Arrival of the City
The Impacts of Urban Expansion on Periurban Agricultural Communities of Sangareddy, India

By Kimberly Gibson

Advised by:

Dr. Douglas McAdam
Director of the Program on Urban Studies and Professor of Sociology at Stanford University

Dr. Michael Kahan
Associate Director and Lecturer in the Program on Urban Studies at Stanford University

Dr. Priyanie Amerasinghe
Senior Researcher at the International Water Management Institute

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Abstract

This case study of Sangareddy, India, seeks to understand the impact of urban expansion on periurban agricultural communities and to establish characteristics that describe these communities. Through a mixed methods analysis of primary data collected in the form of oral surveys, interviews, field notes, photographs, and a focus group discussion, this study identifies four main characteristics of the periurban zone: physical transition, social dynamism, creative adaptaton, and having an uncertain future. These characteristics are confirmed through an exploration of the three main observations of changing land use patterns, shifting gender roles, and the move of younger generations to urban employment. The conclusion of this study is that, due to the nature of the transition, urbanization is indeed occurring in periurban Sangareddy, on the household level and at an uneven rate.

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Acknowledgements

Upon hearing that I conducted research in India, most people excitedly ask if it was “an amazing experience.” The answer is unequivocally yes. It was an amazing experience. However, I usually qualify the answer by saying “I didn’t realize ahead of time how disastrous it could have been and I am incredibly lucky in that everything worked out.” Due to the difficulties of traveling in India and complexities of field research, this statement could not be truer for the data collection period of this project. If one piece (the housing, the translator, the farmers, etc.) had fallen through, the summer might have been completely unproductive. Just as I did not realize how many problems could have arisen during my travels until after it was complete, I did not realize how rewarding the experience of writing an undergraduate honors thesis would be until arriving at the finish. For the completion of this monumental task, I am indebted to several people and institutions, most especially Mr. Mohammed Qadir and Professor Michael Kahan.

As mentioned above, conducting field research as a foreigner unable to speak to local language, I was heavily dependent on institutional support from the International Water Management Institute (IWMI), the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Sangareddy Department of Agriculture, and the Resource Center for Urban Agriculture and Food Security (RUAF). From IWMI, I would like to thank Dr. Priyanie Amerasinghe for her support and guidance as well as Mohammed Qadir, Rupsha Banerjee, Virginia Hooper, Judith Christiana, and Aruna Jyothi. I would like to thank ICRISAT for housing me during the summer of 2012 and the Interns of ICRISAT for their friendship and moral support. At the Sangareddy Department of Agriculture, I would like to recognize the extensive assistance given to me by Mr. Mannan Shoukat and Dr. Rama Devi. Lastly, I would like to extend special thanks to Ir Henk de Zeeuw, Director of RUAF, for putting me in contact with Dr. Amerasinghe and IWMI.

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-- Kimberly Gibson
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**Introduction**

In the past half century, a great body of literature has been generated on rural to urban migration and the social transitions that occur from the resulting crowding, informal settlements, and cultural evolution.¹ This body of literature is important, as population growth and urbanization continue to bring people to the city. However, there is another side of the urbanization trend that is affecting a growing population: what happens to rural people when the city grows into them? Understanding the effects of urban expansion on rural communities is important since it is impacting a growing population of farmers, young generations of future workers, and large swaths of productive land, that are important for urban food security.

As cities expand, agriculture at the urban-rural interface is an important food security resource, especially in countries with emerging economies. As seen during the 2008 world food crisis, the burgeoning global population is pushing the limits of the world food supply and will continue to do so unless yields increase or indirect consumption of crops, in forms such as biofuels and meat, declines.² Simultaneously, more than half of the world’s population has become urbanized and cities are extending their physical and social presence into formerly rural areas.³ By 2050 it is projected that 70% of humankind will live in cities.⁴ As rapidly growing cities consume their historic agricultural hinterlands, unique social, economic, and environmental patterns will emerge in the transition. Unless nontraditional food sources can be quickly located, the periurban zone, the area between a city’s urban core and its rural hinterlands, will remain a

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pillar of the food supply. Understanding the effects that the process of urbanization have on periurban communities is important for maximizing agricultural productivity, easing the urban-rural transition, and planning for future growth.

Through a focus on farmers in villages on the fringe – or periurban interface – of Hyderabad, India, this case study seeks to characterize urbanizing agricultural communities as physically transitional, socially dynamic, creatively adaptive, and having an uncertain future. These characteristics were established through a review of outside literature as well as qualitative and quantitative data collected in Sangareddy, a periurban area outside of Hyderabad. The main observations included changes in land use, shifting gender roles, and a transition of younger generations to urban employment – each of which illustrate one or more of the four characteristics described above. The following paragraphs will outline the relationships between the primary characteristics of a periurban area and the main observations from Sangareddy.

The physically transitional nature of the periurban zone is illustrated in Sangareddy by changing land use patterns. Driven by rising land prices, rising wages, and climatic variability, farmers in Sangareddy are selling their land for the development of factories and high density housing, or to land prospectors who will hold it in hopes of selling it at a higher price in the future. The profits made from these sales, or from supplementation of family income with wage labor, are often put toward building a new, urban-style home for the family, buying new land further away from the urban fringe, or on one-time gambling or alcohol sprees. The impact of these changes on the periurban area is an increasingly built-up landscape and the loss of agricultural land.

An alternative land-use change made by farmers is to switch to less labor-intensive crops. Most farmers in Sangareddy have historically grown rice and vegetables for family consumption
and sale in the village market. Increasingly farmers are growing cash crops such as sugar, teak, and mangoes. These new crops are altering the agricultural landscape and therefore also exemplify the physical transition that is characteristic of periurban areas.

The social dynamism that is characteristic of periurban areas is most clearly observed in the changing gender roles that are revolutionizing the rural social structure prevalent in Sangareddy. Though male-headed joint-family households remain prevalent, women are gaining access to decision-making power, ownership of farming inputs like land and tools, and empowerment through education and self-help groups. This change is driven by a creative adaption to declining farm profits: male migration to employment in urban industries. The resulting increase in female autonomy is supported by the Department of Agriculture as well as women’s self-help groups and education. The changing gender roles in periurban agricultural families of Sangareddy are illustrative of the social dynamism that defines the periurban interface.

The uncertain future of development in a periurban agricultural community stems from both of the physically transitional and the socially dynamic nature of the area. However, the lens through which this uncertain future of development will be explored through this study is occupational inheritance and the rate at which young people choose to switch from farming to urban wage labor. As shown by studies in both the Midwestern United States and periurban Hyderabad, agricultural skills are passed down from one generation to the next, allowing children who have worked the land with their parents to be more profitable when they inherit and farm in their own right.\(^5\) Young people who leave the farm for urban labor will have less knowledge and so are less likely to return at all or, if they do return, they are often less

successful. In this case, urbanization has occurred on a family level because the tradition of farming has not been passed from one generation to the next in these families. Multigenerational, patriarchal, and joint families that are typical of rural India exert considerable influence on the lives of young people. Therefore, parental perceptions of the possibility for social mobility and the future political and economic climates affect the pace or completion of the occupational transition. The result of this fine grain, household level urbanization is that the future of periurban communities – whether they will continue to urbanize, remain periurban or revert to a rural status – is uncertain.

The last major feature of a periurban interface is creative adaption. This is the ability of individuals and families to find solutions to the challenges presented to them by urban transition. As mentioned, each family faces the transition in their own way, resulting in an uneven rate of urbanization and uncertain future for the periurban area.

Neither scholars of urban centers nor those of rural areas have explicitly explored the unique ways in which periurban individuals, families, and communities respond to the shifting urban environment. As cities in the developing world grow to accommodate booming populations and internal migration, the periurban zone will continue to be a source of agricultural products, labor, and undeveloped land. The periurban zone is a point of arrival for urban migrants, development, and culture. However, within the rural-urban interface are existing communities into which the city itself arrives. This thesis seeks to explore and characterize the impact that these arrivals have on existing communities such as, periurban Sangareddy, India.
Literature Review

The urban rural dichotomy, while useful for categorizing communities, does not give an accurate representation of the spectrum of human habitation. A litany of terms exists to describe what comes in between: suburban, ex-urban, periurban, and urban fringe-land, among others. These terms each occupy a unique niche in the literature, with suburban and ex-urban popular for description of areas around cities in the developing world while periurban and urban fringe-land occupy the literature of the developing world. For the purposes of this project, periurban is the most applicable for describing the study site, offering social context, and explaining the findings. This is because it specifically refers to an area in active transition, usually from agriculture to industry. In this section I will explore the unique physical and social dimensions of the periurban interface, between urban and rural areas, including the international context, development vulnerabilities, transitory nature, and creative adaptation.

According to the Population reference Bureau, only 3% of the human population lived in urban areas in 1800. That percentage grew to 14% in 1900 and 50% in 2008. Urbanization has continued, and in 2012, approximately 51.3% of the total population lived in urban areas. With this acceleration of urbanization has come a growing body of literature dedicated to the study of communities on the fringes of urban centers.

The Oxford English Dictionary entry for the term “periurban” notes that the first introduction of the term was in the 1935 *Economic Geography Vol. 1*. Periurbanism specifically refers to a zone within the rural-urban spectrum of a city, marked by increasing density of...
buildings, transitioning industries from agriculture to factories or retail, and a changing social structure. The term periurbanism is used specifically in the context of countries with emerging economies. In the literature, it is usually described as a periurban interface, a periurban zone, or a periurban area. The term is not commonly used in American English, finding more popularity among British, Australian, Indian, Chinese, and African scholars. The spellings “peri-urban,” “peri urban,” and “periurban” are interchangeable. For the purpose of this project I have chosen to use “periurban.”6 A Google Scholar search for the term yielded 18,100 results from the year 2012-2013. The following Google Ngram7 shows the increase in the frequency with which the term has appeared in English language books over the last 200 years.

The physical space referred to as periurban lacks a strict definition across the literature. In “Environmental Planning and Management of the Peri-Urban Interface: Perspectives on an Emerging Field,” Allen describes it as “an ‘uneasy’ phenomenon, usually characterized by either the loss of ‘rural’ aspects (loss of fertile soil, agricultural land, natural landscape, etc.) or the lack

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6 "peri-urban, adj.", OED Online. March 2013. Oxford University Press. 29 April 2013
of ‘urban’ attributes (low density, lack of accessibility, lack of services and infrastructure, etc.)

Other definitions likewise focus on density, urban access, and social change.

As cities grow in population, they typically increase in both density and area. Glaeser, Gyourko and Saks show in the model presented in “Urban Growth and Housing Supply” that the physical expansion, density, and longevity of cities is linked to the price and quality of the cities’ housing stock as well as the local regulations on growth and availability of land. As will be further explored in the following chapter on land use and development, the price of land and housing is one reason why the periurban communities are attractive for development. One way of measuring the point at which a periurban community has become urban is when housing and land prices are competitive with other parts of the urban core. Another physical measure of periurbanization is the presence of pollution derived from urban industry. Due to their close physical proximity, periurban zones are the first to be impacted by the consequences of urban expansion. As shown by the examples of Accra in Ghana, Mexico City in Mexico, and Sao Paulo in Brazil, periurban areas are heavily impacted with air pollution, solid wastes, and social change when cities grow.

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While the bricks and mortar laid down in the process of urban growth influence the surrounding land, other factors such as roads and regulations have an effect on the size of the periurban zone around it. This is because the periurban zone is part of a spectrum. The periurban spectrum could include, for example, a village that is able to access the city by a new freeway or whose young people find work in a factory that leapfrogged strict urban pollution control policies. Physical proximity is important, but infrastructure that facilitates urban access can make a periurban area out of a more remote locale.

In addition to land use and urban access, social change is another main focus of research on the periurban interface. While few studies explicitly define the periurban zone as socially transitional, many use localities that are nominally “periurban” to study social change. For example, numerous comparative studies, have contrasted informal economies, family structure, or health care in rural, periurban and urban communities. The social dynamism is a defining feature of the periurban zone, an integral part of its transient nature.

While many studies have contrasted the social environment of the periurban zone with urban and rural contexts, few have examined the reasons behind the differences. Those that have conducted exploratory research have found patterns unique to the periurban setting. Most notably in a recent study by the Food and Agriculture Organization of the United Nations, which found that periurban men are migrating into the urban wage labor markets, leaving the farming to their

14 Webster, Douglas. *On the edge: Shaping the future of peri-urban East Asia.* Asia/Pacific Research Center, 2002.
wives and daughters.18 Typical rural to urban migrations, in contrast, involve rural women leaving the family to work as domestic servants in urban homes.19 This may be attributable to the fact that the periurban to urban migration is daily or weekly whereas rural to urban migrations are often for a period of years. The distinctly periurban pattern of urban migration allows men to maintain nominal control over the family while, in fact, giving considerably more autonomy to women. As a result gender roles in periurban families occur in unique stages and patterns.

Another aspect of periurban communities that makes them unique is the changing nature of their governance. As cities grow, they annex unincorporated lands and bring existing communities under their jurisdiction. As the land changes from farms to factories, and the population grows and shifts from farmers to urbanites, the need for certain types of governance changes. For example, extension services offered by a Department of Agriculture to support local farmers and improve cultivation methods are an indispensible resource for a rural community or a periurban area in the first stages of transition. However, when farmers change occupations or move out into less developed hinterland, this service becomes useless and the department will close its doors.20 A more impactful change than the demise of a single department is the shift that may occur in the entire governmental structure.

In the context of India, five-person councils or panchayats rule over rural, unincorporated villages. These panchayats are grouped into mandals that then report to a district office. Urban areas also report to the district level office, but their local governments are divided into wards and municipal corporations rather than panchayats and mandals. Periurban communities may

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20 Interview with Dr. Rama Devi, Sangareddy Department of Agriculture, July 4, 2012
experience a change in governance early in their transition from rural to urban if the annexing city is planning ahead of the development. However, more frequently, the periurban areas urbanize at an uneven rate such that parts become quite urban before they are annexed and given governance befitting a densely settled, industrial area.

In this study of periurban Sangareddy, most of the observations that are identified as signs of urban transition are solutions that communities have found to face challenges presented by urban growth. For example, to combat rising labor prices due to competition with urban industries, some farmers are switching to less labor-intensive crops, like teak, sugar, and mangoes. Other examples of periurban creative adaption will be identified throughout the analysis. The literature around creative adaptation in cities has been primarily focused on either the struggles of rural communities adapting to natural disasters or the social pressures faced by slum dwellers. It is important to distinguish that periurban villages are a distinct category of community from slums. Although they frequently are low-income, they do not have the complete informality, lack of basic services, and extreme density found in urban slums. And though equally vulnerable to climate change, periurban communities are not quite as isolated as rural villages. Despite these differences, the theories of creative adaption, which speak to the ability of individuals to find solutions to their own problems, appear to apply equally well to the periurban zone.

21 Allen, “Environmental planning and management”
Past studies of periurban zones have been primarily focused in Africa and Asia. This study focuses on India, which is of particular interest since it has a large rural population that is rapidly urbanizing into large towns, cities and megacities. According to the McKinsey Global Institute, Indian cities are projected to have a combined population of 590 million people by 2030 – this means that 68 cities will have populations of over 1 million, requiring the construction of as much as 900 million square meters of commercial and residential space each year as well as the paving of 2.5 billion square meters of road. This immense investment will accommodate the burgeoning population and generate jobs, however, it will also have a significant social and environmental impact.

Figure 4: Map of India

Hyderabad, India a rapidly growing city of 9 million people, presents an interesting case study since the researchers at the International Crops Research Institute have studied its

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periurban zone for the Semi-Arid Tropics since 1972. Additionally, between 1995 and 2004, city elites intentionally developed the periurban areas on the northwestern fringe of the city into HITECH city, an information technology office park surrounded by a cluster of new developments. The resulting expansion of the city limits in 2007 redefined the urban zone. The building of the Nehru Outer Ring Road around the new metropolis and the upgrading of the many transit corridors that connect the city to neighboring regions, has resulted in unprecedented connection between the urban and formerly rural – now periurban – zones.

Figure 5: Map of Hyderabad
Methods

Research Setting

The interface of agriculture and urbanization in periurban communities is a global issue that will remain important as the human population grows and moves into necessarily expanding cities. I chose to base my study in Hyderabad for several reasons including India’s rapid rate of urban expansion, existing literature, and access to the study population. As a major information technology hub, Hyderabad and its twin city Secunderabad, have been rapidly growing in both physical size and population over the past decades. Between the censuses of 2001 and 2011 the total population of the state of Andhra Pradesh grew 11%. During this same period the urban population grew by 36.24%.27 This indicates a significant rate of urbanization within the state due to urban-rural migration and the incorporation of formerly rural communities into municipal entities.28 As the principal city and capital of Andhra Pradesh, Hyderabad accounts for much of the urban growth. In 2007, the addition of 12 municipalities to the Greater Hyderabad Municipal Corporation expanded the city from 165 sq. km to 675 sq. km.29 This pace of growth allows for the study of the changing social dynamic of periurban communities over a short time period.

Hyderabad is the location of one of the South Asian offices of the International Water Management Institute (IWMI), which is one of the major research organizations that have studied periurban agriculture. Through contact with the Resource Centers for Urban Agriculture and Food Security (RUAF) Foundation, I was able establish a working relationship with Dr. Priyanie Amerasinghe, head of the IWMI Hyderabad office and a senior researcher in biomedical research.

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sciences. Dr. Amerasinghe and IWMI provided me with access to a translator, local transportation, office space, and housing during the summer of 2012 while I conducted my research. Additionally, IWMI and its partner International Crops Research Institute for the Semiarid Tropics (ICRISAT) are well known and respected by local farmers and the department of agriculture. By being affiliated with these organizations, I was able to access local officials and farmers more easily.

Within the periurban zone of Hyderabad, I chose the mandal of Sangareddy as a primary area of study. A mandal or tehsil, is the third division of government below the state, and is a designation given only to rural or unincorporated communities. It consists of a village or
collection of villages, and is ruled by a 5-person council called a Panchayat. There are 43 mandals in the Medak district and 46 villages.

As shown in the accompanying flow chart, the mandal is a very local level of government. The Government of India is the highest level of government. It rules above state governments, which in the case of my study site is the Government of Andhra Pradesh. Hyderabad is the capital of Andhra Pradesh. Beneath the state government is the Division. There are 3 divisions in the state of Andhra Pradesh including Telangana, Costal Andhra, and Rayalaseema. Hyderabad is located in the Telangana district. Within the divisions are district governments. Hyderabad is spread over three districts including Medak, Hyderabad, and Rangareddy. Sangareddy mandal is located in the Medak District and is the home of the district head quarters. The district government is run by a state appointed “District Collector” and elected assembly charged with overseeing the urban and rural governments beneath it. Depending on the size and local legal tradition, a city may be ruled by a municipal corporation or a municipal government or a city council. As a large city with a complex legal history as an independent state under the British Raj, Hyderabad has all three of these governing bodies, which govern it in concert with each other. The city itself is divided into wards. Outside the city, also reporting to the district, are the mandals.

Sangareddy is the headquarters of the Medak district. Sangareddy is approximately 150 square kilometers with a population of 256,525 people. It is 26 kilometers from Pantancheru, where I was based at ICRISAT. The Sangareddy Department of Agriculture and ICRISAT have worked together on numerous

Figure 7: Monsoon clouds in the sunset over the crop research fields of ICRISAT.
initiatives and I was able to use that relationship to come in contact with Dr. Rama Devi, the Assistant Director of the Sangareddy Department of Agriculture. I interviewed Dr. Devi on two occasions and she put me in contact with Mr. Mannan Shoukat, known to me as Mr. Mannan, the local extension officer who works with farmers in the villages of Sangareddy. Without Mr. Mannan I would have been unable to create as extensive a dataset, since without his recommendation, most farmers were wary of my intentions and uneager to answer my questions.

Initially, I attempted to conduct a random sample independent of the Department of Agriculture. However, due to the busy schedules and reticence of the farmers to interact with me, I ultimately became dependent on Mr. Mannan. Mr. Mannan took me to villages where he knew farmers would be available for surveying and interviewing (he called them ahead of time) and ones known to have active female farmers. The choice to study on female farmers was due to the original intent to focus the project on gender roles and the participation of women in periurban agriculture. Because my data revealed other interesting aspects of periurbanism, I chose to expand the project to include land use and generational succession, but this decision was made only after the data collection was completed. The reasoning behind this decision and its effect on the analysis will be discussed in the next section. In each village I interviewed every available female farmer. It is difficult to know what percentage of the total population of female farmers were interviewed, since participation in agriculture is a private family matter not studied by the government.
The Sangareddy Department of Agriculture presides over three mandals, including Sangareddy, Pantancheeru, and Kondapur. I surveyed villages in all three of these mandals, but the majority of surveys were conducted in Sangareddy. To be concise in the forthcoming discussion sections, I will refer to the study area as “Sangareddy” since all but 2 of the villages were within the boundaries of this mandal. The two villages outside the mandal were Girmapur and Pantancheeru. Girmapur, in the Kondapur Mandal, was demographically similar to the neighboring villages across the border in Sangareddy. Pantancheeru, the head quarters of Pantancheeru mandal, is quite distinct from the other study villages, as it is quite urbanized and
lies within the Nehru Outer Ring Road. The effects of this difference will be explored in the discussion sections.

Interviews and the focus group discussion were also collected in the villages with the assistance of Mr. Mannan. The interviews were conducted in Taldipalli on August 1st and August 10th. The focus group discussion was conducted in Fasalwadi, a village 5.5 kilometers northeast of the village of Sangareddy. During these meetings, Mr. Mannan kindly preoccupied the subjects’ relatives so that I could speak with them uninterrupted with Mr. Qadir, my translator. Participation in the interviews and discussions was based on availability, though I specifically requested to speak with older women, in hopes that they might be able to offer insight on how their communities have changed over time.

The villages themselves were small collections of residences surrounded by agricultural land. As will be discussed in depth in the Land Use and Development Chapter, the residences were a mixture of traditional homes and more modern constructions. The historic homes are built of “red mud, stones, and bricks… [and] whitewashed with limestone powder from inside to give a smooth finishing.”\textsuperscript{30} The survey collection and interviews were conducted in a village home or on occasion, in the field.

\textit{Data Collection}

My analysis is based on primary data, which I collected through oral surveys, individual interviews, a focus group discussion, and personal field observations during the summer of 2012. The surveys were all conducted with the help of a translator, Mr. Mohammed Qadir. Surveys were administered in periurban villages, mostly in the homes of respondents or other village farmers. A few of the surveys were conducted outside in the fields where farmers were working.

\textsuperscript{30} Qadir, email April 23, 2013
The interviews were likewise conducted in or around village home. The focus group discussion was conducted in a small room adjoining a public office. Researchers at IWMI and the department of agriculture discouraged compensation on the grounds that it was not standard practice and might create an incentive that farmers find difficult to decline, regardless of their actual willingness to participate. In compliance with unofficial local research standards, survey respondents were not compensated. When appropriate, I brought snacks to share with the participants and their children as a gesture of gratitude.

Surveys

The survey was designed under the guidance of Dr. Amerasinghe and included several questions aimed at collecting variables for her own future research. We modified existing surveys used by IWMI researchers to study male farmers. Each survey took between 20 and 40 minutes to conduct – depending on the number of interruptions and how the respondents answered questions that had nested follow-up questions. All of the surveys were collected orally and all of the respondents spoke in Telegu, which was translated into English by Mr. Qadir. During the session, I recorded responses on prepared forms. Several respondents declined to answer questions either on the grounds that they had run out of time or were uninterested in sharing personal information. The latter case was especially common when many people were present in addition the respondent. Mr. Qadir and I sought to minimize the audience during our meetings. However, due to the cultural standard of female modesty, we were
rarely allowed to be alone with respondents. None of the respondents agreed to have their responses recorded in an audio or visual format.

A major challenge when conducting surveys was privacy. As mentioned, in most cases, several people were present during the administration of surveys including children, relatives, and village men. The respondents were often interrupted and their responses may have been biased by the presence of other people. As much as possible, I kept field notes on how many additional people were present, what their gender was, and what their relationship was to the respondent. In the frequent event that a man answered for the female respondent, Mr. Qadir and I would try to ascertain whether or not the women would have answered in the same way by asking her other, similar questions once the interrupter had left or had been asked not to respond. I also took note of which questions were interrupted and to what extent.

My survey sample population was female farmers. I defined female farmer as a woman who participates in agricultural activities and is a member of a landowning village family. This definition was used to eliminate from my sample the large population of female day laborers who work solely for wages in the fields of other families and who do not have their own farms. This distinction was made under the assumption that wage laborers would not participate in the agricultural decision-making process of their employers. Some of the respondents worked as wage laborers in addition to working on their family farms. This was noted on the survey response forms.
Originally, the focus of the project was to investigate the impact of female participation in decision making on periurban agriculture and gender roles. For this reason, the sample was limited to women who were actively engaged in their own family’s agricultural operation rather than day laborers who were working for wages in the fields of other farmers. It was through collecting the additional information in the interview, focus groups, and field observations that the project was expanded to include a more general analysis of the effect of urbanization on periurban agricultural communities. The fact that the respondent population was narrowed in the aforementioned way resulted in certain sample biases. These included stronger deviation from historic gender roles, a below average awareness of regional development and a greater emphasis on children’s education and employment migration. These biases will be discussed in greater depth in the analysis sections.

The surveys were analyzed using IBM’s Statistical Package for Social Sciences (SPSS). Respondents were each given a four digit code that recorded the date of their survey collection and which number survey they were that day. For example, 6243 is the code that would have been given to the third survey collected on June 24th. Responses were given numerical codes that enabled the software to generate variance tables and Pearson correlations. Due to the small sample size of 24 respondents, very few tests revealed significant results. However, when backed by the qualitative data collected in the interviews and focus group discussion, the analysis is sufficiently supported.

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Interviews

Interviews were conducted with the department of agriculture and village elders. The interviews with the department of agriculture officials, Rama Devi and Mr. Mannan Shoukat, focused on trends across villages and the department programs. These interviews were conducted in the office of Rama Devi or in the IWMI car, which Qadir and I drove between ICRISAT, Sangareddy and the villages. In both cases, the officials were quite willing to speak with me, but it is important to keep in mind that politics might have motivated some of their responses. These interviews were structured around major questions that were prepared in advance. Both Mr. Mannan and Dr. Rama Devi preferred to speak in Telegu and so their answers were translated by Mr. Qadir and recorded in a notebook. Neither Mr. Mannan nor Dr. Devi was comfortable having their responses recorded in an audio or visual format.

Three interviews were conducted with elderly village women. The women were selected for their age in hopes that they would be able to offer their observations of how urbanization has affected their communities over time. Due to time constraints and availability of interviewees, all three of the interviewees were residents of Taldipalli. This likely had a great effect on the range of answers given to my questions. Despite this limitation, the
interviews yielded very interesting results, mostly in the form of personal anecdotes and confirmations of information given by the survey respondents.

In general there were far fewer interruptions to the interviews as compared to the surveys. This may have been due to the greater authority of the older women, who, though subordinate to the family patriarchs, were much more able to silence the younger generations. Additionally, there were fewer people present during these meetings than there were during the survey collection. This is attributable to the fact that they were conducted when younger farmers were away tilling and planting. In each of the interviews, Mr. Qadir translated my question, asked in English, into Telugu for the interviewee. In turn, he translated each Telugu response into English for me. The responses were recorded by hand, as none of the interviewees was comfortable with audio or visual recording.

The interview notes were coded for major themes and used as supporting evidence in the analysis of the survey data. The interviews were not used as the primary focus of the analysis, since the information captured was less detailed than that of the surveys due to the slower nature of handwriting notes as compared to checking boxes on a survey form. Despite this limitation, the interviews offer valuable information and contributed a more personal quality to the research with opinions and emotions that were not catalogued by the survey.

One additional interview was conducted in April of 2013 with Maneeshika Madduri, a part-time resident of Hyderabad who is currently a student at Stanford University pursuing a master’s degree in electrical engineering. Ms. Madduri offered commentary on my preliminary findings and compared them to her own experience as a young woman living in the urban core of Hyderabad. Ms. Madduri’s interview was conducted in English in a private setting with no interruptions. Her responses were recorded in the form of typed notes, which were not
independently analyzed, but used in a few instances for comparison with the survey and interview data presented in the chapter on changing gender roles.

**Focus Group**

The focus group was a discussion held with 6 women in the village of Fasalwadi. It touched on many of the same questions as the survey, but differed greatly in that it was more conversational and conducted in a much more private setting than the surveys. Although not heavily cited in the analysis, the focus group discussion was the most valuable insights into the lives of women and their own emotions concerning the subject of social change in their communities. It was in this setting that I truly began to understand the importance of self-help groups, discussed more in the gender roles chapter, in which women create a safe space for themselves and confidently express their opinions, stories, and ideas.

The focus group is not heavily cited because the lively discussion required more participation on my part and so reduced the quality of the notes taken. As in the other forms of data collection, the women in the focus group were not comfortable with recordings in audio or visual format. Mr. Mannan was present to introduce us to the village but was not present during the conversation as he kindly entertained the farmers outside to prevent interruptions. Although Mr. Qadir was present during the focus group meeting, as the participants spoke only Telegu, the discussion was private and uninterrupted by anyone not participating in the group.
**Field Notes**

In addition to the surveys, interviews, and focus group discussion, I kept a typed record of field notes for almost every day I was out in the villages. In these notes I recorded general observations as well as the conditions in which the data was collected. The field notes included many pictures, which I took as a way of quickly documenting settings and events that would otherwise have taken precious time to describe in writing. In additional to daily observations, the field notes and pictures include information on trips Mr. Qadir and I made to the local markets where periurban farmers sell their produce and to Ameenpur, a village where Dr. Amerasinghe was conducting an agronomic study.

The agronomic field trial, which I conducted with Dr. Amerasinghe and Mr. Qadir, was on a farm run by a male farmer. This study was comparing rice grown using conventional methods (fertilized with DAP, Urea, and Potash) and rice grown using homemade compost. By helping with the set up and data collection for this study, I was able to observe a male periurban farmer. Additionally, while in Ameenpur, I was able to have another point of comparison for my analysis of the periurban village form and the changes it is undergoing due to urbanization. Also, at the Ram Reddy Agronomic Study, I was able to work side by side with agricultural day laborers so gained understanding of their work and the overall farming process.

**Figure 15:** Example of photographic evidence. Woman sells produce at the Pantancheru Market

**Figure 16:** Transplanting rice with agricultural day laborers at the Ram Reddy Agronomic Study
Limitations

As referenced in the data collection section, there are several important limitations to this study. Primary among these are the small sample size, time of year in which the data was collected, the demographics of the data collectors, and the role of the Department of Agriculture. While it is difficult or impossible to measure the effect of these limitations on the research, it is reasonable to assume that they do not compromise the analysis.

The small sample size primarily affects the significance of the Pearson correlations run as part of the quantitative analysis. Despite the limitations discussed above, it is important to note that the repetition of main themes in all of the different types of data, maybe considered significant findings, as they have reached a point of theoretical saturation. Theoretical saturation is an integral part of the grounded theory method of social research. Saturation, which is reached when no new insights, themes, or issues are revealed with the addition of participants added to the sample.32 Because the main themes of changing land use and development, evolving gender roles, and generational succession were repeated by the participants in each category of qualitative data, the lack of statistical significance in the quantitative analysis does not nullify the findings.

The study was conducted between June 20, 2013 and August 18, 2013, a window of time that overlapped with the monsoon rainy season, the main rice planting season, Ramadan, and the Hindu festival season. All of the farmers who participated in the survey, interviews, and focus groups were Hindu and were actively planting their rice fields during this time. These combined factors greatly limited the availability of the farmers and also may also have influenced their responses to questions concerning the state of agriculture and the community. The overlapping

time of Islamic holy month of Ramadan with the data collection period may also have affected the demographics of the farmers I interviewed. During this time, most Muslims limit the time spent working so as to prioritize prayer and time spent with the family. As such, it is likely that when requests for participants were put out, most Muslim farmers declined. In retrospect, the willingness of Mr. Qadir and Mr. Mannan to continue work on the project during their observance of the Ramadan fast, was crucial to the success of the project and very generous on their part.

That both Mr. Mannan and Mr. Qadir were middle aged, Muslim men and that I am a young, white, unmarried (unusual for my age-mates in India), foreign woman, may have affected the responses given to us by the respondents. All respondents were married, Hindu women and the demographic difference may have roused feelings of suspicion, intimidation, or mistrust. It is also possible that for certain questions, the fact that I was from outside the community, made the women more comfortable with giving candid answers. Without having a parallel study conducted solely by a Hindu woman, it is impossible to measure the affect that this might have had on the data collection.

Lastly, it is important to consider the means by which I contacted these villages, namely through the Department of Agriculture. Because the study was conducted under the authority of Mr. Mannan, it is possible that participants may have felt inclined to give answers that would please him or speak to the work of the department of agriculture. In compliance with IRB regulations, all participants gave oral consent to participate and were allowed to leave the study at any time. The possible bias in their answers cannot be easily measured but should be considered when reviewing the analysis.
The small sample size, timing of data collection, demographic differences, and role of the department of agriculture are all limitations to be considered in the analysis of this data. While all likely had a considerable impact on the quality and quantity of data, none are so significant as to nullify the results.
Chapter 1: Land Use Change and Development

Introduction

The expansion of Hyderabad’s metropolitan region is visibly impacting the city’s surrounding periurban agricultural communities such as the villages of Sangareddy Mandal. Changes consist primarily of modernization of the housing stock and either a shift in cropping patterns or discontinued use of farmland. Using photographic evidence, field notes, survey data, interviews, and outside literature, this chapter will show how the observed changes confirm physical change as part of the rural to urban transition.

Theories of urban growth beginning with von Thunen’s isolated state model\textsuperscript{33} and continuing through current scholarship show that the price of land drives urban growth. Urban Location theory demonstrates how transportation allows urban access to periurban land, which is less expensive than properties in the urban core.\textsuperscript{34} Once transportation infrastructure, like the Nehru outer ring road and the Mumbai highway that run through the study area, have been developed, inexpensive periurban land becomes accessible to urban developers. As a result land prices rise from their inexpensive baseline and farmers have economic incentives to sell their land. Observations of land in Sangareddy that had been purchased by land prospectors or was already beginning to develop, confirm that this process is underway.

\textsuperscript{34} Richardson, Harry Ward. "Regional economics. Location theory, urban structure and regional change." \textit{Regional economics. Location theory, urban structure and regional change}. (1969).
In addition to development driven by the price of land, the findings presented in this section show that rising farm wages and climate variability are also key to the physical transition. The same transportation infrastructure that is increasing the price of land is also allowing more free movement of labor from periurban to urban employment. As a result, the seasonal, physically strenuous work demanded by farmers has to compete with higher paying and less physically demanding urban labor. Additionally, the high wages paid by the national Employment Guarantee Scheme is creating competition for the available labor. Agricultural wages are consequently rising and farm profits declining. In response to this farmers have to find creative solutions in order to maintain their family income. Examples of this include changes in crop choices to less labor-intensive products than rice and fresh vegetables, such as teak, sugar, and mangoes. Other methods of addressing the labor crisis include moving to less urban areas, leaving farming, or supplementing farm income with urban wages by male employment migration and increased female participation in agriculture. Those who do seek urban employment can use the profits of their land sales to build more modern homes suitable for their urban lifestyle. All of these adaptations to rising wages result in observable changes in the land use patterns of Sangareddy.

The last driver of periurban land use change that will be discussed in this section is climate variability that has destabilized agricultural communities throughout the world. In Sangareddy, climate variability is experienced as increased local variability in precipitation.

patterns, heat waves, and drought. In response to this unpredictable climate many farmers have sought creative solutions such as the transport of rice seedlings to fields with more rainfall by truck. A more lasting solution, for which many farmers are opting, is to leave the field and move to urban industries. The result of this decision is a consolidation of farms or the selling of land to developers.

Periurban farmers are adapting their lifestyles to accommodate for rising land prices, rising wages, and climate variability. All result in altered land use patterns such as changes in crops, a modernization of the housing stock, and development. With the exception of climate variability, these changes are driven by urban growth. Therefore, the observed alteration in land use can be identified as an indicator of urban growth and its impact on periurban farming communities.

**Literature Review**

As shown by early urban theorists and empirical evidence, urban growth drives periurban land use change. Starting with Johann Heinrich von Thunen’s *isolated state model* of 1826 the periurban zone has been recognized as an important agricultural resource, though it is often more highly valued for its development potential. Following von Thunen, Robert Murray Haig developed the idea of *cost friction* in his 1926 “Towards and Understanding of the Metropolis.” *Cost friction* asserts that the cost of land and the cost of transportation are inversely related. If all other factors are held constant, aggregate urban land values will fall as land on the fringe of the

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38 Thünen, *Isolated State*
city will be inexpensive with sufficient transportation. Assuming that urban residents are rational actors, these theories speak to outward growth of the city, especially in the age of inexpensive fossil fuel based transportation.

Numerous scholars have modeled the growth of cities into their periurban hinterlands. Behind this kind of growth modeling is the urban location theory, developed by Harry Ward Richards in his 1969 article “Location Theory, Urban Structure and Regional Change.” Urban location theory uses spatial price analysis of land, labor and material goods to define the periurban interface. The theory has been confirmed in more recent studies such as Ingram’s 1998 comparison of city growth in developed and emerging economies, “Patterns of Metropolitan Development: What Have We Learned?” Another example is Choy’s analysis of periurban food security in Australia, “Farming the City Fringe: Dilemmas for Periurban Planning.” Urban location theory offers a useful framework in which to study the effect of urbanization on land use in periurban Sangareddy.

Based on a review of the literature, the effect of urban expansion on periurban communities will depend on physical proximity to the city or urban accessibility. Farmers who are too close the urban-periurban boundary may experience rising land prices and subsequently find economic sense in selling their land to developers and moving to an urban industry or buying farmland farther out from the urban periphery. Farmers working on the periurban-rural border may not feel that they are a part of or related to the city, since the relation is not reflected

41 Richardson, “Regional Economics”
in their land or crop prices. Periurban farmers who do not experience economic pressure to sell their land, but are close enough to the city to be able to have low transport cost, may find it quite profitable to grow highly perishable crops.44

My original hypothesis was that rising land prices due to urban growth and land prospecting would be the primary driver of change in periurban agricultural communities. Based on my findings however, I will argue that, while land sales finance the changing village culture, rising costs of labor are the main reason why farmers choose to sell land, leave land fallow, or grow less labor intensive crops. The following sections will describe in more detail the observed changes and their causes.

Observations

The typical village in Sangareddy Mandal consists of a grouping of homes, historically made out of “red mud, stones, and bricks… [and] whitewashed with limestone powder from inside to give a smooth finishing.”45 The homes frequently have colorful decorations around the door and rectangular tiled roofs. They are built around a central courtyard used for housing equipment and, on occasion, livestock. They rooms are sufficient to accommodate multiple generations. The primary retail is in the form of an open-air market where vendors gather a few times a week. A corner store vending specialty items like soda and packaged food is the other primary form of

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44 Thünen, Isolated State
45 Qadir, email April 23, 2013
village retail. Most village roads are unpaved and the fields surround the residences are used for agriculture.

According to the Department of Agriculture most village farmers use animal and human labor to complete farm tasks, though central government programs are beginning to provide tractors. According to an interviewee, Satgunamma, tractors were introduced to these farming communities approximately 20 years ago. Dr. Devi reported that of the 60 villages administered to by the local Department of Agriculture, each group of 6 villages has been given a single tractor to share. The farmers are responsible for paying for fuel and the driver.

As the city of Hyderabad expands into historic farming lands, farmers are selling land to developers or land prospectors, who lease the land with hopes of selling it at a higher price in the future. The developers build factories, which pollute at levels not allowed in the city proper. As a result air and water pollution are common problems for the villagers. With the money earned from the sale of their land some villagers buy new land farther out and many build new multi-story houses typical of urban neighborhoods. According to Mr. Qadir, these new homes are built with “all the new and latest material available in the market like cement, sand, steel, [and] bricks…different colors [are added] to white cement and [to] make it colorful.” The new homes do not have courtyards to house equipment and livestock, indicating that these homes are built by farmers using modern farm technology or families that have moved

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46 Interview with Rama Devi; Department of Agriculture Office – Sangareddy, July 16, 2012
47 Interview with Satgunamma; Tadlapally Village, August 10, 2012
48 Interview with Dr. Devi; Sangareddy Department of Agriculture, July 4, 2012
49 Qadir, email April 23, 2013
to urban industries. Some farmers lose their new wealth to gambling and substance abuse, and so must become wage laborers on farms, in the factories or other urban industries.\textsuperscript{50}

In addition to urbanization, climate instability and water scarcity are also exacerbating the disruption of periurban agriculture. Agriculture in this area was historically rain fed but recently, irregular precipitation patterns and surface water pollution (caused by the aforementioned factories) have required many farmers to irrigate with ground water pumped through bore wells. The expense of well installation and electricity for pumping adds economic pressure to seek employment off of the farm. As shown in figure 21, in extreme cases, I even observed farmers moving young rice plants that had been sown in one field to a field in a different village where rainfall had been more abundant. Climate projections for the Andhra Pradesh region of India predict that future rainfall will be increasingly variable.\textsuperscript{51}

The majority of farmers in periurban areas, however, are continuing business as usual in their farming operations. That said, significant numbers of farmers are making changes to address the rising land prices, changing labor patterns and climate change. For example, to deal with changing costs and availability of labor, farmers are planting less labor-intensive crops like teak and sugarcane. To prepare for high land prices, farmers are sending their children to school in hopes that the next generation will have options other than farming. Rising land prices, changing labor patterns, and climate change are all contributing to the changes in land use

\textsuperscript{50} Interview with Mr. Qadir; Pati Village, July 5, 2012
\textsuperscript{51} Reckien, “Sustainable Climate Change Adaptation”
observed in periurban villages. The following three sections examine the contributions of these factors on periurban agriculture

**Presentation of Secondary Literature and Field Observations**

**Rising Land Prices**

During the last decade, Hyderabad experienced a housing bubble that was driven by the growth of the information technology industry \(^{52}\). City boosters who invested in the new HITEC City office park near Pantancheru, which caters to new software firms and call centers, encouraged this trend. As a result, a great deal of land was purchased and high-density housing was planned. However, many of these properties remain uninhabitable since developers can no longer finance the development following the worldwide recession of 2008.

According to Dr. Devi, many farmers sold their land and continue to sell their land. The problem has become so widespread, that a neighboring mandal had to close its department of agriculture, due to a lack of clientele. \(^{53}\) My survey respondents did not recognize this trend as a primary driver of change. It is possible that this is due to the fact that my survey respondents were all women who, bound by cultural norms, rarely leave the home and so might not be very knowledgeable about regional development. In response to the question “do you think that the farmland

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\(^{52}\) Interview with Mr. Qadir; Pati Village, July 5, 2012
\(^{53}\) Interview with Dr. Rama Devi; Sangareddy Department of Agriculture, July 4, 2012
you own or lease is likely to be sold to developers,” two of twenty-two respondents, thought her land was likely to be developed and ten thought their land would never be developed. It is interesting to note that the two farmers who replied yes to the question were farming land in Pantancheru, two kilometers inside the Nehru Outer Ring Road. In one case, the ring road could actually be seen from the farm. Several of the farmers who responded “no,” cited their geographical location as a reason. As the real estate market recovers from the crash, and if the information technology industry continues to grow, then land prices may be a future cause for farmers to give up their land. In the meantime, other factors are more significantly contributing to changes in land use.

Table 1: Distance of Respondent’s Farmland from Outer Ring Road

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Village</th>
<th>Kilometers</th>
<th>Do you think your land is likely to be developed?</th>
</tr>
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<tbody>
<tr>
<td>8071</td>
<td>Pantancheru</td>
<td>1</td>
<td>Yes</td>
</tr>
<tr>
<td>8072</td>
<td>Pantancheru</td>
<td>2</td>
<td>Unlikely</td>
</tr>
<tr>
<td>7245</td>
<td>Nagapur</td>
<td>3</td>
<td>No</td>
</tr>
<tr>
<td>7161</td>
<td>Indirakaran</td>
<td>10</td>
<td>Unsure</td>
</tr>
<tr>
<td>7171</td>
<td>Nagapur</td>
<td>20</td>
<td>Unsure</td>
</tr>
<tr>
<td>7251</td>
<td>Chinthalpally</td>
<td>22</td>
<td>Unsure</td>
</tr>
<tr>
<td>7121</td>
<td>Nagapur</td>
<td>25</td>
<td>Unlikely</td>
</tr>
<tr>
<td>8073</td>
<td>Kothlapur</td>
<td>25</td>
<td>Unsure</td>
</tr>
<tr>
<td>8074</td>
<td>Kothlapur</td>
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<td>No</td>
</tr>
<tr>
<td>8075</td>
<td>Kothlapur</td>
<td>25</td>
<td>No</td>
</tr>
<tr>
<td>8076</td>
<td>Kothlapur</td>
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<td>No</td>
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<td>Nagapur</td>
<td>28</td>
<td>Unlikely</td>
</tr>
<tr>
<td>7252</td>
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<td>No</td>
</tr>
<tr>
<td>7253</td>
<td>Taldipalli</td>
<td>30</td>
<td>No</td>
</tr>
<tr>
<td>7255</td>
<td>Taldipalli</td>
<td>30</td>
<td>No</td>
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<td>Nagapur</td>
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<td>Nagapur</td>
<td>35</td>
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<td>Shohour Tanda</td>
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<tr>
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<td>Girmapur</td>
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<td></td>
<td>26</td>
<td>28</td>
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Table 2: Frequency of Responses for Interest in Farming

<table>
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<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
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<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Unlikely</td>
<td>3</td>
<td>41.7</td>
<td>45.9</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>12.5</td>
<td>91.7</td>
</tr>
<tr>
<td>Unsure</td>
<td>8</td>
<td>33.3</td>
<td>79.2</td>
</tr>
<tr>
<td>Total Valid</td>
<td>22</td>
<td>91.7</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Changing Labor Patterns**

The most significant contributors to changing land use found by this study is the changing price and availability of labor. Indian agricultural wages are rising in both real and nominal terms. According to Gulati, Jain, and Staija, between 2007 and 2012, “nominal farm wages increased 17.5 per cent per annum and real farm wages by 6.8 per cent per annum.” The rise in wages has been identified as a major driver of poverty in agricultural communities, where it cut deeply into farm profits. Manual labor outside of agriculture has also experienced a spike in wages. Both within and outside of agriculture, wages for manual labor in India are closely linked to producer price. The 2008 food crisis, India’s major public works projects, and private contracting for urban growth are all considered causes of India’s national wage increases for manual laborers. Trends in periurban wages are similar, and the labor market in Sangareddy is changing in several ways. In the following section I will argue that the National Employment

56 Gulati, "Rising Farm Wages"
Guarantee Scheme, education of the workforce, and shifting gender roles are driving rising agricultural wages in Sangareddy.

The Mahatma Gandhi National Rural Employment Guarantee Scheme of 2005 (EGS) was designed to encourage rural development and employment. The program pays a minimum wage of Rs. 130 (approximately $2.40 per day) for up to 100 days for each unemployed household. The national government pays for the wages and 75% of building material costs, while the state governments pay the remaining portion of the budget. One third of the jobs are reserved for women. While fraught with corruption and criticized for maintaining cycles of poverty, the EGS is preferred by workers who feel the jobs are less strenuous and higher paying than jobs provided by private construction firms or farm labor.58

Mr. Mannan as well as my survey respondents, interviewees, and focus group participants cited the EGS as being a cause for rising wages for farm labor. Satgunamma, who has seen lots of change in estimated 60 years that she has lived in Taldipalli Village, commented on this change in her interview. She said, “Laborers are earning more money because the city provides more stable wages. It used to be that the landlord was honored and respected. Now with the employment scheme, payment is given to the laborers with no benefit to the farmers. The farmers are just breaking even.”59 T. Sangamma, age 60, reported that in her youth, she worked for 0.5 rupees per day and that workers were regularly hired for 0.5-1 rupee per day. For many years, 5 rupees was

58 Ramsurya “Core Sector Builders”
59 Interview with Satgunamma; Tadlapally Village, August 10, 2012
a stable price for a day’s work until farmers themselves increased pay to get labor done more efficiently. Now, she reported, the laborers are earning more than farmers. While both interviewees did not give time specificity to their observations, the supporting evidence from other respondents suggests that the spike in rural wages was driven by the EGS.

Though unprompted by the survey, seven of the twenty-four respondents explicitly mentioned the price of labor as a concern or threat to their farming operations. All of the survey respondents use hired labor on their farms and most also work as wage laborers on other farms to supplement the household income. In addition to the survey respondents, Mr. Mannan, Satgunamma, T. Sangamma, and Nagama all listed the price of labor as a major concern in their interviews.

In addition to rising wages, the availability of labor has been affected by urbanization and increased access to education. As young people in rural communities gain access to education, many prefer the urban jobs that their education qualifies them for. As I was repeatedly reminded by several respondents, farming is back-breaking work that requires people to be tied to the land and work every day of the season regardless of heat, rain, or illness. Young people are seeking employment off the farm as domestic servants, factory workers, or any other type of nonagricultural work available to them. The women said this was especially true for girls, who are increasingly gaining access to education: “If you teach a few words of English, she would rather stay home doing nothing, than do farm work.” As young people move away from farming, the availability of labor declines.

One survey respondent, Bharadamma, showed me her

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60 Interview with T. Sangamma; Tadlapally Village, August 10, 2012
62 Focus Group Discussion; Fasalwadi Village, August 14, 2012.
family’s solution to the labor crisis. Betting on a slower pace of development, the family chose to plant some of their land in teak trees. The teak will be harvested for lumber when it is 25 years old, and in the meantime the trees will need very little labor to maintain. While this solution was not common in Sangareddy, it illustrates how cropping patterns are creatively shifting to accommodate the new reality of high wages.

The EGS and decreasing availability of agricultural labor are increasing the cost of labor. Survey respondents reported an average price of labor at 250 rupees per day. This is as much as 400% of the wage reported to have been earned by the older interviewees in their youth. These high wages are cutting into farm profits and encouraging farmers to make radical changes. While some are creatively combating the situation, many others are choosing to leave the field or encouraging their children to do so.

**Climate Change**

While not a direct result of urbanization, climate change is encouraging periurban farmers in Sangareddy to move off the land or change their cropping patterns. In particular, increased variability in precipitation has added to the inherent uncertainty of farming. I arrived in Hyderabad just days after the first monsoon storm broke the heat of summer. The data collection period almost perfectly coincided with the length of the rainy season, which is also the planting season for rice farmers. As a result I was able to observe the additional strain climatic variability is putting on farmers.
Sangareddy is located in a semiarid tropical climate with an average temperature of 26 °C and an average annual rainfall of 764 mm. It is predicted that in the coming century climate change will cause precipitation to vary +/- 4-17% from the annual average. Additionally between 2009 and 2050 heat waves are expected to triple in frequency. This variability of climate is already having a significant impact on crop production. Farmers in Sangareddy were unable to plant or transplant their rice at the appropriate time due to insufficient rain. Crop yields have been heavily impacted by insufficient water. Another matter of concern is that borewells are beginning to fail, as there is insufficient groundwater recharge, and water is being drawn on for urban industries and residences. Climatic instability is causing several farmers to leave agriculture or encourage their children to seek other professions.

Conclusion

Rising land prices, higher wages, and climate variability are all factors driving changes in the use of land in periurban Sangareddy. Of these three factors, higher wages appear to be the most important, though each is driving periurban farm families to creatively adapt to the changing situation. In response to higher land prices, farmers are selling their land and either buying less expensive farmland farther away from the urban core or selling their land to developers or land prospectors and moving to urban industries. Farm families often use the profits from their land sales to finance homes built with more modern materials that suit a more urban lifestyle. As a solution to rising wages, which are cutting into profits, farmers are creatively adapting by planting less labor-intensive crops. This results in a change in the

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64 Reckien, “Sustainable Climate Change”
65 Interview with T. Sangamma; Tadlapally Village, August 10, 2012
landscape from vegetables and rice paddies to teak forests, mango nursery, and sugar cane fields. Lastly, climate variability, though not directly caused by urban growth, is destabilizing agriculture with an increasing frequency of heat waves, drought, and unpredictable rainfall. In response to this, farmers are planting later in the season, moving their crops by truck, or turning to urban employment. As a result, land is left fallow or sold to developers.

The changing patterns of land use observed in Sangareddy are the result of rising land prices, rising wages, and climate variability. In order to adjust to these changing conditions, farmers are creatively adapting. The result is very fine grain urbanization, with some families building colorful multi-story cement homes and working in factories, while their neighbors maintain traditional white washed mud and brick homes and spend their days plowing, planting, and experimenting with more profitable crops. Between these two types of solutions are families who send their fathers, husbands and sons to work in urban industries, while leaving the women in charge of the farm. This type of response to the periurban transition will be the focus of the next chapter. All of these solutions to the changing conditions of the periurban interface are resulting in altered patterns of land use and social change.
Chapter 2: Shifting Gender Roles

Introduction

Social dynamism is a defining characteristic of the periurban interface along with land use change, uncertain futures, and creative adaption. Without further research, it is difficult to determine causality in these characteristics, and at this depth of study, they seem to be quite intertwined. As discussed in the previous chapter, one of the ways in which families are responding to the pressures driving land use change is to reorganize historic gender roles and encourage younger generations to seek urban employment. These creative adaptations to land use change are key factors in the social dynamism observed in Sangareddy. The following two chapters will examine the manifestations of social dynamism first as shifting gender roles and then as generational succession of occupation.

As demands on the family are changed by urbanization, gender roles shift from historical norms. The participation of women in periurban agriculture is one example of the shifting social dynamics. While modern technologies and industrialization are greatly affecting the role of women across Indian agricultural communities, the work of periurban women serves as a unique indicator of both modernization and urbanization. It is difficult to completely separate trends caused by modernization from those caused by urbanization, however some degree of distinction can be obtained through statistical analysis of survey responses and an examination of secondary literature. By first comparing the work of rural and urban women, and then analyzing survey results that illustrate the periurban reality, this chapter will illustrate the impact of urban growth on the periurban communities of Sangareddy. The change in gender roles is most noticeable in the increased participation of women in agricultural wage labor, decision-making, and self-help groups.
Historically, farm labor has been divided along the lines of caste, age, and gender. The caste system, derived from the Hindu tradition, ranks society based on spiritual purity. In practice, this has been a hierarchical division of society, which is designated at birth, binds individuals to an occupation, and limits their interactions with people outside their caste. The caste system has been repeatedly attacked as an archaic, discriminatory institution and is officially banned by the current constitution. Despite this and affirmative action measures to help equalize caste disparities, the caste system remains prevalent throughout India. While farmers historically fall in to the Kurmi caste, there are several subcastes and I did not collect data on where in this hierarchy the farmers of Sangareddy were classified. Interviewees alluded to there being different castes for farmland owners and farm wage laborers, as well as other categories within each village. Caste is the line along which labor is divided within the village community.

Division of labor within a family occurs on the basis of age and gender. This is due to the joint family system that is common in rural India. Joint families consist of blood related men (fathers, sons and brothers) and their female spouses and unmarried daughters. In this system the family elders take a managerial role in the public and private affairs of the family with younger members subordinate to them. Similarly, women in this system are subordinate to men, as temporary or non-blood related members of the family.

While caste and age are important sources of authority, for the purpose of this study, I will focus on gender. To a lesser degree than power derived from caste and age, urbanization is affecting the authority of women in periurban families. Due to a trend of male migration to urban labor, women are participating more in agriculture and gaining authority in family decision making. This increase in authority is observed in financial decision-making, cropping decisions,

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self-help group participation, and ownership of land and equipment. Observations of these changes prove that social dynamism is a key impact of the periurban transition.

Through analysis of survey data, photographic evidence, interviews, field notes, and outside literature, this chapter will examine the shifting gender roles in periurban Sangareddy. I will argue that while the trend is not universal, many women are participating more in making decisions for the cropping and financing of family farm operations. I predict that this increase in female autonomy will continue to grow as self-help groups gain membership and promote the exchange of knowledge. The long-term affects of this trend are unknown and contribute to the characteristic social dynamism and uncertainty of a periurban zone’s future.

**Literature Review**

Gender roles have been extensively studied in India in a variety of contexts. However, the effect of urbanization on periurban gender roles is rather limited. One of the primary goals of this thesis is to expand knowledge on this topic by exploring female decision-making and participation in family agriculture. In addition to analysis of variables describing participation and decision-making power, consultation of outside literature was important for clarifying this phenomenon. A significant body of research exists on gender inequality of labor, inheritance, and access to financial resources, particularly in India. Synthesizing this with the primary data is key to understanding the reasons behind shifting gender roles and the implications it might have in the future.

The unequal burden of labor according to gender is a phenomenon seen around the world, but with great intensity in South Asia.\(^\text{67}\) International research has shown that women “lag

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behind men on virtually every indicator of social and economic status. Women everywhere work longer hours but earn less income despite the fact that they are responsible for meeting 40 to 100 percent of a family’s basic needs. In agricultural communities, this unequal division of labor usually puts women in charge of all childcare and household chores, cultivating staple crops for family consumption, and helping with the planting and harvesting of cash crops. Though women usually participate in the cultivation process, men take ownership of cash crops. This means that generated income is often directed to their personal use rather than family needs. By this system, women complete more hours of labor, but have less control of income. As shown by Rae Bloomberg’s theory of gender stratification, family outcomes are very different depending on who controls income. Women are more likely to spend less money on themselves and more on child nutrition and basic family needs. This theory has been vetted by numerous studies, but Bloomberg also acknowledges that the developing world is extremely diverse and gender stratification varies greatly. As discussed above, periurban contexts are particularly understudied and only a handful of significant studies have focused on gender roles in a periurban setting. This study seeks to expand existing knowledge by exploring gender roles in periurban Sangareddy.

In South Asia, there are more female farmers than male and even on male-controlled farms, more female labor goes into food production. Despite the fact that some studies have

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72 Agarwal, "Food Crisis and Gender Inequality."
shown female farmers to be more productive when given the same resources as male farmers, women continue to have less access to land, equipment, fertilizers, and improved crop varieties. Women who own their own farms are likely to be farming on lower quality land and thus could benefit most from access to organic fertilizers. Eliminating the constraints faced by women farmers could increase their yields by 20-30%, and so have a substantial impact on global food security.

Presentation of Secondary Literature and Analysis of Field Observations

Historic Gender Roles

Gender is one of the three main categories that divide labor and power in Indian society. The others are caste and age. The hierarchies within these categories are based on family structure and religious beliefs of purity stemming from both Hindu and Islamic traditions. The following section will explore these hierarchies in greater historical detail to contextualize the changes observed in gender roles in Sangareddy.

Among families within a community, inherited caste was and continues to be an important indicator of an individual’s social role. While I did not collect data on caste specifically, it is a possible confounding variable that should be considered in future research. Interestingly, with the exception of one village, caste was not discussed as a major cause of problems or differences in the farming communities. Nationally, class, based on material wealth, is becoming a more

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important social marker than caste.\textsuperscript{77} This change was matched in Sangareddy where greater deference was given to those of material wealth rather than those born to a prestigious caste. The one village that was an exception to this observation was Mohammed Shahpur Tanda. This village was populated by families of a formerly nomadic tribal group, which was settled there by one of the Nizams of Hyderabad. When visiting this village, Mr. Qadir was very uncomfortable and explained later that this was due to his superstitions around coming in contact with tribal women. As a tribal group, these villagers are outside the caste system, and though not considered spiritually unclean, they rank at the bottom of any Indian social ladder.\textsuperscript{78}

Hierarchies based on age originate in the joint family structure typical of agricultural Indians. Gender hierarchies also stem partially from this arrangement, but as will be discussed later, religious traditions also factor into the gender divide. Joint households are historically multigenerational and headed by the eldest male member.\textsuperscript{79} As Niranjan, Nair and Roy explain, patriarchal joint families, consisting of multiple generations of a male bloodline and their mothers, wives, unmarried children, and widowed relatives, are common in rural areas. In urban areas joint families are prevalent but living arrangements based on the nuclear family are becoming more common.\textsuperscript{80}

In the joint family farming operation labor is divided by age and gender. Younger members of the family are subordinate to the elders. This means that elders have considerable decision-making power for the family and hold a managerial, though still active role, in the farming operations. Between genders, men take on jobs that require the use of tools and heavy farm equipment, such as plowing and leveling the fields. Women are responsible for all domestic tasks, such as cooking and childcare as well as manual agricultural work including planting, weeding, and processing crops. Within this division of labor, women play an active role in the family farming operations, if not a dominant one. Also along the lines of gender and age, there is a division of power in addition to the division of labor. Men are rulers of the family’s public affairs while women run the private domestic realm of family life. As presented by Yanagisako and Delany in the introduction to Naturalizing Power: Essays in Feminist Cultural Analysis.

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male power in the public sphere is made normal through cultural traditions that elevate male status above that of women.  

Social norms that subordinated women to men originate in both the joint family as well as in Hindu and Islamic practices. In both Hinduism and Islam, women are viewed as impure while menstruating. During this time, Hindu women are considered dirty and do not participate in religious activities and many do not enter certain parts of the home, such of the kitchen, for fear of polluting it. This monthly burden further excludes women from public affairs and makes them more dependent on male relatives.

From Islam, Indians have adopted the tradition of purdah, which stems from Arabic codes of female modesty. Purdah can take one or both of two forms in the lives of women. The first is physical segregation from unrelated men, starting at puberty or marriage. This involves separate entrances to the house, screens that shield women from view, and the sheltering of women in the home. Secondly, purdah can be observed in modesty of dress including the wearing of a dupatta (shawl that covers the chest and can be drawn over the head), face veils, and full-length cloaks or burqas. While the latter of these garments is worn almost exclusively by Muslim women, social norms in Muslim areas require Hindu women to also dress modestly.

Purdah became a part of Hindu culture during the rule of the Mughals between 1526 and 1857. Ancient Hindu cultures did not practice purdah and allowed women to participate freely in many public events. The strictness of purdah varies greatly between classes and regions and

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so does its impact on the role of women. The institution is strongest in areas with historic Muslim influence,\(^87\) including Hyderabad,\(^88\) while in the South of India it is almost unheard of.

*Purdah* and other restrictive female customs such as *Sati* (the immolation of a wife on her husband’s funeral pyre), dowries, prohibition of widow remarriage, and early marriage, naturalized male power during the medieval and colonial periods.\(^89\) Presently, these practices are in general decline, especially among upper class and urban families. Poorer families cannot afford to confine their women to the home or compromise their work efficiency with extra garments, especially in agricultural communities where female labor is necessary in farming operations.\(^90\) However, institutions that restrict female autonomy remain powerful, particularly in more conservative rural communities.

Historic Indian culture primarily defines female members of the family as subordinate to male members and younger members subordinate to older. Men control the family’s public affairs and are nominally in charge of all decision making. The modernization of technology and urbanization are changing these roles through mechanization and increasing dependence on income generated off the farm. Amongst families, caste is the historic determinate of social relations, though economic class is becoming more important as social mobility improves with economic liberalization. The following section will examine changes in these historical institutions in the periurban context.

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\(^{88}\) Interview with Maneeshika Maduri, Part-time Resident of Hyderabad, Stanford University; April 20, 2013

\(^{89}\) Chakraborty, “Indian concepts on sexuality”

Changing roles

The effects of modernization and urbanization on periurban gender roles can be observed in the mechanization of women’s work, increased dependence on off-farm income, increased female decision making, and the rise of self-help groups. Families who seek to supplement farm incomes with urban labor will often send male members to urban employment on a daily or weekly basis, leaving female members in charge of farm management and financial decision-making. In this section, I will argue that the creative adaptations made by individual families in response to the dynamic periurban environment, dictate the rate of these changes and through shifting gender roles, create urbanization on the family level as opposed to village or regional designation.

Male migration to urban centers is a phenomenon particularly important in periurban centers. Due to the proximity of the villages to the city, male migration is not as permanent as in rural households, with husband and sons returning on a daily or weekly basis to the home village. However, the effect of placing more responsibility on female family members is the same. Female-headed households have become increasingly common in India, though only one such family is represented in this study. In these emerging familial arrangements women are the primary providers for the family and govern both the public and private affairs. Female-headed households are usually the result of divorce, separation, desertion, death of the husband, or male

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91 FAO. “Profitability and Sustainability”
migration to urban centers. The female-headed family represented in this study was of a recently widowed survey respondent. Within months of her husband’s death the widow was taking charge of the family. As an aside from her survey responses, she told me that her oldest son would probably take over the farming, but as will be shown in the next chapter, he might take an urban job to more easily support his mother and siblings. In this event, the survey respondent, like many of her peers, would maintain the family farm and so allow the family to maintain knowledge of the land while also benefiting from high and stable urban wages.

As rural agricultural communities in India gain access to modern farming technologies such as tractors, mechanical seeders, mowers, synthetic fertilizers, pesticides, and hybrid seeds, women’s jobs are being taken over by men and their machines. Rather than resulting in less work for the Indian woman, this has made rural women dependent on wage labor, working in other families’ fields. The combination of these two trends has led to an increase in the supply of available female agricultural laborers combined with a decline in the demand for their work. This trend has been problematic for rural women who may lack skills and other employment opportunities; but for periurban women with access to other job markets, this trend has promoted leaving agriculture for urban jobs in factories, homes, and firms.

The trends discussed above apply to the whole of India, an extremely diverse nation both culturally and agriculturally. In Martha A. Chen’s study “Women's Work in Indian Agriculture by Agro-Ecologic Zones: Meeting Needs of Landless and Land-Poor Women,” she notes that in agricultural areas that are predominantly irrigated rice paddies, such as in the state of Andhra Pradesh, there is an above average rate of female employment as casual laborers, that is

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92 Lingam, “Women-headed households”
93 Survey 8073
associated with high productivity. In Chen’s study, high proportions of female laborers were associated with high productivity in several different types of agricultural systems. The reason behind this is not understood. Considering the work of Jennie Dey in Sub Saharan Africa, the higher productivity of female farmers has occurred elsewhere and is likely linked to female responsibility for family food staples and childcare.

Also discussed in Chen’s study is an increasing gap in the difference between the wages paid to men and those paid to women in Andhra Pradesh. This is possibly due to the rapid rates of mechanization, which has resulted in a surplus of women agricultural laborers. The mechanization of women’s work has increased the efficiency and, by some accounts, productivity of farmers. It is possible that the surplus of female labor has helped increase the authority of women in family farming systems. This would be because with a surplus of female labor, all their work is complete and they can be given higher status jobs that were formerly reserved for men, while men in turn go to work in the city. Despite this possible positive externality, there are many concerns about this trend from within communities, the department of agriculture, and the academic community.

Among these concerns about mechanization are the overhead costs, the environmental impacts, and health consequences for farmers, consumers and communities. While validation of these concerns must be left to further research, it is important to note that these concerns are very present for the women who participated in this study. To express her opinion about synthetic fertilizer and chemical pesticides, one member of the focus group went so far as to lift her sari (making my conservative male translator somewhat uncomfortable) to show impressive scars where her stomach had been punctured by the horns of a rampaging bull. She said that when the

95 Chen, “Women’s Work”
96 Dey, “Gender Asymmetries”
97 Chen, “Women’s Work”
bull gored her, her intestines spilled out and the doctors said that she wouldn’t live - but she did live because the food she ate was good and she was strong because of it. This focus group participant thinks that since chemicals have been introduced, the food is not as nourishing and she would not have lived after her encounter with the bull. The government subsidizes fertilizer and pesticides, but they remain costly. Many farmers do think of them as “medicines” which the soil can no longer lived without. It is concerning that these farmers find these products burdensome to their health and finances, and yet feel dependent on them.

Aside from the health and financial consequences of the modernization of agriculture, a shift away from the historic gender roles discussed above is occurring due to the choices made by people, in adopting a combination of modern farming techniques and urban lifestyles. This is primarily observed in a pattern starting with men leaving to seek urban jobs such as construction, driving, and factory work. This need for off-farm income is driven by declining profits due to the cost of seeds, fertilizers, herbicides and pesticides (which were formerly cost-free products saved or created by the family year to year) and the spike in wages that was discussed in the previous chapter. The ability for periurban men to leave the farm and work in the city without permanent migration is enabled by the improved access to urban jobs. This can be attributed to metropolitan amenities such as roads and regular transportation that come to periurban areas as part of the growing city.

**Table 3: Urban Employment**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>33.3</td>
<td>38.1</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>54.2</td>
<td>61.9</td>
</tr>
<tr>
<td>Total Valid</td>
<td>21</td>
<td>87.5</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>3</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
When the men leave, women are left in charge of both the farming and their regular domestic chores. Though rural women historically participate in agriculture, the relative absence of men in periurban communities gives women more responsibility, such as managing laborers and making decisions concerning farm finances and cropping. Through increased responsibility and decision-making power, women farmers step outside their culturally assigned gender role. This increased responsibility, combined with self-help groups and affirmative action in government schemes, is giving women more autonomy, allowing them to take on leadership roles in the community, and thereby improving their employment opportunities.

The pattern of shifting gender roles, driven by declining farm profits and proximity to urban jobs, is specific to the periurban zone and is supported by the survey data collected in Sangareddy. As shown in Table 3, 33.3% of respondents reported having family members who had previously been employed in agriculture, but now were working in urban jobs. Additional data collected on financial decisions, cropping decisions, self-help group membership, and land ownership serve as supporting evidence for this social change occurring in periurban Sangareddy. The following subsections explore the collected data that illustrates increase in female decision-making and empowerment.

Financial Decisions

The topic of finances was a sensitive subject for the farmers who participated in this survey. When asked about their finances, many respondents grew suspicious and asked if I was working for the government. Nevertheless, 20 of the 24 respondents answered this section of the survey.
The results provide interesting insight into the business aspects of periurban farming operations and female decision-making.

Table 4: Financial Decisions

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>13</td>
<td>54.2</td>
<td>65</td>
</tr>
<tr>
<td>Respondent</td>
<td>3</td>
<td>12.5</td>
<td>15</td>
</tr>
<tr>
<td>Other Family Member</td>
<td>2</td>
<td>8.3</td>
<td>10</td>
</tr>
<tr>
<td>Both Respondent and Husband</td>
<td>2</td>
<td>8.3</td>
<td>10</td>
</tr>
<tr>
<td>Total Valid</td>
<td>20</td>
<td>83.3</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>4</td>
<td>16.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

As Table 4 shows, 65% of the respondents reported that their husbands make financial decisions for the family. Those who were categorized as having an “other family member” make the financial decisions, referenced a son or father-in-law. While the majority did not report participation in decision-making, three respondents reported that they were making financial decisions for the family and two reported making decisions with their husbands. These five respondents are key indicators of a social shift away from the historic exclusion of women from this kind of authority in the family.

Another indicator of this shift is the number of women holding loans in their own names. Because the seasonality of agriculture does not provide a steady income, most respondents reported that credit was taken for their farming operations. These loans were used to purchase chemical inputs, lease equipment, pay laborers, and support the family before the harvest was cashed in. Respondents were asked several questions aimed at revealing the details of their credit. Eighteen of the twenty-four survey respondents answered this question and as shown in table 5, four of the respondents reported holding loans in their own name.
The role of government programs should not be overlooked or underestimated when viewing these results. Some of the women reporting participation in family financial decisions may do so in order to allow the family to take advantage of government schemes, which set aside certain percentages of available resources for women.\textsuperscript{98} In this case, holding loans might not actually indicate significant participation in decision-making. Data was not collected about which respondents were only nominal land and loan holders.

Alternative to the possibility that women are only taking ownership “on paper” for government benefits, is the possibility that they are actually running family farms. Participation in self-help groups provides support for the latter. Of the 22 respondents who answered the question, 66.7\% reported participation in a women’s self-help group. Many of these groups offer small loans to their members through microfinance schemes. Respondents who reported holding loans may have been referencing loans that they took from their self-help group. While the overall trend is for male family members to take credit, the number of women participating in

financial activity indicates a shift from the tradition of leaving all business outside the home to male family members.

*Cropping Decisions*

The participation of women in cropping decisions is another indicator of shifting gender roles. Deciding what crops to grow is an important task for periurban farmers who are growing food in close proximity to large markets and can operate with minimal transportation costs. Additionally, in Hyderabad, the semiarid tropical climate allows for a wide range of produce to be grown in all seasons. Historically this important family decision was left to male family members. While this is still the norm, the survey results show a number of women beginning to take on this role.

**Table 6: Cropping**

<table>
<thead>
<tr>
<th>Who in your family decides what crops will be grown?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>12</td>
<td>50</td>
<td>54.5</td>
</tr>
<tr>
<td>Respondent</td>
<td>1</td>
<td>4.2</td>
<td>4.5</td>
</tr>
<tr>
<td>Other Family Member</td>
<td>3</td>
<td>12.5</td>
<td>13.6</td>
</tr>
<tr>
<td>Both Respondent and Husband</td>
<td>6</td>
<td>25</td>
<td>27.3</td>
</tr>
<tr>
<td>Total Valid</td>
<td>22</td>
<td>91.7</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows that 22 of the 24 female farmers responded to this question and of those, one (4.5%) reported deciding what crops to grow. An additional six respondents (27.3%) claimed to decide what crops to grow jointly with their husbands. 54.5% of valid responses indicated that decision-making was done by the husband, and the remaining 13.6% by another family member, usually a father-in-law or son. While this demonstrates that cropping decisions are still male-dominated, the sharing of decision-making power and the transition to female decision makers is
occurring. This deviation from historic gender roles is indicative of a larger shift occurring in periurban communities due to urbanization.

**Self-Help Groups**

Known locally as Dakra or women’s groups, self-help groups are small groups of women, usually from the same village, who meet regularly to offer support to each other. This support can come in the form of group education, community outreach, and microfinance. While most of my respondents did not have time to give open ended answers, a few explained that their Dakra groups have microfinance schemes where the group redistributes membership fees and collects interest on year-long loans.

<table>
<thead>
<tr>
<th>Do you participate in a self-help (Dakra) group?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>16</td>
<td>66.7</td>
<td>66.7</td>
</tr>
<tr>
<td>No</td>
<td>6</td>
<td>25</td>
<td>91.7</td>
</tr>
<tr>
<td>Total Valid</td>
<td>22</td>
<td>91.7</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>8.3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 7 shows that of the 22 respondents who answered this question, 66.7% participate in self-help groups. Whether or not a respondent is a member of a self-help group does not directly speak to their participation in family decision-making; however, it does indicate a higher level of empowerment.99

While not necessarily attributable to participation in self-help groups, some of the women in the focus group and interviews reported pursuing higher degrees or having off-farm

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employment such as teaching and cooking in the village school. For example, the sisters standing in figure 27 are enrolled in a local university pursuing a Masters of Business Administration and Bachelor of Science in Engineering programs at a local university. Both sisters also work alongside other female relatives on their family’s farm, which grows cotton, sugar cane, rice, and vegetables.

Land and Equipment Ownership

In addition to participating in decision-making and empowerment through education and self-help groups, control of farm assets such as land and equipment is an indication of shifting gender roles. Despite the fact that some studies have shown female farmers to be more productive when given the same resources as male farmers, women have had less access to land, equipment, fertilizers, and improved crop varieties historically and contemporarily. Moreover, women who own their own farms are likely to be farming on lower quality land. Despite these discouraging statistics, land ownership is an indicator of a woman’s involvement in family agriculture. As Bina Agarwal discusses in her book, A Field of One’s Own, “Land defines social status and political power in the village, and it structures relationships both within and outside the household. In legal terms, women have struggled for and won fairly extensive rights to inherit and control land in much of South Asia; but in practice, most stand disinherited. Few

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100 Dey, “Gender Asymmetries”
101 Rao “Gender Equality”
own land, even fewer can exercise effective control over it….”103 While women who do not own land may also participate in decision-making, land ownership speaks to a level of empowerment that enables greater autonomy in decision-making and use of resources.

Table 8: Land Ownership

<table>
<thead>
<tr>
<th>In whose name is the land owned or leased?</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Husband</td>
<td>13</td>
<td>54.2</td>
<td>61.9</td>
</tr>
<tr>
<td>Respondent</td>
<td>2</td>
<td>8.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Other Family member</td>
<td>4</td>
<td>16.7</td>
<td>19</td>
</tr>
<tr>
<td>Both Respondent and Husband</td>
<td>2</td>
<td>8.3</td>
<td>9.5</td>
</tr>
<tr>
<td>Total Valid</td>
<td>21</td>
<td>87.5</td>
<td>100</td>
</tr>
<tr>
<td>No Response</td>
<td>3</td>
<td>12.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 shows the relative frequency of land ownership among survey respondents. Of the 21 participants who answered this question, two reported owning land in their own name and two reported owning land with their husbands. Of the four who responded that another family member owned the family’s land, three were referring to their fathers-in-law and one was referring to her son. This leaves 61.9% who reported that their husbands owned or leased their farmland. While this again shows the historic gender roles in majority, the 19% of respondents who either own land independently or jointly with their husbands represent the shifting roles previously illustrated in the periurban environment.

One variable that confounds this survey data, and was discussed in interviews with Mr. Mannan is that some families give the women title to the land in order to have access to government subsidies104 set aside for female farmers. In these cases, female landowners may not

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actually be participating more than their non-landholding counterparts. Further analysis of this trend should be given attention in future research.

Similar to land ownership, owning or controlling the tools necessary for farming indicates a higher level of empowerment for women. Farm equipment is of particular interest since many periurban farmers have the choice between using tractors or bull teams and plows. Deciding which of these to invest in, either through ownership or rental, requires technical information about the crops being grown and the financial tradeoffs of the different options.

Table 9: Equipment Ownership

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent</td>
<td>1</td>
<td>4.2</td>
<td>5.6</td>
</tr>
<tr>
<td>Husband</td>
<td>3</td>
<td>12.5</td>
<td>16.7</td>
</tr>
<tr>
<td>Other Family</td>
<td>2</td>
<td>8.3</td>
<td>11.1</td>
</tr>
<tr>
<td>Doesn't Know</td>
<td>1</td>
<td>4.2</td>
<td>5.6</td>
</tr>
<tr>
<td>No Equipment Owned</td>
<td>11</td>
<td>45.8</td>
<td>61.1</td>
</tr>
</tbody>
</table>

| Total Valid       | 18        | 75      | 100           |
| Missing           | 6         | 25      |               |
| Total             | 24        | 100     |               |

Table 9 shows that of the 18 valid responses, 11 reported that their families do not own farm equipment. While this may have much to do with the economic status of these families, it also speaks to the transitory nature of periurban farming. Families who doubt the longevity of their farms are unlikely to invest in expensive equipment.

It is interesting to note that one respondent reported not knowing who in her family owned farm equipment. This speaks to the continued prevalence of historic gender roles despite the shifting norms of periurban communities. This shift is acknowledged by the one woman who reported to own her own equipment, whereas historically there would have been none.
The data collected on land and equipment ownership shows that some periurban women are gaining control over these important farm resources. Theoretically, if this were a result of male migration to urban industries, the proportion of women with land and equipment ownership would equal the proportion that had family members working in urban industries. The data shows that the proportion of respondents reported owning or leasing land and equipment (27%) is not quite equivalent to the percentage that report to having family members working in urban jobs (33.3%). However, the closeness of these proportions, and the fact that there are women with ownership of these resources at all is an indicator of shifting social norms in the periurban communities of Sangareddy.

**Conclusion**

Though women have historically played an active role in agriculture, the restrictions placed on them by cultural and religious requirements, as well as the patriarchal structure of the joint family, has limited their role in ownership of land and equipment as well as participation in decision-making. In the socially dynamic periurban zone of Sangareddy, families are creatively adapting to the economic pressure of urban expansion. One way in which they manage to balance maintaining the family farm and benefiting from access to the high paying, less physically strenuous, and more stable urban employment, is by re-dividing labor along gender lines.

The survey data presented in this chapter showed a presence, if not abundance of female participation in cropping and financial decisions, as well as ownership of land, equipment and credit. While it is possible that these numbers are augmented by cases of women who nominally own land and credit in order for the family to take advantage of government programs, a more
encouraging trend is demonstrated by the high rates of participation in self-help groups. Additionally, investment in female education indicates that families are relying more on their daughters to play an active role in family affairs. The result of this shift in gender roles is a uniquely periurban, intermediary stage between rural and urban; with family labor divided between agriculture
Chapter 3: Generational Succession of Occupation

Introduction

The transition from rural to urban is occurring rapidly, if unevenly, in periurban Hyderabad. When I initially attempted to conduct a random sample of villages, I was thwarted by the fact that villages currently registered with the Department of Agriculture as having a farmer enrolled in the government’s Ideal Farmer Program, no longer had any farmers remaining at all when I came to interview them. Dr. Devi confirmed this trend when she explained that a neighboring mandal had recently closed its Department of Agriculture due to an abrupt loss of client farmers.\(^5\) Using evidence from the interviews, focus groups, field observations, and secondary literature, I will argue in this chapter that, though not all periurban zones become urban, at the family level, if a generation of children chooses urban employment over agriculture, than urbanization will have occurred.

The preceding discussions of the periurban interface’s defining characteristics are focused on change: social dynamism results in changing gender roles and physical transition is evident in changing land use. While these changes, combined with statistics about population growth and internal migration, make urbanization seem the inevitable fate of periurban communities, it is theoretically possible that a periurban zone will never become urban or may return to a more rural state. This could be the case in the aftermath of an economic crash like the housing bubble experienced by Hyderabad in 2008, or in the event of a social revolution such as that caused by the rise of information technology in the 1990s.\(^6\) While urbanization is not necessarily the destiny of periurban communities, it is

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\(^{105}\) Interview with Dr. Rama Devi, Sangareddy Department of Agriculture, July 4, 2012

statistically likely to occur, considering the rate of urbanization and population growth in India, it is likely to occur.

This raises the question “At what point, does a mandal, village, or family become urban?” For mandals and villages, the answer to this question would be determined via a measure of population density and development, two variables this study did not collect. On the household level, however, survey and interview data is able to reveal that there is very fine grained urbanization happening based on decision-making at the family level. The movement of youth away from farming lifestyles and into the urban job market is a strong indicator for urban transition in families. This is because, when young people move, they often lose the opportunity to inherit farm knowledge from their elders and so are unlikely to return to the farm as a place of employment. Additionally, as they start to earn an urban income and live an urban lifestyle, young peoples’ demands for shops and transportation grow while their need for open land and farm animals declines. These shifting demands alter the makeup of the community, leading to higher density housing, more retail, more extensive roads, and less open space.

In this chapter, I will contextualize the primary data I collected by first examining of national and state level secondary data on the causes of attrition from the farming profession and the rates at which this is occurring. I will then use survey and interview data as well as secondary literature to show that the family level urbanization is dependent

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on occupational transition. This occupational transition is driven in turn by local and national policy, parental perceptions, and household level decision-making. As a result, the direction of a periurban community’s developmental evolution will likely be uneven and is difficult to predict.

Presentation of Secondary Literature and Analysis of Field Observations

National and Statewide Trends

To begin contextualizing the periurban transition of occupation, this section will focus on the national loss of farmers in India and particularly in the state of Andhra Pradesh. The loss of farmers is attributed to several factors including urbanization, mechanization, and farmer suicide - a problem especially prevalent in Andhra Pradesh, with more than one thousand incidences in 2010. Separating the impact of the first two of these factors is difficult since the influence of urbanization and mechanization are closely tied. The national epidemic of farmer suicides represents another way in which the farming population is declining. These national and state issues contextualize the local concerns in Sangareddy and the Department of Agriculture’s efforts to encourage and support young farmers.

The population of India has grown rapidly over the past century, more than doubling from an estimated 553,874,000 people in 1980 to 1,224,614,000 in 2010. According to the Food and Agriculture Organization of the United Nations (FAO) the percentage of the population engaged in agriculture dropped from 79% to 48% during the

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same period.110 Despite this precipitous decline, the percentage of the population classified as urban only changed from 29% in 1980 to 30% in 2010. This suggests that a large contingent of people formerly engaged in agriculture has moved to urban employment, even if their physical location has not changed classification. I hypothesize that many members of this cohort are periurban residents who were formerly engaged in agriculture but are now commuting to the city for work.

Table 10: Percentage of Indian Population in Agriculture111

<table>
<thead>
<tr>
<th>Year</th>
<th>Population in Agriculture</th>
<th>% of Total Indian Population in Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>438,614,000</td>
<td>79</td>
</tr>
<tr>
<td>1990</td>
<td>504,038,000</td>
<td>72</td>
</tr>
<tr>
<td>2000</td>
<td>559,446,000</td>
<td>53</td>
</tr>
<tr>
<td>2010</td>
<td>592,277,000</td>
<td>48</td>
</tr>
<tr>
<td>2012</td>
<td>596,694,000</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Among those still engaged in agriculture, suicide rates are high. Farmer suicides in Andhra Pradesh, which as mentioned, is experiencing particularly high rates, are attributed to low yields due to climate variability, rising costs of production due to mechanization, growing power of moneylenders due to lack of access to institutional credit, and an increase in farming leased rather than owned land.112 The combination of rising costs of production and the lack of access to institutional credit is arguably the most common reason that farmers take their own lives.113

A high rate of farmer suicide has devastated agricultural communities throughout India in the past three decades due to historical and socioeconomic factors that will be

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110 FAOSTAT. "FAOSTAT."
111 FAOSTAT. "FAOSTAT."
discussed in detail in the following section. In accordance with the rise in suicide rates, the body of research on the topic has substantially increased since the 1980s. This can be seen quite clearly in the Google Ngram displayed in Figure 27. It is important to note, however, that the social taboo of public discussion of suicide has somewhat relaxed in the past century and this may account for the upswing in scholarship of the subject.\footnote*{Ginsburg, G. P. "Public conceptions and attitudes about suicide." \textit{Journal of Health and Social Behavior} (1971): 200-207.}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure25.png}
\end{figure}

As previously mentioned, suicides are particularly common in the state of Andhra Pradesh, which memorably had 400 reported farmer suicides between May and June of 2004.\footnote*{Sridhar, V. "Why do farmers commit suicide? The case of Andhra Pradesh." \textit{Economic and Political Weekly} (2006): 1559-1565.} While this two-month period represents a spike in the multi-decade trend, it is important to recognize that there were likely more suicides that went unreported and that the trend has continued in the ensuing decade. The combination of a cultural mandate for male self-sufficiency, rising costs of production, and lack of access to institutional credit, has been a deadly arrangement for thousands of farmers. This speaks to Durkheim’s classic theory\footnote*{Mohanty, Bibhuti B. "‘We are Like the Living Dead’: Farmer Suicides in Maharashtra, Western India." \textit{Journal of Peasant Studies} 32, no. 2 (2005): 243-276.} that suicide is the result of a specific historical combination of social and
economic pressures on an individual. \footnote{118 Durkheim, Emile. "Suicide: A study in sociology (JA Spaulding & G. Simpson, Trans.)." Glencoe, IL: Free Press. (Original work published 1897) (1951).} Farmer suicide was not mentioned by any of my survey respondents, focus group members, or interviewees. However, given the context of Andhra Pradesh, farmer suicide is an important factor to keep in mind when considering motives for government action and the decisions made by young people and their parents.

The Role of Government

Multiple levels of government in India have sought to address the loss of farmers. Examples of this are the Ideal Farmer Program, the Mahatma Gandhi National Rural Employment Guarantee Scheme of 2005 (EGS), and the work of agricultural extension officers like Mr. Mannan. However, other policy decisions are being made which exacerbate the problem. For example, the neoliberal politics instituted by the national government in the early 1990s, reduced price stability for smallholder farmers. This trend was particularly problematic in states with large export economies like Andhra Pradesh. \footnote{119 Mohanakumar, S., and R. K. Sharma. "Analysis of farmer suicides in Kerala." Economic and Political Weekly (2006): 1553-1558.} These sorts of policies are part of a balancing act of pleasing consumers with low food prices and helping farmers with high prices. By examining government policy, I will now argue that local and national politics have a substantial influence on the livability of the farming lifestyle and therefore impact the rate of the periurban transition.

In 1991, when the ninth Prime Minister of India, P.V. Narasimha Rao, was elected to office, he created a neoliberal government that ruled the country for the following 5 years. In response to the impending financial crisis of 1991, Rao installed economic reforms that dismantled the socialist policies that had ruled India for several decades, and secured loans
from the International Monetary Fund (IMF). These loans were conditional on the opening of India’s economy to foreign trade and investment. As was the case for many countries that accepted structural adjustments under the IMF, liberalizing the economy heavily impacted Indian farmers and rural resources. The impacts include price variability, accelerated development of land, and increased competition with imported products. While some farmers have benefitted from international investment encouraged by liberalization, the majority of smallholder farmers, such as those in the periurban zone, were negatively impacted.

In contrast to the burden placed on farmers by economic reforms, the Indian government has tried to address farmer attrition and suicide via the creation of the National Mental Health Programme (NMHP) and subsidies for credit, irrigation, and fertilizer. Created in 1982, the NMHP aims to prevent and treat "mental and neurological disorders and their associated disabilities." District Mental Health Programs are primary means by which this is being accomplished. The district programs offer mental health care as well as training in mental illness awareness and prevention for local communities.

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123 O’Brien, “Mapping vulnerability to multiple stressors”
However, the continued prevalence of farmer suicide speaks to this method of prevention being underdeveloped or ineffective.

Subsides are another means by which the national government is working to help farmers. Between 1998 and 1999 the Government of India paid Rs. 314 billion (approximately 5.8 billion USD) in subsidies.\(^{127}\) It is estimated that only half of these subsidies, which were mostly for electricity and fertilizer, were actually received by farmers;\(^{128}\) the rest were misdirected to use by industries or nonagricultural consumers.\(^{129}\) Despite the challenge of delivering on these subsidies, the central government continues to use subsidies as a possible solution to farmer’s plight. Seven of the nineteen respondents who answered my question about government subsidies indicated that they did receive them. It was not asked whether these subsidies were coming from the central government or more local agencies.

Local government agencies like the Sangareddy Department of Agriculture, are also working to keep farmers in agriculture. Of these, the most prevalent is the Ideal Farmer Program, which appoints a farmer liaison known as the “ideal farmer” or “Adarsh Rythu” in each village. These ideal farmers are trained in the latest technology and cultivation methods so that he or she can act as a conduit of knowledge from the Department to the village.\(^{130}\) In addition


\(^{128}\) Gulati, “Demystifying fertiliser”

\(^{129}\) Gulati, “Demystifying fertiliser”

to the Ideal Farmer Program, Mr. Mannan and other extension officers have been training young farmers in special classes and encouraging them to remain in agriculture.

In an interview, Mr. Mannan cited the need to support farmers as urgent for the region's retention of labor and continued food production. His strategy has been to reach out to women and youth in the periurban villages where interest in agriculture has been ebbing. As part of a recent program, Mr. Mannan selected 18 young women and 12 young men to participate in a training course similar to the Ideal Farmer program. By teaching the young people and offering them government support, Mr. Mannan hopes to build a network of young farmers that will inspire and engage their peers.131

As part of this outreach, Mr. Mannan is also training female farmers in alternative farming methods which he believes are less expensive, more productive, better for the environment and better for the farmer’s health. He finds that female farmers are increasingly responsible for family farms and so are an effective group to target. He hopes that by teaching them alternative methods such as the use of compost and green manure crops, the planting of rice in organized rows, and the reduction of chemical inputs, costs will be reduced and profits rise. It is somewhat paradoxical that the way that the tradition of agriculture is being “sustained” in the periurban zone is by a radical revolution in gender roles and farming techniques.

131 Interview with Mr. Mannan Shoukat; Sangareddy Department of Agriculture – July 23, 2013
Through the aforementioned programs, local governments are primarily working to help agriculture. There are, however, some policies which are encouraging urban growth at the expense of periurban agricultural decline. For example, as mentioned in the preceding chapter on land use change and development, city boosters are working to promote information technology industries. This movement is being encouraged by the Software Technology Parks of India Scheme (STPI), which was established by the national government in 1991 as a response to the financial crisis and resulting economic liberalization.\textsuperscript{132} Hyderabad is one of the major technology hubs developed by the STPI, which continues to support the industry today, over two decades after the scheme’s creation. While not actively degrading local agriculture, the information technology industry is creating attractive non-agricultural jobs and developing land that would formerly have been put to farming.

Mr. Mannan’s superiors in the Department of Agriculture, share his fears for the fate of agriculture in Sangareddy. It is important to consider the personal and political motives behind this concern. In an interview on July 4, 2012, Dr. Devi expressed apprehension about farmer attrition in Sangareddy. She said that a neighboring mandal had recently closed its Department of Agriculture due to a lack of farmers to whom they could offer services. With this example so close at hand, it is unsurprising that officials like Mr. Mannan and Dr. Devi might feel a sense of urgency to protect agriculture and with it, their jobs. While this study did not collect data about the personal motives of agricultural officials, it is essential to remember that they have a stake in the persistence of agriculture in their constituent communities. This is likely true for national officials as well, whose jobs

may depend on their ability to keep crop prices high, food prices low, and investment incoming for the voters they serve.

Whether beneficial or detrimental to agriculture, government decisions affect the rate of generational succession of occupation for periurban farmers. Subsidies, health care, and extension services are government programs that improve the profits, life expectancy and efficiency of farmers. Neoliberal politics and development schemes are some of the factors that decrease the profitability, diminish quality of life, and encourage rural-urban transition. Behind all of these decisions are the motives of the individual officials whose jobs and communities are dependent on policy outcomes. Balancing the needs of consumers and producers is of particular importance for governments, and this challenge results in inconsistent policies for the health of agricultural communities.

The Role of Parents and Household Level Decision Making

Parents who wish a better life for their children can be found throughout the periurban villages of Sangareddy and around the globe. While many older and middle aged people feel that they are set in their ways and unable to seek alternative employment, they hope that their children and grandchildren will be able to avoid the hard labor and impecunious farming lifestyle. Whether or not children seek occupations outside of farming is based on household level decisions that are influenced by the social, political and economic climates. In this section, I will argue that parental perceptions and household level decision-making are the ultimate drivers of generational succession of occupation in periurban Sangareddy.
Table 11: Interest in Farming of Younger Family Members

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>9</td>
<td>37.5</td>
<td>39.1</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>37.5</td>
<td>39.1</td>
</tr>
<tr>
<td>Unsure</td>
<td>5</td>
<td>20.8</td>
<td>21.7</td>
</tr>
<tr>
<td>Total Valid</td>
<td>23</td>
<td>95.8</td>
<td>100</td>
</tr>
<tr>
<td>Missing</td>
<td>1</td>
<td>4.2</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

The responses to the survey question “are younger members of your family interested in farming” presented an even split between affirmative and negative responses. This is likely attributable to the range of ages of the survey respondents. Many of those who answered “yes” were older with children already working in agriculture. Several of the respondents in the “unsure” category qualified their answer by saying that their children were young and it was too early to know, but that they hoped their children would get a good education. If the question “would you like your children to go into farming?” had been asked, the answers would likely have been an overwhelmingly “no.”

In the focus group and interviews, many women spoke with disdain toward people who had left farming, as if it was a sign of weakness or cultural failing.133 At the same time however, they spoke extensively about the difficulties of farming and wished for their children to find “better” jobs. Several survey respondents added explanations to their answers to the question “are younger members of your family interested in farming?” Many of the respondents who answered “unsure” to this question,

133 Interview with Satgunamma; Tadlapally Village, August 10, 2012
category, were mother’s whose children were still in school and for whom they were hoping there would be “better [employment] options.” Others were more direct. For example in survey 7242, the respondent added, “Farmers have to labor every day regardless of their health or energy.” Similarly, respondent 8011 said, “The children are getting an education. I don’t want them doing farm work. I want them to get good jobs.”

With the available data it is difficult to determine the origin of this attitude towards farming. Farmers do have an anecdotal reputation for complaining, but to be fair, the nature of their work requires a reliance on the whims of consumer demand, international affairs, and a changing climate. This, in addition to the physical demands of agricultural labor, is apt to make for a lack of enthusiasm about the job. However, growing food can be extremely rewarding and is often the only skill set in which rural people have been trained.134 This, then, explains the sense of pride that is mixed with the general complaints.

Another possible explanation for the attitudes toward farming expressed by respondents, is that respondents who viewed me as an exotic “American scientist” wanted to give the answers that they thought I was “looking for” and so responded accordingly. However, based on correlations run amongst survey responses, and the pride with which respondents told stories of children who had left farming to work in urban industries such as a computer store135, hospital136 or the sugar cane factory,137 I argue that to some degree the attitude I observed comes from urbanization and the creative adaption which defines a periurban community.

135 Survey 7243
136 Survey 7244
137 Survey 7242
Another empirical indicator that shows that the desire to work outside of farming originates in the periurban nature of Sangareddy, and parental perceptions, is the Pearson correlations run between survey variables. Specifically, I tested the distance respondents’ farmland was from the outer ring road and whether or not younger members of their family where interested in farming. Since distance to the outer ring road (a major highway encircling the city of Hyderabad) is an approximate measure of the respondents’ access to the city. This distance can in turn be used to measure the influence of the city on respondents. With this assumption it can be hypothesized that there is a positive correlation between an answer of "yes" to the question of younger generations’ interest in farming and a relatively far distance from the ring road. While the sample of the survey was too small to yield significant results, the direction of the Pearson correlation supports the hypothesis.

<table>
<thead>
<tr>
<th>Table 12: Pearson Correlation of Distance to Ring Road and Interest in Farming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation of distance from outer ring road and interest of children in farming</td>
</tr>
<tr>
<td>Are younger members of your family interested in farming?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>How far away is your farmland from the outer ring road?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Lastly, the story from my field notes of Varsha, the daughter of the Ideal Farmer in Nagapur Village, shows that parental desire for education and social status is what drives the creative adaption of periurban children who pursue urban labor. I met Varsha on July
24, 2012, when I came to interview her mother and other female farmers in the village of Nagapur. After conducting several interviews with me, Mr. Qadir and Mr. Mannan left to attend their midday prayer at the local mosque. While they were gone, I waited in the home of Varsha’s family. The excitement of an exotic visitor drew the entire family and they sat me down in a plastic chair with great ceremony and insisted on serving me 7UP soda and cookies. Once I was seated, the family gathered around and nudged 10-year-old Varsha in my direction. “Madam,” she said very seriously, “what... is your name?” And so began an hour of questions all beginning with “madam” and ranging in content from “what do you eat at home” to “what are you studying?” She quickly translated all of my responses to her elders and relayed back their follow up questions.

During the interview, I was also able to ask Varsha some questions of my own. Varsha is interested in continuing her education and proud that she speaks better English than her brother, who darted in and out of the room making faces at us. Her parents also seemed very proud and wished to encourage this pursuit. Because Varsha is a girl and therefore expected to marry soon after she graduates from secondary school, we did not discuss her job prospects. However, I hypothesize that Varsha’s parents’ pride in their daughter stemmed from the hope that she might one-day use her education to climb into a higher social class. Nagapur is one of the poorest villages in Sangareddy, but Varsha’s father has already gained status in the village through his role as the Ideal Farmer. It would be
unsurprising if the family wished to continue this upward trajectory and encourage their children to pursue education and work off the farm. This is somewhat ironic, since the Ideal Farmer Program was designed to promote agriculture.

Varsha’s story exemplifies both new and old trends of social mobility in India. The new trend is that economic class is becoming more socially defining than caste.\(^{138}\) The old trend is that parents often try to marry their daughters to men of higher social status. While early studies found that physical appearance was a much more important indicator of whether or not a girl would be socially mobile in marriage\(^ {139}\), recent studies have found that educational attainment is of growing importance.\(^{140}\) Aspiring to attain upward mobility through employment or marriage is driving the rural to urban transition. As young people and their parents seek the higher socioeconomic status that is associated with urban wage labor, urbanization occurs at the family level.

Varsha’s story gives the example of one family in one mandal outside of one city in India. It is extremely difficult to generalize how families are feeling about the rural-to-urban transition and what actions they are taking to slow or hasten the process. For this reason, I will argue that household level decision-making is an important determiner of the rate of periurban transition. The joint family structure typical in India results in most young people’s lives being controlled by their elders or in-laws.\(^ {141}\) For this reason,


\(^{141}\) Dhesi, “Expectations and post-school choice”
occupational inheritance may not be affected by urbanization at the same rate across households.

Parental perceptions of their children’s social mobility options and household level decision-making are key factors in the rate of generational succession of occupation. In turn, the interruption of occupational inheritance and shift in lifestyles drive the periurban transition from rural to urban. Parents, who have themselves spent their lives working long, hard days in the field, may wish a different and better life for their children. Mobility through education, marriage, and employment are all potential ways by which this can be accomplished. Because young people’s lives are largely controlled by their elders, household level decision making plays an important role in the rate of rural-to-urban change, which cannot be generalized across families.

Conclusion

The periurban transition from rural to urban occurs on both a physical village level as well as in a social familial level. Household decision-making determines the pace and direction of a younger generations’ adaption to urbanization. In some cases families are educating their children in hopes of social mobility through attainment of urban occupations. Others hope for their children to inherit the land and continue farming. Young people who are educated and encouraged to seek urban employment do not inherit knowledge of local farming practices. They are therefore unlikely to return to agriculture or to be as productive if they do decide to return. For these reasons the move from rural to urban employment is an indicator of urbanization on the family level.
Creative adaption to the shifting physical and social environment of the periurban area could take periurban families in divergent directions. Some families may choose to sell their land and move to farms farther away from the urban core to continue farming. Other families may choose to re-divide the labor between genders and send men to urban jobs while keeping women back to manage the farm. Still other families may decide to encourage their children to transition to urban employment through education and attainment of upward mobility through marriage. These are possibilities that can be adjusted or combined to create a unique future for each family. As a result of this variability urbanization occurs at an uneven rate in the periurban zone.

The uneven rate of urbanization that occurs in periurban areas, due to the fine grain nature of transition, does not necessarily mean that the community will continue to urbanize or ultimately become urban. While the Indian statistics of population growth and urban expansion suggest that urbanization is likely to occur in the current periurban zones, growth could be slowed or redirected. For this reason the future of the physically transitional, socially dynamic, and creatively adaptive periurban communities, and even more so of periurban families, is uncertain.
Conclusion

The transitional periurban zones that encircle the growing cities of the developing world are in a unique social and environmental stage of urbanization. Early in its development, the urban-rural interface serves as a rich agricultural resource that supports urban food security. Later, the interface becomes both a source of urban labor, and an area of unregulated industry and government transition. Through this case study of Sangareddy Mandal, I have shown that periurban communities may experience transition primarily in the form of altered land use patterns, shifting gender roles, and generational succession of occupation. From the analysis of these three trends, four main generalizable periurban characteristics emerge: physical transition, social dynamism, an uncertain course of evolution, and creative adaption.

The most easily observed periurban characteristic is the physical transition noticed in the altered land use patterns and development in Sangareddy. As a community becomes more closely tied to the city, infrastructure is improved, allowing agricultural produce and labor to travel in one direction, and capital and new building materials in the other.142 As land prices rise, farmers sell their land to developers or land prospectors. These farmers then use the liquidized assets to buy more farmland farther away from the city, build a new house, or change their lifestyle. The price of labor has even more impact than the price of land on a periurban agricultural community’s land use. As wages increase, farm profits decline and so does the viability of farming as a profession. As a result, fields are planted with less labor-intensive crops, land is sold, gender roles shift, and younger generations are encouraged to seek nonagricultural employment. These are forms of creative adaption to the changing environment, which also speak to the characteristic physical transition and uncertain future of periurban agricultural communities.

142 Thünen, Isolated state
Social dynamism is a characteristic of periurban communities that was primarily observed in the deviation from the historic division of labor along gender lines and in increased female autonomy among farm families in Sangareddy. Shifting gender roles is one way in which agriculture is sustained in the face of land use change and generational succession of occupation. The work of women in agricultural communities has been to keep the home and complete specific kinds of fieldwork such as planting, weeding, and processing the harvest.¹⁴³ In periurban communities such as the villages of Sangareddy, however, women are gaining decision-making power over farm finances, cropping, and management. This shift in gender roles sustains family agricultural operations as men migrate to urban wage labor.¹⁴⁴ Feminized agriculture is therefore an intermediate stage in the urban-rural transition that may be terminated or sustained depending on whether or not the family transitions fully to an urban lifestyle or maintains an agricultural household. This social limbo exemplifies the dynamism characteristic of periurban societies.

That periurban agricultural communities have uncertain futures is another key characteristic of the urban-rural interface found by this study. While periurban villages are statistically likely to urbanize, the process will not necessarily be completed and may even reverse. This is seen by the inconsistency of the generational succession of occupation, the choice of young people to either follow their parents and continue farming or to move to urban labor. Observations in Sangareddy show that urbanization is occurring at a very fine grained, household level based on the generational succession of occupation. Decisions to continue farming or pursue urban labor are made on the household level and are influenced by government policy and parental perceptions. Multiple levels of government make policies that

¹⁴³ Mancini, “Increasing the environmental”
¹⁴⁴ Lingam, “Women-headed Households”
often work in opposition to one another, promoting\textsuperscript{145} or discouraging\textsuperscript{146} the agricultural lifestyle. Because the joint family, bound by the male blood line and ruled by a hierarchy of age, still holds sway in most Indian farming communities, parental perceptions of the political future, economic viability, and opportunity for social mobility strongly influence the choice of young people to either remain in or leave agriculture. The result is an uneven rate of change and an uncertain future for periurban communities.

This case study of farming villages in Sangareddy shows the complex nature of periurban communities. Three major observations about Sangareddy, specifically around shifts in its land use, gender roles, and generational succession of occupation, have been made. Each observation led to a particular characterization of periurban communities. Changing land use allowed for characterization of the communities as physically transitional; shifting gender roles led to characterization as socially dynamic; and inconsistency in the generational succession of occupation prompted characterization as having an uncertain future. In addition to these one-to-one correlations, all three observations demonstrate the characteristic of creative adaption. Adapting creatively demonstrates the inherent resilience of these periurban communities as they experience the challenges and opportunities presented by the arrival of the city, Understanding the interplay of all of these factors will be crucial for protecting periurban environmental resources and urban food security as well as providing for population growth and internal migration.

\textsuperscript{145} Interview with Mr. Mannan Shoukat; Sangareddy Department of Agriculture – July 23, 2013
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