Explaining Village-level Development Trajectories through Schooling in Karnataka

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This paper develops and explores a methodology for explaining development trajectories at the village-level. Using data from the Censuses of 2001 and 2011, and qualitative and quantitative data from three purposively selected villages in North Karnataka, it asks why literacy rates and schooling vary considerably in geographically proximate villages. In advancing an explanation, the paper attends to what has been termed the micro–macro problem in analytical sociology as well as the problem of spatial variability, neither of which has been systematically addressed in the literature on rural change in India. The data and methodology used here help identify two social mechanisms—livelihoods enhancement practices and social cooperation—which together explain why one village (Chennooru) experiences stable and higher levels of schooling relative to its neighbours where either livelihoods enhancement practices are absent (Valasooru) or there is a lack of social cooperation (Banadooru). The approach and analysis in the paper imply that attention to social mechanisms aids the crafting of more robust policies on schooling and development.

Fieldwork was made possible through a grant from Azim Premji University. Fieldwork data collection was done by Indira Patil as part of a research project at Azim Premji University. We thank Azim Premji Foundation (Yadgir District Institute) for facilitating the fieldwork. We also thank Umashankar Periodi, Giridhara Vaidya, Krishnayya T, Rudresh S, Devaraj Kodabala and Suresh Goudar for their assistance during the fieldwork, and Bhavyashree Jain, Fathima Begum, Annapoorna, Asha and Shruti for conducting the survey. Above all, we thank all the villagers of Chennooru, Valasooru and Banadooru for welcoming us and sharing their experiences. A longer version of this paper is available upon request.

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1 Introduction

Scholarly literature on "village studies" and "agrarian studies" sharply differ in their approaches to understanding rural life (Breman 1997; Gupta 2005; Jodhka 1998). We share the major critiques of the methodology of village studies, especially their inability to view villages as "determined more by regional agrarian histories and the local trajectories of social, economic and ecological processes" (Jodhka 2014: 8). However, we share the view of those scholars who do not dismiss the village as a site of study, but instead call to view villages as imbricated within larger material and discursive processes, including the state, market, capital formation and migration (Harriss-White and Janakarajan 2004; Thakur 2014). Rural studies in India stand to benefit from new methodologies that view "villages" being produced in discourse and practices in ways that far exceed their geographical and "moral" ambits.

In this paper, we argue that a modified refocus on villages has another potential benefit, viz, the possibility of producing an empirically-grounded set of "explanations" for an event or phenomenon (Elster 2007).[1] This is what Hedström and Swedberg (1996), building upon the tradition of Merton (1967), have called "middle-range theories." In our view, debates on rural India would be strengthened by attention to *social processes*, or what analytical sociologists call *social or causal mechanisms* for explaining any event or phenomenon. In particular, we are interested in taking up two challenges for explanations. The first is the *micro–macro problem* from analytical sociology (Alexander et al 1987; Coleman 1994; Elster 2007) which has resonance in what empirical methodologists call "process tracing" (Gerring 2007). The second is what we call the *spatial variability* problem. In our view, both these problems pose challenges for empirical studies in agrarian and rural research. We expand on both briefly below.

Survey research techniques have recently spurred studies that attempt to explain a social phenomenon through inferring causality (or its milder form, correlation) between different factors (variables) that shape the phenomenon, or between a factor and an outcome. Examples include studies showing the dependence of healthcare on geographical location (Elliot et al 2000), and "causal models" based on randomised control trials (RCTs) that infer causality, for instance between para-teachers and academic outcomes (Banerjee et al 2007). However, scholars have pointed out that studies which infer causality (or correlation) from micro-level individual behaviours to macro-level patterns are limited by their inability to identify the actual

micro-level processes that generate patterns or outcomes in social life (Cartwright and Hardie 2012).

The micro–macro problem, then, is the challenge for researchers to demonstrate how a macro-level event (say, increase in school attendance) is a result of a chain of micro-level social mechanisms or processes (say, decisions about livelihood that increase incomes which spur households to send children to school). Social mechanisms are analytical constructs which help explain "frequently occurring and easily recognisable causal patterns that are triggered under generally unknown conditions or with indeterminate consequences" (Elster 2007: 36). Mechanisms are specified at a "micro-level" (the level of individual and group actors, rather than social, political, ecological or economic structures) and shape individual and collective social action. Although the micro–macro distinction has generated much debate, we use it as a heuristic to highlight how individual behaviour/agency and aggregative structure are "interpenetrating" (Emirbayer and Mische 1998). Thus, we view individuals (and their choice-making decisions) as constituted within a relational social accounting of others (Goffman 1959), mediated through social norms produced within social interactions (Collins 2004), and within social institutions, such as families, households, caste groups, schools, work (DiMaggio and Powell 1983).

The challenge of "spatial variation" is posed insufficiently in social research. While statistical analyses acknowledge differences across (spatial) observations, they focus on separating the all-important "central tendency" from (spatial) variability that is mere "noise."[2] Such a perspective characterises policy-making too, relying as it does on statistical models and comparative projects which restrict themselves to comparisons of averages or means.[3] On the other hand, qualitative research seems to have registered the problems raised by variability to a somewhat greater degree over the last half century (Abu-Lughod 1991; Clifford 1988; see also Henrich et al 2010 for an interesting critique of psychological research). Variability is now acknowledged to be an inherent part of "cultures" which cannot be viewed anymore as homogeneous or uniform groups with a shared set of traits (Natrajan 2011; Sperber 1996).

From the village studies literature, many note the existence of considerable micro-level diversity in development trajectories. A large literature explores spatial differences in development trajectories of macro-regions in India, most commonly inter-state comparisons but also comparisons of substate regions. Working on two Bihar villages over decades, scholars note that

> each village has its own pattern of connections with the process of development…The overall pattern of change in rural Bihar is then a composite of many different village development paths, in which the average may hide a great deal of variation in social and economic patterns and trends (Datta et al 2014: 1198).[4]

The remainder of this paper is organised as follows. The next section briefly outlines the methodological approach which takes up the above challenges in the context of a puzzle within a taluk of North-east Karnataka. It is followed by two sections developing a comparative analysis of three villages using a mixed-methods approach with qualitative fieldwork insights interspersed with quantitative survey and document analysis.

2 Methodology

Our interest is in micro-level socio-economic change in rural India and its explanations. Although change in any one dimension of socio-economic life is inextricably linked with change in other dimensions, we suggest that carefully chosen spatial comparisons of (temporal) change may enable scholars to parse out causal sequences while maintaining interconnections across different dimensions. Our focus is on change in village-level schooling outcomes. Clearly, schooling change is linked with other dimensions, particularly economic structure, social structure, and the institutional schooling structure—and how they influence household decision-making (and are influenced by it). Our approach is outlined below.

Purposive Choice of Villages: We chose villages in the same taluk and with similar schooling levels at one point in time but which showed different schooling levels within a short time period. By choosing villages in the same micro-region—and therefore subject to similar district/state-level policies, similar regional economies and political histories, and similar agro-climatic conditions—our village-selection strategy helped "control" a swathe of factors that might have otherwise independently "explained" differences in village schooling trajectories. Juxtaposition of the different trajectories of such villages can help construct explanations of change.

We focus on Shorapur taluk in Yadgir District of North-east Karnataka (NEK).[5] We considered all villages (close to 200) in order to select the "best" possible pair using census literacy data as a proxy for schooling outcomes.[6] Since schooling trajectories may be gendered, we used data on both women's and men's literacy rates. Finally, since we planned to rely on oral histories and related methods, we chose the most recent intercensal decade (2001–11) to improve data reliability and validity.

The general procedure for village selection can be seen from Figure 1 (p 56).[7] It presents literacy rates (by sex) in 2001 and 2011 on the horizontal and vertical axes, respectively. Villages above the line experienced an increase in literacy rate in 2001–11 and villages below it experienced a decrease. The vertical distance of a village (dot) from the line measures decadal change. We used a more detailed version of Figure 1 to generate several possible village pairs (with similar starting levels of literacy in 2001 but considerably divergent levels in 2011),[8] and among these we prioritised two village pairs: Chennooru–Valasooru and Chennooru–Banadooru.[9] The first pair had identical and very low women's literacy rates in 2001, and yet while Chennooru increased by over 30 percentage points in only 10 years, Valasooru remained stagnant. This produced a focused empirical puzzle. Similarly, the second pair had identical men's literacy rates in 2001, and yet while Chennooru increased by almost 30 percentage points in only 10 years there was a slight decrease in Banadooru. This produced a second focused empirical puzzle.

Mixed Methods Approach: Having used the above-mentioned method to purposively identify villages for comparison, we note that quantitative methods are notoriously ill-equipped to

trace processes of change (Cartwright and Hardie 2012; Jacob 2015). Accordingly, we emphasise qualitative methods, but in a mixed methods framework. Fieldwork was conducted in the three selected villages in November–December 2014, with a follow-up in March 2015. The qualitative methods used during fieldwork included (i) ethnographic observation of everyday work contexts (households, fields, schools and government offices) and informal conversations; (ii) oral histories of individuals and families; and (iii) semi-structured interviews (school personnel including teachers, government officials). We also collected longitudinal school enrolment data (sex-wise and community-wise) for the three villages from enrolment records in the individual school registers. Further, we designed and executed a household survey in Chennooru—the village with the substantive schooling improvement—in March 2015.

Figure 1: Purposive Village Selection

In the next two sections, we present narratives of change for Chennooru (where schooling outcomes dramatically improved) and Valasooru and Banadooru (where they did not). We use these narratives to explore the possible explanations in specific contexts of change.

3 Chennooru: A Village with a Happy Tale

As described previously, Chennooru experienced a considerable increase in literacy rate in the intercensal period 2001–11 (Figure 1). The improvement in schooling is reflected in Figure 2: school register data show that enrolment increased in the early 2000s.[10] Our village survey further reinforces this. Figure 3 shows two schooling indicators (primary school graduation rate and years of schooling) among 10–20 year olds across different decadal periods.[11] Both indicators changed little in the decades prior to the 2000s. That is, schooling indicators are similar among those who are today in the 50–60 and 40–50 age-groups. However, compared to them, the primary school graduation rate is double for 30–40 year olds, and double that for 20–30 year olds, and most remarkably, it is further double that for 10–20 year olds—an increase of about 30 percentage points within the most recent decade. Figure 3 shows that the average years of schooling (our second schooling indicator) also increased in a similarly rapid manner in recent years.

Figure 2: Enrolment in Chennooru and Valasooru Villages

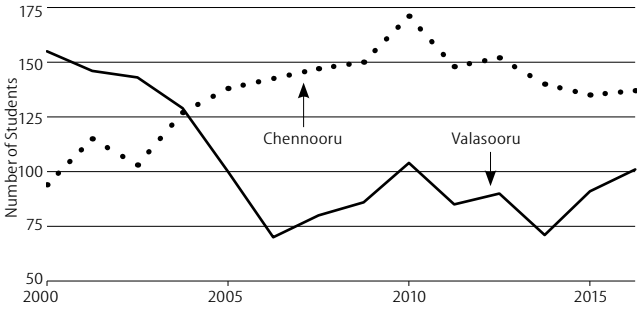
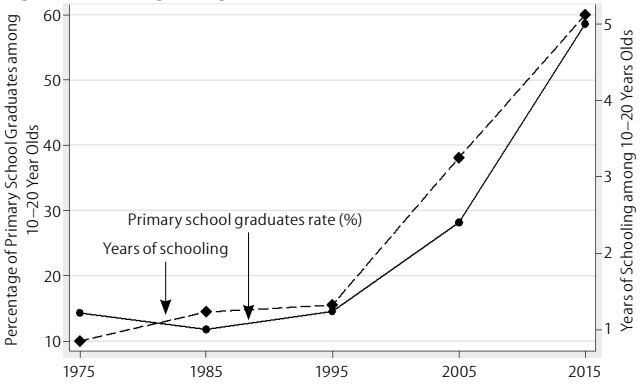


Figure 3: Schooling among 10–20 Year Olds in Chennooru, over the Decades



Livelihoods Change: Chennooru with population of about a thousand is composed of Nayakas (about 40%), Madigas/Bhajantris (about 30%) and Kurubas (about 20%)—classified by the state government as Scheduled Tribe (ST), Scheduled Caste (SC), and Other Backward Class (OBC), respectively. Most of the agricultural land is owned by Nayakas and Kurubas. However, with alkaline soil and lack of controlled irrigation, sustained cultivation was not a mainstay in Chennooru until the early 2000s. During our fieldwork, many residents mentioned the construction of the Upper Krishna Project (UKP) canal and consequent access to irrigation as major events[12] in their lifetime.[13] We gathered from them that paddy cultivation was taken up subsequently in a major way. As an elderly villager, Halamma (a Kuruba woman) put it,

> Cultivation of paddy (*kavali*) in the village began about 15 years back after irrigation (*neeravari)*. Since the soil here is alkaline (*savalu)*, not much cultivation happened till paddy came in. Thus we worked [then] as agricultural labourers in neighbouring villages like Chindalli, Kashnooru and Kaldooru. Groups of families went together and stayed in the neighbouring villages during the harvest season. Also, some people went to Shorapur [town] and worked in cement construction. Now, we work in our fields and also go to work in neighbouring villages (interviewed on 8 December 2014).

The contrast with the "old days" was further emphasised by Siddhaiah, a cultivator from Chindalli, a neighbouring village where the soil was better, thus:

> During the 80s and 90s, the villagers of Chennooru were called for cutting jowar (*jola)* and bajra (*sajji*) during the harvest season by the Chindalli cultivators. Many families from Chennooru used to come in groups, stay in Chindalli for about a fortnight and complete the work. They would get about 2–3 gunny bags of jowar or bajra for the work. Then they would go to the next village. Thus *a culture of working in groups* outside the village exists [in Chennooru] from the earlier times (interviewed on 2 December 2014; our emphasis).

Collective action in the form of organising of labour (groups) for work in other villages was thus part of the cultural experience of the various communities in Chennooru.

What became clear from our field observations and interviews was that this move to cultivate paddy characterised much of the households in Chennooru. We identify such livelihoods enhancing practices as our first social mechanism to explain schooling change.[14] It led to increased incomes both through production (annual cultivation of two crops instead of the single harvest for other crops) and through increased labour earnings on paddy fields (more agricultural work, and at higher wage rates). According to Devappa (a Kuruba farmer) of Chennooru,

> With the coming in of paddy, the demand for agricultural labour increased along with the wages. During earlier times, the wages were less than 50 rupees. After paddy came in the wages increased. Today a woman working in paddy fields gets a wage of 150 to 200 rupees a day. A man working in paddy fields gets 250 to 300 rupees. Further the women and children working in cotton fields get 120 and 100 rupees each. The wage rates have grown from 2 to 5 to 15 to 50 to 300 rupees. Our income has increased (interviewed on 8 December 2014).

Thus the economic circumstances of both small landowners (mostly Nayakas and Kurubas) as well as the landless agricultural workers (mostly Bhajantris and some Madigas) improved.

Our survey findings for Chennooru accord with fieldwork findings described above. Figure 4 shows community-wise averages for the (self-reported) earnings scales for cultivation and agricultural labour for the two end-points (2000 and 2015) of our period. In all cases, the average earnings from cultivation and agricultural labour increased dramatically in this period.[15] Figure 5 also shows that by the end of the period (that is, 2015), regular seasonal migration was low, and migration in general was particularly low among Nayaka households (where, as Figure 4 shows, cultivation earnings increased most). Further, there is a low incidence of the highest level of debt-related distress. Thus Figure 5 supports the findings from Figure 4 as regards livelihoods change.

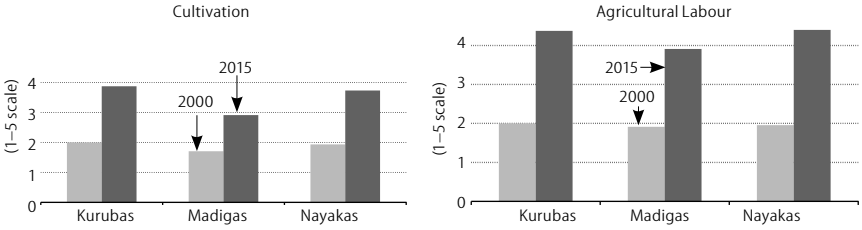
Livelihoods Enhancing Practices and Schooling Change: Interestingly, the schooling change in Chennooru coincided with the same time period as livelihoods change with the onset of paddy cultivation. From our field data and analysis, we are tentatively able to advance the following explanatory narrative for schooling change. Before the coming of the dam and water for irrigation, the people of Chennooru (all communities) largely worked as agricultural labourers in neighbouring villages and stayed there during the harvest season, or some (Kurubas) raised sheep and cattle. Such livelihood activities negatively impacted children's schooling as they would accompany their families for agricultural labour or take care of their herds. The onset of irrigation and paddy enabled the people of Chennooru to cultivate on their own lands in the village, which in turn provided a stability of location and livelihood and helped them send their children to school on a regular basis.

However, once the water became insufficient for paddy cultivation for two seasons (around 2004), the villagers by and large tided over by supplementing paddy incomes with cotton cultivation (again, livelihoods enhancing practices). There was a different impact, however, in terms of schooling since children are deployed to a far greater extent as labour in cotton fields than in paddy fields. The differential demand of the two crops on children's labour is captured by Shantamma, a Class 4 student from Chennooru School thus,

> I along with my mother go to pluck cotton. I do not go to paddy fields. Other children also do not go to paddy fields but come along to pluck cotton (interviewed on 18 December 2014).

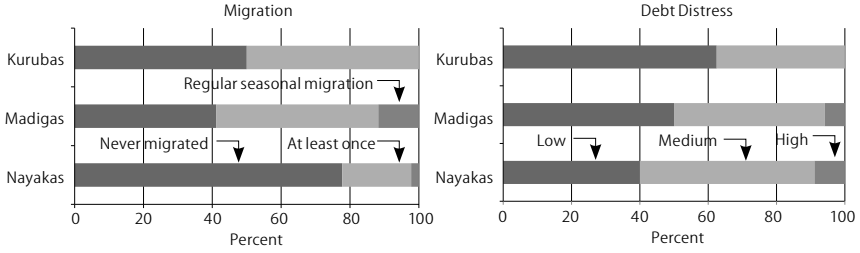
We note, however, that whereas children from Class 6 and above do work in paddy (and cotton) fields, children from Classes 1 through 5 do not work in paddy fields but do pluck cotton. Thus paddy cultivation, with less of an involvement of

Figure 4: Change in Earnings from Cultivation and Agricultural Labour in Chennooru, 2000–15



Cultivation scale:
1= Very low: Own to cultivate land or <1 acre of land; 2= Low: Own 1 to 2 acres of land + cultivate jowar or bajra; 3= Moderate: Own 2 to 4 acres of land + cultivate jowar of bajra; 4= High: Own s 2 to 4 acres of land + cultivate paddy and commercial crops like cotton; 5= Very high: Own > 4 acres of land + cultivate paddy and cotton.
Agricultural labour (AL) scale:
1= Very low: No household member involved in AL; 2= Low: 1 member does AL; 3= Moderate: 2 members do AL; 4= High: 3 or 4 members do AL and/do attributed increased income to higher wage rates; 5= Very high: >=5 members do AL and/or assertively attributed increased in come to higher wage rates.

Figure 5: Migration and Debt Distress in Chennooru (2015)



The following scale for debt was used.
Low: debt (generally taken) before sowing season (about Rs 25,000–50,000); Medium: debt before sowing season + additional debts for construction of house, etc (about Rs 50,000–1.5 lakh); High: debt before sowing season + additional debts (> Rs 1.5 lakh).

children's labour, enabled most children to attend school regularly. Further, the general improvement in economic circumstances through enhanced self-cultivation and agricultural labour (and not just the specific move to paddy) reduced the families' use of children in agricultural work. Consequently, children tended to stay in school longer *after* paddy cultivation came to Chennooru.

Our survey findings for Chennooru are consistent with the fieldwork findings described above. Figure 6 shows years of formal schooling among 10–20 year olds for different categories of the cultivation earnings scale, for 2000 and 2015. Strikingly, in both years separately, higher levels of the scale (3 for 2000, and 4/5 for 2015) are indeed associated with greater schooling levels. The higher values for 2015 (viz, 4/5) are what pulled up overall schooling levels compared to 2000. Further, our survey data also reveal that for 2015, regular attendance for cultivation category 5 is almost double that for categories 3 and 4 combined. The survey also asked respondents who dropped out of school to describe the reason for doing so; we subsequently coded the reasons into eight categories along with a "miscellaneous" category. Figure 7 shows how the major reasons for dropouts have changed over time. After the livelihoods change in the 2000s, agricultural labour replaced poverty as the most important reason.

Figure 6: Schooling and Cultivation in Chennooru, 2000 vs 2015

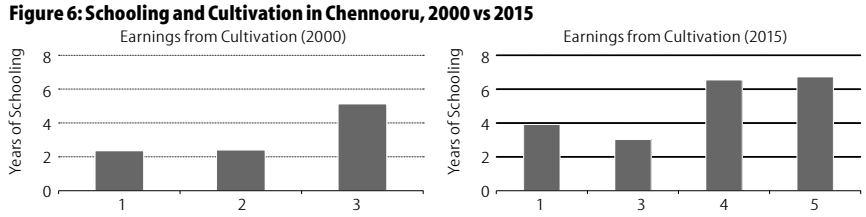


Figure 7: Major Reasons for Dropping Out of School for 10–20 Year Olds in Chennooru, over the Decades

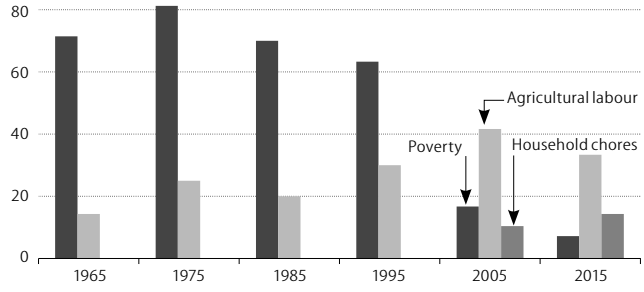
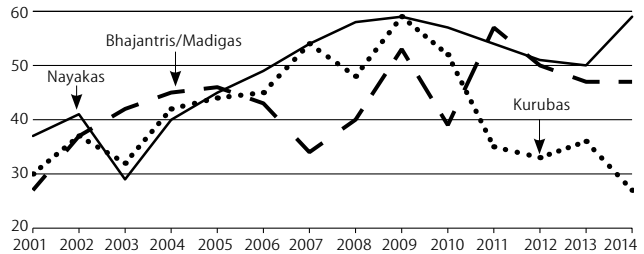


Figure 8: Enrolment in Chennooru, by Community



Community-wise enrolment data from the Chennooru school register offer further pointers. Figure 8 shows a steady increase in the enrolment of Nayaka and Kuruba students from 2004. This corroborates our analysis that communities which saw relatively greater earnings increase and less seasonal out-migration (such as landowning Nayakas and Kurubas) experienced a spike in enrolments more so than others.[16]

Mechanisms (or Processes): The above set of correlations which exist between two *macro-level* events—arrival of the dam and consequent improved irrigation, and increased student enrolment and retention, operate through culturally-shaped household decision-making.[17] To argue further that this is a causal chain, we need to identify *micro-level* social mechanisms that produce the macro-level phenomenon of improved schooling/literacy. Here, two micro-level events that we find to be key are decisions (by social actors) to shift to paddy (what we have referred above as livelihoods enhancing practices) and their decisions to send children to school. By bringing in social actors (individuals for sure, but also larger entities such as families—or more correctly, dominant decision-makers within families), we commit to building a middle-level theory around purposive action-driven change (Coleman 1994). Although our survey data are unable to show the particular sociocultural mechanisms at work, the interview material does point in this direction. For instance, Kamalamma of Chennooru said,

> My husband has 5 siblings and all the 6 families together grow paddy in the 6 acres of land [divided but cultivated jointly]. Then we share the profits equally. With the coming of irrigation and paddy, our income increased. The children *need not have to work* and contribute to our income. Thus we started sending them to school. I have 4 children—Shivanna studied till 8th class and then dropped out as we wanted him to graze cattle. Parvati went to school till 7th class. Now she works as agricultural labourer and goes to neighbouring villages like Martooru, Kaldooru and Bingadalli. Raju is in 4th class and Padma is in 1st class. Depending upon our economic condition, *we will decide* if we can send them to high school (interviewed on 10 March 2015, our emphasis).

We note here that decisions are needed to be made about sending children to school; there is nothing automatic about this being the case once incomes increase or children's labour is not deemed to be as essential for household (or family) reproduction. Further, decisions are about power relations; they are taken collectively—but unequally—in households/families.

Similarly, Putamma from Chennooru, a neo-literate woman who along with family members farms her own 4 acres of land reiterated the connection between increased income from paddy and schooling thus:

> After the check dam was constructed, about 14–15 years ago, the irrigation facility for the fields has greatly improved and we are able to grow crops for two seasons. Paddy cultivation has greatly increased our income. *Thus* (*hangaagi*) I sent my children to school and even continued their education. All my children (three of them) study in Shorapur. Ravi is studying 14th class, Paresh is studying 11th class and Priya is studying 10th class (interviewed on 10 March 2015; our emphasis).

Her use of the conjunctive "thus" connotes the underlying causality which is consciously represented in her reconstruction of her own decision-making.

Finally, Shivaram, who is the bill collector of the Chindalli Gram Panchayat overseeing Chennooru, also attested to

the impact of paddy cultivation and subsequent decision-making:

> Because of the alkaline soil, before paddy came in, very less cultivation happened in Chennooru. After paddy, the face (*chehre*) of Chennooru has changed. They have availed the benefit of both self-cultivation and agricultural labour. The income of the people there increased *because of which* they started sending their children to school. We receive about 80–90 scholarship applications every year from SC/ST students of all four villages under the panchayat. Of these applications, about 50% are from Chennooru (interviewed 2 December 2014; our emphasis).[18]

The significance of the above statement is that the SC (Madiga) and ST (Nayaka) groups in Chennooru are also the most vulnerable and the most well-off communities respectively, one owning very little land and the other major landowners, one subaltern and the other dominant. We surmise that a second social mechanism (or process) is at work in Chennooru which causes a significant majority of the village residents to decide to send children to school. We identify this mechanism as a form of "social cooperation" which, as noted above on labour groups from Chennooru working outside the village, is a historically salient form of social relations across caste/community differences in the village. As we will show below in our comparison with another village (Banadooru), social cooperation can also, due to its absence, stymie schooling.

We submit, however, that any interview data elicits "conscious" reconstruction of a decision-making process which may in reality have been far more unconscious habit-formation, and which may in turn be shaped by (and go into the making of) collective norms, peer pressures, and "traditional" practices. Cultural "norms" are established within social interactions, and transmitted through "cultural attractors" (Sperber 2012). The latter are practices which probabilistically attract people and hence lead to a particular cultural trait being transmitted despite individual variations of that trait within the population. Such a mechanism could very well have played a major role in making this a village-level practice. That is, social cooperation works in not only enabling the sending of children to school by all communities in Chennooru, but also becomes culturally attractive to the residents despite the fact that some households may not send children to school despite having the income that enables this decision.

Exogenous Influences

Social cooperation was also enabled by two other events exogenous to Chennooru. The first was the construction of a bridge in 1997–98, allowing easier access to the neighbouring town. This improved high school prospects elsewhere, and therefore increased the use of the primary school. Venkayya, a teacher in the Chennooru School for the past 13 years, explained that

> [t]he construction of the bridge has been really helpful, especially with respect to education. Greater numbers of students are able to go to high school comfortably. This has encouraged many parents to send their children to primary school regularly, so that they can send them to high school (interviewed on 27 November 2014).

The second exogenous factor occurred in 2006: soon after the income boost from UKP, a community-interaction programme for schooling (Namma Shale) was instituted in the government school. As attested by Ramanna, the headmaster of the Chennooru School, the programme "created a platform wherein the parents were able to actively engage with school and reduced the distance between the school and community" (interviewed on 4 December 2014). Corroborating this, Lokappa, a parent from Chennooru put it thus:

> The awareness programmes by the school helped us understand the importance of education. Parents too got an opportunity to get involved in school activities. I have been sending my children to school regularly and want to educate them further. Earlier the children in the village would not go to school. After the programme, many children have been going to school regularly (interviewed on 8 December 2014).

We note that social cooperation may have simultaneously been the enabling factor for Namma Shale's success, while also being enabled by it.

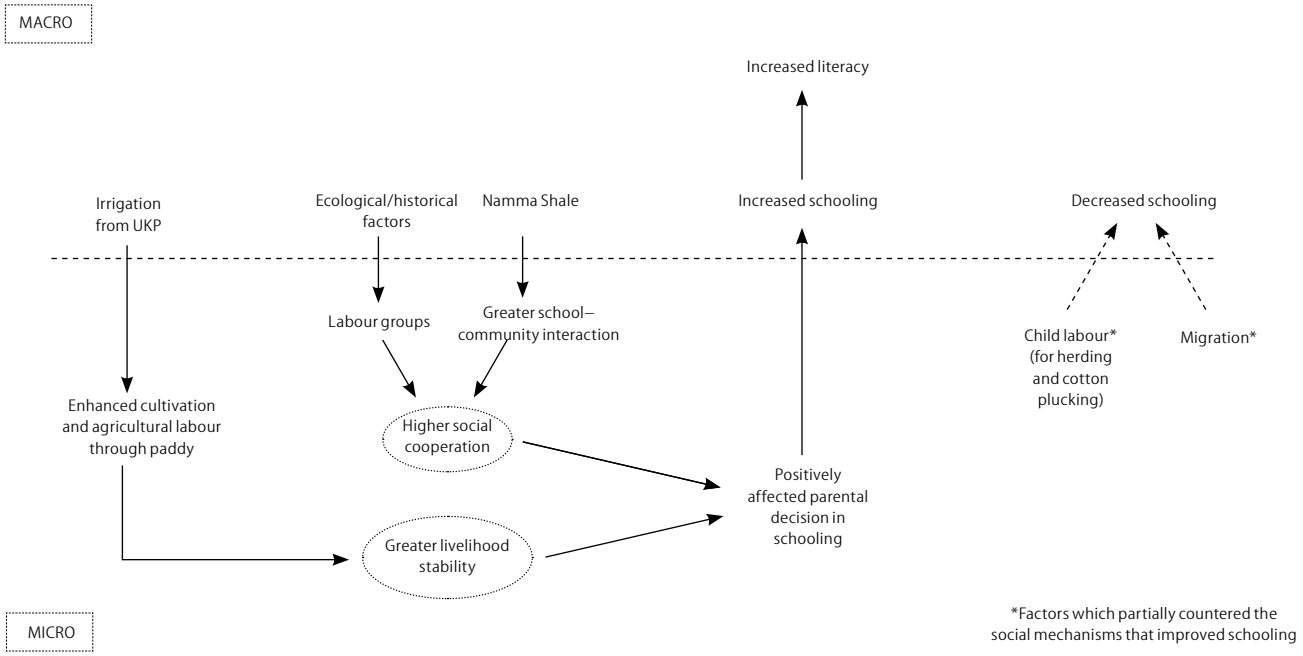
Limits of the Narrative of Salutary Schooling Change: However, the above account of schooling improvement was hardly universal for the village. Although traditional livelihoods declined, they did not die out. Children in some Chennooru families continued to work on these activities rather than being sent to school. As we noted earlier, unlike the case of paddy cultivation, children are deployed to a much greater extent in other livelihoods (principally, cattle/sheep herding and cotton-growing/plucking). Despite the economic improvements triggered by UKP for several families, there were other cases where families preferred to continue their pattern of seasonal outmigration; in such cases, children often had bad schooling outcomes. Sitamma (a Nayaka woman) from Chennooru migrates along with her husband to Bengaluru for about five–six months (January to May) every year. Her family owns land which her in-laws look after during the migration season. According to her,

> My husband and I have been going to Bengaluru for the last seven years. We get a daily wage of about 250–300 rupees. My brother-in-law has settled in Bengaluru and is a taxi driver. Thus we have a roof in Bengaluru to stay under and go every year for five to six months. We take our children along with us as my in-laws are old and cannot take care of them. My elder daughter Renamma is enrolled in 2nd class. We took her to Bengaluru as there was no one to take care of Deepak and Adheesh [Renamma's younger brothers] while we went to work (interviewed on 8 December 2014).

The last part of Sitamma's account raises the question of the regularity of attendance of young girls who are also expected to be caregivers for younger siblings. This turns out to be an important aspect of our second village narrative (Valasooru) below.

Explanation of Change in Chennooru: We have thus far been able to narrate the Chennooru story via the social mechanisms of livelihoods enhancing practices and social cooperation which positively impacted schooling. Could we go further and claim to have provided the elements of an explanation for a social phenomenon, enveloping the micro–macro problem? Drawing upon Elster (2007), we need to rule out alternatives to our particular account of why schooling in Chennooru increased in a certain period. Just because the increase came right after the introduction of paddy cultivation, it need not

Figure 9: Schematic for Causal Social Mechanism in Chennooru



necessarily have caused it. Further, while we argue that our account is more "plausible" than others we can think of, we need to demonstrate that this is the "true" one for Chennooru. For sure, we have come some distance in identifying a macro event (coming of a dam and availability of water for irrigation) that led to a chain of micro-events—successful adoption of paddy cultivation and a high degree of social cooperation which set into motion culturally-shaped decision-making within a significant number of households about child labour and school-worth, together with boosters such as the bridge and the school programme, all while acknowledging the marginal persistence of child labour and migration—which together go into the mao.king of a macro-event (schooling increase) reflected in the census literacy data, our survey data, and the school register data. In doing this, arguably we have advanced a causal mechanism chain that is a plausible explanation. We capture this diagrammatically in Figure 9.

What remains is the issue of variability in the region and comparability (without which favoured explanations are unable to rule out alternative explanations). For this, we now turn to other villages in the region of Chennooru to see how mostly similar conditions can nevertheless produce different results.

4 Valasooru and Banadooru: Unhappy Villages That Are Unhappy in Their Own Away

Valasooru is about 25 km from Chennooru and is similar to it in terms of agricultural/livelihoods potential. The three communities constituting Chennooru are also the major communities in Valasooru, except that the Kurubas are more preponderant here comprising about 75% of the village (with a sprinkling of Lingayats as well). As with Chennooru, the big event in recent decades was the irrigation water from the UKP, which brought paddy cultivation to Valasooru. Before the UKP much of the village area was devoted to grazing lands and rain-dependent, single season cultivation of jowar, bajra and groundnut. With the coming of irrigation, paddy started being grown in grazing lands in and around Valasooru.

Predictably, this produced an initial spurt in earnings in Valasooru. However, unlike Chennooru, Valasooru was a "tail-ender" village for the canal.[19] As other (upstream) villages used more water, the water supply for Valasooru decreased rapidly within a few years. Krishnappa, a farmer from Valasooru, put this poignantly,

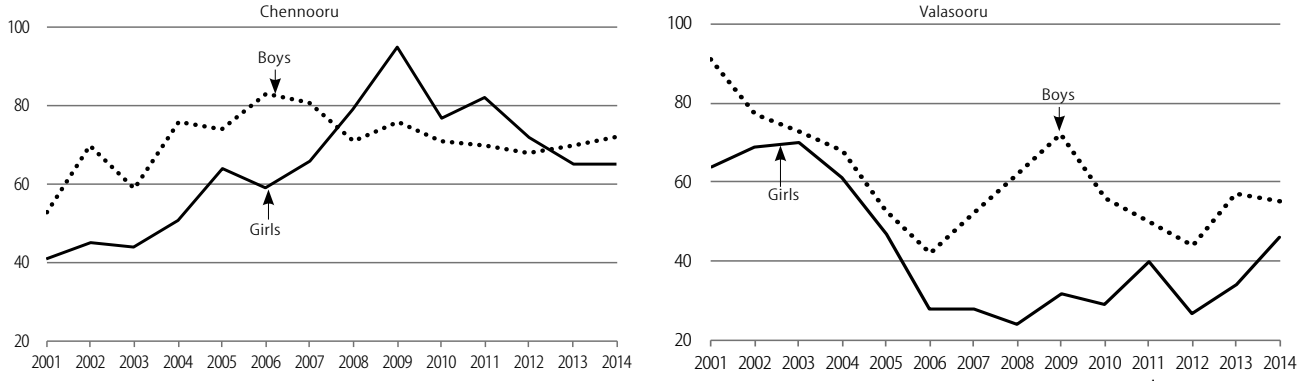
> Before paddy cultivation started in the neighbouring areas, we used to receive at least some amount of water from the canal. But after paddy cultivation, in the last 12–13 years, we have completely stopped receiving water, even the share that we rightfully deserve. This has severely affected our livelihood. Our cultivation became rain-dependent and production went low. Nobody can understand the distress of a tail-ender village (*kadi halli*) (interviewed on 26 November 2014).

Confirming this story, Revappa, a retired employee of the UKP, noted that the situation was made worse by the illegal lifting of water from the canal by initial receptors of canal water, and the fact that people in this region started growing paddy for two seasons. This reinforced water-scarcity in Valasooru and negatively affected the earnings.[20]

The situation in Valasooru was, however, not simply because of actions within the village (conversion of grazing lands for paddy) and subsequent drop in water supply. There were two other (exogenous) factors at work here. The regional increase in paddy cultivation itself acted as an "enclosure" for Kurubas in Valasooru, and there was also incidence of disease among the sheep—both of which influenced the shift to paddy. As Dharmappa, a Kuruba shepherd from Valasooru ruefully admitted,

> With paddy fields surrounding our village from all sides, we did not have grazing land for the sheep. Also, there was increased occurrence of disease among the sheep. Thus we were forced to sell the sheep as grazing and managing it was getting difficult (interviewed on 1 December 2014).

Figure 10: Enrolment in Chennooru and Valasooru, by Sex



At this point in our narrative, we see that the livelihoods situation in Valasooru has already diverged from that in Chennooru. Continuing with our aim to produce grounded narratives that explain change at the village-level, we need to first dispose off alternative possibilities. In principle, things could have gone back to the pre-UKP situation in Valasooru—that is, the paddy lands being reconverted to lands for grazing and production of un-irrigated crops, with the water crisis having no long-term consequences. In fact, single season cultivation of previous crops along with cotton resumed to some degree. However, for reasons that are still unclear to us, Kurubas did not revert to grazing. This may have been partly because most of them had sold their sheep upon first converting pasture to paddy, and because of very little availability of pastures due to presence of paddy fields in other villages surrounding Valasooru. The other remaining option was migrant work, and this is what transpired in Valasooru.

Valasooru's villagers found increased work as agricultural labour in paddy fields of other (non-tail-ender) villages. However, given the volatility of such seasonal employment and income, they continued searching for other options. In 2003, some Kurubas from Valasooru went to Bengaluru (over 500 km away) to work for a building contractor and ended up earning well. As in Chennooru, a combination of cultural attractors and conscious decision-making gave rise to a pattern of larger-scale seasonal migration (January–May) among Valasooru's Kurubas.

Beginning in 2003, Valasooru residents have regularly migrated to Bengaluru as well as to neighbouring towns. This negatively impacted regularity of schooling for the children of these migrants, often in gendered ways. In cases where a parent migrated seasonally, some children were left behind to care for the old and the very young. For example, Kalappa and his wife migrate to work in building construction sites in Bengaluru every year from January to May. Their older daughter (about nine years old) remains behind with Kalappa's elderly parents in Valasooru in order to "do the household chores and look after them." She does not go to school. Similarly, Kalappa's younger daughter (about seven years old), who accompanies her parents to Bengaluru, also does not go to school since she mostly takes care of her two younger brothers. As Kalappa put it, "since they [the two sons] are small, we need her to take care of them while we go to work" (interviewed on 26 November 2014). In cases where the whole family migrates seasonally, children cannot be enrolled since they are not stably established in either Valasooru or Bengaluru over the school year. This is the case with Rajanna who along with his family members and brothers has settled in Bengaluru and works at various jobs. Of his three children, only the son goes to school, while one daughter works in the home of Rajanna's employer caring for his elderly mother, and the other daughter works with her mother at construction sites.

The particularly gendered decisions regarding schooling seem to be reflected in conscious ways by some residents of Valasooru. Maarappa, who sends both his sons to school but not his daughter, opined that "girls are meant to be at home and look after the household. I do not prefer to educate my daughter" (interviewed on 26 November 2014). Giriamma, a 16 year old girl from Valasooru who was pulled out of school after Class 2, refers to a fairly widespread rationalisation thus:

> My mother does not prefer me and my sisters going to school. She wants us to help her with the household chores. She says that if I study further then it will be difficult to find a groom (interviewed on 1 December 2014).

Such qualitative data help advance an explanatory mechanism for outcomes in Valasooru. As in Chennooru, the coming of the dam and availability of water for irrigation did produce an initial shift to paddy cultivation. However, paddy cultivation ran into trouble due to the geographic location of Valasooru as a "tail-ender" and a complex of other factors, including the fact that the numerically dominant (Kuruba) community did not revert to the earlier stable livelihood (that is, raising sheep). Consequently, migrant work (a livelihood enhancing practice) became the mainstay of most residents of Valasooru. However, unlike Chennnooru, this practice—aided by a set of culturally shaped understandings of girls and boys in terms of schooling—arguably caused the fall in enrolment in early 2004 at the local school (Figure 4).[21] That the reduction in enrolment was particularly striking for girls relative to boys, as the above account reveals, is confirmed by Figure 10 (second graph) which plots sex-wise enrolment over time for Valasooru.

Banadooru: Unhappy Tale of Social Conflict: The comparison of Chennooru and Valasooru points to the clear schooling implications of the introduction of irrigation and consequent changes in livelihood patterns. In Chennooru's case, the

livelihoods enhancing practices were a key mechanism, and we argued that social cooperation was an additional, enabling mechanism—and that together they were *sufficient* to explain schooling improvement in Chennooru. The contrast with Valasooru helped to reinforce the importance of the first mechanism in Chennooru. The contrast with Banadooru, developed below, helps to reinforce the importance of the second mechanism (social cooperation) in Chennooru.

Banadooru is about 12 km from Chennooru. It has a larger population than the other two villages and is composed largely of Nayakas and Kurubas (who form about 35% and 40% of the population, respectively). As in Valasooru, Madigas (along with Holeyas in this case) constitute about 10% of the Banadooru population. Interestingly, unlike the other villages, the UKP did not reach Banadooru, and so there were no attendant livelihood changes. Given the lack of canal irrigation, residents continued to grow non-paddy crops (jowar, bajra, cotton) throughout the period that the other two villages experienced cropping changes.

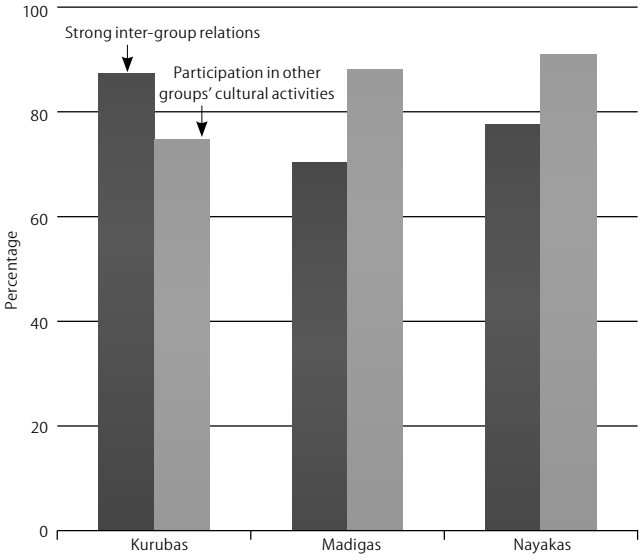
Based upon the local histories that we collected, we surmise that there was a big "event" in Banadooru which strained the relations between the two largest communities, the Nayakas and Kurubas, an event connected to particularities of the local political economy. Given the Kurubas' combination of shepherding and farming, both of which generated good incomes in this period, the Nayakas regarded them as economic rivals. However, the Nayakas dominated the village politically by asserting their high status. For instance, they are known as "Doregalu," descendants of the royal family of Shorapur.[22] Further, the biggest local political leader is from the Nayaka community and has connections with the royal family. Two particular events are part of the "folklore" of the villagers. Despite their being memorialised (and most probably embellished in different ways across the communities), we find it important to place them as part of the social mechanisms at work in the village.

The first was a "love affair" between a (female) anganwadi teacher and a local (male, married) leader; the former was a Lingayat from outside the region, the latter was a Nayaka with connections to the powerful local political leader. When it came to light (around 2000–01), it triggered a sense of anger and suspicion towards the school and teachers.[23] While Nayakas were upset about the teacher, the affair lent credence to a longer-standing distrust of Kurubas towards the Nayakas since they had long believed that schoolteachers favoured Nayaka children. The latter perception itself developed over some time due to perceptions of how the powerful local political leader influenced the school. The second "event" reinforced these perceptions. The Banadooru school had begun to receive local government (gram panchayat) funds for its School Development and Management Committee (SDMC) from around 2002. However, these funds were mired in corruption allegations and school mismanagement. Kumarappa, a teacher who worked in the school for more than 10 years, surmised:

> Post-Sarva Shiksha Abhiyan [a large, over-arching government initiative in education], the SDMC started receiving funds from the gram panchayat. Once the money started flowing in, the members of the SDMC along with a few teachers started fighting among themselves over the money. There was increased interference from the local politician and a few dominant people, in matters related to the school and its functioning (interviewed on 25 November 2014).

The fight over SDMC funds in turn led to increased conflict between particular families which supported different SDMC members.

Figure 11: Inter-group Relations in Chennooru (2015)



Darker bars present answers to the question: Do all communities live harmoniously in the village?
Lighter bars present answers to the questions:
* Do you participate in the functions of other communities in the village?
* Do you celebrate any pan-village fair/festival?

As a result of these two events, which were viewed along Kuruba–Nayaka fault lines, the school did not function well, and several families—both Nayaka and Kuruba—stopped sending their children to the village school. Some Nayaka and Kuruba families sent their children to schools in Shorapur and Tumkur. Also, the Namma Shale programme which was a success in Chennooru failed in Banadooru as the people refused to participate, largely because of the school–community distrust. Amidst these incidents, a teacher got suspended and transferred, others actively sought and took transfers, and at one point the school was run by a single teacher.

This narrative of Banadooru helps identify a key conditional factor—namely, intra-village social cooperation—that enabled Chennooru's livelihoods change to lead to improved schooling outcomes. This factor manifests itself positively in Chennooru (enabling village-level collective action) and negatively in Banadooru (social conflict). Bhairappa, the Village Accountant of both Banadooru and Valasooru, sums up the situation gravely:

> If you want to do some kind of development in Valasooru, you can—but you cannot develop Banadooru. In order to retain their political dominance, the upper class Nayakas try to undermine the economically advanced Kurubas…Though the local politician owns fields in Banadooru and often visits it, no significant development has happened there. Amidst the conflict between the upper class Nayakas and the Kurubas, the poorer Kurubas and particularly poorer Nayakas and Madigas have suffered. Banadooru is a *sudagad ooru* ('graveyard village') (interviewed on 8 December 2014).

Since the comparison with Banadooru revealed the importance of social cooperation, the Chennooru survey had also asked respondents about their perceptions on inter-group relations. Figure 11 (p 62) shows the results by group. The vast majority of respondents reported that inter-group relations were strong and that they participated in other groups' cultural activities.

The comparative exercise, while useful, points to the epistemic limitations of the search for enabling/conditional factors: we cannot know what other conditional factors (besides social cooperation) might have enabled the specific livelihoods change in Chennooru to produce good schooling outcomes. Perhaps more such comparisons would be fruitful in this regard, although clearly there is luck involved in managing to compare with a village such as Banadooru where a particular event happened by chance, which in turn triggered the focus on inter-group relations as a potential enabling factor in Chennooru.

Finally, although it is obvious, it is nevertheless worth mentioning that there are factors common to all study villages and for our chosen time period, which would affect the *levels* of schooling in each, but which would therefore not affect the *differences* in schooling levels across these villages. One such factor that came out clearly during fieldwork was the presence of government-provided subsidies—specifically, SC/ST scholarships and the subsidised ST student hostel in Shorapur town. These are likely to have incentivised schooling especially among these communities. Also worth noting is the National Mid-Day Meal programme, the Sarva Shiksha Abhiyan, as well as a regional programme called the Child Friendly School Initiative (2002–13)—all of which were common across schools and implemented similarly. However, they have less potential to explain the inter-village differences in schooling change uncovered both by our fieldwork and the quantitative data we have presented.

Conclusions

The paper has highlighted the work of two social mechanisms working together—livelihoods enhancing practices and a mechanism of social cooperation. Chennooru showcases both mechanisms acting together whereas the other two villages showcase what happens when either of the two social mechanisms fails (livelihoods enhancing practices failure in Valasooru, social cooperation failure in Banadooru). To enhance our case-based explanations, we have also identified other enabling and disabling factors at work keeping in mind that it is our purposive choice of villages with variability of schooling change which helps unpack underlying social mechanisms. Going back to how we began this paper, we submit that the two social mechanisms we have identified resolve the micro–macro problem since the macro event (coming of the dam and irrigation water) manifests impactfully at the micro-level through the livelihoods enhancing (or not) practices accompanied by the mechanism of social cooperation (or not), both of which cause the sending of children to school (or not) resulting in the related macro-level event of changed schooling outcomes.

Our aim throughout has been to argue for more attention to methodologically approaching the problem of explanation in empirical research. We further suggest that attention to empirically-based explanations that account for local variability set the foundations for robust policymaking. Our paper is part of a much larger project that aims to build ground-up narratives of blocks and districts with respect to the issue of schooling. To this end, we are continuing our work in Karnataka and have also expanded it to Chhattisgarh.

NOTES

1 Admittedly, the quest for *explanation* has been given up or dismissed by particular traditions within the humanistic sciences (for example, Geertz 1973).

2 Even in statistical analyses that incorporate spatial variability, the tendency is to identify and separate "spatial autocorrelation" to get at the "true" relationships of underlying variables.

3 For a succinct portrayal of this problem in the climate sciences, see Lehmann and Rillig (2014). For an analysis of this problem from a methodological and policymaking perspective, see Cartwright and Hardie (2012).

4 See Jacob (forthcoming) for a review of this literature.

5 We chose this taluk because we had access to field resources there through the work of the Azim Premji Foundation.

6 Arguably, literacy rate is a crude indicator of education (and of development), raising concerns of construct validity. However, this is consistent with the education literature. Further, we use literacy rate only in village selection; our fieldwork encompassed more nuanced aspects of education and development.

7 The underlying comparative methodology is the "method of difference" that traces to John Stuart Mill (Gerring 2007). In this approach, units chosen for comparison are similar except for a specific outcome and variable of interest, so that variation in outcome can be potentially (causally) traced to variation in the other variable. For a discussion in the Indian context, see Jacob (2015).

8 Choosing village pairs with similar starting literacy levels helps make the case for starting similarity, although it is of course hardly definitive. Specifically, it is possible that two villages are on very different literacy trajectories, but that those trajectories happen to intersect at the chosen starting point. However, we ensured that this was not the case by checking the 1991 literacy rates of the selected villages.

9 Throughout, we use pseudonyms for villages and particular individuals who we have interviewed.

10 We believe that the underlying numbers are fairly robust because the class-wise trends are also similar.

11 We chose this age group in order to reflect the impact of changes in the 2000s. 10–20 year olds in 2015 would at best have been in primary school in 2005, so the changes of the early 2000s would be reflected in this age-group but far less among the 10–20 year olds of 2005, and not at all among the 10–20 years olds of 1995.

12 Elster (2007: 9, emphasis in original) notes: "The basic type of explanandum is an *event*. To explain it is to give an account of why it happened, by citing an *earlier event* as its cause."

13 The UKP was carried out in three stages which took 40 years for completion. Major parts of Shorapur and Shahapur taluks (of the then Gulbarga District) were covered in Stage 1, Phase 1 of the UKP (Shirahatti and Khepar 2007).

14 We use the term "practice" from Bourdieu (1977) to imply a set of actions that are neither unconscious structure nor agentive consciousness, but micro-level behaviour that creates space for structured innovations.

15 Among surveyed households, in no case did earnings through cultivation or agricultural labour decrease.

16 Interestingly, while Nayaka enrolment plateaus after 2008–09, Kuruba enrolment falls substantially after that peak. Possible reasons for this (which would need more robust data) include the particular ways in which the school structure acts differentially on children of different communities, the differential impact of droughts on paddy cultivators versus shepherds and the concomitant use of children in grazing versus paddy cultivation.

17 Of course, the choice to *not* deploy children in paddy fields also needs to be viewed as shaped through culture—the set of tacit knowledge and information acquired and transmitted through communication, implicit and explicit (Bloch 2012; Richerson and Boyd 2008; Sperber 1996).

18 Although about half the scholarships go to Chennooru, it forms only about 17% of the gram panchayat population, and Nayakas are also present in large numbers in the other three villages of the gram panchayat.

19 In Wade's (1994) study of canal irrigation, "tail-ender" status in villages such as Kottapalle affects socio-institutional processes regulating water use.

20 Complicating this situation was the problem faced by those (few) Kurubas who had leased out their land to migrant Andhra Reddy farmers some of who left without paying.

21 The class-wise trends are also similar, suggesting robustness of the numbers.

22 Although the Nayakas are now listed as a ST, this was not the case until the 1990s, given the Doregalu claims. The transition to ST status came only after that, in order to avail benefits from some government programmes.

23 Although the anganwadi and school are run by separate government departments, the incident created distrust of all government teachers, reinforced by the fact that they were from outside the local area.

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