

Analysing Forms of Vulnerability in a Disaster

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This paper attempts to highlight the plurality of vulnerability in an affected community. It aims to suggest that the needs of each affected group differ and should accordingly be addressed. The paper is divided into three sections. The first section briefly reflects on the intertwining of disasters with vulnerability and entitlement systems. The second section draws upon a case study of the earthquake in the Osmanabad and Latur districts of Maharashtra to understand the social processes underway in the aftermath and their impact on different vulnerable groups' entitlement systems; and illustrate from available data, differential vulnerability faced by different groups. The last section generates indicators of vulnerability in a disaster situation.

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INTRODUCTION

Disasters are mainly human tragedies. In a disruption, interrelated dynamics and new complexities develop, affecting the vulnerability of individuals, households and communities.

The impact of disasters on a community depends on the nature and intensity of the event. At times it brings about irreversible changes in resource and demographic patterns, thereby causing disturbances in the lifestyles. The aftermath situates the people of the affected community in a trying environment for a considerable period. This space and time enclaves social power and production relations. The culmination of all these affects members of the community differentially with age, gender, caste and class.

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section draws upon a case study of the earthquake in the Osmanabad and Latur districts of Maharashtra to understand the social processes underway in the aftermath and their impact on different vulnerable groups' entitlement systems and illustrate from the available data, differentia! vulnerability faced by different groups. The last section generates indicators of vulnerability in a disaster situation.

DISASTERS AND VULNERABILITY

A number of micro-level studies and surveys on disasters focus on the longitudinal journey that the affected people trudge, and suggest that disasters and vulnerability have consequential sequence. In Sen's (1981) analysis of entitlements, the exchangeable entitlements, that is an individual's capacity to control resources in the system, directly or indirectly, through labour, inheritance, property and trade, is the focus. His argument relates to social processes, which spread over a long period, and dominate in crises situations, like famines. The notion of 'vulnerability' emerges within the context of natural calamities like floods or earthquakes, which refers to the (in) capacity of people to manage or withstand their shock (Buchanan and Maxell, 1994; Longhurst 1994). Following this, we allude to vulnerability here, as the inability to cope with disruptions in the entitlement system. 1 Those who are not able to cope with or maintain control over their entitlements are more vulnerable. They will, thus, be more susceptible to succumb to new forces originating from changing social, gender and production relations.

Unlike famines or droughts, which are silent and have long gestation periods, earthquakes and floods are loud and sudden in their occurrence. The former is embedded within a social structure and an agro-climatic dynamics and is, therefore, less harsh towards a few who enjoy security and power. Sudden emergencies do not respect the powerful or the rich; they victimise and traumatise all. These unexpected and quick events cause large-scale property and livestock losses and/or deaths. In a short span of time, they can alter the configuration of the social equations and, hence, the vulnerability of people. The social fabric mutates its form and direction as the disrupted community resettles and copes with shifts in the socioeconomic factors, institutions and structures. Some aspects that undergo change are the demographic composition, intra-household dynamics, interdependence within the social system, markets, and access to aid and functions of the government. Some gain, while others slide to a more vulnerable

position than before, and still others may retain a *status quo*. Disruptions in the entitlement system increase vulnerability across all socio-economic groups with differing dimensions.

Vulnerability is neither static nor does it have the same form over time (Kabeer, 1994). It would differ in its forms, as it would vary with age, class, caste and gender. Being multidimensional, it is not always easy to rank people on vulnerability scales. It can be assessed only with a varying degree of plurality. For example, the vulnerability due to a physical handicap, caused by sudden disaster, for an old man will differ from that of a mentally traumatised young women or from that of an old farmer who loses young male offspring.

In a disaster situation, vulnerability can assume at least three forms, though they are not mutually exclusive. People could be vulnerable on account of their economic status. Second, social vulnerability assumes a form of discrimination, which is heightened or reduced as a result of newer emerging entitlement systems. Last, personal vulnerability is a disturbed mental state, a feeling of being uprooted and the threat of exploitation due to disruptions of an individual's entitlement system.

It is to be noted that the loss of or disabilities among adult pivotal member(s), increase the vulnerability of the household(s) in which death(s) occurred. In such situations, all members of such particular households could be vulnerable and their vulnerability, interrelated. In some situations, household vulnerability may not be significantly affected, though such cases may not be very many. Typical ones could be as follows: vulnerability due to physical disability of one individual, or being a young widow within a large family.²

Unfortunately, the present data do not provide the scope to illustrate the varied and contrasting forms of household vulnerability since they were collected for a different purpose. Notes presented in the following section, nevertheless, suggest that the impact of social processes is more stark on households that are severely affected by the calamity. Differentiation is made between vulnerability and grief. Vulnerability occurs when the entitlement system of an individual is disturbed by one or more factors. In contrast, an aggrieved individual may not lose on any of the three criteria mentioned above.

In the following section, notes from field studies complement the different forms of vulnerability.

NOTES FROM THE FIELD: ARTICULATING FORMS OF VULNERABILITY

This section draws exclusively from the earthquake that struck the Osmanabad-Latur region in September 1993. High proportions of victims of the earthquake belonged to landed households and higher castes. Women and children accounted for very high proportion of the dead.³ Death rate in low castes and resource poor households was lower compared to the rate among the landed and resource rich households (Parasuraman, 1995).

Death and Redefinition of Social Arrangements

Social and economic value attached to men and women, male and female children organised as groups in families and communities are expressed prominently in disaster situations. Death of individuals who provided social, psychological and/or economic security to other members in the family increased the vulnerability of the survivors. The status of women in society found clear reflection in crisis conditions. In the aftermath of the Marathwada earthquake, women were subjected to utmost humiliation even while they were trying to come to terms with the reality of loss of their spouses and children.

Women from households that lost all adult males were left to depend on others, mostly relatives from their natal side, for support. Women from such households also suffered destruction and lost control of the property. Individuals, who had suffered the death of their spouses, were often left with young children and/or elders. They are giving more time for the management of day-to-day activities because of the breakdown in support system. Besides, their dependence on others has also increased. These aspects have facilitated in rearranging the power-relationships between different members of the society.⁴ Households that did not suffer human loss, but lost properties were better able to deal with economic and social aspects. Members of the high caste and rich households, that did not suffer death regrouped their efforts swiftly to derive benefit from relief and rehabilitation programmes.

During the initial period when relief was being carried out, those who suffered less managed to get a greater access to information and, thereby, relief. They had more time at their disposal since they did not have to spend energy in rationalising the trauma related to the loss of their loved ones. Narrations from the area confirm all of this. In contrast, those struggling with their grief depended on the kindness of

others. The dynamics of control over information and physical resources — and thereby entitlements — and the rapport with the aid and rehabilitation agencies placed the less affected in a better position than others, irrespective of the initial entitlement pattern. However, it must be noted that easy access to aid and relief by those in stronger social and economic position enabled them to attenuate their ability to cope with the shock. Among all groups, women suffered serious damage to their economic and social positions. Among women, those who lost their spouses and children are still enduring serious social and economic hardships.

Women who lost their children and/or spouses were pushed to social positions that lowered their negotiating power (that is, from wives, mothers of sons, wife of the eldest/respected member of the family, they were reduced to widows or childless women). These women, under severe psychological stress, did not look after themselves nor were cared for by others.⁵ Women belonging to certain caste and class groups in the earthquake-affected area, who had earlier not worked for a wage, have now been forced to do so. Evidently this is due to their newly acquired lower social position.⁶

Women (especially those who are now the main earners) have not only accepted low wages for lack of choice, but also pervasive employment contracts that have exacerbated their vulnerability. In some cases women were forced to enter into relationships to bargain for employment.⁷

There were a number of remarriages of young and old widowers and men the disabled spouses, for support and to share family responsibilities and to continue family lineage (in cases where all sons were lost). Within these social relationships, both the new young brides and first wives, were the unwilling martyrs in the power dynamics of gender.

Since widow remarriages are, as yet, unacceptable in the region, the number of female-headed households has, thus, increased. Widows, deserted by their in-laws, is not been uncommon. In addition, a large number of women who had lost all their children, especially sons, and were not capable of bearing any more (for they had either reached menopause or had undergone a sterilisation operation prior to the earthquake) were abandoned by their in-laws and/or husbands (TISS 1994). The older, disabled widows were left at the mercy of their sons or in-laws. In a patriarchal society, it is not difficult to imagine the extent of lack of control most of them have on resources: property or

compensation. Though the government declared policies aimed at giving equal share in compensation and rehabilitation provisions to women, it has not translated into benefits in the implementation stage (TARU, 1995).

In some cases, older men have spent their compensation money on remarriage. A few have spent the compensation money on recanalisation.⁸

The disaster has also actuated varied forms of vulnerability within an agrarian structure that has social arrangements woven with the production relations. The sudden crisis in the landed class has affected social arrangements. In turn, this has exposed poor farmers to positions that may not be in correspondence to their interests. Social relationships are like a grid; the complexities underlying in the shift of position of one actor can play a crucial role in defining changing vulnerabilities.

Impact of External Intervention of Vulnerability

Reorganisation in forms of resources emerges because of the very nature of disaster and the changes in the demographic pattern. Interventions by the external agencies, in turn, affect the social and power dynamics.

In this case, the initial relief and rehabilitation enabled to restore both production and human resources with the aim of having a more just and equitable social arrangement. Efforts in the earthquake hit areas have been made to give women equal property rights, more so in the now female-headed households to prevent women from being further marginalised. These reorganisations of resources have, however, not been accommodated by the society, which has been built on a strong patriarchal and kinship and family structure. Instead, new forms of control have been introduced. Widows were forced into new intra-familial arrangements, so as to maintain control over the family property. This sustains gender hierarchy and inequitable access to family resources.

Hindu joint land ownership pattern is one of the criteria of house allocation in the reconstruction phase. This has encouraged fragmentation of land as well as families, disturbing social networks. Poor peasants earlier had houses in agricultural plots for subsistence activities. The documents of this land were not necessarily available in government records. This meant that they got smaller houses than their earlier ones, thereby altering their socioeconomic status as well as affecting food security. The landless dalits, nomadic and denotified

tribal households invariably got smaller houses, irrespective of the size of the houses they had.

The variations in living arrangements (offered or imposed), emerging in the resettlement process, involved rearrangement of social relationships. Sharing of spaces within houses for animals, storage of fodder and fuel, agricultural implements, and negotiating for basic amenities like water, toilets, space for private activities with alien (caste/religious) groups has exaggerated the feeling of being uprooted. Prolonged stay in temporary sheds has disturbed women and children. The rich from the affected villages normally resided in nearby district and taluka towns and in Mumbai city. Such households neither experienced death of its members nor had to stay in 'temporary sheds'. A few landed farmers shifted to their farms and made temporary housing arrangements. It were the landless, marginal and small farmers with least financial capacity to make independent housing arrangement, who continued to reside in temporary sheds. Women and children from such households suffered the most as they used the space in and around the temporary sheds for most of the time. Men went out to work and often slept in common places due to shortage of space in the temporary sheds.

The reconstruction work in affected villages brought a large number of labourers and professional staff from other places. While some of the local labour either migrated to other, safer places or were unable to work due to a state of shock,⁹ large landowners hired labour from the neighbouring villages. The presence of large number of outsiders, and a feeling of temporariness and uncertainty resulting from prolonged stay in tin sheds induced serious sociological consequences. The affected villages now have many *arrack* (liquor) shops and local women find the new environment highly unsettling.

It has been observed that the distributed agricultural implements and livestock (hybrid seeds which require systematic nurturing, specially designed hoes which are used in specific ways, cows and buffaloes which yield large quantities of milk and require special fodder and care; milching too would specify certain training inputs) would call for different labour demands than before and also raise their labour productivity. However, in the absence of adequate infrastructure, there is likely to be a change in the labour allocation owing to extra responsibilities and burden, and the brunt of the physical labour is likely to be on the women owing to their low human endowments and control.

Corruption and considerable leakage of finances and selective information provision have governed the rehabilitation process, which benefited a few. In addition, there has been delay in the legal procedures, allotment of houses, and non-availability of basic amenities even after a year's wait. Consequently, entitlement patterns have not been restored to the earlier level and the feeling of uncertainty continues to be prevalent (Parasuraman, 1995). This has also lowered the self-esteem of the people and affected their capacity to support and empathise with one another. The rush to acquire what was being offered, situated the community at a stage where aid dictated social behaviour. Material base in the name of compensation has deformed strong family and social support network. Alcoholism, gambling and domestic violence has been on the rise. On the other hand, a few who were the least affected by the calamity gained, while aid was being indiscriminately distributed.

BEYOND NUMBERS: UNRAVELLING FORMS OF VULNERABILITY

An examination of various forms of vulnerability and their interface with social processes was done in the earlier section. Four factors are identified as important in defining an individual's vulnerability. It is essential to differentiate them by the nature and intensity of vulnerability. Grouping individuals by nature and extent of vulnerability and developing strategies to deal with the problems faced by the groups emerge as a critical step in the rehabilitation and development programme. Thus, in this section, an attempt has been made to analyse available data, and categorise an individual's nature of vulnerability.

Disabilities can range from simple to the most complex. The illustration focuses on groups of individuals with different forms of vulnerability within the affected community. The intensity of each individual's and group's vulnerability is not assessed, though the exacerbated conditions of certain groups with specific forms of vulnerability are illustrated through case studies in the appendix. Since the data on ownership and access to property could not be used, the other three aspects alone are analysed.

The forms of vulnerability for this exercise are: physical, social and personal. The first refers to the disability of an individual due to injury, and could include problems ranging from blindness to orthopaedic disorders. Social vulnerability refers to the attitude and norms of the people in determining social positioning of an affected individual.

Persons in this group would include widows and elderly women who have lost their sons. Last, there is vulnerability to the self, referred to as 'personal'. These would typically include threats to one's personal self, like exploitation, threat to endowments (such as health, labour power,¹¹ education and personal security.¹² The lack of access to physical resources is not included in this exercise, but the model would provide an additional weightage to this form of vulnerability.

As stated earlier, gender and social relations determine the categorisation of groups. For example, widowhood for a woman is a single form of vulnerability but it may be compounded by disability, and/or by loss of all male children. In a gender contrast, disability affects a young man's labour entitlement but his social position may not be affected.

The definition of variables is as follows:

Age

Individuals are more vulnerable and, thus, more susceptible to suffer deprivation in specific phases of their life cycle. Life cycle here is divided into five age categories: less than 18 years, 18-35 years, 36-45 years, 46-55 years and 55 years and above. The rationale for this division is based on reproductive and productive periods, as they assume importance in peasant settings. In addition, entitlement patterns differ for men and women in different age groups. Typically, women's social status directly relates to bearing of male children. Men and women in the age group of 36-45 years are both caretakers of young children and old parents, in addition to their productive role. Men assume the role of 'patriarchs'. Unlike men, the reproductive phase for women is complete by this age. Both men and women are at the tail-end of their productive phase, with property inherited by men. In the 55 years and above phase, there is dependence on grown up sons. Children below 18 years are placed in a different category because of their differing dependency, needs and entitlement patterns.

Social Positioning

Gender and marital status override the social position. The economic and occupational criteria are not considered here due to data limitations. Class and caste factors too have not found place in this exercise since the focus here is principally the individual, with the assumption that class and caste, predetermined in a rural Indian setting, influences the position and status of the individual.

The death in the household pushed in individuals to one of the following status:

- remain married;
- widow/widower;
- orphan; and
- loss of sons.

Each category shapes the vulnerability of the individual. Losses of sons or spouses shape the vulnerability of individuals belonging to different age and sex groups differently. The extant social attitudes could augment the vulnerability of certain individuals like widows, orphans, middle/very aged women who have lost sons, due to disruptions in their entitlement system. Women who are not capable of bearing sons again experience lowered social position as well as the fear of being deserted. The loss of all sons would situate an old married female in as vulnerable a position as an old widower, the latter because of a threat to his entitlement system and the former because of her lowered social position and threat to her endowment (male children are endowments of women). All males in the age group of 36-44 years and 55+ years with disability would be vulnerable because of their handicap in the productive age group as well the stress of not being able to carry out their normative roles.

Disability

Disability is regarded as a factor in disrupting an individual's entitlement pattern (as a further elaboration, various types of permanent disability are considered to show the extended categories or groups with a similar form of vulnerability).

Physical permanent disability is classified as

- no disability of senses;
- motor disability;
- serious disability; and
- paralysis.

This level of disaggregation is, however, pursued in a limited exercise later in the text.

Groups with varied forms of vulnerability are derived from a combination of categories, stated factors that influence the entitlement system of the individual. Having arrived at these groupings, that is, age with social positioning and disability, the combinations were re-grouped into six categories based on an *a priori* criterion of severity.

The number of groups resulting from different forms of vulnerability (combinations of the three variables) is 66, details of which are not given in this paper. These categories are then regrouped into six broad groups to arrive at meaningful policy options. Effort is made to group them into 'congregations' that may represent 'similar' degrees of severity; an orphaned and disabled female child is most vulnerable because she may have no guardians (or may have ones who may not provide her with the appropriate affection/care, but may be interested in taking control of her property or compensation money). It is also reasoned that a disabled female child, in a male dominated society, is treated by the relatives as a burden. Besides, being subject to mental trauma, she may also be physically abused. Her helplessness, disability and incapacity to be on her own perhaps makes her the worst affected.

In contrast, a non-disabled widow in the age group 36-45 years too is vulnerable, but not as much because her labour entitlements are not completely lost. In the event that her adult sons are dead, her physical support and social position are also affected. But it is less likely that she would be cheated of her property and even less likely that her coping mechanisms are completely destroyed. In yet another situation there are males who have become vulnerable, but given the fact that their bargaining capacity with the system remains relatively unaltered, the severity of vulnerability would be lesser compared to women in such circumstances.

Based on this logic, six categories are formed as described below:

1. Those who are incapacitated to perform productive activities, their entitlement system being disturbed with the loss of support.
2. Persons with lowered social position, due to threat to their entitlement system.
3. Individuals who are socially powerless to exert control over their endowments.
4. People experiencing a threat to their entitlement system and lack of control over their endowments.
5. Those subjected to personal vulnerability and a threat to their entitlement system.
6. Individuals likely to be subjected to all forms of exploitation and lack of endowments which would situate them in a highly vulnerable position.

RESULTS

The data used in this exercise have been drawn from the survey conducted by the TISS for assessment of loss due to earthquake in Osmanabad and Latur districts of Maharashtra in September 1993. In all, 34,446 households were surveyed covering 1,70,955 individuals. In the analysis, only those households in Osmanabad district, which experienced death of at least one individual were chosen for analysis. The total number of households that suffered death was 1,910, which accounted for 8,395 individuals. The data related to Latur district was not analysed, as data from Osmanabad district was analysed to illustrate the methodology.

The total number of groups, as per the vulnerability criteria discussed earlier, are 61. Their operational definition, as well as the number of cases in each group, is presented in Table 1. The total number of persons identified to be vulnerable are 1,350, that is 15.6 per cent of the total in whose households death has occurred. At the first level of analysis, only death figures, determining the magnitude of the loss, was carried out. This does not, however, reflect the grief or the extent of vulnerability of the truly affected.

Physical disability has played a crucial role in establishing vulnerability. About 67 per cent of those vulnerable are also disabled. This could partially be a biased statement keeping in view the fact that disability, whose importance cannot be undermined, is a criterion of vulnerability here. About 44 per cent are estimated to be vulnerable owing to social positioning, most of whom are women. Again, this latter estimate could be biased since, in an agrarian setting, the gender intrinsically conflates with the definitions of social positioning. Last, about eight per cent vulnerable are so, due to the threat to their person, education and health. All of these are overlaying categories and it has been observed that many are affected by more than one type of vulnerability. These data only show the magnitude of one category *vis a vis* the other.

The categories of vulnerability are presented in Table 2. These have been drawn in accordance with the 'depth' of vulnerability of an individual. *A priori* logic would suggest that if a person suffers from more impairment than one (of the three mentioned above), he/she would be graded higher on a vulnerability scale. This, however, is not the approach followed here since it is possible that not all forms of vulnerability have the same degree of severity. The least vulnerable be defined as those in category '1'. The grade progressively increases with the most vulnerable clubbed in category '6'.

TABLE 1: Distribution of Individuals from Households Experienced Death by Severity of Vulnerability.

<i>Categories of Severity of Vulnerability</i>	<i>No. of Cases</i>
Category 1	
Married Males, 46 + years with no disability, lost all sons	50
Widowers, 46 + years with no disability, lost all sons	88
Married Males, less than 35 years with disability	120
Married Males, less than 35 years with disability, lost all sons	29
Widower, less than 35 years with disability.	16
Widower, less than 35 years with disability, lost sons	11
Widower, 55+ years, no disability	12
Total	326
Category 2	
Married Females, 18+ years, no disability, lost all sons	106
Widows, 18+with no disability	98
Widowers, 55+ years, no disability, lost all sons	7
Married males, 36+ years, with disability	180
Widowers, 36+ years, with disability	56
Total	447
Category 3	
Male orphans, with no disability	32
Widows, 55+ years, no disability and lost all sons	1
Married disabled female, 18+ years	313
Married disabled males, 36+ years and lost all sons	46
Widowers disabled, 36+ years and lost all sons	18
Total	410
Category 4	
Male disabled orphans	5
Widows, 18-55 years, no disability, and lost all sons	10
Widow, no disability, 18 years	1
Married disabled female, 18+ years, and lost all sons	75
Disabled widows, 18+ years	32
Total	123
Category 5	
Female orphans	32
Disabled widows, 18+ years and have lost sons	10
Total	42
Category 6	
Female disabled orphans	2
Total	2

TABLE 2: Distribution of Women Who Were Disabled and Lost All Sons

Age Group	Permanent Disability				Total
	1	2	3	4	
Less than 18 years	-	17	36	2	55
18-35 years	1	3	6	1	11
35-45 years	1	-	3	-	4
45-55	-	-	1	-	1
55+ years	1	-	3	-	4
Total	3	20	49	3	75

Note: 1. Disability of the senses 2. Motor Disability 3. Serious Disability 4. Paralysis

Category '1' has 24 percent individuals of the total 1,350 identified persons with vulnerability. Category '2' has 33 per cent, while in Category '3' it is 30 per cent. Category '4' has 9 per cent followed by Category '5' and '6', both of which have three per cent of the individuals. There were only two individuals with acute disability. It follows from this that the hidden severity of the vulnerability surfaces with deeper analysis. The small numbers in different categories support the argument that more severe the vulnerability, lesser will be the number of persons in that category, while most would fall in the less severe categories.

EMERGING CONCLUSIONS

The analysis reveals that sudden disasters, like earthquakes, accentuate vulnerability of the people. Although, for an immediate period right after the disaster, all the members of the affected community are 'vulnerable', in the sense they are physically and personally dislocated, most recover from their state of shock in a relatively short period. Some, however, are likely to slide further down the vulnerability ladder, if not supported effectively.

The analysis here puts forth that peoples' needs vary with the forms of vulnerability. A uniform policy negates the severity of impact of the disaster on a few. A few, who are most vulnerable, get lost in the number game and they are the ones who need long-term support.

For mitigating vulnerability of individuals, this exercise could be extended or modified according to the nature of the calamity and the objectives stated to identify the truly vulnerable groups. The four aspects, which according to this exercise, need to be looked into are

age, disability, control over physical resource base and social positioning of the individual. The illustrative experience shows that the gender aspect needs to be aptly addressed within the policy framework since it forms the edifice for control, access and social positioning. It also emphasises that careful definition of vulnerability would be imperative for a long-term effective rehabilitation.

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NOTES

1. An entitlement system refers to a framework within, while endowment refers to ownership of an individual's assets like health, education, security and labour power.
2. It has been observed that empathy and grief was not gender neutral: more the deaths of male children/adults, more the grief and empathy. We, therefore, have taken death of all male children as a factor of vulnerability.
3. In Osmanabad district, 1,910 (12 per cent out of all affected) households suffered deaths. Nearly 49 per cent of the dead were children (less than 14 years) and 55 per cent of the dead were females. In Latur district, 1,555 (9 per cent out of all affected) households experienced deaths of whom 47 per cent of the dead were children. Females accounted for 55 percent of the dead. About 41 per cent of the households with deaths were of the higher caste, and 20.6 per cent owned 21 acres or more of land (TISS, 1994).
4. In Osmanabad district, 48 per cent of the widowers had very young children to look after, while 46 per cent widowers had young children below 14 years and 42 per cent widows had dependent children.
5. Widows and childless women and the mentally disabled are rarely treated with compassion. But the worst treatment is meted to those who are a combination of the above.
6. A document by Gorhe (1995) notes that many middle class women, who had not worked for a wage earlier, were encouraged to do so by the women's groups to help them forget their woes. Other observations from the field note that women from these classes were deserted because they had become widows or childless and were forced into wage labour.
7. Observations from the area suggest that contractors who employed women forced them into illicit relationships. The region has also witnessed a rise in prostitution.
8. Recanalisation is a surgical procedure to reverse the fertility behaviour of those women, who had undergone sterilisation to arrest their fertility. A number of women, who had lost their male children, underwent recanalisation to have a male child. None of the health parameters were met nor were the women given any prior information about the severity of the operation (Hegdeand Acharya, 1995).

- The medical profession has enabled the society to meet social dictates of patriarchy and, thus, situated women's bodies in public.
9. A comparison between the Bihar famine of 1966-67 and the Maharashtra drought of 1970-73 showed that an extensive communication system and large urban centres as fundamental factors for distress migration which helped Maharashtra to limit excess death. However, such temporary migrations have long-term implications in terms of conflicts over land, property and compensation, and they change production relations within the region. The in-migration also suggests a threat to the livelihood of the small producers of the region, as the migrants would occupy this economic space (Dyson and Maharatna, 1992).
 10. The data related to land and other moveable and immovable property owned was collected. However, the quality of the data was not good as the persons knowledgeable about the property were not always available to answer the interview schedule in the days immediately following the earthquake.
 11. The reference is to the health of those women who are in the reproductive phase, but have lost sons. They have to undergo a set of subsequent pregnancies once again and those women who had, in the past, adopted family planning measures to arrest their reproductive phase may revert to their reproductive capacity with the help of technology and again undergo a set of subsequent pregnancies. Labour power would be threatened by disability.
 12. This includes the security of the aged who have lost sons, those who are likely to be rejected by their in-laws and may not be accepted in their natal family.

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APPENDIX : Cases of Extreme Vulnerability

1. *Savita Birajdar*, 22 years old, a physically handicapped widow and a mother of a three-year old daughter has been deserted by her in-laws. She is presently staying with her parents who are economically well-off and are willing to support her. They have tried to persuade her in-laws to take her back, but have failed. Savita has not accepted her fate; she wants to independently support her daughter, but lacks skills and now being physically handicapped, though she can move around with difficulty, she is able to do most of the work. She wants to do something, so that she is not dependent on her natal family. She is not sure of the behaviour of her brothers once her parents are no longer alive or the brothers get married.
2. *Sarubai Kokane* is 38 years old. She lost three sons in the disaster and her seven year daughter is partially handicapped. She had a tubectomy operation after her daughter's birth. Her husband Kishore is 44 years old, and forced her to undergo recanalisation. One year after the operation, Kishore and his parents are convinced that she cannot conceive again. They also are perturbed that even after having spent a large sum of the compensation money on the operation, Sarubai has not been able to give them a male child. The medical reports revealed that her fimbrin was mutilated and one of her fallopian tubes was missing. However, this had not been conveyed to the family or to Sarubai.

Kishore is now planning to marry again to have a son to continue the family lineage. His parents, as well as Sarubai's, have given their consent in this regard. Sarubai is aware that her consent carries no weight. Above all, she resentful of the fact that through no fault of hers she is being blamed, even though she has gone through the pain of operation.

3. Members of certain types of households carried greater risk of facing destitution and social marginalisation. A few such households are listed below:
 - A man aged 65 years and his grand daughter aged three years are the only survivors of a household. The girl's parents and her siblings did not survive the earthquake.
 - A poor peasant household with all the adult members are seriously disabled.
 - The only survivors of a family in Rajegaon village are an aged woman and her disabled grandson. The boy's parents and all his siblings have perished in the earthquake.

There are a few households of the types mentioned above in each affected village. The aged persons left alone to bring up the young children face different forms of vulnerability compared to households with one or more physically disabled persons.