CONCLUSION

The present study focused on the analysis of the relationship between developments in water technology and social relations which are an integral part in understanding the agrarian society. The study examined the effects of developments in water technology on social relations such as relations within family, between field and house neighbours, women etc. The aim has been to identify the changes in social structure and to demonstrate new emerging patterns of social relations. A detailed conceptual framework of the social change in agrarian society was considered. The factors responsible for such changes were extensively discussed and explained in the light of sociological understanding.

The following effects of developments in water technology on social relations have been noticed at the level of the family.

- Relationships between fathers-sons were studied and it was found that sons wanted the ownership of ancestral pump so that they could control the agriculture and become the decision makers. It was found that the wish to control the pump ownership generally lead to conflict among siblings and father-son relations. At times this conflict resulted in severing of relations between parents and sons who sought immediate division of property.

- In the relationship among brothers it was found that after division of ancestral property the one who got the ownership of pump did not want to share it with other brothers. In case, those brothers who did not own the pump demanded water or share from the ancestral pump then regular
conflict followed and disintegration of social relations took place. It was observed during the study that free water from the pump for irrigation to one’s own brother declined and demand of ‘cash for water’ became the reason for problems in social relations. These trends clearly manifested the adverse effects of developments in water technology on social relations.

- It was found that, the one who had installed the pump with his secondary sources of income started exercising authority over the other members of the family. It was also observed that the wife of the pump owner also benefited from having the pump in the sense that she would start dominating over the other female members in house by virtue of owning the pump. Generally this behavior of hers was not tolerated by other members of the family and resulted in regular conflict between ‘drani and jethani’ and in ‘suss-nuh’ (mothers-in-law and daughters-in-law). It was noticed that in order to get possession of the land with the pump in case of property distribution, the daughters-in-law used to strategically win over or influence their mothers-in-law. Failure to get the prized share of property invariably led to increased conflict in the family.

- It was also observed that so far as the husband-wife relationship was concerned, the wife wanted her husband to possess the land with pump so that she could also exercise authority over others. Some times it became an important issue of tension between husband and wife and affected their relationship.
• Even parents seemed to take undue advantage of owning the pump. It was observed that in many cases they sold water for irrigation even to their own sons. The study revealed that in such cases traditional harmony and cohesiveness in the relations had disintegrated. Parents at the time of division of property showed favoritism towards a particular son by giving him the sole ownership of the pump, so that he would take care of them in their old age and in difficult time.

• Similarly, parents showed their dislike or anger toward a particular son by giving him that piece of land which was without pump. Thus new irrigation technology vested power in the hand of its owner which generally created tensions in the social-relations and some time led to serious problems also. It resulted in decline in daily interaction, exchange and sharing among the family members. It often became a reason for breakdown of the joint family into nuclear family. Thus as a consequence of developments in water technology, as this study revealed, there was growth of individualism and breakdown of social relations.

The second issue studied was the relations with extended family members. It has been brought out that the relations with the extended family members were also facing the adverse effects of new water technology. Individual ownership of pump has strengthened the commercial relations and market economy. The relations with the members of extended group have turned formal and market fulfills all the needs. Consequently, there have been increasing conflict and tension and social relations have got affected with the developments in water technology.
The third issue studied was the relations with field neighbours, agricultural labour etc. The study has revealed that traditional cohesiveness, *saanjh* with field neighbours has declined. Consequently cooperation and coherence among field neighbours has also disappeared. Self interest has become so dominant that peasants cheated their own field neighbours for economic interest. It has been noticed in social networking that pumiless peasants maintained relations and network with pump owners only for assured water supply. Hence relations have been maintained for self-interest. It would be fair to say that the nature of social relations have got transformed with developments in water pumps for irrigation. Demand of ‘cash for water’ from neigbouring peasants creates tensions in their social relations. In a way exploitation of fellow farmers has increased with adoption of advance capital intensive water technology. It has simultaneously affected the ability to sustain relations and association with field neighbours. The emergence of informal ground water market clearly indicates changing transaction and turning social relations into contractual and informal relations.

Daily needs and demands are fulfilled no more by the informal system of sharing but through formal market system. Growth in individualism and loss of social capital are the consequences of adopting new water technology. Traditional inter-dependence, sharing of irrigation water and technology has declined. Exchange of experience/ knowledge with field neighbours has invariably disappeared which marks change in agrarian society.

Besides the relations with one’s field neighbours, the relations with house neighbours and other villagers were also influenced by the ownership of pump. In village elections, providing water for irrigation for votes or vise versa reflects the power associated with
pump ownership. Ownership of pump has been found to be an important factor in determining even the political equations in the village.

Along with it the social interaction with house and field neighbours has been declining. Developments in water technology has led to rupturing of agrarian relations. Spending leisure time together with house neighbour has reduced considerably which has resulted in reduced social capital.

The third variable studied was the relation between owners and agricultural labourers. Traditional jajmani and barter system has been replaced with commercial relations. It has been brought out that the relations have now become contractual and merely cash oriented.

It is thus concluded from the above discussion that developments in water technology have increased the net produce but at the cost of traditional cohesiveness and integration. It has deepened the commodity relations. Water technology has made obsolete the traditional relations and reliability over one another and has created social distances.

The changed social relations were also mentioned by Dubash (2002) in his book Tubewell Capitalism. He mentioned that inequities and inequalities appear to have been accentuated in some ways; the growing commercialization of life and relations seems to have benefited some but affected others (poorer people, small and marginal farmers) adversely. Thus the progressively more advanced technologies culminating in deep-bore tube-wells brought about inequality and conflict. Bhatia (1994) also found that the relations have turned commercial with new water harvesting technology which has created tension in relations.
The fourth variable studied was women’s participation in agriculture and their role in daily social life. Their standard of living and social status have also been observed. Women, across all socio-economic categories, were found to be active workers in domestic chores like cooking, taking care of the children and the old members in the family and looking after the milch cattle. However, the socio-economic categories mattered when one looks at their participation outside their homes.

The women from the poor households, besides doing the domestic work, also worked on family fields to save the expenses on hired labour. Some of them also undertook the works like *rajae bharna, guhara lana* etc., for contributing in household expenditure.

Women from prosperous families on the other hand largely remained confined to domestic chores only. Among this category of women, working in the fields is considered below their dignity and status. They got all the necessary modern amenities in the house.

It was noticed that only exceptions where women from well off families were engaged in any work outside their homes were where male members were in the service sector. In such cases women looked after both the domestic as well as agricultural work. In agricultural work their role was limited to supervision, that too in the absence of the male members, as they are still denied right to own property and participate in decision making.

The fifth variable studied was landholdings. It has been found that size of landholding as well as ownership of advance water pump determines one’s power and status in agricultural society. Those who own marginal and small holdings could not install costly water pumps for irrigation thus got marginalized. It is found that this marginalization tends to accentuate social inequality and create social distance. The need to have
individual pumps makes peasants so desperate that some time they mortgage their land or sell top soil of the land or resort to defrauding banks.

Medium and large peasants have enough surplus of their own to invest in the capital intensive water technology, but for small peasants it means an additional burden. Those who have the advanced pump technology comfortably increase their landholdings. They comfortably make investments in buying luxury items and necessary amenities to raise their standard of living. They do not find much of a problem to investing in costly implements for agriculture. Janakrajan and Moench (2006) marked that inequality, competition and conflict associated with differential access to groundwater. The source of access to groundwater is new water technology which creates socio-economic inequality.

The sixth variable studied was implements and social relations and it has been brought out that earlier peasants used to obtain/ exchange/ borrow implements via their social networks which further strengthened their inter-relations. The study has revealed that after adoption of new water technology, the peasants commercialized their relations which hampered their hope of borrowing implements from others in free. Thus with developments in water technology the traditional system of transaction such as interdependence, exchange and free borrowing has declined.

The medium and large peasants were found to possess all the agricultural implements. It was noticed that now due to commercial relations they did not lend them in free. Abbi and Singh (1997) also observed in their study that the traditional system has disintegrated in the post-Green Revolution period.

The seventh variable studied was occupation diversification. It was found that either due to non availability of independent water pump or water supply for irrigation, peasants
have been changing their occupation. They either sold their land or disposed it off or made agriculture their secondary occupation. With the ever increasing difficulties in sustaining agriculture they sold their land. “Hun assi pani kharedea ke beej, dvaean.”

It was found that large peasants have leased out their land with the pump because it provides them huge rent. It also allowed them time to engage in other occupations like politics etc. developments in water technology has become another factor for reverse tenancy and for occupation diversification of poor peasants. It was also observed that such occupation change created instability in the relations between poor peasants with rich.

It was observed that young generation is reluctant to work on the fields and no more find it a respectable occupation.

The eighth variable was water technology and it has been found that developments in water technology determined the scope of development in social relations. New water technology is cost intensive and imperative for cultivating cash crops. Peasants struggled for owning or controlling the pump and in such struggle the social relations were sacrificed. Pump often determine the nature of social relations. Advancements in water technology has led to erosion of traditional social setup, values and associations. The production relations in agriculture were modified with the ownership of new technology. In the capitalistic economy the profit maximization with the pump and from the produce acted as a catalyst in reducing the cordial and cooperative in social relations and has turned relations into commodity relations. The ownership of pump affected the factors like coordination and cooperation. Informal groundwater market has been the result of developments in water pumps. Ton and Kees De Jong (1991) in their study found that
new irrigation technology created social differentiation and reduced relations to commodity relations.

After recognizing all the fact when we put them together, we can say that developments in water technology have been impacting the social relations. In principle, the manifestation of developments in water technology is the emergence of money relations and change in social relations. Finally it is also worth mentioning that in agricultural community the pattern of inter-relation as well as the intra-relations are determined and guided by the mode of technology used. Access to technology is the most limiting factor determining all social connections – whether with fellow villagers or within one’s own family or with the larger society. The results strongly confirm the statement, developments in water technology and changing social relations in rural Punjab.

NOTES

1. Parents make a particular son happy by giving him the ownership of pump. It was found that parents generally compensate their other sons either by giving them cash for pump installation or by giving the larger/ better piece of land. Mainly land with the pump has been found to be a prized commodity at the time of division.
<table>
<thead>
<tr>
<th>Pump</th>
<th>Implements</th>
<th>Labour</th>
<th>Cultivation</th>
<th>Water</th>
<th>Social Relations</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent</td>
<td>Owned and hire them out on cash payment. If required then hire from market</td>
<td>Permanent and casually</td>
<td>Independent, own choice and labour intensive,</td>
<td>Sell water</td>
<td>Monopoly, dominating relation, status and power with pump, exploitation of pumpless</td>
<td>Progress, individualism, strained relations, groundwater exploitation</td>
</tr>
<tr>
<td>Shared</td>
<td>Mostly exchange them and do not own costly ones</td>
<td>Partner(s) help and daily wage labour</td>
<td>Mutual choice and selection of crop and less labour intensive</td>
<td>Use own Water</td>
<td>More chances of cooperation and less of conflict</td>
<td>Interdependence cohesiveness, solidarity</td>
</tr>
<tr>
<td>Without Pump</td>
<td>Without hire from market</td>
<td>Family members and during peak season wage labour</td>
<td>Without profit, less water intensive crops, self cultivation for subsistence</td>
<td>Buy water and dependence over pump owners</td>
<td>Dependent relationship, faced exploitation</td>
<td>Lease out, sharecropping, purchase water</td>
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