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FOR THE ADVANCEMENT OF WOMEN

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# **Women, technology and sexual divisions**



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Women, technology and sexual divisions

Study prepared by Amartya K. Sen at the request of  
the UNCTAD secretariat and INSTRAW

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## PREFACE

The United Nations Conference on Science and Technology for Development in its resolution 2, adopted on 31 August 1979, recommended that all organs and other bodies of the United Nations system related to science and technology should, inter alia, "continually review the impact of their programmes and activities on women". All United Nations organizations are expected to contribute to the 1985 World Conference to Review and Appraise the Achievements of the United Nations Decade for Women: Equality Development and Peace. As part of this effort, UNCTAD and the United Nations International Research and Training Institute for the Advancement of Women (INSTRAW) have been engaged in a joint programme of work on the impact of technological developments on the advancement of women and the policies required to assure greater participation of women in the process of technological transformation.

This study has been prepared by Amartya Sen, Drummond Professor of Political Economy, All Souls College, Oxford, at the request of the UNCTAD secretariat and INSTRAW. The views expressed are those of the author and do not necessarily reflect those of the UNCTAD secretariat or of INSTRAW.

## WOMEN, TECHNOLOGY AND SEXUAL DIVISIONS \*/

### I. INTRODUCTION

1. Everyone has many identities. Being a man or a woman is one of them. In some contexts it is not a very important identity. A person's class or nationality, or even age, can be more decisive for many issues. However, there is a class of problems in which differences of sex play a central role, and it becomes possible - indeed essential - to study group characteristics of people as men or women, giving priority to that method of classification. The systematically inferior economic position of women inside and outside the household in most societies, has been the subject of a good deal of recent research. This paper is concerned with problems of "sexual divisions" in general and the specific question of "sex bias" in particular.

2. The paper has three points of departure. First, it is argued that problems of sexual divisions have to be seen as exercises in "co-operative conflicts" - a general class of problems of which the so-called "bargaining problems" 1/ form a special subclass 2/ (unfortunately too narrow a subclass for our purpose). The combination of co-operative and conflicting features can be pursued in terms of certain general "qualitative" relations. Second, it is shown why the issue of "sexual divisions" requires us to take a broader view of technology than is common in the literature. We have to consider not merely commodity production but also social arrangements that sustain commodity production, and this wider view of technology is particularly crucial for understanding the nature and implications of co-operative conflicts. Third, the analysis of "entitlements" applied to inter-family (and inter-class) relations 3/ has to be extended to intra-family divisions. The issues of "legitimacy" raised by social arrangements and their survival link up technological questions with ideology, acceptance and social behaviour.

3. Conflicts of interest between men and women are very unlike other conflicts, such as class conflicts. A worker and a capitalist do not typically live together under the same roof - sharing concerns and experiences and acting jointly. This aspect of "togetherness" gives the sex conflict some very special characteristics. One of these characteristics is that many aspects of the conflicts of interest

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1/ See Nash (1950, 1953) and Luce and Raiffa (1957). On the normative features of "bargaining problems", see Sen (1970, chapter 8), Kaneko and Nakamura (1979) and Kaneko (1980).

2/ The perspective of "bargaining problems" can be fruitfully used to analyse family economies; see Clemhout and Wan (1977), Manser and Brown (1980), McElroy and Horney (1981), Brown and Chuang (1980), Rochford (1981), Pollak (1983).

3/ See Sen (1981a).

between men and women have to be examined against the background of pervasive co-operative behaviour. Not only do the different parties have much to gain from co-operation, their individual activities typically have to take the form of being overtly co-operative. This is seen most clearly in the part of the sexual divisions that relate to household arrangements, e.g., who does what type of work in the household and enjoys what benefits. While serious conflicts of interests may, in fact, be involved, the nature of the family organization requires these conflicts to be moulded in a general format of co-operation, with conflicts treated as aberrations and deviant behaviour.

4. The nature of "co-operative conflicts" requires us to go beyond the particular features of "bargaining problems" - a class of problems that has been much discussed in game theory and social choice theory. Bargaining problems involve a clear identification of the interests of each party (in the form of a complete ordering, which is also representable by a cardinal utility function). The nature of co-operative conflicts in matters of sexual division makes that identification a more difficult exercise, and this in turn affects the nature of the outcome. There are many insights to be gained from the "bargaining problem" formulation of sexual divisions, but the characteristics of the sexual division problem call for a more qualitative approach, i.e. one that is less geared to total quantification, uncompromising precision and unambiguous perception of interest. In dealing with sexual divisions, ambiguities of perception have to be seen as an essential part of the social reality.

5. Closely associated with the peculiarities of "togetherness" is the important role of adapted perception - and even of illusion - in facing what are otherwise powerful conflicts of interests. I have discussed the problem of adapted perception elsewhere, 4/ in the particular context of the division of food and medical attention within the Indian household, (1) involving systematic failures to see certain intra-family inequalities, and (2) perceiving extraordinary asymmetries as normal and legitimate. These issues of perception and legitimacy are not, of course, immutable. They depend on history and the nature of the society. Important differences can also be made by politics and policy. But the nature of "co-operative conflicts" in matters of sexual divisions call for a clear recognition of the absence of clarity of adapted perception, and this is especially important for policy analysis.

## II. TECHNOLOGY AND SEXUAL DIVISIONS

6. In an important and pioneering analysis of "machinery and modern production", Marx (1867) has critically assessed the way "capitalist production" has tended to develop "technology, and the combining together of various processes into a social whole", arguing that it has had the effect of "sapping the original sources of all wealth - the soil and the labourer." 5/ I refer to this here not because I intend to pursue that particular thesis - or indeed to examine its sagacity. But I do wish to follow up the general approach of seeing technology in terms of "the combining together of various processes into a social whole."

7. The nature and content of technology are often seen in highly limited terms, e.g., as particular mechanical or chemical processes used in making one good or

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4/ Sen (1981c, 1982b).

5/ Marx (1867), p. 515.

another. The extremely partial view of technology that emerges from such a limited outlook does little justice to the "social" content of technology and cannot even represent the various processes that go into the combined operations that serve as "ways of making things". The making of things involves not merely the relationship between, say, raw materials and final products, but also the feasibilities of harnessing, utilizing and transforming raw materials into commodities through socially viable labour use and organization.

8. Technology permits one to fly to Tokyo from London in less than a day. But this is possible because there are planes that go fast, oil that planes burn, etc., and - most relevantly in the present context - trained people who can be relied upon to work odd hours. To concentrate on the last, if everyone involved in flying the plane had to have, say, every meal at home, it would be difficult to have a technology that would enable anyone to go from London to Tokyo in less than a day. Technology is not only about equipment and its operational characteristics, it is also about the social arrangements that permit productive processes to be carried out. 6/

9. The point of getting firmly on to what may at first look like a somewhat "esoteric" issue is the need to see technology in a broad enough way to include the social arrangements, including aspects of sexual divisions. For example, household activities have been viewed in many contradictory ways in the context of production and technology. On the one hand, it is not denied that the sustenance, survival and reproduction of workers are obviously essential for such workers being available. On the other, the activities that produce or support that sustenance, survival or reproduction are typically not regarded as contributing to output.

10. There has been a good deal of recent interest in the problem of valuation of these activities and also in reflecting them in the estimates of national income and national consumption. 7/ But for our present purpose these accounting questions are not really central. 8/ What is important is to take an integrated view of the pattern of activities outside and inside the home that together make up the production processes in traditional as well as in modern societies. 9/

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6/ On this general question, see Dobb (1960), Sen (1960, 1975), Bhalla (1975), Singer (1977), Stewart (1977), James (1980), among others.

7/ See particularly Goldschmidt-Clarmon (1982) and the rather large literature surveyed there. There is also the related issue of properly valuing non-household work of women, on which see Beneria (1982). See also Mukherjee (1983).

8/ These questions are, however, important in seeking a better understanding and change in the social position of women; see sections VI and VII below.

9/ A particular pattern - that of capitalist production arrangements with family wages being used for household production - is appropriately characterized by Jane Humphries (1977) thus: "the working-class family constitutes an arena of production, the inputs being the commodities purchased with family wages, and one of the outputs being the renewed labour-power sold for wages in the market" (p. 142). On the interrelations between problems of class divisions and sexual divisions, see - among other contributions - Benston (1964), Della Costa (1972), Meillassoux (1972), Rowbotham (1973), Harrisson (1974), Seccombe (1974), Gardiner, Himmelweit and Mackintosh (1975), Milkman (1976), Himmelweit and Mohun (1977), Humphries (1977), McIntosh (1978), Young (1978), Mackintosh (1979), Molyneux (1979), Young, Wolkowitz and McCullagh (1981), Mies (1982). See also the studies of experiences in socialist countries, e.g., Croll (1979) and Molyneux (1982).

The relations between the sexes are obviously much conditioned by the way these different activities sustain and support each other, and the respective positions depend on the particular pattern of integration that is used.

11. The prosperity of the household depends on the totality of various activities - getting money incomes, purchasing or directly producing (in the case of, say, peasants) food materials and other goods, producing eatable food out of food materials, and so on. But along with aggregate prosperity, the divisions between sexes in general, and specifically those within the household, are also deeply influenced by the pattern of sexual divisions. In particular, the members of the household face two different types of problems simultaneously, one involving co-operation (adding to total availabilities) and the other conflict (dividing the total availabilities among the members of the household). Social arrangements regarding who does what, who gets to consume what, and who takes what decisions, can be seen as responses to this combined problem of co-operation and conflict. The sexual division of labour is one part of such a social arrangement, and it is important to see it in the context of the entire arrangement.

12. Seeing social arrangements in terms of a broader view of technology and production has some far-reaching effects. First, it points to the necessity of examining the productive aspects of what are often treated as purely "cultural" phenomena. It also brings out the productive contributions that are in effect made by labour expended in activities that are not directly involved in "production", narrowly defined. A deeper probing is especially important in encountering the fog of ambiguity in which the roles of different types of labouring activities are hidden by stereotyped social perceptions, and this is of obvious importance in assessing the nature and implications of particular patterns of sexual divisions.

13. Second, it throws light on the stability and the survival of inequitable patterns of social arrangements in general, and deeply asymmetric sexual divisions in particular. An example is the resilient social division of labour by which women do cooking and are able to take on outside work only in so far as that can be combined with persisting as the cook.

14. Third, the division between paid and unpaid work in the context of general productive arrangements (and "the combining together of various processes into a social whole") can be seen as bringing in systematic biases in the perception of who is "producing" what and "earning" what - biases that are central to understanding the inferior economic position of women in traditional (and even in modern) societies.

15. Fourth, specific patterns of sexual divisions (and female specialization in particular economic activities) even outside the household can be seen as being partly reflective of the traditional within-household divisions related to established arrangements, which differentially bias the cultivation of skill and sustain asymmetry of opportunities offered for acquiring "untraditional" skills. In understanding the inferior economic position of women inside and outside the household in most societies, 10/ the imposed social arrangements have to be clearly identified and analysed.

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10/ Even in the United States, the average woman worker earns only 62 per cent of the average male worker ("Female Sacrifice," New York Times, 14 April 1984), and a remarkably small proportion of women can be found in the highest income categories.



16. The feature of "co-operative conflicts" referred to earlier relates closely to the technology of sexual divisions. The divisional arrangements that, on the one hand, help in the economic survival and material success of families and societies, also impose, through the same process, a typically unequal division of job-opportunities and work-freedoms, and of fruits of joint activities - sometimes inequalities even in the commodities consumed in relation to needs (e.g., of food in poorer economies). 11/ The nature of the co-operative arrangements implicitly dominates the distributional parameters and the response to conflicts of interests.

### III. ALTERNATIVE APPROACHES

17. The co-operative conflicts of sexual divisions have often been by-passed in the formal economic literature by making particular - often far-fetched - assumptions. One approach is to see the household arrangements as resulting from implicit markets with transactions at "as if" market prices. 12/ It is hard to see how such implicit markets can operate without institutional support that sustain actual market transactions. 13/ Sometimes, the same basic model can be substantially varied by postulating that the transactions take the form of falling in line with the objectives of an altruistic family-leader. 14/ Others have assumed that somehow or other - in ways unspecified - an "optimal" distribution of commodities and sources of satisfaction takes place within the family, permitting us to see families as if they are individuals. 15/ The basic features of co-operative conflicts are avoided in all these models by one device or another.

18. As was mentioned earlier, helpful insights can be obtained by seeing sexual divisions as bargaining problems, which form a class of co-operative conflicts. The technological interdependences make it fruitful for the different parties to co-operate, but the particular pattern of division of fruits that emerges from such co-operation reflects the "bargaining powers" of the respective parties. This format certainly has many advantages over the models of "as if markets", or "an altruistic leader's dominance", or "harmonious optimal divisions". A number of recent contributions, cited earlier, have brought out these advantages clearly enough.

19. Nevertheless, the format of the bargaining problem is limited by the assumption of clear and unambiguous perceptions of respective (cardinally representable) interests. This misses a crucial aspect of the nature of sexual divisions inside and outside the family. The sense of legitimacy goes

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11/ See Sen (1981c, 1982b).

12/ See Becker (1973-74, 1981).

13/ See Sen (1983d).

14/ Cf. "In my approach the 'optimal reallocation' results from altruism and voluntary contributions, and the 'group preference function' is identical to that of the altruistic head, even when he does not have sovereign power" (Becker (1981), p. 192). On the special nature of this solution, see Manser and Brown (1980), McElroy and Horney (1981), and Pollak (1983). Also Berk and Berk (1978).

15/ See Samuelson (1956).

hand in hand with ambiguities of perception of interests and this is closely related to the nature of the technology establishing specificity of roles and sustaining a presumption of naturalness of the established order. Also, a part of the outcome - who does what - is in fact also a part of the general production arrangements that are seen as forming the basis of economic survival and success.

20. In the next two sections, the nature of co-operative conflicts is studied first as bargaining problems and then in terms of particular qualitative relations.

#### IV. CO-OPERATIVE CONFLICTS AND BARGAINING PROBLEMS

21. We may begin with the neat format of the bargaining problem 16/ as a starting point, to be relaxed later. In the simplest case, there are two persons who can co-operate to improve the position of each compared with what would happen if they fail to co-operate altogether. The outcome when they fail to co-operate has been variously described, and may be called "the status quo position" or "the fall-back position". What happens if the co-operative arrangements should break down is of obvious relevance to the choice of the collusive outcome, since the fall-back position affects the two persons' respective bargaining powers. Since each person's interests are reflected by an exact (and cardinal) utility function, the fall-back position in a two-person bargaining problem is a pair of utility numbers, and the various co-operation outcomes form also a set of pairs of utility numbers (all with cardinal properties).

22. If there were only one collusive possibility that is better for both than the fall-back position, then there would, of course, be no real bargaining problem, since that unique collusive solution would be the only one to choose. The bargaining problem arises from the existence of many choosable collusive arrangements - each such arrangement being better for both persons than the fall-back position. If there is a collusive arrangement which - while better for both than the fall-back position - is worse for both (or worse for one and no better for the other) than some other feasible collusive arrangement, then the first collusive arrangement - "dominated" as it is - is taken to be rejected straightaway.

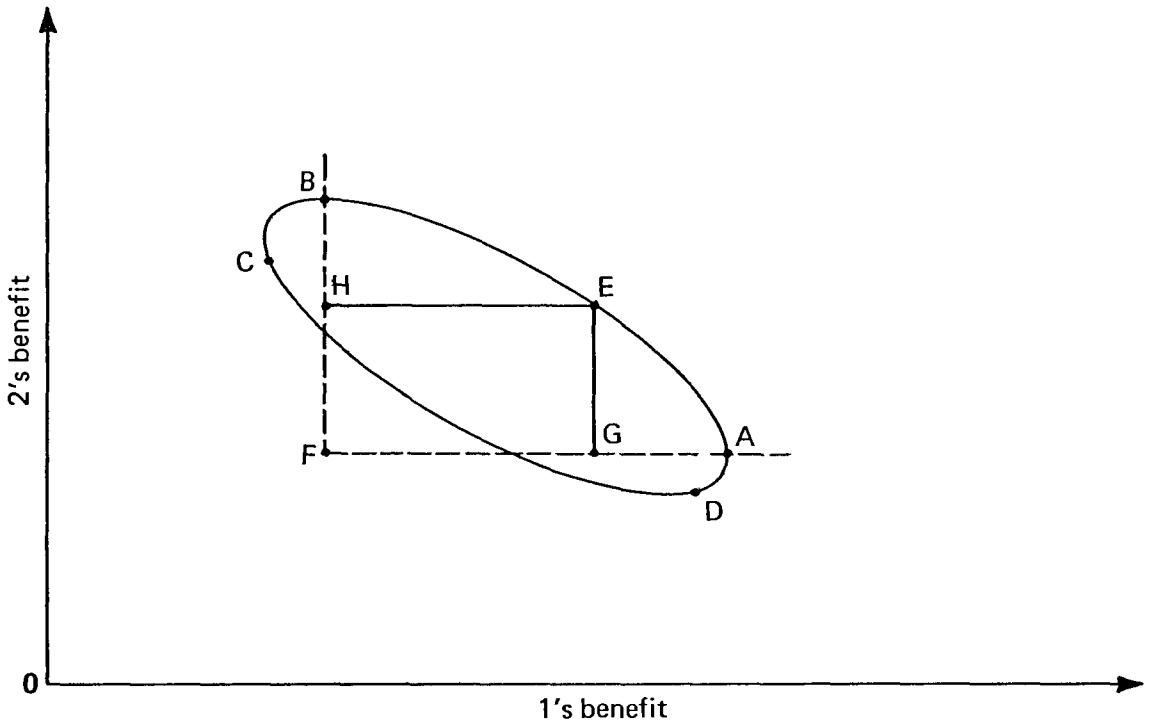
23. Once the dominated arrangements have been weeded out, there remains possible collusive solutions that are ranked by the two in exactly opposite ways. If for person 1, arrangement x is better than y, then for person 2, arrangement y must be better than x. (If not, then x would have dominated y as an arrangement.) At this stage of the exercise the aspect of co-operation is all gone and there is only conflict. The choice between any two undominated collusive arrangements is, therefore, one of pure battle. But at the same

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16/ The classic contributions to formulating the bargaining problem were those of Nash (1950, 1953). For some interesting and important variations, see Braithwaite (1955), Luce and Raiffa (1957), Schelling (1960), Kalai and Smorodinsky (1975), Harsanyi (1976), Kalai (1977), Roth (1979), Binmore (1980), Shubik (1983), among others.

time each person knows that the choice between any such collusive arrangement and the fall-back position is a matter of co-operation since the former is better for both. It is this explicit mixture of co-operative and conflicting aspects in the bargaining problem that makes the analysis of that problem valuable in understanding household arrangements which, too, involve a mixture of this kind.

Diagram 1



24. In diagram 1 the horizontal axis represents person 1's benefit and, the vertical, 2's benefit. <sup>17/</sup> The fall-back position is given by F. The possible collusive arrangements - in terms of outcomes - are given by the area ABCD, any point in which represents one possible outcome. Of these, only the outcomes on the curve-segment AB are "undominated" outcomes. The problem, then, is

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<sup>17/</sup> Nash calls the benefits utilities, and the way he characterizes these measures in terms of behaviour under risk, they have to be utilities of the so-called "von Neumann-Morgenstern type". But this is not an essential feature of the model. The interests of each party may be reflected by a function of "benefit", leaving open, for the moment, the question as to how that benefit may be precisely represented or exactly measured.

selecting some point from AB. It is in 1's interest to go as far as possible in the direction of A, and in 2's interest to get a solution as close as possible to B. The choice over AB is one of pure conflict and that between any given point on AB and the fall-back position F is one of pure co-operation.

25. What solution would emerge in the "bargaining problem"? That depends on a variety of possible influences, including the bargaining power of the two sides. The problem can be resolved in one of many different ways. Nash himself suggested a particular solution that would maximize the product of the two persons' gains compared with the fall-back position. 18/ (In terms of diagram 1, the Nash solution is to find that point E for which the rectangular area EHFG is as large as possible.) Others have suggested other solutions. 19/ For the present purpose it is not crucial to examine these exact solutions in detail, since they are all more or less arbitrary. Indeed, it is most unlikely that any one simple formula can begin to capture the variety of different types of bargaining - implicit and explicit - that may take place in bargaining situations of diverse kinds, all covered by this general structure.

26. The main drawback of the bargaining problem format applied to sexual divisions arises not so much from the nature of any particular "solution", but from the formulation of the "problem" itself. As was discussed earlier, 20/ the perception of interest is neither likely to be precise, nor unambiguous.

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18/ Nash did not see his solution of the bargaining problem as a predictive exercise, and seems to have characterized it as a normative solution of this conflict. His method of choosing a solution took the form of postulating some axioms of reasonableness of a co-operative outcome, and these axioms together uniquely identified the product-maximization formula. But, interestingly enough, exactly the same solution as Nash's would be arrived at if the bargaining procedure followed a method analysed earlier by Zeuthen (1930), whereby the two parties would move from one proposed arrangement to another if and only if the percentage gain of the gainer from the move would be greater than the percentage loss of the loser.

19/ See foot-note 16 above. Manser and Brown (1980) have used the outcome specified by Kalai and Smorodinsky (1975).

20/ Also discussed in Sen (1982b, 1983b).

There are two distinct issues here. The first is the need to distinguish between the perception of interest (of the different parties) and some more objective notions of their respective advantages. I have tried to argue elsewhere (see Sen (1980, 1982a, 1983b)) that focusing on the "capabilities" of a person - what he or she can do or can be - provides a useful approach to a person's advantage. While that format also has many problems (especially dealing with indexing of capabilities), 21/ it has great theoretical attractions as well as much practical convenience. 22/ Especially in dealing with poor economies, there are great advantages in concentrating on such parameters as longevity, nutrition, avoidance of morbidity, educational achievements, etc., compared with focusing purely on utility, pleasure, satisfaction, or psychological well-being. 23/ The analyses of co-operative conflicts have, in this view, to go beyond just "utilities", on which there is exclusive concentration in the traditional models of the bargaining problem (though not in the format used here).

27. The second question concerns precision and ambiguity. No matter what are taken as benefits, it is unlikely to take a very precise form, of the kind represented, say, in diagram 1. Each party's advantages or benefits may well be seen as having incompleteness and fuzziness, and at best they are "partial orderings". This weaker structure does not lend itself to analysis in the restricted format of the bargaining problem, e.g., taking the product of benefits or utility gains  $U_1 U_2$ .

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21/ Some of these problems are discussed in Sen (1984).

22/ For some applications of the format in the specific context of women's position and relative disadvantage, see Kynch and Sen (1983), Sen and Sengupta (1983), and Sen (1984).

23/ The capability to be happy can, of course, be sensibly included among the relevant capabilities, but this is quite different from using utility (or happiness) as the measure of all types of benefits, or (even more ambitiously) as the ultimate source of value (as in different versions of the utilitarian approach).

## V. DIRECTIONAL RESPONSES AND FEEDBACKS

28. Despite the need for eschewing the restrictive formulation of "co-operative conflicts" as "bargaining problems", there are - as was asserted earlier - insights to be gained from that restrictive format. While the concentration in this work is not on predicting one precise outcome, but rather on exploring certain directional relations, the insights from bargaining problems help in the formulation of some of these directional correspondences.

29. One particular feature of the Nash bargaining problem has attracted - justifiably - a good deal of attention, to wit, that it makes the outcome respond firmly to the nature of the fall-back position. If F changes in diagram 1, so would the Nash solution E, as is obvious from the method - already described - of identifying E. Indeed, a more favourable placing in the fall-back position would tend to help in securing a more favourable bargaining outcome. Nash had seen his solution as a normative one, and in that context this responsiveness to the fall-back position may not perhaps be so easy to defend. <sup>24/</sup> But predictively it is, of course, entirely plausible that the fear of the fall-back position would tend to govern the bargaining process and strongly influence its outcome.

30. With a little more structure in the characterization of the bargaining problem than we have introduced so far, it is easy to get a directional relation of the following form:

- (1) Breakdown response: Given other things, if the fall back position of one person becomes worse, then the chosen collusive solution will become less favourable to his or her interest.

The fall-back position gives the person a part of his or her strength in the "bargaining". If in the case of a breakdown, one of the persons is going to end up in more of a mess than it appeared previously, that is going to weaken that person's ability to secure a favourable outcome.

31. The "breakdown response" is a general qualitative property of co-operative conflicts entirely in line with the rationale of Nash's approach to bargaining. Others have extended the idea of bargaining power by bringing in the idea of "threat", to wit, a person threatening the other with some harmful action if the bargaining were to fail. This would make the actual result of breakdown worse than the previously identified fall-back position. <sup>25/</sup>

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<sup>24/</sup> Punishing the more vulnerable is not unplausible from a predictive point of view, but it is odd to think of this as being "just", or otherwise normatively attractive. To say, "I see you are going to be even worse off (than we first thought) if you do not join up with me, so you better agree to these worsened terms of joining", may not ring untrue (if a little explicit and crude), but it is hardly overflowing with anything that can plausibly be called justice. On the relation between the predictive and normative issues in the context of Nash's bargaining problem, see Sen (1970).

<sup>25/</sup> See Braithwaite (1955), Luce and Raiffa (1958), Schelling (1968), Harsanyi (1976), Roth (1979), Binmore (1980).

This is a plausible direction of extension, though there are some very basic difficulties with any theory of threats that deal with situations after the bargaining has failed. <sup>26/</sup> But in the context of a bargaining arrangement that continues over time, there are possibilities of going on making "side threats" (and through them, trying to make the outcome more favourable in the process of living through it). The nature of "repeated games" gives credibility to threats.

32. This is not the occasion to try to go into the formalities of a theory of threats, but it is useful to try to reflect a directional relation in the same general way as "breakdown response".

- (2) Threat response: Other things being equal, if a person can more severely threaten - explicitly or implicitly - the other with possible dire consequences, then the chosen collusive solution will become less favourable to the interest of the threatened person.

33. A different type of issue is raised by the influence of a perceived sense of greater "contribution" (and of the "legitimacy" of enjoying a correspondingly bigger share of the fruits of co-operation). This question has already been discussed earlier, in the context of technological issues of sexual divisions (section II). "Perceived" contributions have to be distinguished from actual contributions. Indeed, the idea of who is actually producing precisely what in an integrated system may not be at all clear. Nevertheless the perceived contribution of people can be important in tilting the co-operative outcomes in favour of the perceived contributor.

- (3) Perceived contribution response: Given other things, if a person is perceived as making a larger contribution to the over-all opulence of the group, then the chosen collusive solution will become more favourable to that person.

34. The three "responses", related respectively to breakdown, threat and perceived contribution, throw some limited light on the way the deal tends to be biased between the sexes. This can be seen both in terms of a stylized reference point of a "primitive" situation as well as a more realistically portrayed "current" one, and the relation between the two situations is itself of some interest. Some disadvantages of women would apply in both types of situations. For example, frequent pregnancy and persistent child-rearing (as happens in many present communities and has happened in most of the past ones) must make the outcome of co-operative conflicts less favourable to women through worse fall-back position, greater vulnerability to threats and lower ability to make a perceived contribution to the economic fortunes of the family. Other disadvantages are much more specific to the nature of the community, e.g., greater illiteracy and less higher education of women in most developing - and many developed - countries today.

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<sup>26/</sup> See Sen (1970), pp. 120-1. The person who threatens to harm the other if the bargaining should fail does it at no direct advantage to himself (otherwise it won't be a "threat" but something he may do anyway, and will be thus reflected in the fall-back position). While it is plausible to try to get bargaining advantage out of a threat during the process of bargaining, once the bargaining has failed, the threatener has no obvious interest in carrying out the threat. But that recognition on the part of the threatened person would call into question the credibility of the threat itself.

35. The relation between the co-operative conflicts in one period and that in the next is of the greatest importance even though it may be hard to formalize this properly. The "winners" in one round get a satisfactory outcome that would typically include not only more immediate benefit but also a better placing (and greater bargaining power) in the future. This need not be the result of a conscious exercise of taking note of future placing or bargaining power (though it can also be that), but the effect may be brought about by the fact that "more satisfactory work" from the point of view of immediate benefit also tends, incidentally, to enhance the power bases of the deal a person can expect to get in the future. For example, getting better education, working outside the home, finding a more "productive" employment, all contribute not only to immediate well-being but also to acquired skill and a better fall-back position for the future. <sup>27/</sup> Also job training improves the quality of labour, and improves one's fall-back position, threat advantages and perceived contributions within the family, even when these may not have been conscious objectives.

36. The transmission can also work from one generation to the next, indeed from one historical epoch to the next, as the "typical" patterns of employment and education for men get solidified vis-à-vis those for women. The asymmetries of immediate benefits sustain future asymmetries of future bases of sexual divisions, which in turn sustain asymmetries of immediate benefits. The process can feed on itself, and I shall refer to this process as "feedback transmission". <sup>28/</sup>

37. In the stylized "primitive" situation, the disadvantages of women in terms of "breakdown response" would relate greatly to purely physical factors, even though the role of physical factors will be governed by social conditions. For example, at an advanced stage of pregnancy, securing food on one's own in a hunting community must be no mean task. The fall-back positions can be asymmetrically worse for women in various types of "primitive" societies, and this can make the sexual divisions go relatively against women in line with "breakdown response". <sup>29/</sup>

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<sup>27/</sup> Cf. Becker, Landes and Michael's (1977) characterization of "working exclusively in the non-market sector" as a form of marriage-specific investment. As Pollak (1983) remarks, "a decision to work exclusively in the non-market sector, however, is also a decision not to acquire additional human capital by working in the market sector" (p. 35).

<sup>28/</sup> If this were to be formalized, it will take the form of "repeated games" with varying participants.

<sup>29/</sup> Strictly speaking, "breakdown response" is not concerned with the relative positions of two parties but with the different positions of the same person in two situations with different breakdown features. Indeed, in Nash's own formulation, the position of one person being worse than that of another is not a meaningful statement, since Nash had no provision for interpersonal comparison (see Sen (1970), pp. 118-125). However, when such comparisons are admitted and a condition of symmetry is used regarding the relation between circumstances and outcomes for the two parties, the property of breakdown response can be easily translated from intrapersonal to interpersonal relations. The same translation has to be done for the other two "responses" as well, to move from intrapersonal formulation to interpersonal application.



38. In a less primitive situation - a stylized "current" one - the primitive asymmetries, if any, are supplemented by socially generated further asymmetries, e.g., of ownership, education, and training, 30/ and also a nurtured view of the "fragility" of women (seen as "quite unsuitable" for some types of jobs). These all contribute to a worse fall-back position, worse "threat" position, and worse ability to make a "perceived contribution" to the family's economic status. The bargaining disadvantages will feed on themselves through "feedback transmission". It may not be, then, terribly important to know how all this got started, i.e., whether because of the physical asymmetries relevant in the "primitive" situation, or through some other process (e.g., as Engels (1884) had argued, through the development of private property). In the present context, the important point is that such asymmetries - however developed - are stable and sustained, and the relative weakness of women in co-operative conflict in one period tends to sustain relative weakness in the next.

39. Turning now to "threat response", the physical asymmetry would be more important in the primitive situation, though it remains important enough even today, judging by the frequency of wife-battering, even in the richer countries. But physical asymmetries of the ability to threaten are also supplemented by nurtured asymmetries of social power. It is easy to underestimate the importance of threat in the social arrangements (including those within the household) since much of it may be implicit rather than explicit, and liberally mixed with other features of household relations, including love, affection and concern. But threat can be in some cases explicit enough, both as a phenomenon in itself and in the transparent role it can play in maintaining a particularly inequitable household arrangement. 31/ It becomes, of course, the subject of much discussion when it is associated with other

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30/ There is, in fact, some substantial common ground here with those neo-classical analyses of women's employment which have emphasized the differences in "human capital" investment in women's working background to explain their lower wages, inferior jobs and worse unemployment risks (see, for example, Mincer and Polachek (1974) and Becker (1981); see also Apps (1981)). That neo-classical literature has done a substantial service in emphasizing these differences related to sex. However, the nature of the analysis suffers from certain fundamental limitations, in particular: (1) taking the existence and realization of competitive market equilibrium for granted (with or without market institutions and competitive conditions), (2) ignoring the role of social prejudices and preconceptions operating in the labour market (going beyond the "stochastically rational" employer behaviour pointed out by Phelps, 1972), (3) dealing trivially with "co-operative conflicts" implicit in household arrangements by concentrating on an as if market solution, and ignoring in particular the role of bargaining power in explaining family decisions regarding human capital investment and the sexual division of labour, and (4) related to the last point, ignoring the role of "feedback transmission" in sustaining the sexual asymmetry.

31/ See for example Kurian (1982), dealing with the role of violence and social power asymmetries in the plantation sector of Sri Lanka, helping to sustain a particularly inequitable situation for women workers.

features that arouse social interest, e.g., the peculiar relationship between pimps and prostitutes in which threat often plays an important part in securing a regular pay-off for the former from the earnings of the latter. 32/

40. The impact of "perceived contribution response" may have been primitively associated with acquiring food from outside. The fact that the division of labour within the household permits some members to play this role while others take care of other activities (including preparation of food and looking after children) may not weaken the perception of special importance of "bringing the food home". Ester Boserup (1970) has, rightly, taken Margaret Mead (1950) to task for the following overgeneralization: "The home shared by a man or men and female partners, into which men bring the food and women prepare it, is the basic common picture the world over". 33/ But it is nevertheless a common enough picture in many primitive (and modern) societies, and may well have contributed a further force in the direction of sexual asymmetry of consumption and sustenance. Women appear to fare relatively better in those societies in which women play the major role in acquiring food from outside, e.g., in some African regions with shifting cultivation (Boserup (1970), chapter 1). 34/

41. The role of outside earning seems a strong one in creating a difference within the family. It has been noted that in India in the regions in which women do little outside earning (e.g., in Punjab and Haryana), sex disparities are sharper - visible even in the discriminated treatment of female children - than in regions where they have a bigger role in earning from outside (e.g., in Southern India). 35/

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32/ For a recent study of the role of threat both in physical terms and through economic pressure in the exploitation of Bangkok prostitutes, see Phongpaichit (1982).

33/ Mead (1950), p. 190; Boserup (1970), p. 16. See also Dasgupta (1977), and Slocum (1975), who also goes into "the male bias in anthropology".

34/ In general women seem to play a larger part in African agriculture than typically in Asian agriculture, as Boserup (1970) also noted (pp. 24-5). See also Dixon (1983). This may well be a causal factor behind the fact that in terms of such criteria as relative survival rates, sex discrimination is less sharp in Africa than in the bulk of Asia. The female-male ratio in the population is 1.02 in Africa, but 0.96 in East Asia (including China), 0.96 in South-West Asia, and 0.93 in South Asia (including India), though the ratio in South-East Asia is 1.01. See United Nations, Demographic Yearbook, 1981 (United Nations publication, Sales No. E.F.782.XIII.1). Also Kynch and Sen (1983) and Sen (1983b).

35/ See Bardhan (1974, 1982), Miller (1981), Kynch and Sen (1983), Sen and Sengupta (1983). Also G. Sen (1983). The contrast between South-East Asia and South Asia may also relate to greater female participation in outside work in the former region. See Dixon (1983) and Sen (1983e).

42. The nature of "perceived contribution" to family opulence has to be distinguished from the amount of time expended in working inside and outside the home. Indeed, in terms of "time allocation studies", women often seem to do astonishingly large amounts of work even when the so-called "economic" contribution is perceived to be relatively modest (see, for example, Batliwala, 1981; Jain and Chand, 1982; Mukhopadhyaya, 1982). That perception tends to relate to the size of direct money earning, rather than to the amount of time and effort expended, or to the role of non-market activities by other members of the family, who indirectly support such earnings.

#### VI. EXTENDED ENTITLEMENTS AND PERCEIVED LEGITIMACY

43. In a series of earlier studies dealing specifically with starvation and famines (Sen (1976, 1977a, 1981a, 1981b)), I have tried to analyse the problem of command over goods and services (including food) in terms of "entitlement systems". The analysis concentrated on the command that the household can exercise over goods and services, and it did not take on the issue of distribution within the household. Entitlement is essentially a legal concept, dealing with rules that govern who can have the use of what. Since the distribution within the household is not typically controlled by law (as, say, market transactions and capital ownership are), there are obvious difficulties in extending the entitlement analysis to the problem of intrahousehold distribution.

44. However, in another series of mainly empirical studies dealing with the distribution of food within the household in India and Bangladesh (Sen 1981c, 1982b; Kynch and Sen, 1983; Sen and Sengupta, 1983), a pattern of sex bias - against women - in the distribution of food (and of other commodities, such as hospital services) has come through strikingly. Such systematic differences have also been observed in other parts of the developing world.<sup>36/</sup>

45. There is also some evidence that deep-seated notions of "legitimacy" operate in the distribution within the family (see Sen, 1982b, 1983c), supplementing the operations of entitlement relations at the levels of households, occupation groups and classes. There is, thus, a good case for extending the entitlement analysis to intrahousehold distribution as well, taking a broad view of accepted legitimacy (rather than just of "laws" in the strict sense). Such an extension will closely relate to the structure of sexual divisions with which the earlier parts of this paper have been concerned.

46. In a private ownership economy, the two basic parameters of entitlement analysis are "endowment" (roughly, what is initially owned) and "exchange entitlement mapping" (roughly, the exchange possibilities that exist through production and trade).<sup>37/</sup> The person (or the household) can establish

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<sup>36/</sup> See, for example, den Hartog (1973) and Schofield (1975).

<sup>37/</sup> For a fuller presentation of the entitlement approach and its application, see Sen (1981a). See also Arrow (1982) and Desai (1983).

command over any bundle of commodities that can be obtained by using the endowment and the exchange entitlement mapping, reflecting both (i) the possibilities, and (ii) the terms, of (a) trade, and (b) production. The set of all commodity bundles on any one of which the person (or the household) can establish command is his or her (or its) "entitlement set". If the entitlement set does not include any bundle with enough food, then the person (or the household) must starve. With this very general structure, much of the analysis was devoted to studying patterns of endowment and exchange entitlement mappings, paying particular attention to modes of production, class structure, roles of occupation groups, and market forces.

47. The analysis was also used to study a number of modern famines, in some of which (e.g., the Bengal famine of 1943, the Ethiopian famine of 1973, the Bangladesh famine of 1974) the total availability of food per head turned out to have been no less (sometimes more) than in previous years. <sup>38/</sup> The famines were seen as entitlement failures related either to endowment decline (e.g., alienation of land, or loss of grazing rights), or exchange entitlement decline (e.g., loss of employment, failure of money wages to keep up with food prices, failure of prices of animal products or craft products or services to keep up with the prices of basic food), or both. The famines decimated specific occupation groups, while leaving other occupation groups and classes unaffected, sometimes enriched.

48. Since for most of humanity, virtually the only endowment is labour power, much of the analysis turned on conditions governing the exchange of labour power (employment, wages, prices, etc., and social security, if any). It was also found that the right to the use of land, even without ownership, e.g., secured share-cropping rights, makes a big difference to famine-vulnerability. In fact, in the South Asian context, while landless rural labourers constitute the occupation group most vulnerable to famine, nevertheless sharecroppers (who are, in normal circumstances, not much richer than labourers) turn out to be much less vulnerable to famines than labourers (Sen (1981a)). The difference relates largely to the fact that the share-cropper gets directly a share of the food crop (without having to depend on the market), whereas the rural labourer faces the dual threat of unemployment and possible inadequacy of wages to buy enough food at the relative prices that would happen to emerge. The fact that daily wage labourers often form a much higher proportion of female agriculture workers than males (see Dixon (1983), G. Sen (1983), among others) is, thus, of some importance.

49. Turning now to the intrahousehold distribution of food in famine situations, the empirical evidence seems to suggest conflicting stories. The famine experts of the British Raj in India were on the whole persuaded that men died in much larger numbers than women in Indian famines, <sup>39/</sup> but the evidence

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<sup>38/</sup> See Sen (1976, 1977a, 1981a, 1981b). See also Griffin (1978), Ghose (1979), Alamgir (1980), Oughton (1982), Ravallion (1983), Khan (1984), for other case studies and related analyses.

<sup>39/</sup> See Census of India 1911, vol. I, part I, appendix to chapter VI, surveying the nineteenth century famine inquiry reports, well reflected by Sir Charles Elliot's summary: "all the authorities seem agreed that women succumb to famine less easily than men".

might possibly have been based on biases in data collection. 40/

50. There has been no serious famine in India since independence, but there have been many situations of hardship in acquiring food, not altogether relieved (though typically much reduced) by government intervention. There is some considerable evidence of bias against the female, especially the female child vis-à-vis the male child, in such situations of hardship (see Sen, 1981c). And in normal mortality too, there is clear evidence of female disadvantage in age groups below 35. This is especially striking for children. 41/ One remarkable feature of Indian demography is a significant decline in the female-male ratio in the Indian population, from 0.972 in 1901 (quite low even then) to 0.935 in 1981. This feature relates to many other ways in which the continued - and in some ways increasing - relative deprivation of the Indian women come through (see Kynch and Sen, 1983). The problem is present in many other countries as well, and as was mentioned earlier, the female-male ratio is very substantially lower than unity in Asia as a whole.

51. In extending the entitlement analysis to include intra-household distribution, attention must be paid to the fact that the relationships within the household in the distribution of food and other goods cannot sensibly be seen in the same way as the relationships of persons and households to others outside the household, e.g., an employer, a trader, a landowner, a retailer, a speculator. That is why a straightforward translation of the entitlement analysis presented earlier would be a mistake, tempting though it might be.

52. To indulge in technicalities for a moment, it is best to see entitlements not as a set of vectors (bundles of commodities going to the household as a whole), but as a set of matrices (bundles of commodities for each member of the household), with each person's share being given by a column of the matrix. Similarly, endowments too are best seen as matrices (bundles of ownership for each member), even though the children would enter with zeroes everywhere, and more importantly, most of the adults too would have nothing other than their labour-power to adorn the household endowment matrix. Women in particular

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40/ An excess of male deaths was reported also in the Bengal famine of 1943 by Das (1949), based on a survey asking people receiving cooked food relief, who of their relations had died. However more complete data do not seem to support Das's survey finding and indicate that the sex ratio of famine mortality in 1943 was much the same as the sex ratio of normal mortality in Bengal (see Sen, 1981a, pp. 211-3). Among the relief receivers (the population that was questioned), there seem to have been a higher proportion of women (famine relief policy was more suspicious of supporting able-bodied men), and this bias in favour of women in the questioned population would have acted as a bias in favour of men being reported as dead in the survey. A woman has typically more male relatives in the nuclear family (including her husband) than female relatives, and thus she has a higher probability of having a dead male relative. Similar biases in sampling could have affected the nineteenth century belief in greater famine deaths among men. But the evidence requires a more thorough examination than it has received so far.

41/ See Bardhan (1974), Mitra (1980), Sopher (1980), Miller (1981), Dyson (1982), Padmanabha (1982), Kynch and Sen (1983). On related observations regarding Bangladesh, see Chen, Huq and D'Souza (1980).

will tend to fall in that category (outside a small class). The exchange entitlement mapping will then specify for each endowment matrix the set of possible commodity matrices. Starvation will certainly occur if - given the endowment matrix - none of the possible commodity matrices includes adequate food for each person. It can also occur even if there is a feasible matrix with adequate food for all, if that feasible matrix does not get chosen.

53. This is not the occasion to launch forth into the technical analysis that will clearly be needed, nor indeed to go into detail in the way ownership patterns, production possibilities and market arrangements (including that for labour power) interact to constrain the exchange entitlement mappings. Some of that analysis can draw heavily on the entitlement relations explored earlier (e.g., Sen, 1981a) at the interhousehold level, but the supplementation needed must capture the essentials of the sexual divisions, including intrahousehold distributions.

54. If the intrahousehold distribution patterns are taken as completely flexible, then the possible matrices would reflect that freedom through listing all possible intrahousehold distributions of the same household bundle. At the other extreme, if the head of the household has very fixed ideas of how the bundle must be distributed and has the power to carry out his patriarchal decisions, then each household commodity bundle would translate into exactly one household matrix of who would have which good. 42/ The actual situation would vary between these limits.

55. The general issues underlying the formulation of the household arrangement problem as a "bargaining problem" can now be used to characterize some features of the extended exchange entitlement mapping. For example, "breakdown response" will be reflected in the individual consumption of the person (his or her "column") being more favourable in the possible entitlement matrices, given other things, as the person's fall-back position improves. The same would apply to other responses.

56. These remarks are, I fear, tiresomely vague. It is, however, not difficult to extend the mathematical formulation of the vector-vector exchange entitlement mapping (see appendix A of Sen (1981a)) into this modified format of matrix-matrix "extended exchange entitlement mapping", 43/ and to specify the "responses" in question in terms of a set of "monotonicity conditions".

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42/ The approach of "equivalence scales" based on the assumption of maximization of a unique utility function for the family as a whole, which is technically perhaps the most impressive part of the literature on intrafamily allocation (see Deaton and Muellbauer (1980)), is implicitly based on some assumption of this kind, e.g. the "head" of the family imposing a benevolent despotic consistent preference ordering in making decisions about everyone's consumption in the family. When the "head has a strictly convex preference map, each household entitlement vector would be translated into a unique household entitlement matrix. See also Sen (1983d).

43/ Strictly speaking, the "extended" exchange entitlement mapping relates a matrix (family endowment) to a set of matrices (family entitlements), just as the standard exchange entitlement mapping relates a vector (family endowment) to a set of vectors (family entitlement).

## VII. OUTSIDE EARNINGS

57. A woman's opportunity to get paid employment outside is one of the crucial variables affecting the extended exchange entitlement mapping. This can happen in two distinct ways, corresponding respectively to the "co-operative" and "conflicting" features discussed earlier in the "co-operative conflict" formulation of sexual divisions.

58. First, such employment would enhance the over-all command of the household. This would be caught also in the simple vector-vector exchange entitlement formulation for the household as a whole, and it would naturally be reflected in an enhancement of the possible entitlement matrices associated with the given endowment matrix.

59. Second, for a given entitlement vector, the household entitlement matrix would typically respond positively in the column associated with that woman's own share in the over-all matrix. This corresponds, of course, to the element of pure conflict in "co-operative conflicts", and the directional link described here would reflect some combination of the three responses discussed earlier. Outside earning gives the woman in question (1) a better fall-back position, (2) a better ability to deal with threats (and indeed to use threats) and (3) a higher "perceived contribution" to the family's economic position.

60. The empirical basis of the directional link has been confirmed in a number of studies dealing with women's work. To quote just one example, in her definitive study of the women workers in the beedi (crude cigarette) industry in Allahabad in India, Zarina Bhatti (1980) found the following:

A greater economic role for women definitely improves their status within the family. A majority of them have more money to spend, and even more importantly, have a greater say in the decisions to spend money. Most women claim to be better treated as a result of their contribution to household income. ... A substantial proportion of women feel that they should have a recognized economic role and an independent source of income. ... Their attitudes evidence a clear perception of the significance of their work to family welfare and their own status within the family (p. 41). 44/

61. The impact of outside earning of women depends also on the form of that earning. In her well-known study of the lace makers of Narsapur in India, Maria Mies (1982) notes that these women workers do not get much benefit from their work, because despite the fact that the products are sold in the world market, the women "are recruited as housewives to produce lace as a so-called spare-time activity, in their own homes" (p. 172). "As she herself is not able to see her work as a value-producing work, she subscribes to the devaluation of this work as non-work, as purely supplementary to her husband's work, and she is not able to bargain for a just wage. This mystification is the basis of her

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44/ See also Benería (1982), Croll (1979), Deere and de Leal (1982), ILO (1982a), Loutfi (1980), Mies (1982), Phongpaichit (1982) and Standing and Sheehan (1978). Lloyd and Niemi (1979) deal with a related problem in the context of rich and economically advanced countries.

over-exploitation as housewife and as worker" (pp. 173-4). The lower bargaining power of the women workers vis-à-vis the employers depresses the exchange entitlement of the household as a whole. Further, the weakness of the three "responses" for women workers vis-à-vis the rest of the family further affects the extended exchange entitlement by depressing their status and the share of benefits that go to them within the household.

62. The extension of entitlement analysis to divisions within the family brings in notions of legitimacy that go well beyond the system of State-enforced laws on which property relations, market transactions, wage employment, etc., operate, and on which the standard (vector-vector) entitlement analysis depends. But these notions of legitimacy have a firm social basis and may be hard to displace. What would have looked, in the narrow format of the "bargaining-problem", like a "rotten" bargaining outcome (e.g. giving a worse deal to the person with a weaker fall-back position) may, actually, take the form of appearing to be the "natural" and "legitimate" outcome in the perception of all the parties involved. The idea of entitlement in the extended form can be influenced by a shared sense of legitimacy and the adopted perceptions that relate to it.

63. In selecting policy instruments, the role of outside employment, with acknowledged "productive" status, in raising the position of women cannot be overemphasized. Both aggregative empirical analysis (e.g. the contrast between Africa and Asia, between South East Asia and South Asia, between South India and North India), discussed in section V, and particular case studies, cited or referred to in this section, point to the importance of outside employment in improving the deal that women get in the society in general and within the household in particular. Extended entitlement analysis can bring out the dual advantages of such a policy, affecting market command, on the one hand, and non-market divisions (related to the strength of the various "responses") on the other. 45/

#### VIII. TECHNOLOGICAL MODERNIZATION AND JOB LOSS

64. The importance of women's outside work, analysed in the last three sections, indicates the need to orient policy in that direction, and also to examine and monitor how market forces affect job opportunities for women. There are, as may well be expected, quite different trends in different parts of the world and also differences between the sectors.

65. However, there are certain distinct patterns that can be observed over broad regions, and one of the patterns seems to involve a considerable displacement of women with technological modernization in many parts of the developing world. Ester Boserup's (1970) pioneering study had drawn attention to the effects of economic development and modernization on the economic

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45/ The practical scope for expansion of women's employment has often been underestimated, especially in the context of "traditionalist" societies. On the last, see Ruth Dixon's (1982) illuminating analysis.



position of women, 46/ and recently more cause for concern has been found in observed patterns of displacement of women from very many different parts of the developing world. 47/ It seems that modernization has, on many occasions, taken the form of adversely affecting women's economic role and thus their economic position. Technological innovation has appeared, often enough, to be no friend of women.

66. Ann Whitehead (1981) argues that "the immediate task is to examine some of the reasons why, despite the potential benefits that women could derive from it, the experience of rural women of both planned and unplanned technological innovation, has been largely 'unfavourable'" (p. 1). Bina Agarwal (1981) comes to a similar conclusion, but goes on to argue: "Clearly the problem cannot be located in the technical innovation per se, ... since what is often inappropriate about the innovation is not its technical characteristics but the socio-political context within which it is introduced" (p. 96). This is indeed so, but there remains the question as to why the "technical characteristics" of innovations (including adaptations) have so often taken the form of displacing female labour and have tended to hurt directly the interests of women - particularly rural women - in developing countries? The "socio-political context" within which these technological changes have been introduced certainly deserve blame for the precise effects that these changes have had. But if these innovations are typically of the kind that particularly displace the work that Third World rural women do 48/ (e.g., rice-milling in Bangladesh, Java, India or Sri Lanka 49/), there is also an important economic question as to why innovations have gone in these directions rather than others.

67. There is, in fact, something slightly contrary about the economic context of these technological changes. Women's remuneration rates are typically lower than those of men, and from the point of view of economic return, it is, other things given, more profitable to displace male labour rather than female labour.

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46/ While Boserup (1970) presented, in her classic analysis of "women's role in economic development", a picture of displacement of women from important productive and decision-making roles in the process of development (e.g. in agricultural development in Africa), she did not associate development only with worsening changes. One important contribution of Boserup's study is a far-reaching analysis of how women's position in society may be viewed in the light of their economic roles, and this permits the study of trends in different directions and of diverse types.

47/ There is, in fact, a vast literature on this by now. To cite only a few, Palmer (1975), Ahmed (1978, 1983), Loutfi (1980), Agarwal (1981), Whitehead (1971), Ahmed and Loutfi (1982), Beneria (1982), ILO (1982a), Ventura-Dias (1982), and the enormous further literature referred to in these studies.

48/ There are, of course, exceptions to this rule and the empirical findings do not all tell the same story (see Ahmed (1978)). There is a danger of generalizing too much in a field like this. However, the evidence does point to a general bias in the nature of these technical changes despite exceptions to the rule (see Ahmed (1978, 1983), Agarwal (1981), and Whitehead (1981), and the literature cited there).

49/ See, for example, Harriss (1977), Palmer (1978), Agarwal (1981), Whitehead (1981).

If, nevertheless, many of the dominant trends in technical innovation (including adaptation) have gone in the opposite direction, an important query is immediately raised about its economic rationale from the point of view of profitability.

68. The answer may not, however, be far to seek. Women, especially rural women, figure in disproportionately large numbers in jobs that involve simple and repetitive work. 50/ And mechanical jobs are often the easiest to mechanize. Thus, even though there might have been more money-saving in replacing men's rather than women's work, the lower cost of innovations that economize on mechanical operations tends to push technological change in directions that harm women's job opportunities more.

69. So the really interesting question in this context is not why has technological modernization taken this apparently "anti-woman" form, but why does the traditional division of labour, which continues into the modern period, tend to relegate women to these repetitive, boring, mechanical, and mechanizable tasks. The question, in the last analysis, is at least as much about "tradition" as it is about "modernization".

70. This is where the particular problem under discussion links up with the general analysis of "co-operative conflicts" presented earlier. The inferior deals that women tend to get in sexual divisions of work and reward (related to the various "responses" that were identified) predispose women in their traditional "productive" role to job loss through elementary mechanization. Technological changes - of the most basic kind - have posed these threats for rural women in developing countries in recent years largely because of their positions inherited from the past. It is tradition that has tended to make modernization a bit of an "enemy" of women. 51/ This is a general point of some strategic relevance, since it is inappropriate to chastise "modernization", when the blame would seem to lie, ultimately, on "tradition". And that calls for change, and indeed also for the right type of "modernization" as the redeemer.

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50/ This seems to hold all over the world; see for example Boserup (1970), Palmer (1975), Standing and Sheehan (1978), Banerjee (1979, 1983a), Burman (1979), Ahooja-Patel (1980), Deere and de Leal (1982).

51/ Displacement of women's remunerative work is not the only respect in which modern changes have been identified as having negative effects. There are other - related - features that have been noted in the literature, and some of those too can be seen as being integrally related to the weak position of women in the traditional structure of the economy. One such feature is the growing need for cash transactions in the rural society of developing countries. (See, for example, Ventura-Dias (1982), in the context of Kenya, on which see also Heyer, Maitha and Senga (1976), Kongstad and Monsted (1980)). This has in many situations reduced the economic power of women even more, since the work of women is so heavily concentrated in the household sector without cash wages being paid. Once again the difficulties created by modernization (in so far as this has occurred) can be traced to the economic weakness of the traditional position of women.

71. That question relates to another general and motivational issue. The most important cause for concern regarding the position of women in developing countries does not lie in some particular patterns of deterioration that may now be visible, but in the inferior position from which women start and from which the deterioration in question is counted. It is not so much that the position of women is becoming terrible; rather that it is terrible already and has been so for a long time - indeed for much of history. While the position of women in one society or another may fall some or rise a little in one period or another in history, the dominant fact is that of a long-lasting inequality and asymmetry. It is against that background that we have to see - and interpret - the modern changes.

#### IX. EMPLOYMENT, REWARDS AND POLICY

72. Creating job opportunities for women is important both for the sake of enhancing over-all economic prosperity, 52/ and for reducing inequalities in economic well-being, through influencing the outcomes of "co-operative conflicts". The general policy implications that follow from this are clear enough, though particular policy packages would have to be specifically derived with respect to economic and social conditions of each country or region respectively. 53/

73. While I shall not try to put together a general list of "do's and don't's", a few of the more general strategic issues of policy may call for brief comments, in line with the analyses presented earlier in this paper.

74. First, it is important not to count success in terms just of the number of additional jobs created, but also to pay particular attention to the nature of the created jobs and the effects that they may have on the outcomes of "co-operative conflicts" (see sections IV and V). For example, "dole-like employment", created on government command, to give some women a simple source of income may not at all have the effect that more "productive" work can have in transforming traditional relations.

75. Second, the advantages of job creation have to be balanced against the potential alternatives. For example, while "enclave type" foreign investment in developing countries using cheap female labour may well do something to improve the position of local women (and also create some over-all income for the families), such policies have to be assessed in terms of comparison with alternative production policies that can be pursued. Neither uncritical

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52/ The over-all gains from more "liberated" economic arrangements are often underestimated. Khan, Dadoo and Horton (1984) show, with an interesting statistical analysis of Bangladeshi agriculture, that women's contribution to total income generated may be very much higher than is supposed.

53/ Some valuable background studies have been produced in this area by the ILO, especially under the World Employment Programme. For a guided tour of some of the more recent studies produced by the Rural Employment Policies Branch, see Ahmed and Loutfi (1982). See also Carr (1978), Date-Bah and Stevens (1981) and Russel-Wasserman (1982).

applause of the "achievement" of the number of female jobs created in these enclaves (without checking what the alternatives were), nor simple denunciation of these arrangements as "exploitative" (without offering any alternative employment opportunity), can stand economic scrutiny. What is needed is an examination of each policy package in terms of its alternatives, bearing in mind the need for taking a broad view of effects, including the impact on co-operative conflicts inevitably involved in the assessment of consequences and the corresponding "extended entitlements" (see section VI).

76. Third, the impacts of economic policy on perception issues are hard to predict but are not unimportant for that reason. As was discussed earlier (sections I, V and VI), the nature of co-operative conflicts involves ambiguities of perception of respective interests, on the one hand, and of respective contributions on the other. Employment opportunities for women have to be judged not merely in terms of the earnings created (important though they are), but also in the context of whether the employment will be seen as, in Maria Mies's words, as "value-producing work" (section VII). The issue is important not merely in the context of working at home for outside enterprises (seen as "purely supplementary to her husband's work"), to which Mies refers in this connection, but also for many other activities. There is, in fact, some evidence that even the widespread and crucial help that women provide in staple agriculture, which may sometimes exceed the contribution of men in terms of effort, 54/ may not get its due recognition, being treated as "purely supplementary to her husband's work". The policy of job creation has to be assessed in a wider social context, involving both the nature of the work involved, and also the social recognition of the productive contributions that are being made, which affects the "extended entitlements" of men and women. One reason for emphasizing the "perceived contribution response" in analysing co-operative conflicts (section V) is to provide a background for policy based on an understanding of influential economic and social variables (e.g. perception biases) that are often wrongly seen just as peripheral cultural phenomena, which display amiable - and perhaps ethnocentric - eccentricity.

77. Fourth, women's weak position in co-operative conflicts may be reflected in worse consumption outcomes (as indeed has been observed in some empirical studies), but it also relates to the outcome that women typically do the less skilful, repetitive and mechanical jobs. These jobs are typically worse paid and are also more at risk from mechanization (section VIII). But the root of the difficulty lies in the nature of the sexual divisions that have tended to emerge from co-operative conflicts. The remedy sought has to go well beyond that of redirecting technological change. Further, women's concentration on these jobs broadly relates, to a great extent, to disadvantages in education, training and skill formation, and these disparities themselves are best seen as results of the outcomes of co-operative conflicts and of feed-back transmission (section V). Any deep-rooted policy response must involve operating on these instruments of job acquisition (in addition to removing straightforward discrimination and "unequal pay for equal work" 55/).

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54/ In the context of India, see Jain and Chand (1982), Jacob (1983), G. Sen (1983), Agarwal (1984).

55/ These straightforward discriminations may relate both to prejudice on the part of the employers as well as greater opportunity of exploiting the female labour. For a rich and illuminating empirical study of the discrimination suffered by unorganized women workers of Calcutta, see Banerjee (1982); also Banerjee (1979, 1983a, 1983b).

78. Fifth, reproduction is a central co-operative aspect of human life, and one that is valuable from many perspectives - not just from that of reproducing the labour force. But at the same time, as was discussed earlier (section V), the differential roles of men and women in this process have a profound effect on the "bargaining" outcome, making the resolution of the conflicting aspects inequitous. The negative effects of pregnancy and child-bearing on the woman's "fall-back position", "threat position", and the ability to make "perceived contributions" to economic production and prosperity, tend to affect the nature of the social divisions. While this is obviously not a problem that can be easily resolved, it is important to emphasize the role that family planning can play in influencing the nature of the outcome of co-operative conflicts, in addition to the other roles it does have. <sup>56/</sup> The disruption of employment and employability that occurs when a woman has to produce and raise a large number of children has a serious impact on the relative position of women in the household, especially in the poorer families. Family planning is certainly one type of technological modernization that would tend to help rather than harm the interests of women in terms of the conflicting as well as the co-operative aspects of household arrangement.

79. Sixth, as was discussed earlier, problems of conflict within the family tend to get hidden by adapted perceptions both of "mutuality" of interests (going well beyond the actual elements of congruence that do, of course, importantly exist), and of "legitimacy" of inequalities of treatment. As a result, no policy analysis in this area can be complete without taking up the question of political education and understanding. Public discussion and debates have a significant role to play. This is an area in which social illusions nestle closely to reality, and terrible inequities are cloaked firmly in perceived legitimacy. The importance of information and analysis in breaking the grip of traditional arrangements is hard to exaggerate. The technology of mass communication offers great opportunities as well as powerful resistance.

80. The implications of characterizing sexual divisions as co-operative conflicts (with certain powerful qualitative "responses") and seeing extended entitlements as incorporating - inter alia - conventional notions of legitimacy (taking note of perceived contributions and interests) are quite far-reaching. The policy needs are correspondingly broad, covering economic and technological decisions as well as social, political and educational programmes. Given the nature and the reach of the problem of sexual divisions and inequalities, this picture of complex interdependence should come as no surprise. There is no cunning "shortcut".

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<sup>56/</sup> Leela Gulati (1981) presents an interesting case study of the rapid impact of the extension of family planning on some fishing villages in Kerala on the health and survival of women and on their earning activities.

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