An Emerging Knowledge Economy and a Stagnating Agrarian Economy
Contradictions in Andhra Pradesh under Globalization

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This paper tried to present some features of the contradictions in Andhra Pradesh's economy today: the fast growth of IT and other technology-intensive industries in Hyderabad, and the alarming levels of distress among small farmers and landless labourers in rural areas of the State. In particular, the paper, through a field study of selected villages in Kuppam, tried to examine the extent to which information and communication technologies (ICTs) can aid development in rural Andhra Pradesh.

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I
Introduction

Andhra Pradesh's capital-city, Hyderabad, is today an attractive location for investments in information technology (IT), pharmaceuticals and other high-tech industries, and is widely considered to be an emerging knowledge centre. However, in recent years, rural areas in Andhra Pradesh have been passing through a major crisis, which include cases of starvation deaths, distress migration of landless agricultural labourers, and suicides among handloom textile workers.[1] The forces of globalization play an important role in shaping Andhra Pradesh's economy, speeding up the flow of investments to the State and, ironically, at the same time, pauperizing a vast majority of its rural population.

This paper aims to bring out some of the contradictions that Andhra Pradesh is facing today under globalization. In particular, the paper examines whether information and communication technologies (ICTs) that characterised the State's economic rise in recent years can bring positive changes to its rural economy. The paper is partly based on a survey conducted in selected villages in Kuppam in Andhra Pradesh in July-August 2004. The paper shows that the existing economic and social conditions in rural areas of Andhra Pradesh are not conducive for widespread and egalitarian growth taking advantage of new technologies. Without strong public intervention in the form of implementation of land reforms, investment in agriculture particularly irrigational facilities, and extension of rural credit, the existing inequalities between rural and urban areas and between rural poor and the rural rich in the State would only widen further.

II
Contradictory Trends in Economic Growth of Andhra Pradesh

Andhra Pradesh has been highly celebrated in recent years for its successes in the information technology (IT) industry. The State's capital, Hyderabad, is home to several large IT firms, pharmaceutical companies, and public and private sector research centres; and it enjoys international attention as an upcoming global hub of innovation.[2] Andhra Pradesh sends large numbers of software professionals to the United States every year. It was estimated that in 1998, software professionals from Andhra Pradesh accounted for 23 per cent of all Indian software professionals working in the United States (Ramachandraiah, 2003). Number of engineering colleges in Andhra Pradesh increased from 36 in 1994-95 to 237 in 2004. Between 1999 and 2002, 'IT industry' (including IT hardware, IT software and ITES) grew at a compound annual growth rate of over 80 per cent in Andhra Pradesh.[3] In 2000-01, software exports from Andhra Pradesh through software technology parks of India (STPIs) amounted to Rupees 20.17 billion, which was 10.1 per cent of the total software exports from India through STPIs.[4]

The former Chief Minister of Andhra Pradesh, Mr. N. Chandrababu Naidu, had won great adulation in the national and international media for the proactive policies of his government for the IT industry. However, in the elections held in May 2004, Naidu's nine-year old government (between 1995 and 2004) was voted out of power. There was, reportedly, great popular discontent against his government's neglect of livelihood issues of the poor (The Hindu, 2004).

For all its noted successes in the IT industry, the growth of per capita State Domestic Product in Andhra Pradesh in the 1990s was slower than the national average. Poverty head-count ratios, for the year 1999-2000, are estimated to be 28.3 per cent for Andhra Pradesh's rural areas and 27.6 per cent for Andhra Pradesh's urban areas (see Tabe 1). In 1999-2000, average household per capita expenditure in Andhra Pradesh was Rs.541, lower than the national average, and considerably lower than the corresponding expenditure in Kerala (which at Rs.810 was the highest among all Indian States) (Drèze and Sen, 2002, Table A.3; see also Table 1).

Andhra Pradesh's achievements in the social spheres have been far from noteworthy. In 2001, female literacy rate was only 51 per cent in Andhra Pradesh compared to 88 per cent

in Kerala (which tops the list of Indian States in most indicators of social development). In 1993-97, an average male could expect to live for 61.2 years in Andhra Pradesh compared to 70.4 years in Kerala (see Table 1). Andhra Pradesh's track record has been unimpressive with respect to the implementation of land reforms and also with respect to the reduction of caste-based, gender-based and rural-urban inequalities. It is important to note that Kerala -- one of the few Indian States which has had a relatively successful programme of land reforms and shows relatively low levels of inequality -- has witnessed significant public action. Kerala's development achievements are, largely, the achievements of democratically elected State governments, of political and social movements, and of its people, acutely aware of their rights and responsibilities (Ramachandran, 1996). Public action of a similar nature is yet to happen in Andhra Pradesh.

Table 1: *Selected indicators of development, Andhra Pradesh, Kerala and India*

	Andhra Pradesh	Kerala	India
Area (thousand square kilometers)	275	39	3288
Population, 2001 (millions)	76	32	1027
Life expectancy at birth, males, 1993-7 (years)	61.2	70.4	60.4
Literacy rate, age 7+, females, 2001 (%)	51	88	54
Average house hold expenditure per capita 1999-2000 (Rs/month)	541	810	589
Per-capita State/National Domestic Product, at constant 1993-94 prices, 2003-04, in thousand Rupees	11.3	12.1	11.9
Poverty Index: Head-count ratio (%), rural, 1999-00	28.3	5.5	28.8
Telephones (per 1000 people), rural, 2003	20.3	78.5	14.9
Number of institutions for higher education, 1993-94	850	234	9003
Number of engineering colleges, 1993-94	36	9	323

Notes: Headcount ratios using national poverty lines, based on the 55th round of India's National Sample Survey, according to Sen and Himanshu (2004, p. 4254-5).

Source: Drèze and Sen (2002, Table A.3); Central Statistical Organisation (1999); Press Information Bureau, Government of India cited in <www.indiastat.com>; Sen and Himanshu (2004).

Several studies have confirmed that agriculture in Andhra Pradesh is facing a severe crisis, and that the policies of the State and Central governments have been largely responsible for

this crisis. A report of the Government of Andhra Pradesh's Commission on Farmer's Welfare identified several factors behind the rural crisis. A sharp decline in the availability of institutional credit for farmers, inadequate and declining supply of water resources in the State, and squeeze of resources for agricultural research, particularly for dryland farming are the important ones. Prices of agricultural commodities have been low and declining, and farmers' incomes have been vulnerable to market fluctuations, finds the report (Government of Andhra Pradesh, 2004). Investigations in 36 villages (spread over three districts) of Andhra Pradesh completed in early 2004 showed that people in the villages were falling into poverty due to the high costs of health care, loans from private money lenders at high rates of interest, and draught conditions exacerbated by the absence of irrigational facilities (Krishna *et al*, 2004). A study on agricultural growth in the Telangana region showed that public investment in the region in canal irrigation was inadequate. In the face of this, small farmers in the Telangana region invested in groundwater irrigation, incurring large debts in the process, which also lead to suicides by several farmers (Vamsi, 2004).

In the early 1990s, cotton cultivation became very extensive in Andhra Pradesh; between 1991 and 1996, over one-and-a-half million hectares of land in the State was diverted from food grain cultivation to cotton cultivation to take advantage of the boom in export demand for raw cotton during this period of time. However, as a consequence of liberalization of agricultural trade, prices of raw cotton declined sharply after 1995, and many cotton farmers in Andhra Pradesh were deep in debt to money lenders, pesticide dealers and seed suppliers (Patnaik, 2003). It is important to note here that the genetically modified (GM) cotton seeds sold in Andhra Pradesh by the subsidiary of a multinational company, Monsanto-Mahyco, were, in 2005, found to be a failure in all the three years after the seed's introduction in the State. According to the Government of Andhra Pradesh, for each 450 gm packet of *Bt* cotton seeds purchased by the farmer at a cost of Rs.1850, Rs.1250 (or 67.6 per cent of the cost) was royalty payments to Monsanto.[5]

Rural areas in most regions in India other than Kerala and West Bengal are characterised by high degree of landlessness among labouring households. In India, during the period of economic reforms (after 1991), there has been a significant slow down in public investment in agriculture and rural infrastructure (Ramachandran and Swaminathan, 2003). There was also a decline in the volume of rural credit disbursed by banking institutions over this period of time (Chavan, 2002; Ramachandran and Swaminathan, eds.,

2005). In Andhra Pradesh, by 2000-01, only 40.3 per cent of the net cultivated area was irrigated. In the year 2002-03, as many as 1041 *mandals* out of the total 1127 *mandals* in Andhra Pradesh had been declared drought affected (Rao, 2003). All these have greatly contributed to the agrarian crisis in Andhra Pradesh.

The Commission on Farmer's welfare suggested that the State government increase public expenditure on agriculture and allied activities to 5 per cent of the gross State Domestic Product. Public policies in the State should aim at increase in investment in irrigational facilities, measures to reduce volatility of farmers' incomes that include remunerative prices, and expansion of non-agricultural employment opportunities (Government of Andhra Pradesh, 2004).

III
New Technologies for Rural Areas? Results of a Survey in Kuppam[6]

A stratified sample survey of households in selected areas in Kuppam was conducted by this author in July-August 2004 in an attempt to examine the impact of information and communication technologies (ICTs) in the development of these areas.[7]

In April 2002, the Andhra Pradesh government and Hewlett Packard (HP) jointly launched a programme to build "inclusive communities" (i-communities) – rural communities that make use of ICTs for participatory economic growth.[8] This project was begun in the Kuppam area or the State Legislative Assembly constituency of Kuppam, which comes within Chittoor district of Andhra Pradesh.[9] The key feature of the Kuppam i-community project is a network of community information centres, operated by local entrepreneurs, who receive financial and technical assistance from the State government, Hewlett Packard and World Corps India (a NGO committed to rural development). These projects aim to provide farmers access to information about new and better agricultural practices and agricultural markets. They also aim to provide information about educational and vocational opportunities, and health-care facilities (Thomas, 2006).

In Andhra Pradesh, for administrative purposes, each district is subdivided into *mandals*, *mandals* are further subdivided into *grama panchayats*, and each *grama panchayat* consists of a number of villages or habitations. The Kuppam area has a population of approximately

320,000 people and is spread over five *mandals*: Gudupalli, Santipuram, Ramakuppam and Venkatagiri Kota. There are, in total, 99 *grama panchayats* and 714 villages in the five *mandals* that constitute the Kuppam area. At the time the survey was conducted, 13 community information centres (CICs) operated in different parts of the Kuppam area as part of the i-community project. Five of these CICs started operations in April 2002, three of them in September 2003, and another five of these CICs were started in April 2004 (Thomas, 2006).

After discussions with officials of HP, officials of the concerned Mandal revenue office, and entrepreneurs of CICs in the Kuppam area, it was decided that the sample survey would be conducted in Kadepalle village in Gudupalle *manda*l and Venkatepalle village in Santipuram *mandal*. These villages are located within a 3 km. radius of a CIC started in April 2002. I prepared a list of all the 141 households in Kadepalle village and 168 households in Venkatepalle village, with names of head of household and ownership of land holdings.[10] This list formed the sampling frame for the survey. A representative sample of 45 households was then chosen from the sampling frame, the representative sample consisting of 20 households from Kadepalle and 25 households from Venkatepalle (representing, respectively, 14.2 per cent and 14.9 per cent of the sample population in the two villages). Stratified random sampling procedure with stratification on the basis of the size of land holdings was adopted in the choice of representative samples (Thomas, 2006).

In the 45 households in which the survey was conducted in Kuppam, there were a total of 215 persons (113 males and 102 females) – thus 4.8 persons on an average per household. Of the 45 households surveyed, 26 households belonged to a Hindu backward caste (officially, other backward caste or OBC); 3 households to other Hindu castes; 9 households to a scheduled caste (SC), and 7 households belonged to the Muslim community. Literacy rate among persons above the age of seven in the surveyed households in Kuppam was 63.3 per cent; the corresponding figures for Andhra Pradesh and Chittoor district, according to Census of India 2001, were 61.1 per cent and 67.5 per cent respectively (Thomas, 2006).[11]

Of the 45 households in the sample, 10 households were landless, 16 households possessed less than 1 acre of land, and another 10 households possessed land between 1 acre and 2.5 acres. There were 9 households in the sample whose landholdings exceeded 2.5 acres. The highest amount of landholdings possessed by a household in the sample was 7.8 acres.

Kuppam's economy is largely dependent on agriculture. The major source of income for the majority of the surveyed households was cultivation and agricultural labour. Of the total 45 households surveyed, 4 households depended on agricultural labour alone, another 4 households on cultivation alone, and 13 households depended on both cultivation and agricultural labour. There were yet another 15 households in the sample who earned their livelihood partly from agriculture and partly from other non-agricultural employment opportunities (see Table 2). A railway station is located close to the surveyed villages and this provided a small number of low paying, unsteady employment opportunities. One of the households in the sample earned its livelihood by cooking and selling food items to passengers in the trains that stop at the railway station. A hotel and a shop selling vegetables and fruits, both run by households in the sample, got their clientele from people coming in and out and people working in the railway station. There were several persons in the surveyed villages who travelled by train to Bangalore on a daily basis to sell *chamanthi* flowers and to find small jobs in the city. Heads of two surveyed households were construction workers in Bangalore who regularly travelled back to the village. There were persons in the sample who occasionally found work as construction workers in the nearby villages; there were also persons who made small incomes by making incense sticks. Two persons in the sample were employed by the Railways Department as manual workers and they received regular incomes. Two teachers, a post-man, a lab-technician and a marketing executive were the only other persons in the whole sample who received steady incomes from a formal-sector job (see Table 2).

The survey did not attempt, in any systematic manner, to find the number of days of employment in a year for agricultural and non-agricultural workers in the sample, or to find the incomes of surveyed households in different months of the year. However, certain observations may be useful here. Agricultural work in the village was highly unstable. Agricultural labourers could find employment only during the cropping seasons in June-July and December-January. Daily wages of female agricultural workers were between Rs.20 and Rs.25, and for male agricultural workers daily wages ranged between Rs.30 and Rs.50. A construction worker earned Rs.100 to Rs.150 a day in Bangalore and Rs.100 -- Rs.120 a day in the village.

The important agricultural crops in the surveyed villages were paddy, *ragi*, groundnut, tomatoes, *chamanthi* flower, and vegetables. According to 51.1 per cent of all households in

the sample (or 65.7 per cent of all land-owning households in the sample), the *most important* constraint to agricultural growth was the absence of irrigational facilities. A substantial number of surveyed households (17.1 per cent of all land-owning households in the sample) noted that non-availability of credit was the *most important* problem they faced. There was only a single source of institutional credit in the surveyed villages in Kuppam -- a Grameen Bank under the management of a religious institution. Not any of the scheduled commercial banks or co-operative banks operated in the surveyed villages. Absence of adequate physical infrastructure for marketing agricultural goods was another important issue. The head of one of the surveyed households, the owner of a six-acre agricultural plot and a High School English teacher by profession, pointed out that he was keen to adopt new agricultural practices and venture into cultivation of new crops; yet he was worried that he would not be able to sell his agricultural products. Sharp fall in recent years in the prices of many of the agricultural commodities produced in the village, particularly tomatoes, was another issue of great concern to the cultivating households (Thomas, 2006).

While overall non-agricultural opportunities in the surveyed villages have been rather limited, people who obtained regular jobs in the non-agricultural sector were those belonging to households which possessed relatively larger landholdings. In the whole sample, there were only four agricultural households in which a family member held a regular-income job; three of these households possessed more than 2.5 acres of land (there were, of course, three other landless households whose household incomes came from regular jobs) (see Table 2).

Persons belonging to the relatively rich households were found to be better-educated. Households with landholdings of more than 2.5 acres accounted for 45 per cent of all persons in the sample who received tertiary education and more; the share of these households in total adult population in the sample was only 26.4 per cent. On the other hand, landless households and households with less than 2.5 acres of land each accounted for a greater share of the illiterate population in the sample compared to their corresponding shares in total adult population in the sample (see Table 3).

Table 2: *Distribution of surveyed households by their major source of income and extent of landholdings, in numbers, Kuppam, 2004*

Households classified by landholdings	AL	C	C + AL	UNA	SNA	AL + UNA	C + UNA	C + SNA	Total
Landless	2	--	--	2	3	3	--	--	10
<1 acre	2	1	7	4	--	1	--	1	16
1 acre – 2.5 acre	--	2	4	--	--	2	2	--	10
>2.5 acre	--	1	2	--	--	--	3	3	9
Total	4	4	13	6	3	6	5	4	45

Notes: AL = Agricultural labour; C = Cultivation; UNA = Unsteady non-agricultural employment; SNA = Steady non-agricultural employment.
Source: Survey data, July-August 2004.

Table 3: *Distribution of all adult members, illiterates and educated members in the surveyed households across various landholding categories, shares in per cent, Kuppam, 2004*

Households classified by landholdings	Adult members (age +7)	Illiterates	Primary educated	Secondary educated	Tertiary educated
Landless	14.7	15.5	20.7	9.3	22.7
<1 acre	37.6	42.3	37.9	34.7	31.8
1 acre – 2.5 acre	21.3	23.9	13.8	28.0	0.0
>2.5 acre	26.4	18.3	27.6	28.0	45.5
Total	100.0	100.0	100.0	100.0	100.0
Total in numbers	197	71	29	75	22

Source: Survey data, July-August 2004.

Based on the responses of the head of households to questions asked during the survey, it was found that in 37.8 per cent of surveyed households, household members had not heard about computers, and in 60 per cent of the households, members had not heard about the information centre in the locality. Of all persons above age seven in the sample, only 38.8 per cent read newspapers, 52.6 per cent listened to the radio, 48 per cent operated a telephone, and only 7.7 per cent operated a computer (however, 75.5 per cent of all persons above age seven in the sample watched television). Therefore, penetration of ICTs as well as other traditional media was very low in the surveyed village. Although the i-community project aimed to encourage the use of computers among surveyed households, it was clearly not very successful in that task (Thomas, 2006).

More importantly, it was unlikely that the information on agriculture or employment opportunities which the information centres tried to provide would be useful to majority of the surveyed households. First, 10 out of the 45 surveyed households (22.2 per cent of all) did not possess land (see Table 2). In 7 out of these 10 landless households, the only source of household income was agricultural or non-agricultural work by one or more family members. Irregular employment as agricultural or non-agricultural workers provided the major source of income to several households owning less than 2.5 acres of land (see table 2). Households of landless labourers did not have much to gain from information on better agricultural practices or agricultural prices for the simple reason that these households did not have land to cultivate crops, did not have agricultural crops to be sold in the market, and also did not have the bargaining power to convert an increase in agricultural prices into a corresponding increase in wages (Thomas, 2006).

Information on better agricultural practices or agricultural prices did not have great usefulness to a large number of land-holding households as well in Kuppam. In Kuppam, 33.3 per cent of all surveyed households owned land that was not irrigated. Agricultural production in many of the land-holding households in the sample suffered from small size of land-holdings and absence of irrigational facilities; these households were not selling their agricultural produce in the market. In fact, the survey showed that only 35.6 per cent of the sample of households was selling their agricultural produce in the market (Thomas, 2006).

Demand for information not only about agriculture but also about jobs and higher studies is seen to be positively associated with the extent of landholdings. Among households holding more than 2.5 acres of land, 66.7 per cent had at least one household member searching for jobs; and 22.2 per cent had one or more household members interested in higher studies. Among the category of landless households, the corresponding proportion searching for jobs was 10.0 per cent. None of the family members in the category of landless households and households owning 1.0 – 2.5 acres of land were interested in higher studies. The proportion of households who were aware of agricultural prices was 89 per cent in the highest landowning category, but only 40 per cent among households owning 1.0 -- 2.5 acres of land. Again, proportions of households which have received loans from formal sources of credit were considerably higher among the category of households owning more than 1 acre of land compared to the landless households and households owning less than 1 acre of land (see Table 4).

Table 4: *Some indicators on the potential role of information and communication technologies in development, surveyed households, classified by ownership of land holdings, Kuppam, 2004*

Land holding categories	Number of households in each category	Households which are aware of agricultural prices	Households whose members are searching for jobs	Households whose members are interested in higher studies	Households which have received loans
Landless	10	1 (10.0)	1 (10.0)	0 (0.0)	2 (20.0)
< 1 acre	16	2 (12.5)	5 (31.3)	1 (6.3)	10 (62.5)
1 acre – 2.5 acres	10	2 (40.0)	0 (0.0)	0 (0.0)	9 (90.0)
> 2.5 acres	9	8 (89.0)	6 (66.7)	2 (22.2)	7 (78.0)

Notes: Figures in brackets show numbers of households as a proportion of households within each land holding category.
Source: Survey data, July-August 2004.

IV
Conclusions

This paper tried to present some features of the contradictions in Andhra Pradesh's economy today: the fast growth of IT and other technology-intensive industries in Hyderabad, and the alarming levels of distress among small farmers and landless labourers in rural areas of the State. In particular, the paper, through a field study of selected villages in Kuppam, tried to examine the extent to which information and communication technologies (ICTs) can aid development in rural Andhra Pradesh.

In Kuppam, it was found that landless households did not have much to gain from the information about agricultural practices and agricultural markets that ICTs aimed to provide through community information centres. This was equally true of households owning small and marginal landholdings or landholdings that are not irrigated. The illiterate and the less-educated can hardly gain from information about jobs or higher studies. It was also found that persons belonging to the relatively poor households were less likely to be educated. Thus the relatively rich and the better-educated will gain from the information that ICTs provide, while the poor and the illiterate will not. In this way, it was found that ICTs could aggravate the existing inequalities.

New technologies including ICTs and biotechnology will effect widespread positive changes in the rural economy only when landlessness, absence of irrigational facilities and institutional credit, and illiteracy are removed through interventionist government policies. Changes are also needed at the global level to revamp the unfair rules of world trade that depress prices of agricultural commodities. As long as the fundamental obstacles to agrarian transformation and to the freedoms of labouring women and men persist in the Indian countryside, the really poor and the illiterate would suffer the most. Their disadvantageous position in the rural economy could put them at a greater disadvantage in the emerging knowledge economy.

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Notes

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[1] See Krishnakumar (2001) and Sainath (2003).

[2] According to *Wired* magazine, cited in UNDP (2001), p.38.

[3] 'Information and Communication Technology Policy of the Government of Andhra Pradesh 2002', Government Order Ms. No. 27, dated 27-06-2002 (downloaded from <www.ap-it.com/ictpolicy02.pdf>, accessed 9 June 2004).

[4] <.http://planningcommission.nic.in/plans/stateplan/sdr_punjab/sdrpun_ch13.pdf>, accessed 5 October 2004.

[5] 'Andhra Pradesh plans to drag Monsanto to Monopolies and Restrictive Trade Practices Commission over Bt cotton royalty', *Business Line*, December 29, 2005.
[6] For more details on the survey, see Thomas (2006).
[7] The methodology for field study for this paper is motivated by field studies conducted in Ramakumar (2004), Pais (2003) and Rawal (2001). It also benefited from an ongoing study conducted by V. Surjit of the Indian Statistical Institute, Kolkata.
[8] See www.hp.com/e-inclusion/en/project/kuppam.pdf, accessed 9 June 2004).
[9] The assembly constituency of Kuppam has been returning Chandrababu Naidu to the State Legislative Assembly continuously from 1989 -- and even in the most recent elections held in 2004.
[10] As part of the Integrated Child Development Services (ICDS) Project, which is being carried out in the Kuppam area, Anganwadi teachers conduct a door-to-door survey of all households in their village, collecting socio-economic information about households as well as health information of children in the households. I have used this information collected by Anganwadi teachers in Kadepalle and Venkatepalle in the preparation of sampling frame.
[11] See the results of Census of India 2001 in <www.censusindia.net>