 2004). In the former "homelands" agriculture is a main livelihood source for only a minority of households (around 7%–8% of those involved in some kind of agricultural production).[2] However, diverse forms of small-scale farming remain crucial for food security and agriculture continues to employ many people in rural areas (Cousins, 2015). The vast majority, however, rely on wages, social grants, and remittances (Neves & du Toit, 2013).

Since around 2005, agricultural investments, in the form of Joint Ventures (JVs), have been promoted by the state and agribusiness sector to improve the contribution of agriculture to livelihoods (Lahiff et al., 2012). JVs typically involve collaboration between agribusiness investors and small-scale farmers (Cotula et al., 2009; IFAD, 2012) or local people with existing land rights (Mayson, 2003). In South Africa, many JVs have struggled and some have collapsed after major losses for both investors and communities (Bitzer & Bijman, 2014; Bunce, 2018; Davis, 2014; Lahiff et al., 2012; Manenzhe, 2016; van Koppen et al., 2018). Critics of JVs highlight their tendency to promote large-scale commercial farming as the only viable option within land and agrarian reform. This is exacerbated by the government's unwillingness to subdivide land for smallholder production, as a possible alternative model (Aliber & Hall, 2012; Cousins, 2015; Mahlati et al., 2019).

The JV model may be a new way for agribusiness firms to exploit black small-scale farmers while retaining their dominance over the market and benefiting from improved political credibility (Lahiff et al., 2012; Tapela, 2005). The unequal power relations between small-scale farmers and agribusiness partners are highlighted in existing studies (Bunce, 2020a; Davis, 2014; Derman et al., 2006; Hall et al., 2015; Spierenburg et al., 2012; Vermeulen & Cotula, 2010). Here I argue that the intense struggles over jobs, dividends and land, cannot be fully explained without investigating dynamics of social differentiation within the communities in which these JV investments take place. Investigating the interhousehold and intrahousehold distributions of JV benefits and risks is central to understanding the impacts of JVs on livelihoods and the conflicts they provoke.

The study undertakes a comparative analysis of two JV dairy farms, involving the same agribusiness partner, Amadlelo Agri. The farms are located on irrigation schemes in the former Ciskei in the Eastern Cape. The JVs involve residents from the rural settlements of Keiskammahoek and Shiloh, as both landowners and workers. I find divergent outcomes when the same JV model is implemented in different rural settlements. This is most powerfully explained by the differences in the class structure of each settlement. Class analysis helps to explain the more intense intragroup conflicts that have emerged around the JV in Shiloh. The class-analytic approach sheds light on the tensions that the JV model generates in relation to household reproduction.

Here, I propose a context-specific class typology for exploring dynamics of social differentiation. The typology is based on the application of the methodology that Patnaik (1987) developed for investigating class relations in rural India, using a "labour exploitation criterion," together with relevant adjustments that take account of the character of class relations in South Africa's communal areas. I make use of class typologies developed by Cousins (2010) and Levin et al. (1997) for South Africa, but I also draw on those proposed by Neocosmos (1987) for Swaziland and by Scoones et al. (2012) and Cousins et al. (1992) for Zimbabwe. These authors have all considered the complex

[1]The former "homelands" or "Bantustans" are a key legacy of the 1913 and 1936 land acts, which reserved around 13% of the land for black South Africans. There were 10 "homelands" designated for different South African 'tribes' (Claassens, 2015). The Ciskei, which is the focus of this study, was one of four homelands that became "nominally independent states" and was designated for the Rharhabe Xhosa (Switzer, 1993).

[2]The lack of data on small-scale farmers in South Africa means that exact numbers are not known. The General Household Survey in 2015 indicated that there are 2,501,476 black households involved in some kind of agricultural production; around 180,000–200,000 of these are market-oriented farmers, and the remainder are subsistence-oriented. Many, but not all of them, are located in the former "homelands" (Bunce, 2020b; Cousins, 2018).

interrelations between class differences in agriculture and social reproduction strategies located largely, or entirely, off-farm.

Patnaik's (1987) conceptual framework distinguishes between rural classes based on a key criterion—the degree to which one employs others, works for others, or works for oneself. In this paper, I combine this principal indicator of "labour exploitation" with a range of other variables, such as the income contributions of social grants, levels of ownership of farming assets and livestock, and the contribution of agricultural production, to simple or expanded reproduction. Thus, I differentiate between classes which have similar labour exploitation ratios but have a qualitatively different class character. I argue that this class typology illuminates key processes and political dynamics in my case study sites and the emerging agrarian class structure that a JV-type intervention both reflects and in turn conditions in dialectical fashion.

However, I caution that class dynamics are not the only ones at work in contexts such as these, since they are intermeshed with many other "determinations," including gender, generation, ethnicity, and religious and political affiliation, and are thus complex, contingent, and subject to processes of constant change. Employing a typology based on only some key variables always involves a degree of reductionism and on its own explains only some aspects of any given social reality (Bernstein, 2010; Cousins, 2010; Scoones et al., 2012). Class place is fluid, and therefore, the typology presented is merely a snapshot in time, in need of constant revisiting and reimagination.

I first outline the history of the two irrigation schemes and describe the JV model, drawing out some of the pertinent differences between the two case studies. I then explain the methodology I developed to study them and present the findings on the class typology I employed. Finally, I discuss the implications of my findings for debates around agrarian change in South Africa.

2 | JV SHAREMILKING FARMS: A COMPARATIVE CASE STUDY OF SHILOH AND KEISKAMMAHOEK IRRIGATION SCHEMES

Both JV farms are located on the site of homeland-era irrigation schemes, originally established in 1976 at Keiskammhoek and in the mid-1960s at Shiloh (van Averbeke et al., 1998). The capital-intensive and technologically sophisticated model of these irrigation schemes entailed both high maintenance costs and intensive management, unbefitting of smallholder farming systems (van Averbeke et al., 2011). As a result, many smallholders were never able to farm independently (Cousins, 2013a). During the homeland-era, both the Keiskammahoek and Shiloh schemes included a central commercial estate (managed by the homeland parastatal, Ciskei Agricultural Corporation or Ulimocor), commercial smallholder units on mini-farms of between 4 and 12 ha and subsistence units of small food plots for household production of 0.1–0.25 ha (Holbrook, 1996; van Averbeke et al., 1998).

The role of farmers on the commercial smallholder units is important in the notably different historical development of these two irrigation schemes. Keiskammahoek started off with 97 "commercial smallholder units," while Shiloh only had 17. In Keiskammahoek, only 35 landowners benefit from the JV today, and over the years, they accumulated larger plots (many with private titles), dairy cows, and other assets and managed to hire in labour on their land (Bunce, 2018; Holbrook, 1996; Laker, 2004). The process through which some of the original group of 97 households in Keiskammahoek were squeezed out by their accumulating neighbours points to a classic trajectory of class differentiation among petty commodity producers.

The remaining 35 households in Keiskammahoek have private title to their land (or are in the process of finalizing their titles), unlike Shiloh, where irrigation plots continue to be held under a form of communal tenure (Bunce, 2018; van Averbeke et al., 1998). A much larger group of 395 households at Shiloh has rights to relatively small irrigation plots, which is a sharp contrast to Keiskammahoek. Shiloh's original 17 commercial dairy smallholders are not beneficiaries of the JV farm today. The complex land conflict that surrounds their removal from the scheme has created an ongoing intragroup conflict in Shiloh. This land conflict predates the establishment of the JV but has

taken on a new life in the context of the JV investment and in the struggles over who should benefit (see Bunce, 2018).

In Shiloh, most landowners have given all of their land over to the JV, with a minority maintaining a few quarter hectare food plots. According to van Averbeke et al. (1998), a relatively successful aspect of the scheme during the homeland-era was the food plots, which were used predominantly for household consumption. However, "betterment planning" under Apartheid resulted in homesteads in Shiloh being removed from these plots on the irrigation scheme and resettled in nearby villages. The inconvenient location of food plots from homesteads negatively impacted productivity, since it made tending to plots challenging, especially for the elderly and for women caring for children. Many households thus shifted their focus into less labour-intensive livestock farming on communal grazing camps and established smaller household garden plots adjacent to their homesteads.

Even before the establishment of the JV, these factors had limited the ability of households in Shiloh to continue to engage in farming to the same extent as households in Keiskammahoek. In contrast, in Keiskammahoek during the homeland-era, farming households were not separated from their irrigation plots, and they managed to accumulate relatively large plots (12–20 ha). Following the establishment of the JV in Keiskammahoek, most households managed to maintain plots of around 1 or 2 ha for cropping and livestock production on the irrigation scheme.[3]

When the Ciskei was dissolved and reincorporated into South Africa, financial and institutional support to farming households was withdrawn in a chaotic manner, and at Shiloh, the scheme was vandalized following the liquidation of Ulimocor in 1997. Both Shiloh and Keiskamahoek fell out of full commercial production, although some marginal production continued at Keiskammahoek (Bunce, 2018; van Averbeke et al., 1998/2011). Both schemes were later resuscitated through the Recapitalisation and Development Programme (RECAP),[4] when Amadlelo Agri was identified by government as the strategic partner.

An important aspect to consider is how the new JV investment has changed the social relations of production and reproduction on the irrigation schemes. At Keiskammahoek, irrigation plots remained central to household livelihoods from the democratic period up until the formation of the JV.[5] Despite challenges, all of the respondents at Keiskammahoek claimed to have farmed their plots between 1994 and 2009 (after which the JV was established), and 80% of Keiskammahoek's landowners claimed that they were selling a surplus and hiring labour frequently.[6] In sharp contrast, 69% of Shiloh's landowners reported *not* having used their plots between 1994 and 2010 (after which the JV was established), and only 6.8% were selling a surplus and hiring labour frequently. At Shiloh, since 1994, two failed attempts were made through government programmes to revive production on the irrigation scheme, through the Siyazondla and then the Massive Food Production Programmes (Bunce, 2018).[7]

The capital-labour relations introduced by the JV have had different effects on the pre-existing social relations of production at Shiloh and Keiskammahoek. At Shiloh, households receive land rents,[8] profits, and jobs from the JV. This is not a drastic departure from the organization of production on the scheme during the homeland-era, where customary landowners received dividends from a group farm that they played no role in managing. The JV model thus simply provides continuity to these social relations of production, and the community's role as "shareholders" and "labourers" is nothing new. However, a key change is that the food plots, previously farmed by individual households, are now being farmed by the JV.

[3]The houses of some farmers had to be removed to make way for the construction of new centre pivots for the JV irrigation scheme. In these cases, they have been allocated new houses by the JV, including household gardens.

[4]Government has made access to RECAP funding conditional upon beneficiaries entering into an arrangement with a "strategic partner." There is thus pressure placed on both communities and agribusiness firms to enter into JVs if they want to access scarce government funding (Lahiff et al., 2012).

[5]Only two households were not making use of their plots due to ill health.

[6]The category "frequently" excludes labour that is hired seasonally, or only for soil preparation or harvest, for example. The intensive nature of dairy farming also explains why frequent labour is hired as opposed to seasonal labour.

[7]See Jacobson (2013) and Mtero (2015) on the Massive Food Production Programmes and De Klerk (2013) and Fay (2013) on the Siyazondla Homestead Food Production Programme.

[8]A household survey and interviews confirmed that besides the land rental fees that Shiloh's customary landowners receive for their food plots from the JV, no other rental or sharecropping arrangements were found at either Shiloh or Keiskammahoek.

At Keiskammahoek, the social relations of production introduced by the JV have transformed capital-labour relations more fundamentally. During the homeland-era, households directly farmed their land for both commercial and household subsistence, unlike at Shiloh. The current group of 35 landowners accumulated the land of their neighbours, along with other assets, in a classic process of class differentiation among petty commodity producers (Bunce, 2018; Holbrook, 1996). Farming their irrigation plots remained a central livelihood activity up until the JV was implemented in 2010. However, since the JV's establishment, households no longer control the production process, and instead, they now receive dividends as shareholders and some labour on the JV farm for a wage. However, many households at Keiskammahoek are using their relatively larger dividends to reinvest into their own farming activities on other smaller plots, in livestock on communal grazing camps, or into off-farm livelihood activities. The historical process of accumulation in Keiskammahek can in part account for the much larger numbers of *rent earning rich farmers and business owners* and *worker farmers*, who are engaging more extensively in own-account farming, as discussed below.

2.1 | Social relations of production in sharemilking JVs

Amadlelo Agri is an agribusiness firm whose stated mission is "to contribute to transformation by creating profitable, sustainable, black empowered Agri Business."[9] Keiskammahoek "7 Stars Trust" was established in 2010, and the "Shiloh Dairies Trust" were established in 2011. The Amadlelo Agri JV model is based on a "50/50 sharemilking"[10] agreement. The community, through government investment, brings the fixed assets to the business including the land, irrigation, and the milking parlour. These assets are owned by the community cooperatives—Mayime Cooperative at Shiloh and the 7 Stars Cooperative at Keiskammahoek. Amadlelo Agri brings the cows[11] and other movable assets, like tractors, to the business.[12] Each JV sharemilking farm has an operating company in the form of a Trust (Keiskammahoek 7 Stars Trust and Shiloh Dairies Trust). The Trusts are governed by representatives from both Amadlelo Agri and the community cooperatives. Amadlelo Agri is responsible for the day-to-day management of the farms, for which they employ farm managers and landowners get preferential access to jobs on the farm.

After a 10% management fee has been deducted, profits from milk sales are split on a 50/50 basis between Amadlelo Agri and landowning households affiliated to the farming cooperatives. The dividends captured in Table 1 below include land rentals and profits. At Keiskammahoek, the fewer households benefiting and the larger scale of production means that the dividend for irrigation plot holders is substantially larger than at Shiloh. At Keiskammahoek, 50 permanent jobs have been created and 26 at Shiloh. At both farms, because of the high demand for jobs in the area and the need for the farm to legitimise its use of irrigated land in communal areas, they employ more labourers than a regular commercial dairy farm would. Keiskammahoek employs one worker for every 40 cows, and Shiloh employs one worker for every 35 cows. Sharemilkers operating on white commercial farms in the Eastern Cape were employing a mean of one worker for every 62 cows (Bunce, 2018).

The irrigation schemes at both Keiskammahoek and Shiloh are surrounded by densely populated villages. Pervasive unemployment means that there are high demands from the surrounding community for jobs, which the farms are unable to meet given the relatively low labour requirements of capital-intensive dairy farming. Many respondents from the surrounding communities emphasized the tensions exerted on the social fabric of the community by the astonishing spectacle of hundreds of hectares of fenced green pastures, latest technology in rotary dairy parlours, and the numerous high value dairy animals, amidst the extreme poverty of the residential locations and an otherwise

[9]For a more in-depth analysis of Amadlelo Agri's JV model, see Bunce (2020a).
[10]Amadlelo Agri adapted their 50/50 sharemilking model from New Zealand (see Blunden et al., 1997 and Bunce, 2018).
[11]The majority of cows are rented from commercial farmers. In the long-term, Amadlelo Agri plans to buy out these leases in order to own its livestock.
[12]In 2016, Amadlelo Agri reported that government investment in fixed assets across all of their projects amounted to ZAR197 million, while they invested ZAR92 million in dairy animals and movable equipment.

TABLE 1 Key features and main contrasts between Keiskammahoek and Shiloh JV farms in 2016

Name of JV farm	Government funding (via RECAP)	Hectares of land under JV	Dairy herd size	Land tenure	Size of plots per household	Mean dividends per household in 2015/16	Households receiving dividends	Number of permanent labourers
Keiskammahoek 7 stars trust	ZAR54 million	745	2000	Private title, deed of sale & municipal land	12–20 ha	ZAR110,000	35	50
Shiloh Shiloh dairies trust	ZAR30 million	450	900	Customary tenure	±1 ha	ZAR2,096	395	26

Abbreviations: JV, joint venture; RECAP, Recapitalisation and Development Programme; ZAR, The South African Rand.

drought-stricken landscape. This raises questions about the suitability of the JV model to meet the reproductive needs of the local communities.

3 | RESEARCH METHODS

This study made use of the iterative deployment of both extensive and intensive methods, informed by Critical Realism (Sayer, 1992). I used a household survey of 117 households[13] (62 in Shiloh and 55 in Keiskammahoek), as a basis to explore the *Labour Exploitation Criterion* (Patnaik, 1987) discussed below. Data were gathered on household composition, livelihood sources, incomes, labour relations, land ownership and use, and household and farming assets. I made use of ethnographic immersion—life histories (29) and semistructured interviews (105)—to understand the relational and causal processes underpinning the emerging class categories (Sayer, 1992). The iterative approach to investigation, by constantly revising research questions and moving back and forward between "the field" and "theory," was inspired by Marx's approach of recursive abstraction, aiming to go beyond identifying concrete phenomena to explaining their causal mechanisms (Mtero et al., 2021).

The fieldwork was conducted over several visits between September 2015 and December 2016. I also drew on a limited set of primary data and analyses in other studies of these sites (de Wet, 1985; Holbrook, 1996; Laker, 2004; Switzer, 1993; van Averbeke et al., 1998, 2011). I have used "households" as the main unit of analysis, adopting "a broad residency rule," which includes individuals who live elsewhere for parts of the year but continue to maintain the household as a social and economic unit (Mtero, 2015; Posel, 2004). Although the household is used as the unit of analysis for the class typology, it should be stressed that the class positions of capital and labour can be differentially distributed within a household, linked to gender, generational, or other dynamics (Bernstein, 2010; Cousins, 2010).

To generate a sample for the study, "taxonomic groups" were created from across households. These different taxonomic groups relate to the JV in distinctive ways, and sampling from them allowed me to capture the diversity of relations between different households and the JV farms. These groups included *JV dividend receiving households* (receiving dividends from the JV), *JV dividend and wage receiving households* (receiving dividends and JV jobs), *JV wage receiving households* (employed in JV jobs), and *no JV benefits households* (no access to JV dividends or JV jobs). For qualitative data collection, once I became more aware of the dynamics underpinning the case studies and the actors involved, I made use of purposeful sampling to select "information-rich cases" (Terre Blanche & Durrheim, 2002). For life histories, I chose cases which were theoretically important for explaining certain causal mechanisms or livelihood trajectories among the emerging class categories.

In Keiskammahoek, for all the taxonomic groups except the *no JV benefits households*,[14] household lists were available to apply a random sample for the household survey. In Shiloh, household lists were not available for the *no JV benefits and JV dividend receiving households*. In the absence of household lists, opportunistic sampling had to be undertaken and because these groups were very large, a representative sample was not achieved. Furthermore, not all respondents on the provided lists could be located and the politics surrounding these agricultural investments meant that some were not willing to be interviewed, particularly in Shiloh. Since all interviews were conducted by the author with the help of a translator, and an explicit preference was placed on gathering rich data, the breadth of the study was compromised in favour of depth. A limitation of the study is that the sampling method was imprecise due to these challenges, and so the conclusions about these groups are tentative. The total sample size and the final sample reached for the household survey are detailed in Table 2 below.

[13]52% of respondents sampled identified as female and 48% as male. In addition, four JV Managers were surveyed; their data were analysed separately since managers are in a qualitatively different position from other "beneficiaries" having been recruited by Amadlelo Agri, and their households were located outside of these rural communities.

[14]The sampling frame for this group included all the households of each rural settlement. Households were sampled in an equal as possible spread from across the villages or settlements, which surround the farm.

TABLE 2 Sample for household survey by category of respondent in Keiskammahoek ($N = 55$) and Shiloh ($N = 62$)

	Total households in COR groups		Number of households reached in sample	
Category of respondents (COR)	Shiloh	Keiskammahoek	Shiloh	Keiskammahoek
JV dividend receiving households	385	21	23	8
JV dividend and wage receiving households	10	14	10	11
JV wage receiving households	16	37	9	21
No JV benefits households	3,910	1850	20	15
Total *N*	4,321	1922	**62**	**55**

Note: Values in bold emphasis highlight the final sample for the household survey.
Abbreviation: JV, joint venture.

4 | DYNAMICS OF CLASS FORMATION IN SOUTH AFRICA'S FORMER LABOUR RESERVES

Classical notions of "the countryside" filled with "rural people" are often inappropriate for describing many parts of rural South Africa (Murray, 1995). There has, however, been an unfortunate tendency to overstate proletarianization and class homogeneity, particularly in the former "homelands." A dominant "linear proletarianization thesis" continues to exert a strong influence on scholars today. The result of this is that processes of incipient class formation continue to be underestimated (Cousins, 2010; Levin & Neocosmos, 1989). However, several authors emphasize that in the apartheid period, wages and remittances were central to sustaining agricultural production (de Wet, 1985; Levin & Neocosmos, 1989; Switzer, 1993), and Beinart et al. (1986) emphasize the rich diversity of regional experiences and the uncertain outcomes of capitalist development.

Empirical evidence presented in this paper points to the reality that rural communities in contemporary South Africa are in fact highly differentiated. This is evident in the diverse socially reproductive strategies pursued by households and quite distinct responses to the same JV business model, both between and within different settlements in the former Ciskei "homeland." It provides further support to analyses of class dynamics in South Africa which see rural households as differentiated classes of "petty commodity producers," who both own the means of production and self-exploit their own labour (Bernstein, 2010; Mtero et al., 2021). Their ability to deal with competition and shocks, and to negotiate these internal contradictions of class, is uneven, and this results in a tendency towards class differentiation (Gibbon & Neocosmos, 1985). Analyses of Southern African class dynamics have to take account of the intricate ways in which wage employment is combined with self-employment (both agricultural and nonagricultural) and welfare payments by the state (Cousins, 2010; Cousins et al., 1992; Mtero et al., 2021; Neocosmos, 1987; Scoones et al., 2012).

5 | A REVISED METHODOLOGY FOR CLASS ANALYSIS: DRAWING ON PATNAIK'S LABOUR EXPLOITATION CRITERION

My approach to rural class analysis is based on Patnaik's (1987) *Labour Exploitation Criterion*. Patnaik's empirical index distinguishes peasant classes based on "the degree and type of labour exploitation relative to self-employment, as the single most important indicator of class status" (Patnaik, 1987:51). The primary forms of exploitation that she considers are firstly, direct exploitation through hiring labour (i.e., surplus value appropriation[15]) and secondly,

[15]Surplus value is the product of the unpaid surplus labour time of producers (labour), which is appropriated by capitalists as profit (Bernstein, 2010).

indirect exploitation through leasing of land (rent appropriation). In adopting this framework for analysis of my cases, I view the JV dividends that households with rights to irrigation plots receive as a form of rent involving indirect exploitation of labour.

Patnaik (1987) notes that, when defining a labour exploitation ratio for households, the unit of measurement could be labour-days, product, or income. She chooses labour-days as her key criterion because it is easier to measure and "because it lays bare the underlying production relation in the clearest possible manner" (Patnaik, 1987: 52). However, she notes that any unit of measurement would suffice, as the latter two are simply "the product and value forms or expressions of the first, labour-days" (Patnaik, 1987). I chose to use income data over a 12-month period as my key measure. Given that residents of Shiloh and Keiskammahoek engage in a variety of off-farm livelihood activities, with quite variable degrees of income generation, it could be argued that "income" may be more illuminating than "labour-days." Days worked in an informal or seasonal "unskilled" job would render quite different incomes from a permanent "skilled" job.

There are, however, definite limitations to using income data for calculating a labour exploitation ratio. The most obvious limitation is that income data rely on the honest and accurate recall of income by key informants, who for various reasons may underestimate or overestimate incomes or provide inaccurate information. Unlike in the case of contract farming, where farmers may be able to easily recall a single yearly payment, researching own-account farming engaged in by households for both own consumption and for sale on open markets[16] poses considerably more difficulty (Pérez-Niño, 2014). Although a few expected discrepancies were observed, clear patterns for particular types of income sources emerged. In addition, incomes from social grants and public works programmes could be independently verified, and incomes from JV jobs could be verified through payslips.

Given that own-account farming was not a major livelihood activity and that relatively little labour was being hired in, if labour was being hired in, this in itself was significant and indicative of class place. For the purpose of calculating the labour exploitation ratio, it was thus sufficient to categorize "own-account farming" income as being derived either from "labour hired in" or from "family labour," without dividing it into approximate proportions.[17] Since incomes derived from own-account farming were relatively insignificant in these two case studies, compared with other sources of income, it did not exert much influence on the overall patterns that emerged. Survey data revealed that in Keiskammahoek own-account farming only accounts for a mean of 5.8% of total household income and in Shiloh only 3.3%. In Keiskammahoek, only 18% of the sample had access to field plots (apart from those used for the JV) and only 30% of these households had cultivated their fields in the last year. In Shiloh, only 6% of the sample had access to a field plot and only half of these households had cultivated their fields. Crop production is primarily limited to small household gardens, which reflects trends across the former "homelands" (Bunce & Cousins, 2015; Fay, 2013).[18] No examples were found in either site of expanded reproduction through own-account farming or cases where households were cultivating crops or rearing livestock exclusively for sales, outside of the JV context. In contexts where own-account farming is a predominant activity (unlike in the cases presented here), involving both

[16]The household survey captured total production of various crops and livestock and sales in own-account farming. Surplus sales were one of the additional indicators that distinguished worker farmers from allotment holding workers, along with cattle and farming assets.

[17]In cases where own-account farming involved some family labour and hiring labour for either specific tasks like soil preparation and harvesting or more frequent hiring of labour for cultivation or herding, these were counted as income from "labour hired in." The household survey did gather data on wages paid and the frequency of labour hired in for own-account farming; however, this was analysed separately to elaborate on livelihood strategies and specific cases rather than being computed into the "labour exploitation criterion." The same approach was taken with off-farm self-employment, which contributed relatively little to household incomes, except for petty commodity producers. These data have been reported elsewhere (see Bunce, 2018).

[18]In Shiloh, 36% of households had not cultivated a homestead garden in the last year, 41% had cultivated for subsistence only, and 23% for subsistence and some sales. 61% of households had not used the communal grazing land in the last year. In Keiskammahoek, 37% had not cultivated a homestead garden in the last year, 22% had cultivated one for subsistence only, and 41% for subsistence and some sales. 62% had not used the communal grazing land in the last year. Although own-account farming is marginal in terms of incomes, it remains important to the social reproduction of many households, both through own consumption and the importance of livestock for ceremonial use. However, the vast majority of food is purchased, apart from a very few outliers who cultivate quite productive food gardens (see Bunce, 2018). Due to the limitations of using income data and the relatively insignificant contribution of household farming for "own consumption," it has not been computed into the labour exploitation criterion. Livestock sales for ceremonial and other purposes and crop sales from field plots and homestead gardens were however computed.

hiring labour and self-employment, it would be advisable to develop a more discerning approach for the use of income data or to rather make use of data on working days.[19]

In the use of the labour exploitation index, Patnaik (1987) acknowledges that one has to accept a degree of reductionism. I am aware of the limitations of the approach developed, but as with all "typologies," one may need to accede to a degree of abstraction and then explore the degree to which it produces meaningful results. The analysis below will demonstrate that despite limitations in using income data, the modifications to Patnaik's (1987) labour exploitation ratio were successful in distinguishing class categories with discrete characteristics.

Patnaik's (1987) labour exploitation ratio is calculated by the following formula:

$$E = (H_i - H_o)/F = X/F$$

Labour-exploitation ratio = Net labour-days hired in/Family labour in self-employment
where E = Labour-exploitation ratio
H_i = Labour-days hired in or *net income from labour hired in* (including rents)
H_o = Family labour-days hired out or *net income from family labour hired out*
F = Family labour-days in self-employment or *net income from family labour in* self-employment
X = Net labour hired in.

In order to distinguish between different class categories, Patnaik (1987) establishes limits for each class for the value of E (labour exploitation ratio) and assigns relative values for X (net labour hired in) as opposed to F (family labour in self-employment). The logic of how these "limits" are established is documented in Table 3 below, in the "reason" column.

In addition to "labour exploitation," Patnaik (1987: 201) identified a further two "secondary characteristics" to distinguish classes in agrarian societies but which are not directly computed in her labour exploitation criterion, namely, "the degree of possession of means of production, and the achievement or otherwise of a customary subsistence." We can expect that both of these additional variables will correlate closely with the type of labour exploitation that predominates. Patnaik's (1987) method is commensurate with Cousins' (2010:14) class-analytic typology,[20] since his principal variables are "the degree to which agriculture contributes to social reproduction or expanded reproduction and the degree to which hired labour is used in the agricultural production process."

I use ownership of farming assets (means of production), ownership of livestock, and whether or not there is sale of an agricultural surplus, to distinguish between "allotment holding workers" and "worker farmers." The latter reinvest off-farm incomes in own-account farming on a more substantial scale than the former. I use social grant incomes as a separate variable to identify a class category of "supplementary food producers" that rely substantially on welfare payments and to distinguish them from "petty commodity producers." These two class categories have similar labour exploitation ratios and are similar to Patnaik's (1987) "small peasants," because neither has access to significant wage incomes (petty commodity producers might have access to a little).

Patnaik (1987) makes use of the class categories employed by Lenin (1967) to differentiate rich, middle, and poor peasants,[21] which are relevant in the Indian agrarian context. My methodology attempts to capture the complex

[19] I have tried to be clear about the limitations of the approach and to highlight gaps that could be addressed by further research in different contexts. Some of these methodological shortcomings are also due to a lack of disaggregated income data, as the household survey was conducted before the methodology for class analysis was iteratively and fully developed.

[20] Cousins (2010) typology includes the following: capitalists whose main income is not from farming, small-scale capitalist farmers, petty commodity producers, worker farmers, allotment holding wage workers, and supplementary food producers. This typology, along with Patnaik's (1987) labour exploitation criterion, has informed the development of context-specific class categories for Shiloh and Keiskammahoek.

[21] Poor peasants struggle to reproduce themselves without squeezing their own labour-power, their capital, or both. Middle peasants can engage in simple reproduction and meet these pressures through their own efforts. Rich peasants are able to engage in expanded reproduction, accumulating capital and may produce on an increasingly larger scale of production, and some may become capitalist farmers over time (Lenin, 1967).

TABLE 3 Methodology for establishing class categories

Type of labour exploitation	Patnaik's (1987) Class categories	Characteristics	Value of E = X/F	Reason	Bunce (2018) Revised class categories	Characteristics of revised class categories	Variables considered (in addition to Patnaik's value of E = X/F)	Class % in Shiloh sample (*N* = 62)	Class % in Keiskammahoek (*N* = 55)
Primarily exploiting labour of others	**Landlords**	No manual labour in self-employment, large-scale employment of others' labour	$E \rightarrow \infty$	$F = 0$ $X > 0$	**Rent earning pensioners**	Survive entirely off rents (JV dividends) and pensions. No wage labour or manual labour in self-employment (besides in garden plot and livestock, which more commonly involves hired labour).	JV rent appropriation and access to old age grants/ pensions. $F \geq 0$	NA	5.5%
	Rich peasants	At least as large an employment of others' labour as self-employment	$E \geq 1$	$F > 0$ $X > 0$ $X \geq F$	**Rent earning rich farmers and business owners**	Employment of others' labour (including rents) is equal to or larger than self-employment. Some derive substantial income from off-farm business with hired labour. Employed	Livelihoods centred on JV incomes, own-account farming and own businesses with hired labour.	3.2%	14.5%

(Continues)

TABLE 3 (Continued)

Type of labour exploitation	Patnaik's (1987) Class categories	Characteristics	Value of E = X/F	Reason	Bunce (2018) Revised class categories	Characteristics of revised class categories	Variables considered (in addition to Patnaik's value of E = X/F)	Class % in Shiloh sample (*N* = 62)	Class % in Keiskammahoek (*N* = 55)
						in off-farm activities and some labour on the JV. Reinvest income into own-account farming, especially accumulating livestock.			
Primarily self-employed	**Middle peasants**	Rely primarily on self-employment but employ the labour of others to a minor extent	**$1 > E > 0$**	**$F > 0$** **$X \geq 0$** **$X < F$**	***Does not exist in either case study***	NA	NA	NA	NA
	Small peasants	Zero employment of others or working for others; or working for others to lesser extent than self-employment	**$0 \geq E > -1$**	**$F > 0$** **$X \leq 0$** **$\lvert X \rvert < F$**	**Petty commodity producers/ petty traders**	Reproduce themselves predominantly from self-employment (on-farm and/or petty trade) without any or minimal hired in labour. Some supplement self-employment	Self-employment is main income source.	8.1%	5.5%

TABLE 3 (Continued)

Type of labour exploitation	Patnaik's (1987) Class categories	Characteristics	Value of E = X/F	Reason	Bunce (2018) Revised class categories	Characteristics of revised class categories	Variables considered (in addition to Patnaik's value of E = X/F)	Class % in Shiloh sample (*N* = 62)	Class % in Keiskammahoek (*N* = 55)
						with working for others, to a minor extent.			
					Supplementary food producers	No access to wage income. Survive primarily on social grants, supplemented by garden plots, some livestock and a little petty trading.	Social grants are main income source (77–100%).	14.5%	NA
Primarily exploited by others	**Poor peasants**	Some self-employment but rely primarily on working for others.	$E \leq -1$	$F > 0$ $X < 0$ $\lvert X \rvert \geq F$	**Worker farmers**	Engaged predominantly in wage labour (often migrant, also JV jobs). However, they reinvest off-farm incomes into own-account farming on a more substantial scale (particularly into livestock).	Fulfil at least two of three criteria[a]: Cattle assets (middle or rich); farming assets (middle or rich); and sell a surplus.	32.3%	20%
					Allotment holding workers	Engage in wage labour for simple reproduction	Fulfil less than two of the three criteria.	30.6%	41.8%

(Continues)

TABLE 3 (Continued)

Type of labour exploitation	Patnaik's (1987) Class categories	Characteristics	Value of E = X/F	Reason	Bunce (2018) Revised class categories	Characteristics of revised class categories	Variables considered (in addition to Patnaik's value of E = X/F)	Class % in Shiloh sample (*N* = 62)	Class % in Keiskammahoek (*N* = 55)
						but also keep small home gardens or plots.	Tend to have fewer livestock, farm assets and marginal/no sales.		
	Landless labourers	Do not engage in self-employment since they have no means of production and depend entirely on working for others.	$E \rightarrow -\infty$	$F = 0$ $X < 0$	**Near-landless labourers**	Depend almost wholly on wages and social grants. Landless or near-landless.	No plots, no livestock, most do not cultivate garden or to minor extent $F \geq 0$	11.3%	12.7%

Sources: Bunce (2018), Patnaik (1987), Cousins (2010), and Levin et al. (1997).

[a]Utilizing these different criteria allows a diversity of livelihood strategies and coping mechanisms to be accounted for. Requiring only two of three criteria to be fulfilled avoids excluding households as worker farmers if they have fewer farming assets (e.g. livestock farmers utilizing communal grazing camps), different types of livestock (not cattle), or have had no sales in the last year for various reasons, including drought or other shocks.

interrelations between class differences in agriculture and social reproduction strategies located largely, or entirely, off-farm and so required adaptations to both Patnaik's (1987) categories and her methodology. I have chosen to use terms which shed light on the social relations of production on JV farms in Shiloh and Keiskammahoek and the diverse ways in which households meet their reproduction needs both on and off farms, across rural and urban spaces.

6 | EMPLOYING THE CLASS-ANALYTIC TYPOLOGY TO INVESTIGATE SOCIAL DIFFERENTIATION IN AGRICULTURAL INVESTMENTS

In Keiskammahoek, those households who did not engage in wage labour and relied primarily on JV rents, social grants (primarily pensions), and own-account farming with hired labour were identified as *rent earning pensioners*. This class category is found only in Keiskammahoek and accounts for 5.5% of the sample. A substantial part of the sample in Keiskammahoek was classified as *rent earning rich farmers and business owners* (14.5%), while in Shiloh only 3.2% of the sample fell within this category. In Shiloh, households were not identified in this category due to JV rents (which are insignificant compared with other incomes). Rather, they earned income from off-farm businesses in which they hired labour, combined with own-account farming.

A *middle peasantry* could not be identified in either case. Even where self-employment (with some hired labour) was undertaken, as in Keiskammahoek, incomes were much smaller than JV rents. The value of E was thus necessarily larger than 1, placing these households in the class category of *rent earning rich farmers and business owners*. I also did not classify any of these households as "small-scale capitalist farmers," as identified in Cousins' (2010) typology. This is because there were no cases where households relied substantially on hired labour in agricultural enterprises and were engaged in expanded reproduction (accumulation).

Most of the households engaging more extensively in own-account farming were classified as *rent earning rich farmers and business owners* or *worker farmers* in the latter case because of heavy reliance on the sale of their labour in return for wages. Among these households, a minority were hiring in labour more frequently but generally no more than a single labourer for between 1 and 5 days a week in household gardens or for herding, where households generally paid a herder collectively. The significance of this absence of *middle farmers* and *small-scale capitalist farmers* for agrarian change in South Africa, particularly in light of the prominence of the JV model, is discussed in the conclusion section.

Supplementary food producers were only identified in Shiloh, where they made up 14.5% of the total. Social grant contributions ranged from 77% to 98% of overall household income. In both sites, only a minority of households were identified as *petty commodity producers or traders*. A *near-landless labourer* class category was also identified, which depends almost wholly on wages, supplemented by social grants. They have no field plots, no livestock, few or no agricultural assets, and most do not cultivate a garden. Some of the labourers on the JV farms in both sites fall within this class category. In Keiskammahoek, they account for 12.7% of the sample and in Shiloh, 11.3%.

Cousins (2010) notes that the boundaries between his *worker peasants* and *allotment holding wage workers* are blurred; however, the main distinction he draws "rests primarily on scale of land-holding." In the specific contexts investigated here, however, scale of land-holding is not a relevant variable. Even if households own irrigation plots, none of the households in these class categories farm these plots themselves because they are hired to the JV scheme. Historical processes of land closure related to the establishment of the irrigation schemes means that there are very few dry land plots. Limited access to land and the importance of wage labour means that many households are not cultivating plots (which is labour-intensive) but rather investing in livestock farming, using communal grazing land for goats, sheep, and cattle or their household yards for small livestock like pigs and chickens. I did not want to exclude dynamic livestock producers engaged in farming on a substantial scale from the category of *worker farmer*,

simply because they did not have plots. The additional parameters I established for *worker farmers* included the following: cattle ownership, ownership of agricultural assets,[22] and whether a surplus was being sold or not.

Worker farmers and *allotment holding workers* correspond to Patnaik's (1987) *poor peasants*. *Worker farmers* engage in wage labour for their simple reproduction and but also reinvest off-farm incomes in own account farming on a substantial scale. In Shiloh, a larger proportion was identified as *worker farmers* (32.3%), as compared with Keiskammahoek where they account for only 20% of the sample because there are more households located in the category *rent earning rich farmers and business owners*. *Worker farmers* with access to JV dividends and JV wage incomes were reinvesting these in own-account farming, particularly significant being the relatively large dividends reinvested in Keiskammahoek. As I will discuss in more detail below, there are important qualitative differences between the reproductive strategies of worker farmers in Shiloh and Keiskammahoek.

Allotment holding workers rely mostly on wage labour (including JV jobs) for their simple reproduction but they also work small home gardens or plots. They own fewer livestock and farm assets than worker farmers and earn little or no sales income from their own-account farming. In Shiloh, they accounted for 30.6% of the sample and in Keiskammahoek, 41.8% of the sample. In the following section, I explore the characteristics of these various class categories further in each case study site.

6.1 | Characteristics of class differentiation in Shiloh

Tables 4 and 5 present a picture of a highly differentiated sample of households. Table 4 presents the key features of the labour exploitation criterion across the different class categories identified.[23] The extent to which they hire out family labour, hire in labour or are self-employed, differs significantly among households. Table 4 also reports the proportion of income from social grants, which as discussed above was used to distinguish "supplementary food producers" that rely substantially on welfare payments from "petty commodity producers" whose main income source is self-employment.

The rent earning rich farmers and business owners have the highest mean incomes. This is closely related to their exploitation of hired labour in off-farm businesses and in farming (own-account and JV dividends), which accounts for 81% of their incomes, as indicated in Table 4. These incomes are complemented by off-farm permanent jobs and old age pensions. Households in this class category do not have members who labour on the JV farm.

Worker farmers have the second highest household incomes; however, wage labour is their most important income source. The highest proportion of JV jobs is found in this class category, and they also have access to a mean of one off-farm permanent job per household and access to remittances. Self-employed family labour in own-account farming contributes more significantly to household incomes than labour hired in, an opposite trend to Keiskammahoek's worker farmers.

60% of allotment holding workers' income is from labour hired out. After worker farmers, they have the next greatest number of JV jobs and they also engage in own-account farming, mostly with family labour. Social grants account for 33% of their incomes, which is the second greatest contribution to a class category, after the supplementary food producers for whom social grants amount to 93% of household incomes. Supplementary food producers have a little income from own-account farming with family labour and some engage in petty trade.

The supplementary food producers own more small livestock than the allotment holding workers. However, a larger proportion of allotment holding workers (73.7%) are cultivating garden plots, indicating differentiated livelihood strategies. However, generational characteristics may also account for differences in livestock ownership. Supplementary food producers have the oldest mean for household heads at 72 years, allowing for generational accumulation and investment of pensions in livestock.

[22] I established asset groups for the variable of cattle (no cattle, poor, middle, and rich) and agricultural asset ownership (poor, middle, and rich) according to data for each case study site.

[23] The same is reported for Keiskammahoek in Table 6 below.

TABLE 4 Shiloh: Features of the labour exploitation ratio (E = X/F) (*N* = 62 households)

Class categories:	Near-landless labourers Mean (median)	Supplementary food producers Mean (median)	Allotment holding workers Mean (median)	Worker farmers Mean (median)	Petty commodity producers Mean (median)	Rent earning rich farmers and business owners Mean (median)
E = labour exploitation ratio	−41,557.5 (−22,200)	−0.03 (0)	−7,384.24 (−39.17)	−25,673.65 (−44.73)	−0.46 (−0.4)	227,600 (227,600)
Total yearly cash income for household (HH)	ZAR55,511	ZAR36,193	ZAR82,374	ZAR201,533	ZAR147,724	ZAR271,500
Proportion of income from labour hired in	-	-	0.02	0.03	0.01	0.81
Proportion of income from labour hired out	0.72	-	0.6	0.73	0.13	0.12
Proportion of income from self-employed family labour	0.04	0.07	0.05	0.06	0.59	-
Proportion of income from social grants	0.24	0.93	0.33	0.18	0.27	0.07

TABLE 5 Shiloh: Aspects of socioeconomic differentiation and household composition by class categories ($N = 62$ households)

Class categories		Near-landless labourers	Supplementary food producers	Allotment holding workers	Worker farmers	Petty commodity producers	Rent earning rich farmers and business owners
JV taxonomic groups	JV dividend HH	-	22%	42%	40%	60%	100%
	JV wage HH	14%	-	21%	20%	-	-
	JV dividend and wage HH	-	-	11%	35%	20%	-
	No JV benefits HH	86%	78%	26%	5%	20%	-
Household asset groups[a]	Poor	86%	44%	47%	-	40%	-
	Middle	14%	56%	32%	40%	40%	-
	Rich	-	-	21%	60%	20%	100%
Cattle groups	No cattle	100%	78%	95%	5%	0.80	50%
	Cattle poor	-	-	5%	10%	0.20	-
	Cattle middle rich	-	22%	-	45%	-	-
	Cattle rich	-	-	-	40%	-	50%
Farming assets	Mean	Poor	Middle	Middle	Rich	Middle	Middle
Garden plot cultivated (last 12 months)	Yes	29%	56%	74%	65%	60%	100%
Household size	Mean	4	4	5	6	5	4
% female-headed HHs	Mean	0.86	0.67	0.53	0.35	0.6	0.5
% adults present most/all nights	Mean	0.85	0.88	0.78	0.57	0.89	0.63
% HH members under 18 years	Mean	0.35	0.2	0.23	0.17	0.08	-
Age of HH head	Mean	53	72	61	67	65	67
Goats owned	Mean	-	2	-	11	2	15
Pigs owned	Mean	-	1	-	1	1	1
Sheep owned	Mean	-	-	-	4	1	3
Chickens owned	Mean	-	2	1	7	4	9

Abbreviations: HH, household; JV, joint venture.

[a]In order to construct asset indices, a list of predetermined durable assets is allocated weights, which allow for the calculation of household scores. Different assets were assigned weights (1, 2, or 3), based on their approximate value, and an overall asset score was assigned to each household. This was used to divide households into asset groups (see Bunce, 2018).

Petty commodity producers derive 59% of their income from self-employed family labour, with a mean of two household members engaged in these activities, complimented with off-farm casual jobs. Social grants account for 27% of their income. The near-landless labour class category has the second lowest incomes, and 72% of their income is derived from wage labour (casual and precarious jobs). The generational characteristics of these households (young household heads) means that most do not have pensions, but they have a mean of one child support grant.

Table 5 indicates that the class categories with the highest proportion of female-headed households are the two most vulnerable class categories—the near-landless labourers (85.7% are female-headed) and the supplementary food producers (66.7%). The class category with the most male-headed households is the worker farmers (65%). The two class categories with the highest incomes also have a large proportion of households located in the "rich" and "middle" categories for household and cattle assets.

Notably, the worker farmers have the smallest proportion of adults present most or all nights (57%), signifying the highest incidence of migration among the class categories. Petty commodity producers, on the other hand, have the most adults present. The percentage of household members under 18 speaks to dynamics of generational reproduction and a consumer/producer ratio. There are no child dependents in the rent earning rich farmers and business owner households, while the near-landless labour households have 35% of household members under 18 years. These different aspects of household composition illustrate how class on its own cannot explain everything and how aspects like generation and gender intersect with class in complex ways.

6.2 | Characteristics of class differentiation in Keiskammahoek

In Keiskammahoek, worker farmers have the highest incomes, but they derive 70% of their incomes from hiring their own labour out. Worker farmer households have a mean of one JV job. They also have access to a range of other incomes, including permanent and casual off-farm jobs, and some also have civil servant jobs. About 18% of their income is from labour hired in, which is in part from labour exploitation through JV rents and own-account farming. Worker farmers have the lowest social grant contribution to income (6%) and no access to public works jobs.

The next greatest mean, for total household incomes, is among the rent earning rich farmers and business owners, for whom labour hired in accounts for 64%. This is mostly from JV dividends, as there is a lower incidence of hiring labour in for own-account farming. These households complement their incomes from labour hired in, with wage labour, particularly JV jobs and civil servant jobs. They also have access to off-farm permanent and casual jobs (and remittances) and some off-farm self-employment. There is a larger proportion of rent earning rich farmers and business owners whose adult members are present most nights, compared with worker farmer households. In general, the former's livelihoods are more closely connected to the JV farm and their own-account farming than worker farmers who rely more significantly on off-farm jobs, including migrant labour.

Table 7 indicates that the class place of rent earning pensioners intersects with generational dynamics, as household heads have the oldest mean age of 78 years. About 23% of their income is derived from social grants (especially old age grants), and they are the only class with a mean of one for disability grants. Together with generational dynamics, ill health may explain why they are not accessing wage labour. The highest contribution to their income is from labour hired in (76%), predominantly from the JV dividend. The use of hired labour in own-account farming reflects, in part, illness and old age.

Allotment holding workers derive 61% of their income from hiring their own labour out, particularly in JV jobs, and also permanent and casual off-farm jobs. These incomes are supplemented by own-account farming with family labour and petty trade. Social grants contribute significantly to their household incomes, accounting for 24%. Petty commodity producers derive 44% of their income from self-employed family labour. A mean of two household members is engaged in own-account farming and one in off-farm petty trade, both with no hired labour. They also access

TABLE 6 Keiskammahoek: Features of the labour exploitation ratio (E = X/F) (*N* = 55 households)

Class categories	Near-landless labourers Mean (median)	Allotment holding workers Mean (median)	Worker farmers Mean (median)	Petty commodity producers Mean (median)	Rent earning rich farmers and business owners Mean (median)	Rent earning pensioners Mean (median)
E = labour exploitation ratio	−53,280 (−2000)	−6,395.54 (−20)	−29,149.46 (−14.75)	−0.53 (−0.55)	54,712.63 (20.67)	36,866.22 (63.48)
Total yearly cash income for household	ZAR85,916	ZAR116,117	ZAR341,014	ZAR116,813	ZAR228,769	ZAR132,262
Proportion of income from labour hired in	-	0.06	0.18	-	0.64	0.76
Proportion of income from labour hired out	0.72	0.61	0.7	0.21	0.21	-
Proportion of income from self-employed family labour	0.01	0.09	0.06	0.44	0.06	0.01
Proportion of income from social grants	0.27	0.24	0.06	0.35	0.09	0.23

Abbreviation: JV, joint venture.

TABLE 7 Keiskammahoek: Aspects of socioeconomic differentiation and household composition by class categories ($N = 55$ households)

Class categories		Near-landless labourers	Allotment holding workers	Worker farmers	Petty commodity producers	Rent earning rich farmers and business owners	Rent earning pensioners
JV taxonomic groups	JV dividend HH	-	4%	27%	-	13%	100%
	JV wage HH	43%	52%	46%	33%	-	-
	JV dividend and wage HH	-	9%	18%	-	87%	-
	No JV benefits HH	57%	35%	9%	67%	-	-
Household asset groups	Poor	57%	35%	9%	33%	12%	-
	Middle	14%	43%	55%	-	50%	33%
	Rich	29%	22%	36%	67%	38%	67%
Cattle groups	No cattle	100%	78%	9%	33%	25%	-
	Cattle poor	-	18%	-	-	37%	100%
	Cattle middle rich	-	4%	36%	33%	25%	-
	Cattle rich	-	-	55%	33%	13%	-
Farming assets	Mean	Poor	Middle	Rich	Rich	Rich	Middle
Garden plot cultivated (last 12 months)	Yes	27%	65%	64%	100%	63%	100%
Household size	Mean	6	6	8	7	7	6
% Female-headed HHs	Mean	0.29	0.3	0.09	0.33	0.5	0.33
% Adults present most/all nights	Mean	0.57	0.59	0.46	0.67	0.65	0.58
% HH members under 18 years	Mean	0.29	0.22	0.3	0.17	0.27	0.13
Age of HH head	Mean	54	57	65	72	63	78
Goats owned by household	Mean	-	1	9	29	4	1
Pigs owned by household	Mean	-	1	3	1	4	2
Sheep owned by household	Mean	-	-	4	12	-	-
Chickens owned by household	Mean	-	4	9	5	29	5

Abbreviations: HH, household; JV, joint venture.

some wage labour, particularly off-farm casual jobs. Social grants contribute most significantly to this group, accounting for 35% of household income.

Households classified as near-landless labour have the lowest incomes. They have access to precarious and poorly paid forms of wage labour and public works job. A few households have access to JV jobs, and there is a mean of one casual job, one permanent job and one remittance. Social grants contribute 27% of total household income, with a mean of one child support grant.

Table 7 illustrates that rent earning rich farmers and business owners have the highest incidence of female-headed households with 50%, and worker farmers have the lowest with only 9.1%. Worker farmers have the largest household sizes and the highest incidence of migrant labour. Near-landless labourer households have the youngest household heads, and 29% of their household members are under 18 years, while rent earning pensioners have the oldest household heads, and the lowest percentage of household members under 18 years.

Accumulation of cattle is most pronounced among worker farmers, followed by petty commodity producers, and then rent earning rich farmers and business owners. The high number of chickens among rent earning rich farmers and business owners is due to small-scale broiler farming (several operated by women) targeting local markets. Pig ownership among worker farmers, and rent earning rich farmers and business owners, reflects market-oriented enterprises run mostly by women. Allotment holding workers only have a mean of four chickens and one pig, and they are characterized as "middle" in farming assets.

7 | DISCUSSION AND COMPARATIVE ANALYSIS: THE COMPLEXITIES AND CONTINGENCIES OF CLASS FORMATION

The results of employing the class typology illustrate definite patterns between the class categories. These differences are expressed not only in terms of trends in different forms of labour exploitation but also in terms of reproductive strategies, access to different types of incomes, assets, and also household composition. This indicates that despite limitations in using income data, my modifications to Patnaik's (1987) labour exploitation ratio worked. The results of the livelihood survey and life histories[24] have confirmed that in both Shiloh and Keiskammahoek the local communities in which these JVs are being implemented are socially differentiated along class lines. However, aspects of generational difference, gender, religion, race, and ethnicity intersect with class in complex ways. There are also important differences between these two sites in terms of historical trajectories of class formation and particularly land use and consolidation, which assist in explaining the very diverse outcomes.

At an obvious level, the divergent outcomes between Shiloh and Keiskammahoek are a function of the size of the beneficiary group and scale of production. In Keiskammahoek, 2000 cows are kept on 745 ha with dividends deriving to only 35 households. This sharply contrasts to Shiloh, where 900 cows are kept on 450 ha, with a huge beneficiary group of 395 households, and hence, there are both smaller dividends and fewer JV jobs. The difference in reproductive strategies across these case studies is in part a reflection of the way in which larger holdings of land had been historically accumulated prior to the JV by Keiskammahoek's 35 landowners. The historical process of accumulation and class formation can in part account for the much larger numbers of rent earning rich farmers and business owners and worker farmers engaging more extensively in farming in Keiskammahoek. Access to a larger JV dividend also enables a surplus to be reinvested in own-account farming and at the same time influences their labour exploitation ratio.

This contrasts sharply with Shiloh, where the majority of landowners reported having abandoned cropping on the irrigation scheme between 1994 and 1997, when the Ciskei's agricultural parastatal was dissolved. Apart from a short-lived attempt by the government to get crop production going again, for the most part, the land was only used to graze cattle. Consequently, access to wage labour and social grants became comparatively more critical for the

[24]These could not be presented here due to space; see Bunce (2018).

reproduction of these households. This explains the relatively small number of rent earning rich farmers and business owners and a larger group of allotment holding workers and worker farmers in Shiloh who rely substantially on wages. The wider context of unemployment in Shiloh also accounts for the identification of the class category of supplementary food producers, who rely almost entirely on social grants, supplemented marginally by own-account farming and petty trade.

In Shiloh, the way the irrigation scheme was historically structured, the different nature of land rights (small communal plots), and the history of land conflicts all produced a very different historical trajectory of class formation. During the homeland-era, most households received dividends or wages from the group farm, which is a surprising continuity with the social relations that the JV entails. Consequently, there are no examples to be found of historical accumulation through land and agriculture in Shiloh, in the same way that Keiskammahoek reveals. The irrigation plot owners that have accumulated in Shiloh have done so mostly outside of farming, for example, worker farmers investing wages into cattle. In Shiloh, most landowners have given over the use of all of their land to the JV, with a minority maintaining a few 1/4 ha food plots. This has limited the ability of households in Shiloh to continue to engage in own-account farming to the same extent as households in Keiskammahoek (Bunce, 2018).

In order to understand the heightened levels of intragroup conflict in Shiloh, relative to Keiskammahoek, it is revealing to compare the class structure of those *households with access to irrigation plots*, as documented in Table 8 below. Clearly, there is differentiation among these households in both sites; however, in Shiloh, this differentiation is more extreme. In particular, there are classes like petty commodity producers, which have little or no access to wage labour and mostly exploit their own family labour in petty trade. Households identified as supplementary food producers rely considerably on social grants and can thus be considered quite a vulnerable class. In Keiskammahoek, neither of these class categories can be identified among households with rights to irrigation plots.

Emerging conflicts in Shiloh in part have their roots in the more intense reproductive squeeze that many households are subject to. With deeper poverty, less available wage labour outside of the JV, and fewer cases of households accumulating in farming, the new agricultural investment has become the site of struggles over resources and jobs. About 74% of irrigation plot holders in Shiloh are allotment holding workers and worker farmers. Shiloh's irrigation plot owners are thus concentrated in class categories who are "primarily exploited by others" and vulnerable households who are unemployed or underemployed.

In Shiloh, the rent earning rich farmers and business owners only account for 7% of the sample, and the rent earning pensioner class category does not exist. In Keiskammahoek, by contrast, when these two classes are combined, which "primarily exploit the labour of others," they account for 57.5% of households with irrigation plots. Rent earning pensioners do not sell their labour, and rent earning rich farmers and business owners sell their own labour to a smaller degree than they hire in the labour of others. This demonstrates how the predominant dynamics of labour exploitation among irrigation plot holders is vastly different between the two case study sites.

In both case study sites, worker farmers have quite high household incomes, relative to other class categories. However, in Keiskammahoek, there is a mean of ZAR341,041, which is much higher than Shiloh with only ZAR201,533.[25] In Keiskammahoek, social grants only contribute 6% to total worker farmer incomes, whereas in Shiloh, they contribute 18%. In Keiskammahoek, worker farmers have a mean of one civil servant job, whereas in Shiloh, only a few households have access to these jobs, which speaks to a difference in the type of wage labour present. The life histories also reveal that there are qualitative differences between worker farmers' reproductive strategies. In Keiskammahoek, there is evidence of accumulation in farming, which is simply not present in Shiloh to the same extent. For example, a worker farmer household was identified who had accumulated 20 dairy cows and was renting them to the JV farm, as well as accumulating other livestock and farming assets (Bunce, 2018).

There are half as many allotment holding workers among irrigation plot holders in Keiskammahoek as there are in Shiloh. In Keiskammahoek, this class has higher overall household incomes (a greater proportion of which is from self-employment in agriculture); they rely less on social grants, and they have more assets and livestock. Life histories

[25]However, the former also tends to have larger household sizes.

TABLE 8 Class typology for irrigation plot holders in Shiloh and Keiskammahoek

Class categories for irrigation plot holders[a]	Type of labour exploitation	Shiloh	Keiskammahoek
Supplementary food producers	Primarily self-employed	7%	-
Petty commodity producers/traders		12%	-
Allotment holding workers	Primarily exploited by others	30%	15.5%
Worker farmers		44%	27%
Rent earning rich farmers and business owners	Primarily exploiting the labour of others	7%	42%
Rent earning pensioners		-	15.5%

[a]The near-landless labour class category is not included here because this is a class typology for households that own irrigation plots, and thus they are not landless.

also revealed that in Keiskammahoek, some households were located in this category because of gender and generational dynamics. These were widowed female-headed households who did not own cattle, and due to old age or illness, some were no longer generating surplus sales from own-account farming. These households predominantly rely on the JV dividends, supplemented by the support of younger household members engaged in wage employment.

In Shiloh, the incidence of female-headed households is, however, far more pronounced and shows an almost opposite trend to Keiskammahoek. In Shiloh, every class category except worker farmers has more female-headed households than male-headed households. In contrast, in Keiskammahoek, it is only among rent earning rich farmers and business owners where there is a 50/50 split between female and male-headed households, and all of the former were households headed by elder widows. This is an important characteristic difference between the two sites.

Literature highlights how female-headed households tend to be more vulnerable. This is evident in how 85.7% of the near-landless labourers in Shiloh are female-headed. This vulnerability is not only because of gendered struggles in the workplace, home, and other social spaces. Women (particularly when unmarried) also generally have inferior customary inheritance rights, which are contingent on their relationships with male household members (Berry, 1989; Cousins, 2013b; Fay, 2005; Oomen, 2005; Whitehead & Tsikata, 2003). Many women claiming dividends in Shiloh are widows, but some are also younger female-headed households who have inherited irrigation plots. This finding is in line with research, which has illustrated that since 1994, single women have had improved access to land in the former homelands (Claassens, 2015).

In Shiloh, many conflicts have emerged over the governance of the Mayime cooperative, rights to jobs and dividends from the JV farm, and communal land rights. However, life histories and ethnographic immersion revealed that the roots of these conflicts sometimes preceded the establishment of the JV. Several aspects of social difference intersect in complex ways to determine access to jobs, including generation, gender, class, ethnicity, and religion (association to the local Moravian Church). Several respondents noted that individuals who are not members of the Moravian Church, are not considered as members of the "traditional community," or who are in poor relations with the local headman (a member of the cooperative committee), were not considered for either JV or public works jobs. The establishment of rural labour markets through JV jobs and differential access to them, resulting from the undemocratic governance of the Mayime cooperative committee, has heightened processes of social differentiation.

In Shiloh, there are complex historical intergroup and intragroup conflicts that continue to play out over land rights. The ongoing land conflicts surrounding the removal of 17 commercial dairy farmers, as well as other divisions within the current customary landowning group, sparked by the vandalism that took place when Ulimocor left the scheme in 1997, are important contextual factors in understanding the intragroup conflicts that are now emerging around the JV itself. These conflicts have impacted which households are excluded as beneficiaries of the current JV farm. Shiloh is also nestled alongside the sprawling and densely populated Sada Township, where households were

relocated as a result of Apartheid's forced removals. This land has now become the subject of a collective land claim by Shiloh's irrigation plot holders. The claimants contend that Sada was their customary grazing land, and the traditional leader intends to use the land to extend the pastures for the dairy farm. This conflict plays out in the distribution of benefits from the JV farm because residents from Sada are not eligible to apply for jobs at the JV farm (Bunce, 2018).

Although the JV has not led to the same levels of intragroup conflict in Keiskammahoek, there are still visible areas of contention. The history of land consolidation under 35 landowners has contributed to shortages of grazing land in this area. In the first years of the farms' establishment, the surrounding community would frequently cut fences to let their livestock on to the pastures, which caused serious challenges for the biosecurity of the farm's dairy herd. The local community often refers to the landowners as "settlers" since many originate from other parts of South Africa. The legitimacy of their rights to the land is frequently questioned, framed by discourses of belonging and membership to customary and ethnic groups, which endure despite the title deeds most households have.

Another important finding emerging from this study is the need to focus on the distribution of benefits and risks at an intrahousehold level. In some cases, JVs are precipitating a reorganization of labour processes and their gendered relations within households. Some female respondents expressed frustrations over male members controlling JV dividends and wages. This quote, from a woman in a rent earning rich farmer and business owner household in Keiskammahoek, is revealing of gendered struggles: "Men always want all the money to come to them. Sometimes you cannot know how much you got because they do not tell you, they control it. The dividend goes straight to my husband's bank, so I do not even know if it's paid or not."

Gendered struggles were especially marked in Keiskammahoek, where households were still farming their land prior to the JV. The comparatively large size of the dividend also explains why it is igniting intrahousehold struggles. Women explained how it had been easier to maintain a degree of control over farming income prior to the JV. Since the implementation of the JV, women had to develop new strategies to renegotiate their livelihoods. Some women had refocused their efforts on household gardens, and many had started small pig or broiler businesses. However, the effects of the JV on gender relations were differentiated and contingent and the outcome was not always negative for women's relative power within households. Some women emphasized having equal, or at least considerable negotiating power, over how JV dividends and wages were spent in the home.

8 | CONCLUDING REMARKS

A central lesson emerging from this study is that the outcomes and impacts associated with JV-type investment models cannot be fully understood without a comprehensive understanding of class and other dynamics of social differentiation, including gender and generation. How diverse communities meet their social reproduction must be thoroughly understood before agricultural investments are designed. Moreover, the character of agrarian change desired and the underlying livelihood systems and class relations that tend to generate these changes must be clearly understood and stipulated by policy makers.

This paper presented a methodology for exploring class dynamics that brings together Patnaik's (1987) labour exploitation criterion with other approaches to develop class typologies in the South African context (Cousins, 2010; Levin et al., 1997) and the author's additions (Bunce, 2018). The results of employing the class typology demonstrate how differing dynamics of class formation and other aspects of social differentiation, like gender, religion, ethnicity, and generation, help explain divergent outcomes in the comparative case study of Shiloh and Keiskammahoek. However, the class typology presented is merely a snapshot in time, and because class dynamics are intermeshed with many other "determinations," they are complex, contingent, and subject to processes of constant change (Bernstein, 2010; Cousins, 2010; Scoones et al., 2012).

The analysis also sheds light on a number of emerging inter- and intragroup conflicts. However, these conflicts must also be understood within the wider political economy. In this sense, Bernstein's (2011) rendering of the

"agrarian question of labour" compels our attention towards the wider crisis of employment under modern capitalism, and how "classes of labour" battle to meet their simple reproduction needs. It is this tension which is often at the core of struggles over land, its use, and its meaning (Arrighi & Moore, 2001).

The class typology is, however, significant because it speaks to the type of emerging agrarian structure that a JV intervention conditions. This has important implications for debates around agrarian change in South Africa. Significantly, the study could not identify any households as "middle farmers." This contrasts to research that has identified dynamic middle farmer class categories, reliant on "accumulation from below" through petty commodity production (Cousins, 2013a; Scoones et al., 2012). Many authors consider accumulation from below to be a more progressive, dynamic, and desirable pathway of agrarian reform (Aliber & Hall, 2012; Cousins, 2015; Scoones et al., 2012). The JV model does not, however, seem to provide the right conditions for promoting the emergence of a class category of accumulating middle farmers.

An alternative agenda for agrarian reform in South Africa would be to promote accumulation by differentiated smallholders on these irrigation schemes (Bunce, 2020b; Cousins et al., 2020; Denison & Manona, 2007), in place of the JV model which involves customary landowners in the contradictory positions of worker and shareholder. We also need to be realistic about the role that land and agrarian reform can feasibly play in addressing the crisis of social reproduction which poorer households in South Africa's communal areas face. A wider programme of redistribution and investment is required. Improving access to off-farm jobs and extending welfare payments must be central complements to land and agrarian reform (Bernstein, 2013; Cousins, 2015; Neves & Du Toit, 2013).

ACKNOWLEDGEMENTS

I would like to thank Professor Ben Cousins for his guidance, encouragement, and mentorship as my PhD supervisor for this research. Many thanks also to my postdoctoral supervisor Professor Dan Brockington for his valuable suggestions on revising this manuscript. Thanks to Welcome Nelo for his assistance with translation and companionship during the fieldwork. My gratitude to the fieldwork participants, for welcoming me into their homes and patiently sharing their insights with me over the many fieldwork visits. Many thanks to the two anonymous reviewers for their insightful comments on my manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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How to cite this article: Bunce, B. (2022). A methodology for class analysis: Agricultural investments and agrarian change in South Africa. *Journal of Agrarian Change*, 1–29. https://doi.org/10.1111/joac.12505