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Rural Women and Irrigation: Patriarchy, Class, and the Modernizing State in South India

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Abstract *Irrigation is the major strategy used by "modernizing" states in India and throughout the Third World to raise agricultural productivity and surpluses. This paper shows that irrigation is not gender-neutral, focusing on how canal irrigation affects women's work and lives in Andhra Pradesh, India. First, it delineates the particular consequences for women of state-sponsored irrigation. It then focuses on transformations in the sexual division of labor, workloads, and the labor process for women of different classes and castes and shows how the economic and physical burdens of agricultural intensification have fallen most heavily on women of agricultural labor and marginal cultivator households. It concludes by suggesting policy measures that can meet poor women's basic livelihood needs and points out that only working class women's organizations will be able to change the preoccupation of the state with modernization, the inequitable distribution of resources, and the stranglehold of patriarchy.*

Keywords: agricultural labor, class, irrigation, modernizing state, patriarchy, rural women, sexual division of labor.

This article analyzes the effects of irrigation on women's work and lives in rural south India. The article focuses on irrigation because it has been the most important component of the Green Revolution package (high-yielding varieties of seeds, chemical fertilizers, and pesticides being other components). Irrigation continues to be used as a strategy by modernizing states in India and throughout the developing world in attempts to replace traditional peasant agriculture with scientific technology so as to raise productivity and agricultural surpluses.¹ Despite the warning by Ester Boserup as far back as 1970 that there are constraints on women realizing the benefits of agricultural modernization, empirical studies on the gender-specific effects of irrigation are virtually nonexistent (Agarwal, 1981). Based on fieldwork in rural south India, this article is an attempt to redress the substantial gap in the data base.

Theoretical Considerations

Because *patriarchy*, *class*, and *state* are all disputed terms, I begin by defining them and theorizing the interplay between these terms.

Patriarchy "encapsulates the mechanisms, ideology and social structures which have enabled men throughout much of human history to gain and maintain their domina-

tion over women" (Ramazanoglu, 1989, p. 33). Patriarchy expresses not only the power of men over women but also the ideological legitimization of this power as natural, normal, and just (Eisenstein, 1979). According to Althusser (1971), *ideology*² is a relatively coherent ensemble of representations, values, and beliefs that reproduce existing relations of production by interpellating subjects in imaginary relations to the real. As processes, rather than systems of ideas, ideologies have a material existence and are intermeshed with both the way production systems are organized and the operation of male dominated gender relations.

In accord with Marx, *class* is used as an analytical category. To the extent that the means of production are owned by some historical groups in society and not others, and to the extent the owners control both the decisions about and the fruits of production, the production system is organized along class lines (Kohli, 1987). Women cannot be understood as constituting a separate sex class, because if they were, then differences between women of different classes would not be recognized.³

In accord with Alfred Stepan (1978) and Theda Skocpol (1979), the *state* is defined as a set of administrative and coercive institutions headed by an executive authority that structures relationships not only between civil society and public authority but also within civil society itself. Modernizing states or Third World states can be distinguished by the facts that they are committed to deliberate development or planned socioeconomic change and that this goal is widely accepted as legitimate by the politically relevant strata (Kohli, 1987).⁴

Structural theories of the state (Poulantzas, 1978; Skocpol, 1979) have not considered gender as central to their analyses. Socialist feminist theory, however, recognizes that, to the extent that the state is the site for the systematic concentration of man's power, it codifies, institutionalizes, and legitimizes patriarchy (MacKinnon, 1983). The repercussions of the male state for women in modernizing states have only just begun to be studied,⁵ yet the findings are unequivocal: "Gender is at the heart of state origins, access to the state, and state resource-allocation. States are shaped by gender struggle; they carry distinctive gender ideologies through time which guide resource allocation decisions in ways that mould material realities" (Parpart and Staudt, 1988, p. 6).

The implicit assumption of modernization policies such as the policy of agricultural development through the introduction of large-scale irrigation schemes is that such state intervention is gender-neutral. In fact, the way the male point of view frames an experience is the way it is framed by policy (MacKinnon, 1983). Thus, patriarchal ideology that defines women primarily as dependent beings has provided the rationale for colonial and postcolonial male officials to assume that the benefits from irrigation accruing to men will automatically benefit women and children as well.⁶

This article shows that this is not true. First, it shows that the distribution of irrigation benefits within the household reflects the fact that the household is a hierarchical social unit and embodies relations of subordination based on gender.⁷ Second, it shows the differential effects of irrigation on women of different classes. Third, it shows that changes in the sexual division of labor consequent to the introduction of irrigation cannot be seen only as technically determined transformations. Based on socialist feminist theory, both the social relations of production—the mode of appropriation of surplus labor and the social distribution of the means of production—and patriarchy are taken into account in understanding why women continue to be exploited and oppressed (some more than others) even after the introduction of irrigation.⁸

The Research Context

The southeastern region of Andhra Pradesh lies in the uplands of the Deccan plateau (in contrast to the fertile, long irrigated deltas) and is characterized by sparse (29 in. annually) and uncertain rainfall, 77% of which falls during the 5 months of the southwest monsoon (June-December). Consequently, the area is dry and drought-prone. Without irrigation, only a rain-fed crop is cultivable.

The canal that is the focus of this study was built in 1956. It flows off the Tungabhadra river and provides water to cultivators in 80 villages in either the first (June-December) or the second (December-April) cropping season. The cropping pattern is diversified. In the first season of 1984-1985, for example, there were 15,000 acres of paddy, 8000 acres of cotton, and 1000 acres of vegetable crops. In the second season, other than cotton (which is a 7- to 9-month crop), there were 21,000 acres of groundnut and 2500 acres of paddy. In addition, in the first season, about 40,000 acres of sorghum and 30,000 acres of tobacco, cotton, groundnut, and other crops were grown with monsoon rainfall.

Patriarchy is a powerful system in southeastern Andhra Pradesh as in the rest of contemporary India. It draws historical and cultural legitimacy from the norms of *streedharma* (proper behavior for women) codified by Manu in the first century A.D., which hold that a woman should obey her father when she is young, her husband when she is married, and her son when she is old (Bardhan, 1986). Families in the region are structured as patrilineal-patrilocal units, with males controlling land, capital, and the female labor process. However, as in other regions in south India and in contrast to north India, patriarchal domination does not include proscriptions on women's participation in fieldwork. The operation of patriarchy in structuring the form and extent of women's work participation varies with class and caste, as is shown subsequently.

Three classes can be distinguished in southeastern Andhra Pradesh, based on their relationship to land, the principal means of production. The distribution of land is highly skewed. Five percent of all landowners (Group 1) are rich cultivators holding 20-200 acres of land each; they own 25% of the land. Twenty-five percent of landowners (Group 2) are middle-income cultivators holding 5-20 acres each; they own 40% of the land. Seventy percent of all landowners (Group 3) are smallholders or marginal peasants holding less than 5 acres each; they own 35% of the land. Fifty-four percent of the population (Group 4) are agricultural laborers who own no land. Groups 1 and 2 form a class of owner-cultivators with landholdings from which they can obtain a surplus over their minimum subsistence requirements and employ wage labor. Group 3 consists of a class of owner-cultivators who are unable to meet livelihood requirements solely from their lands and must engage in wage labor to balance the family budget. Group 4 consists of a class of laborers who are separated from the means of production and must earn their livelihoods solely from wage labor.

According to the Census of India (1984), the number of owner-cultivators in the *taluk* (administrative subregion) through which the canal flows was 25,000 (Groups 1, 2, and 3), of whom only 24% were women, indicating that the men have a stranglehold over the most valuable means of production. In contrast, of the 40,000 agricultural laborers (Group 4), 55% were women.

The ranking of groups according to social hierarchy or caste broadly parallels the classifications. The rich cultivators are of the higher or upper-middle Reddy or Kamma castes. The Reddys have been the dominant caste in the region for many generations.

They are the old elite, few in number but owners of a disproportionate amount of land and wielders of enormous economic, political, and social power. The Kammas migrated into the region from the delta area of Andhra Pradesh in the mid-1960s. They number only in the thousands but are the new entrepreneurs. Soon after the introduction of the canal, they bought irrigated land cheaply from naive native cultivators, and they now cultivate high-value crops for profit. Middle and marginal cultivators are of the middle and service castes (Kurruva, Boya, Golla, Muslim, and so on), and agricultural laborers are from the lowest and the untouchable castes (Mala, Madiga, Teliga, and so forth). Brahmins, the highest caste, are numerically and politically insignificant in the region.

The research focused on three villages at the tail end of the canal system, all of which had *niti sangams* or water associations, and one village at the head end, without a *niti sangam*. In each village, rich, middle, and marginal cultivators and landless laborers were interviewed. Within each household, both women and men at various stages of the life cycle were questioned.¹⁰

Implications for Women of Irrigation as a State Intervention

Historically, canal irrigation in south India has been managed as a state enterprise. Since independence from the British colonial government in 1947, the modernizing state has continued this tradition. Irrigation was seen as a means "to get out of this rut of poverty" by Nehru, India's first prime minister, and numerous new canals have been built, one of them the system studied.

The consequences of state-sponsored irrigation development for women are manifold. First, thousands of women were employed as construction workers when the canal was built. In construction, as in agriculture, the sexual division of labor is explicit: women carry headloads of earth or concrete, sieve sand, and so forth, whereas men dig, mix the concrete, and perform other such tasks. Women are paid a lower wage than men, and this is justified by an overall ideology of gender that considers the jobs women do as lighter. The government Committee on Fair Wages upholds this view, arguing that "where women are employed on work exclusively done by them or where they are admittedly less efficient than men, there is every justification for calculating minimum and fair wages on the basis of the requirements of a smaller standard family in the case of a woman than in the case of a man" (quoted in Swaminathan, 1987, p. WS37). Thus, the state institutionalizes and legitimizes patriarchy.

Second, local labor was not used to build the canal. Instead, the Class I (big) private contractors (always men), to whom the Irrigation Department awarded the contracts, employed labor agents (also always men) who supplied the labor—women and men—from unirrigated villages where living conditions were even more bleak. By employing migrant laborers, contractors were (and still are) able to pay them less and make them work longer hours than local laborers, holding them captive in makeshift camps at the work site. Work conditions were, and still are, especially oppressive for women, who continue to be responsible for child care, finding fuel and water, and cooking, tasks that are more difficult in locations far from home.

Third, when plots of land were localized or given rights to water by the state, rosters were drawn up of those with title to the land, the majority of whom were and still are males. By placing another critical resource in the hands of men, the state only reinforced patriarchal domination.

Fourth, as a result of state policy, water at the tail end of the canal is scarce, but not all tail-end villages are affected equally.¹¹ Tail-end villages, where the *peddamanshulu* or Big Men—and they are always men—are able to organize a *niti sangam* or water association, are much better off than villages without them. This is because the *peddamanshulu* lobby, negotiate, and bribe Irrigation Department staff and officials to get water for their villages. Tail-end villages that do not organize *niti sangams* receive little water and have not been able to intensify agricultural production. They remain dry farming economies and are unable to support the increasing population base. The consequences of this for women of the lowest classes and castes is migration in search of livelihoods. These are bound to be in technologically deprived sectors, whether agriculture, construction, petty commodity production, or the informal sector where working conditions and wages for women are more insecure, contingent, and arduous than for men, who do not have to shoulder a double burden of work.

Fifth, even in the tail-end villages where there are *niti sangams*, the economically significant and socially valued work of “coping with the bureaucracy”¹² is performed exclusively by men. The Irrigation Department, established in colonial times, continues to be an all-male enclave—from the chief engineer to the ditch tender. The officers are separated from their field staff and marginal cultivators by their class; they are also distanced by the location of their offices far from most canal villages. Only the *peddamanshulu* or rich peasants have the status, class characteristics, transportation, and political savvy to deal with irrigation engineers and other government officers. At critical junctures in the crop season when water gets very scarce, they may be accompanied to a government office by a large contingent of marginal cultivators in a show of force. Women are conspicuously absent from this public domain.

Sixth, the ability of the *peddamanshulu* to spend time and resources organizing village activities, such as the collective provisioning of water, is predicated on the fact that their wives or mothers are not only performing the work of childrearing and all the work of managing the home but are also out there in the fields supervising day-to-day operations. This puts an extra and unacknowledged burden on these women.

Seventh, it is community men who are hired for the irrigation jobs that have been created since the introduction of the canal; these include the jobs of water guards, common irrigators, or laborers employed on contract for the task of irrigating plots. Female-headed households are most likely to employ men on contract to do the task of irrigating their plots, because night irrigation is perceived as being particularly dangerous for women, and even during the day, irrigating one's plot may involve fighting with upstream neighbors. Although women often irrigate their family plots, the ideology of gender is apparent in remarks such as “this plot is easy enough for a woman to irrigate” or as an explanation for breaking out of turn, “the woman of the family irrigated; what does she know about the *niti sangam* schedule of turns?”

In concluding this section, it is pertinent to point out that the gender implications of state-sponsored irrigation systems such as this canal have been characterized as unplanned fallouts (Agarwal, 1988). In contrast, in numerous other irrigation projects, such as Mwea, Kenya (Hanger and Moris, 1973) and Mahaweli, Sri Lanka (Schrijvers, 1988), gender biases are an explicit part of the plans and include attempts to “integrate women in development.”¹³ In either case, the consistent workings of patriarchy within the state serve to reinforce patriarchy in civil society, with adverse consequences for women.

Transformations in the Sexual Division of Labor, Workloads, and Control of the Labor Process

Women in Agricultural Labor Households: Technical Organization of Labor

"All our lives are a summer time." This statement by Maryamma, a woman of the lowest agricultural labor class and caste (Madiga), sums up the close dependency of finding employment on the availability of water: during the dry summer months there is very little work available. In the days before canal irrigation, the only source of moisture was rainfall, and this is still the case for the majority of plots in the area. A comparison of the technical organization of labor under rainfed and irrigated conditions demonstrates the process of transformation.

The rainfed cycle of agricultural production usually begins in June or July and ends in December or January. Preparation of the land for sowing can begin only after the rains, as the black cotton soils in the area cannot be worked unless first moistened. As is the practice in all other parts of the country, only male labor is used for ploughing, though women may assist in clearing the fields and in manuring. Working the bullock team and seed drill to sow groundnut and sorghum is also an exclusively male job; a woman may follow the team dispensing seed. Rainfed cotton, however, is sown by women, as each seed is planted individually. Women prepare tobacco nurseries and transplant the seedlings; these are almost exclusively women's jobs, as is the process of debudding to allow for greater leaf growth. Debudding tobacco is a particularly offensive task that leaves a blackish poison on the hands; women usually skip their midday meal when they are doing this work so as not to ingest the poison. Harvesting the leaves and stringing tobacco garlands are also considered female jobs. Then both men and women work on curing the leaves for 3-4 months.

After planting, there is little work for women on cotton, groundnut, and sorghum until the harvest; it is the men who are involved in hoeing and fertilizing. If the rains are good and weed growth is excessive, women may be employed once for weeding. Cotton is picked using women's labor, with the number of individuals hired varying with the quantity of cotton to be picked. *Gumpus* or groups of women and a few men usually take responsibility for harvesting groundnut and sorghum. For groundnut, harvesting entails uprooting the plant, plucking the pods off the stems, and binding the stems. Women are again employed to clean the nuts and bag them. For sorghum, harvesting entails reaping, cutting the cobs off the stems, and binding the sheaves. Both men and women are employed to thresh and winnow the grain.

The irrigated agricultural production cycle starts with the release of water into the canal by the authorities of the Irrigation Department. The main irrigated crop in the first season is transplanted high yield variety (HYV) rice paddy. Ploughing the paddy fields and building and repairing bunds are all male tasks; leveling work is done by women. Nurseries are tended for 25 days, after which women's labor is used exclusively for transplanting. Men procure and apply water, broadcast fertilizer, and spray pesticide. Weeding, which is done at least twice, is women's work. Harvesting operations—reaping and binding, followed by threshing and winnowing—are carried out by groups of women and men.

The next irrigated crop to be sown is hybrid cotton of both the long- and short-duration varieties. In addition to the agricultural operations necessary to grow rainfed cotton, women work on hand weeding (after the men hoe) and basal fertilizer application

three or four times during the crop cycle. Harvesting irrigated cotton employs approximately three times the number of woman-days required to pick rainfed cotton. The most labor-intensive crop to be grown is hybrid cotton for seed. Although it is grown on less than 5% of the irrigated land, it employs mainly children almost continuously for 4-5 months to cross-fertilize each flower of one variety with the pollen of another.

The most significant irrigated vegetable crop is onion. Again men plough the fields, build the furrows, and irrigate the plots. Women transplant the seedlings into the furrows. Weeding is done two or three times during the crop cycle by the women and involves a lot of work, because hoeing is not possible. Harvesting—uprooting the bulbs, trimming the stems, and bagging—is done by groups consisting of both men and women.

Irrigated groundnut is the major crop in the second season. In addition to the agricultural operations necessary to grow the rainfed crop, women shell twice the quantity of seeds and weed after hoeing by the men once or twice. Harvesting, which is by groups, employs at least twice the number of woman-days as required by rainfed groundnut.

Thus, under both rainfed and irrigated conditions the technical organization of labor feeds off the sexual division of labor that assigns women of the lowest class and caste to labor-intensive, backbreaking, and sometimes hazardous tasks.

Women in Agricultural Labor Households:

Women's Workloads

Table 1 summarizes the labor required to grow the different crops. The transformation in women's work as a result of irrigation is dramatic. In contrast to the 25 woman-days for sorghum, paddy requires 53 woman-days per acre. Compared with 44 days for rainfed cotton, irrigated cotton requires 112 woman-days per acre, and compared with 23 days for rainfed groundnut, irrigated groundnut requires 45 woman-days per acre.

More generally, changes in the technical organization of labor as a result of irrigation mean that even marginal cultivators must hire labor for transplanting and harvesting. The specific cropping pattern adopted in the area, historically and currently, has not lent itself to heavy mechanization and consequent unemployment for women.¹⁴ Also,

Table 1
Women's Labor Demands for Major Crops

Crop	Labor Demand (in Woman-Days per Acre)
Rainfed sorghum	25
Rainfed tobacco	55
Rainfed cotton	44
Irrigated cotton	112
Irrigated cotton seed	1891 ^a
Rainfed groundnut	23
Irrigated groundnut	45
Irrigated paddy rice	53
Irrigated onion	125

^aIncludes children.

unlike in monocrop rice and wheat areas, there is mixed cropping in the region of Andhra Pradesh studied. The various cropping cycles overlap, and seasonal peaks and troughs in employment opportunities are not as marked. These changes have led to an increase in the availability of work for women agricultural laborers. But to find employment over a longer period of time, women must be skilled at various agricultural operations for many crops.

Women agricultural laborers are employed for approximately 20 days a month from August to April. But as Mencher and Saradamoni (1982) point out, the number of days a woman works varies even within the same village depending on factors such as age, marital status, husband's contribution, and so forth. Additionally, during periods of peak labor demand, the length of the working day is increased, but this bars women with infants, who cannot leave their children alone from 8 A.M. to 7 P.M.

Women in Agricultural Labor Households: The Labor Process

In the hierarchy of laborers (permanent, regular casual, and seasonal casual), women are at the lower end (Sen, 1982). Unlike men, who may be employed as *ghasaghadiu* or attached laborers for a year, women can never be sure of being continuously employed. It is inconceivable that they could be employed as attached laborers, because that involves practically full-time work and would leave them with no time to meet the needs of their families. Thus, the ideology of gender, which assigns primary responsibility for the work within the household to women, has a direct effect on their participation in paid work outside the house. That is, although women work as hard as men, they do not have the security of regular, assured work.

The insecurity attending women's work is intensified by changing relations of production as traditional networks of responsibility fall apart. For generations, women of the lowest class and castes have worked as agricultural laborers or coolies for those who belong to privileged classes and castes. Although the form of coolie work, referred to by the women as *kashtam* (hardship), and overt production relations continue, the significance of these production relations has undergone dramatic change (Mies, 1986). For example, according to Ramamma, an elderly woman whose husband has been a *ghasaghadiu* for more than 30 years, in the days before the canal "practically the whole village" used to be employed by the biggest landowning family in one of the villages.¹⁵ All those employed had the right to do certain jobs for which they would receive remuneration, usually in kind. Today, only about 50 women are employed by the family during the agricultural season as regular casual workers or those who are "free to work for others if her permanent employer has no work" (Mencher and Saradamoni, 1982). Of these 50 women, only about 10 retain a right to work around the house for the *sahukar* or patron during the summer or monsoon when there is no work in the fields. These women occasionally pay for the relative security of their work by accepting wages that are below what others receive during times of peak labor demand. The remaining 40 women are in a position where traditional relations do not exist and they are not free wage laborers. The rich peasant can be fairly sure of his labor supply during the agricultural cycle, and he need not be burdened by a wage bill during the slack months. But the laborers are in no position to bargain for adequate wages to compensate for those off-seasons. The emergence of women as wage laborers has denied them patronage in slack months.

The chances of a woman being a regular casual laborer are higher if she is married or related to a male attached laborer, because recruitment of labor by large and middle-

size cultivators is through their attached labor. Thus, within agricultural laborer households, some are more disadvantaged than others.

The most frequent form of employment is seasonal casual work for which individual women may receive a daily wage or a piece rate. For some operations, such as transplanting or harvesting, women may receive a share of the amount her *gumpu* or group has contracted. On days when a woman does not find work, she receives no income, because employers are not obligated by law or custom to support daily casual workers. Neither are they obligated to provide pensions, support for health care or child care, occupational safety devices (like gloves), or even drinking water and toilet facilities at the workplace.

Not only is the labor market for women agricultural laborers insecure and fluctuating and the working conditions abysmal, but also gender disparities in wages are extreme. The daily wage rates or equivalents paid per person per day for casual labor in 1984-1985 are presented in Table 2. It is apparent that the highest wages are received for the group activities of transplanting and harvesting, where in a narrow window of time a lot of work must be accomplished. *Gumpus* have varying numbers of people depending on the size of the plot to be worked. Usually a group consists of related households, and it rarely cuts caste lines. Both men and women form groups, and the women are paid the same rates as the men.

Women are paid a lower wage for all other tasks where the sexual division of labor is explicit. The justification men give for this is that women are weaker than men and cannot do as much work as men; therefore, their productivity is lower. Besides, they said, "from the time of our ancestors that is the way things have been." Wage discrimination upholds a vision of the male as the primary breadwinner and the male wage as the main source of family income. Thus, the ideology of patriarchy and the sexual division of labor both work to undervalue women's labor.

Piece rates are paid for jobs such as plucking groundnuts, shelling groundnuts for seeds, and stringing tobacco garlands. A woman's productivity is gauged by how much work she has been able to accomplish, regardless of the time it has taken. Such a system of measuring work means women spend long hours doing intensive and arduous tasks. Yet it is these very jobs that are defined as light because they are done in the landowner's home or the village threshing floor, not in the fields. The social stigma of doing light work has been effective in keeping the number of men doing these jobs low; this is in the interests of the higher classes, who would have to pay higher piece rates if the men were employed. The Equal Remuneration Act of 1976, which stipulates that men and women be paid equal piece rates when the work is "demonstrably identical" does not take into account the fact that often there are no male counterparts with whom women can claim equality. Thus, the state does not overcome the patriarchal prejudices or structural inequalities in defining certain work as exclusively women's work.

Since the introduction of the irrigation-HYV package, all wages except the harvesting of foodgrains—paddy and sorghum—are paid in cash and offer no hedge against inflation. When there is an increase in demand for labor during planting or harvesting, the money wage rate increases. Peak demands for labor are also met by using migrant laborers from unirrigated regions who stay until the end of the harvest, thus dampening potential increases in wages caused by temporary scarcity. However, this does not mean that wages are determined only by the market forces of demand and supply; there seems to be tacit agreement among the *peddamanshulu* or Big Men as to how much should be paid. The average daily wage paid to men and women hovers around the minimum necessary for family subsistence. Paternalistic relationships with cultivators increase the

Table 2
Wage Rates or Equivalents per Person per Day for 1984-1985

Month	Female Male/Children/ Group	Individual Wage or Equivalent in Rupees	Piece or Contract Rate in Rupees	Activity
May	Female	3.00	—	Cotton picking
	Female	4.00-5.00	1.25/dabba	Groundnut plucking ^a
	Male	4.50-5.00	—	Clearing fields
	Male group	4.00-5.00	1.00/yard	Desilting canals
June	Female	3.00	—	Leveling and manuring paddy fields
	Female	1.50-3.00	0.25/seer	Shelling groundnut for seeds ^b
	Male	5.00	—	Clearing fields
	Male	15.00	15.00/acre	Building canals and drains for paddy fields
July	Child	3.50-4.00	—	Cross-fertilizing cotton ^c
	Female	5.00	—	Transplanting onion, sowing groundnut and cotton
	Female group	10.00-14.00	100.00-140.00/acre	Transplanting paddy ^d
	Male	8.00-10.00	—	Ploughing paddy, sowing groundnut
	Male group	10.00-20.00	10.00-15.00/acre	Irrigating cotton
August	Female	4.00	—	Weeding paddy, onion, cotton; basal fertilizer for cotton
	Female	5.00	—	Tobacco transplanting
	Male	8.00-10.00	—	Fertilizer application, hoeing
September	Female	5.00	—	Weeding onion, transplanting tobacco; basal fertilizer for cotton, sowing sorghum
	Male	8.00-10.00	—	Sorghum sowing, hoeing; fertilizer application
October	Female	5.00	—	Cotton picking, weeding, fertilizing, sorghum sowing
	Male	8.00-10.00	—	Sorghum sowing, hoeing, canal cleaning
November	Female	5.00	—	Cotton picking, tobacco debudding
	Female	3.00-6.00	0.50/seer	Groundnut shelling
	Male and female group	18.00-22.00	150-180 seers paddy/acre	Harvesting paddy (transplanted) ^e
	Male and female group	9.60-12.00	48-60 seers + 30 seers paddy/acre	Harvesting Threshing paddy (broadcast)
December	Female	4.50-8.75	0.30-0.35/kg	Cotton picking ^f
	Female	6.00-12.00	0.30/dornam	Tobacco garlands ^g
	Male	8.00-10.00	—	Groundnut sowing, irrigating
	Male and female group	5.00-8.00	—	Onion harvesting
	Male and female group	6.00-7.00	60.00-70.00/acre	Groundnut harvesting
January	Female	5.00	—	Groundnut sowing, weeding, cotton picking
	Male	8.00	—	Groundnut sowing, irrigating
	Male and female group	6.75	54 seers sorghum/acre	Sorghum harvesting

Table 2
Wage Rates or Equivalents per Person per Day for 1984-1985 (Continued)

Month	Female Male/Children/ Group	Individual Wage or Equivalent in Rupees	Piece or Contract Rate in Rupees	Activity
February	Female	4.00-5.00	—	Groundnut weeding, cotton picking, tobacco curing
	Male group	10.00-30.00	10.00-14.00/acre/ wetting	Irrigating
	Male and female group	6.00-12.00	9.00/tractor trip	Desilting canal
March	Female	4.00-5.00	—	Tobacco curing, cotton picking
	Female	5.25-8.00	1.75-2.00/dabba	Groundnut plucking and cleaning
	Male and female group	7.00-9.00	140.00-180.00/acre	Groundnut uprooting and plucking ^b
April	Female	5.00	—	Tobacco curing, cotton picking
	Female	6.00-11.00	2.00-2.75/dabba	Groundnut plucking, cleaning
	Male	8.00-10.00	—	Transporting harvest
	Male and female group	10.00-13.00	200.00-260.00/acre	Groundnut uprooting and plucking

^aA dabba is an empty oil tin used as a standard measure. Average number of dabbas a woman can pluck in a day is 3-4.

^bAverage number of seer shelled per day is 6-12.

^cThis activity employs children every day until January/March. However, less than 5% of the gross cropped area was used for seed cotton production.

^dA group of 20 can transplant 2 acres per day.

^eA group of 20 can finish all harvesting operations except winnowing in a day. Conversion factors: after milling, the rice yield from paddy is 66% by weight. 1 seer = 0.93 kg. Open-market price of rice in November 1984 was Rs 4.00/kg.

^fIn most villages, cotton picking is paid for as a daily wage. In one village, a rate per kg was paid. On average a woman can pick 15-20 kg per day.

^gOne woman can sew 20-40 dornams (garlands) per day.

^hA group of 20 can uproot and pluck 1 acre of groundnut per day.

security of livelihoods and the chances of being able to borrow for emergencies. The system of patriarchy exacerbates relationships of exploitation between the classes, introducing gender inequities in the already inadequate wages paid to both men and women; as a result, no family savings are available, which further increases the dependence of agricultural labor on the rich and middle-class peasants, to whom agricultural laborers must turn for loans.

Women in Cultivator Households

It could be hypothesized that with irrigation and the intensification of agricultural production, patriarchal proscriptions are reshaped, and women of landowning classes with-

draw from fieldwork as the new culture makes women's work invisible by restricting it to the home, while simultaneously endowing men, whose wives are now defined as dependent housewives, with greater prestige (Mies, 1986). Contrary to these expectations, in the region studied neither women from marginal nor middle-class cultivator households have withdrawn from fieldwork. Except for the Kamma and Komati castes, this did not seem to be as important for a man's status and prestige as in other regions of India (Epstein, 1962).

In fact, as we have seen, with the introduction of irrigation and changes in the technical organization of labor, even the smallest cultivator needs to hire nonfamily labor at certain times in the crop cycle. To minimize the cost of hired labor, no longer paid in kind but in cash wages, family labor is used as much as possible. Moreover, the financial intensity of irrigated agriculture, the purchase of labor and HYV seeds, chemical fertilizers, and pesticides, instead of their organic substitutes, entails a higher investment outlay. Because these households do not have investable surpluses, they are forced to borrow. Often this is from the rich cultivators at usurious rates of interest (24-60% per annum). Even if the borrowings are from the nationalized banks, the financial intensity of the new mode of production forces the women of these households out into the wage labor market. While the men of these households busy themselves with grain processing and sale and land preparation during the dry season, the women migrate to irrigated villages to work as wage laborers. Thus, as in the case of agricultural laborers, patriarchy and structures of exploitation combine to push women from marginal cultivator households out to find work, swelling the ranks of the labor reserve and depressing wages. Yet without their contribution, it is unlikely that family subsistence needs would be met.

The contribution of women of middle-class cultivator families, unlike that of women agricultural laborers, is relatively invisible. In fact, these women play a critical role in the supervision of day-to-day agricultural operations. This entails managing the labor force and seeing that workers are provided with supplies such as seeds for sowing or fertilizer. In addition, women cultivators often join in field activities, pushing the pace of coolie women and correcting them as they work alongside. In the process these women deny one woman agricultural laborer a day's work and contribute to the exploitation of women of the lowest classes. Women of these households are not compensated for their work either as supervisors or as laborers, but clearly without their work it would be impossible for their families to maintain their class positions. When the men of these classes go to the fields to supervise coolie work, they do not actually soil their hands or do women's work, because that is culturally unacceptable. Only women in the very rich households are not involved in supervision these days (although they were just two generations ago): a male *ghumasta* or supervisor is hired in addition to many attached laborers.

The case of women from the Kamma caste is noteworthy because although they form less than 5% of the population, they are aspiring for the position of a new rural elite. The case also demonstrates the way patriarchal ideology works hand in hand with masculinism to assert caste and class superiority. Patriarchal domination by Kamma men limits women to work within the household, such as caring for the cattle. Kamma men are highly critical of local men for being lazy and letting their womenfolk work in the fields; they question the very manhood of these men. Currently the economic, political, and social control of the old elites and the material necessity for their women to be out working in the fields, while the men are organizing the *niti sangam* or building other

political alliances at the village level, continue to support non-Kamma norms as the dominant ideology.

Thus, in a region where patriarchal domination did not include proscriptions on women's participation outside the home, the economic and physical burdens of agricultural intensification have fallen heavily on women in marginal and middle-class cultivator households; consequently, there has been little reshaping of preexisting patriarchal norms.

Conclusions and Implications for Development Policy

When asked whether the canal had benefited them, women agricultural laborers and marginal cultivators replied "no." Although they acknowledge that the demand for labor has increased, it still entails *kashtam* or hardship. That is, working and living conditions are still intolerably tough. The wages they receive in cash get spent immediately on daily consumption, usually at the discretion of the men.¹⁶ The women said they could not question the right of the men to assert control over the cash income because "we cannot depend on our uncertain income to raise a family" and "it is the man of the house who gets loans during emergencies." In the days before canal irrigation, they said, whatever both men and women earned as daily laborers or attached laborers was in kind, and the grain could be stored for household consumption throughout the year.

Women of marginal cultivator households complained that not only has their work load on their own farms increased, but so has the investment necessary to engage in agricultural production. As a result, they are forced to work as agricultural laborers on the lands of others. The HYV rice they grow is sold, and an inferior variety of rice is bought for household consumption. At the end of each season, loans are repaid with high rates of interest, leaving no investable surplus, and the cycle of poverty and toil continues.

In contrast, the women of the larger landowning classes and castes said they had more work but had benefited from the canal. But it is the men who control the surpluses that are made, particularly because the women do not earn cash incomes. The men of these classes went further to say: "not only have we benefited, but agricultural labor has benefited too." First, these men pointed out that real wages of agricultural workers have increased. They calculate that before the canal the average male attached laborer got 5 quintals of sorghum and Rs. 500-1800 in today's prices, whereas today the average attached laborer gets Rs. 2800-4200. In fact, the issue of whether real wages have increased or decreased as a result of agricultural intensification is debatable.¹⁷ Second, they argued that agricultural laborers and marginal cultivators have shifted their consumption habits from inferior grains like sorghum to superior and more costly grains like rice. In fact, although rice is socially considered superior to sorghum, it is much less nutritious.¹⁸ Third, according to the men of the larger landowning classes, the disposable income of laborers and cultivators has increased. In fact, a substantial part of the increase in disposable income is spent by men of all classes and castes on personal consumption: tea, beedis (cigarettes), toddy (alcohol), movies, gambling, and womanizing. This spending is taken for granted as normal male prerogatives by most women, even though it means that household earnings are diminished (see also Mencher and Saradmoni, 1982). According to one male informant, the quantity of alcohol consumed in his village has increased fourfold in the last 15 years!

A third set of assessments about the benefits of canal irrigation in general come from urban, elite, male development planners within or in complicity with the state:

Due to irrigation, India has been in a comfortable position with regard to the availability of foodgrains over the last ten years or so. *Ignoring for the moment the problem of hunger among the income deficient households of the economy*, the country's granaries are now more than full and there is enough grain stored up to prevent any famine which may occur in the foreseeable future. In this context, no less significant is the fact that the pace of grain output (growth) has been noticeably higher than the rate at which the population has been increasing (emphasis added) (Dhawan, 1988, p. 12).

Thus, according to this view, state investments in irrigation have paid off handsomely, and India has been successful in its efforts to modernize.

In contrast to the gender-blind, class-biased assessments of irrigation presented above by those who make macro policy, this article highlights the extent to which the official development strategy of modernization through irrigation has increased the drudgery in the lives of poor rural women in a specific micro setting. But can the state as a patriarchal institution possibly implement irrigation schemes that are more favorable to women? As Parpart and Staudt have said, "(i)t would be a mistake to overdetermine the state's relationship to women" (1988, p. 15). States are neither monolithic nor unchanging. Whether for reasons of populism or competitive party politics, the state in India "is not in a position to leave completely unmitigated the stresses of inequities generated by the capitalistic growth processes in a socially and economically stratified context (Bardhan, 1989, p. 24). More important, although women may appear powerless in comparison with the state, recent experience with various grassroots movements in India reveal women as actors who recognize, defend, and advance their own interests.

The women's movement in India consists of many diverse organizations that occupy a range of political and social spaces. In the context of irrigation, some of these organizations have an important role to play in reshaping irrigation policy and projects so that they are more favorable to women in the short run by (1) demanding that technical decisions, such as whether to invest in female labor-intensive earthen tanks, dams, and canals or in skilled male labor-intensive tubewells, be considered by irrigation policy planners; (2) exerting pressure on the state to enact and implement legislation that will provide women migrant construction workers and agricultural laborers with adequate and equal minimum wages, better working conditions, and social services; (3) insisting that the cropping patterns suggested by the state include crops that will increase women's employment and not attract mechanization; (4) calling for changes in the structure and staffing of the Irrigation Department so it is decentralized and employs women; and (5) pushing for the distribution of irrigation rights to women of landless and marginal cultivator households.¹⁹

But, while building women's labor-intensive schemes or increasing the participation of women within existing structures are essential beginnings, they will not be enough. What is needed is a radical shifting of priorities that politicize the effects of irrigation on poor rural women. Working-class women's organizations, such as the Chipko movement,²⁰ will be most effective in tackling the issues central to the daily life of poor rural women in irrigated regions—food, insecure employment, low and inequitable wages, abysmal working conditions, indebtedness, gender disparities and the double burden of work, and exclusion from decision-making bodies like *niti sangams*. In the process, they would exchange the preoccupation of the state with modernization for a commitment to change the unequal division of labor between the sexes, to meet basic subsistence needs, and to ensure an equitable distribution of resources, higher standards of living, and a

better quality of life. Such a redefinition of development is imperative not only to change the conditions under which poor rural women work and live in irrigated regions of the world but for society itself.

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Notes

1. Irrigation is described as "the lynchpin in the entire effort directed towards rural development in India" (Dhawan, 1988, p. 14). The government of India is planning to spend Rs. 400 billion to double irrigated acreage from its present level by the turn of the century.
2. I do not mean to obscure differences in ideology (see Boswell, Kaiser, and Baker, 1986), but for the purpose of this article I focus on the main contribution of Marxist thought.
3. For a detailed discussion of this issue see Ramazanoglu (1989, pp. 101-103).
4. In contrast, Western democratic states can be characterized as having a managerial commitment to development (Kohli, 1987).
5. See Deere and Leon (1987) on Latin American states, Parpart and Staudt (1988) on African states, and Agarwal (1988) on Asian states.
6. According to modernization theory, irrigation and adoption of the Green Revolution package of seeds, fertilizer, etc., is supposed to lead to the following general benefits: (1) an increase in agricultural output through increases in yields of existing crops, gross cropped area, cropping intensity, and shifts to higher yielding strains of crop, and (2) an increase in the demand for labor time through increases in gross or net cultivated area, in yields and therefore in harvesting operations, in the overall care and supervision necessitated by the new varieties, and in the number and kinds of agricultural operations as results of the changes in the cropping pattern (Agarwal, 1981). As a consequence of (1), the increase in output, the income of cultivating households is supposed to increase; as result of (2), the increased demand for labor time and real wages, the income of agricultural labor households is supposed to increase. Further, irrigation projects per se are expected to generate employment during project construction, for maintenance and water management, and through secondary employment effects (Meinzen-Dick, 1987).
7. This article does not discuss the effects on women of domestic water supply schemes or water-related diseases and other health issues. From field observations it is possible to say that the water table has risen in the area, and drinking water is more accessible than in the past.
8. Although I recognize the importance of the social relations of reproduction, unfortunately this was beyond the scope of my initial study. From field observations it was clear that women have primary responsibility for childrearing and domestic work. Moreover, even though the physical work for women outside the house has increased since the introduction of irrigation, there have been no changes in the division of labor between the sexes within the home.
9. Only about one-third of the total crop area in each village is actually zoned (localized) for irrigation by the state. The remaining area is cultivated with a rainfed crop in the first season and left fallow in the second season. Head-end villages tend to be monocropped with paddy in the first season. In tail-end villages, mixed cropping is the norm; as landholdings are fragmented, owner-cultivators may grow onion on one of their plots and chilies or cotton on another, for example.
10. The research on women presented here is part of a larger study on irrigation and equity that deals with the formulation and implementation of irrigation policy, the relationship between

the state bureaucracy and farmer associations, and the distribution of irrigation benefits within village communities.

11. The state built, in south India, canal systems extensive in length to protect as many villages as possible from drought if the monsoons failed. Water was not scarce until the late 1960s. Since then, with the process of incorporation into the market economy and the introduction of Green Revolution technologies, the demand for water has increased dramatically and is the cause of much conflict.

12. "Coping with the bureaucracy" is borrowed from Lees (1986).

13. In the Mahaweli, for example, contrary to traditional Sinhalese inheritance rules, which prescribe that both sons and daughters should inherit paddy lands, only one heir can be nominated, and it is usually the son. Furthermore, married women are not entitled to plots. And although women are working harder on both paddy plots and home gardens, they have no independent access to money. The ideology of women as dependent housewives is reinforced through scheme-sponsored training programs to teach women skills such as needlework and poultry raising. Little information on extension or cooperative credit, which may enhance women's agricultural productivity, is provided to them (Schrijvers, 1988).

14. There are a few rice mills, but there has been little tractorization, introduction of irrigation pumps, and so forth; in the limited areas where these and fertilizer/pesticide sprayers have been introduced, they have displaced women's labor.

15. The population of this village 30 years ago was approximately 200 families and today is approximately 500 families (average family has five members).

16. Mencher and Saradamoni (1982, p. A165) estimated that "the ratio of female to male contributions is at least 1:1 and in most cases it is higher" in agricultural labor households and "a little over half to well over half household income" in marginal landowning families. These conclusions held in this case study as well.

17. Some researchers have contended that real incomes have decreased (Agarwal, 1988). Others (Chambers and Harriss, 1977; Lal, 1976) have shown that real incomes have increased. According to Government of India (1979, 1981) reports, in Andhra Pradesh annual real earnings over the period 1964-1965 to 1974-1975 decreased from Rs. 246.80 to Rs. 198.20 for men but increased for women from Rs. 88.40 to Rs. 104.80. It is noteworthy that these government reports are for the whole state of Andhra Pradesh, not the specific research area, and that very often they are biased against women (Agarwal, 1985).

18. According to Gopalan (1981), milled rice contains 6.8 g of protein, 0.6/100 g minerals, 10 mg calcium, and 3.1/100 g iron in comparison with 10.4 g protein, 1.6/100 g minerals, 25 mg calcium, and 5.8/100 g iron in jowar (sorghum).

19. The divorcing of water rights from land rights and their allocation to the rural poor has been effective in lift-irrigation schemes in Pune and Chandigarh districts organized by nongovernmental agencies. For details see Chambers, Saxena, and Shah (1989).

20. For details on Chipko and other mass-based women's movements in India, refer to Bardhan (1989) and Everett (1986).

References

- Agarwal, B. 1988. Neither sustenance nor sustainability: Agricultural strategies, ecological degradation and Indian women in poverty. In *Structures of patriarchy: State, community, and household in modernising Asia*, ed. B. Agarwal, pp. 83-120. New Delhi: Kali for Women.
- Agarwal, B. 1981. Water resource development and rural women. New Delhi: Ford Foundation (mimeograph).
- Agarwal, B. 1985. Work participation of women in the Third World: Some data and conceptual biases (Special Issue, Review of Agriculture). *Economic and Political Weekly* 20(51 & 52):21-28.
- Althusser, L. 1971. Ideology and ideological state apparatuses (notes towards an investigation). In

- Lenin and philosophy and other essays*, ed. L. Althusser, pp. 127-186. New York: Monthly Review.
- Bardhan, K. 1989. Agricultural growth and rural wage-labor in India. *South Asia Bulletin* 9(1):12-23.
- Bardhan, K. 1986. Women: Work, welfare and status. Forces of tradition and change in India. *South Asia Bulletin* 6(1):3-16.
- Boserup, E. 1970. *Women's role in economic development*. London: George Allen and Unwin.
- Boswell, T., E. Kaiser, and K. Baker. 1986. Recent theories in Marxist theories of ideology. *Insurgent Sociologist* 13(4):5-22.
- Census of India. 1984. *Andhra Pradesh: Revised figures of population*. New Delhi: Government of India.
- Chambers, R., and J. Harriss. 1977. Comparing twelve south Indian villages: In search of practical theory. In *Green Revolution? Technology and change in rice growing areas of Tamil Nadu and Sri Lanka*, ed. B. H. Farmer, pp. 301-322. London: Macmillan.
- Chambers, R., N. C. Saxena, and T. Shah. 1989. *To the hands of the poor: Water and trees*. New Delhi: Oxford and IBH.
- Dhawan, B. D. 1988. *Irrigation in India's agricultural development: Productivity, stability, equity*. New Delhi: Sage.
- Deere, C. D., and M. León. 1987. *Rural women and state policy: Feminist perspectives on Latin American development*. Boulder, CO: Westview.
- Eisenstein, Z. 1979. *Capitalist patriarchy and the case for socialist feminism*. New York: Monthly Review.
- Epstein, T. S. 1962. *Economic development and social change in south India*. Manchester: Manchester University Press.
- Everett, J. 1986. We were in the forefront of the fight: Feminist theory and practice in Indian grass-roots movements. *South Asia Bulletin* 6(1):17-23.
- Gopalan, C. 1981. *Nutritive values of Indian foods*. Hyderabad: National Institute of Nutrition.
- Government of India. 1981. *Rural labour enquiry 1974-75, final report on employment and unemployment*. Chandigarh: Ministry of Labour.
- Government of India. 1979. *Rural labour enquiry 1974-75, final report on wages and earnings*. Chandigarh: Ministry of Labour.
- Hanger, J., and J. Moris. 1973. Women and the household economy. In *Mwea: An irrigated rice settlement in Kenya*, ed. R. Chambers and J. Moris, pp. 209-244. Munich: Weltforum Verlag.
- Kohli, A. 1987. *The state and poverty in India*. Cambridge: Cambridge University Press.
- Lal, D. 1976. Agricultural growth, real wages, and the rural poor in India. *Economic and Political Weekly*, Review of Agriculture, June 1976, pp. A 47-61.
- Lees, S. 1986. Coping with bureaucracy: Survival strategies in irrigated agriculture. *American Anthropologist* 88:610-622.
- MacKinnon, C. 1983. Feminism, Marxism, method, and the state: Toward feminist jurisprudence. *Signs* 8(4):635-658.
- Meinzen-Dick, R. 1987. Labor demand and employment generation in irrigation systems. Ithaca, NY: Cornell University. (Irrigation Studies Group Working Paper).
- Mencher, J., and K. Saradamoni. 1982. Muddy feet, dirty hands: Rice production and female agricultural labour. *Economic and Political Weekly*, Review of Agriculture 17(52):A 149-167.
- Mies, M. 1986. *Patriarchy and accumulation on a world scale: Women in the international division of labor*. London: Zed.
- Parpart, J., and K. Staudt, eds. 1988. *Women and the state in Africa*. Boulder, CO: Lynne Rienner.
- Poulantzas, N. 1978. *State, power, and socialism*. London: New Left Books.
- Ramazanoglu, C. 1989. *Feminism and the contradictions of oppression*. London: Routledge.
- Schrijvers, J. 1988. Blueprint for undernourishment: The Mahawweli development scheme in Sri

- Lanka. In *Structures of patriarchy: State, community, and household in modernising Asia*, ed. B. Agarwal, pp. 29-51. New Delhi: Kali for Women.
- Sen, G. 1982. Women workers and the Green Revolution. In *Women and development*, ed. L. Beneria, pp. 29-64. Geneva: International Labor Office.
- Skocpol, T. 1979. *States and social revolutions: A comparative analysis of France, Russia, and China*. Cambridge: Cambridge University Press.
- Stepan, A. 1978. *The state and society: Peru in comparative perspective*. Princeton: Princeton University Press.
- Swaminathan, P. 1987. State and subordination of women. *Economic and Political Weekly* 22(44):WS34-39.