Biannual Journal of Gender and Social Issues
Spring 2012, Vol. 11, Number 1

Indigenous Knowledge, Early Warning System and Disaster Management: A Case Study of Khetran Community in Balochistan, Pakistan

ABSTRACT

Present study was conducted in a small community Nahar Kot, District Barkhan, Balochistan (Pakistan). The study aims at understanding the role of early warning system in disaster management at community level. Indigenous knowledge has a pivotal role in managing disasters in the absence of the scientific knowledge and vice-versa. This study sheds light on the role of early warning systems i.e. weather predictions based on typology of winds and predictions based on behavior of animals. The analysis shows that these masses of tribal community of Barkhan have an enriched indigenous knowledge purely based on their experiences. They also believe in the elders because of their vast experiences regarding local environment and they also get timely help from their elders to predict weather and mitigate with it.

Keywords: Indigenous Knowledge, Early Warning System, Disaster Management, Rural Balochistan, Khetran Tribe, Blaoch, Barkhan, Balochistan, Pakistan.

INTRODUCTION

In the rural community throughout Balochistan, people rely on different types of predictors of future disasters. These modes of early warning help them to reduce

Mr.Rahim Bakhsh Khetran
PhD Scholar
Department of Anthropology,
Quaid-i-Azam University,
Islamabad.
Mr. Sarfraz Khan
PhD Scholar, Department of Anthropology,
Quaid-i-Azam University,
Islamabad.
Dr. **Waheed Chaudhry**
Assistant Professor,
Department of Anthropology,
Quaid-i-Azam University,
Islamabad.

the affect of expected disaster(s). People have experience of generations to predict droughts on the basis of the changes in the behaviors of the animals. They also understand the types of wind and make certain arrangements to mitigate with the severity of the environment in advance. One can easily find such predictive activities in the different rural communities across Kenya and other African States. Indigenous knowledge is not only prevalent in the case of Balochistan but it has been a major source of the prediction of the environment in different parts of the world too. Before discussing the role of indigenous knowledge in the disaster management one must look into the conceptual frameworks of the above mentioned three terms i.e. indigenous knowledge, early warning system, and disaster management.

According to Shaw, Noralene and Baumwoll (2008) indigenous knowledge is a method and a practice produced by community with keen understanding of their local environment. These skills can take generations to have a command on these. The knowledge regarding the changes in local environment has important characteristics. These include originating within the community, maintaining a non-formal means of dissemination, collectively owned, developed over several generations and subject to adaptation, and imbedded in a community's way of life as a means of survival. According to Farrington and Martin (1988) indigenous knowledge is not an abstract scientific knowledge. It is concrete and relies strongly on intuition, historical experience and directly perceivable evidence. This knowledge finds a wider scope in rural areas and are being used from generations. This Knowledge is based upon one's own experience and may be environmentally sound, cost effective and acceptable to farm families.

After discussing the indigenous knowledge, now we will discuss early warning system in following section. In most of the cases humans have adopted early warning system from animals because they have a greater sense of understanding. Many studies conducted in the Kenya likewise UNEP (2008) have rationalized that the existences of reptiles and other wild animals near by the homes indicates that there is a possibility of drought. Modern early warning system is also developed by examining indigenous experiences. Modern early warning systems are not only sources for predicting floods, tsunami, and earthquakes. It is not possible for the states to provide the efficient early warning systems at community levels. It is bit easier in case of urban settings and towns where technology is advanced. In this situation, the traditional people depend on the traditional as well as indigenous knowledge for the prediction of ecosystem.

Indigenous knowledge has been instrumental in maneuvering the life patterns of traditional communities around the world. It has now become indispensable to

take indigenous knowledge into account prior to any analysis of disasters in such communities. There is a plethora of reason and logic in support of considering indigenous knowledge. Based on the premise that people of such traditional communities are well aware of their ecological conditions; cultural traditions associated with natural calamities have a very intimate association with the area where they have been dwelling normally for centuries. Indigenous knowledge has been of a very practical nature and even pivotal during the course of Cultural Revolution in societies where multi-faceted disasters of various magnitudes inevitably effect the said evolutionary course.

The contemporary world has become more vulnerable to disasters due to the looming effects of global warming. Therefore, a significant change can be witnessed in the policy making of disaster relief and development agencies from post-disaster and technology based approaches to disaster forecasts, early warning systems, mitigation and disaster preparedness activities using the indigenous knowledge in order to reduce the huge loss of life and property. With the development of more social science patterns, the global relief and development has inclined greatly to benefit from the indigenous knowledge in the recent times. So, instead of opting for one strategy, both the natives and the relief and development agencies may complement each other using the indigenous insights and technology based on the scientific knowledge in the greater interest of the humanity.

Background of the Village and Main Ethnic Groups

Present study was conducted in a small village named Nahar Kot, District Barkhan in Balochistan. The village is located at a distance of 18 kilometers from Barkhan. There are aobut 96 families residing in this village. The major occupation of the community members is cultivation. Majority of the inhabitants work as tenant farmers and few have their own land to work on it or to rent it out on sharecropping and fixed rent. In addition to the cultivation practices people are also fond of cattle and they graze these cattle in the nearby hills as well as in the plain areas. The popular domesticated animals in the village are cows, goats and sheep. The village is almost deprived of basic amenities of life like pure drinking water, gas, proper health facilities, and sanitation. People experience disaster in great number. The common forms of the disasters in the village are drought, earthquake, hail storm, epidemics and famine. Drought is one of the most repetitive disasters. After repetitive and periodic encounters with drought, the community has developed its own indigenous mechanisms of forecasting and mitigating with the disaster.

Majority of the population of this village is of Khetran (Baloch) by lineage. On the history of the Khetran tribe there are few comments in the literature. Like Bakhsh (1974) stated that Khetran tribe is a mixture and combination of Baloch, Pathan and Jat. They were driven in the area of Marri tribe by Bijranis in 1717. While on other side, the excerpts presented in the GOB (1906) asserts that Khetrans are an offshoot of Kansi tribe of Afghan and descended from Kahir-ud-din-Kharshabun son of Saraban who was one of the three sons of Qais Abdur Rashid-the common ancestor of Afghan. The oral history of Khetran does not present a consensus on the origin of the tribe. Different views given by the informants regarding the origin and identity but we have presented only two of these in the following section.

1. "One of the views is that the Khetran tribe originated in Russia. After coming to Barkhan, the tribe settled in scattered settlements in adjoining places. According to this view Khetrans, being belligerent people, do not hesitate to occupy the land in the middle of other Baloch tribes."
2. "A very popular claim of the natives is that they are descendants of Hazrat Amir Hamza, paternal uncle of Hazrat Muhammad (PBUH). This claim shows their affiliation with Islam from early times. But this claim needs further explanations."

There is need for the further explanations of the history of this branch of the Baloch tribe. There are only few semi-factual accounts about the origin and subsequent migration of the tribe. The collection of histories of origin of the Khetran and how they arrived here and settled after fighting with the Mughal Emperor might have an iota of truth or these may be reflections of their cultural ethos and how they would like to be perceived. Following are the objectives of the research

1. To understand the prevalence and importance of indigenous knowledge system in the rural settings of Balochistan, Pakistan.
2. To study the early warning system in the study area of Nahar Kot in rural Balochistan.
3. To investigate the predictive behavior among the community members of the Nahar Kot based on the wind system and behavioral changes in the animals.

METHODDS

Present study is based on the anthropological fieldwork conducted during 2009-2010. The results presented in the study are based on the following main sources:

1. Participant Observation Method;
2. In-depth Interviews; and
3. Selected Case Studies.

The researchers spent almost six months in the field and maintained their field notes while observing the respondents. In addition to the participant observation methods, in-depth interview of the community elders, shepherd, and owners of the cattle herds were also administered. Five case studies of the different events were also taken to understand the predictive behavior of community members and the accuracy of information they float before the occurrence of any disaster.

RESULTS AND DISCUSSIONS

Early Warning System in the Locale

Early warning in Nahar Kot is purely based on the keen observations of the community experts related to the animal behavior, birds' behavior, insects' movements, the process of vegetation and magnitude and extent of winds, water and air temperatures, clouds appearances etc. Moreover, the indicators which community uses are mostly particular to the indigenous level. Farmers in the study area of Nahar Kot use different type of traditional knowledge to predict rainfall based on their observation of such phenomena as wind movement, lightning, animal behaviors, bird movement, halos or rings around the moon, and the shape and position of the moon on the third to fifth days from the new moon. These types of information provide a framework that farmers use to explain relationships between particular events and changes in the climate and weather. Farmers combine different predictors and indicators to inform critical farming decisions and to decide on adaptive measures.

Indigenous forecasting knowledge to a large extent reflects the interactions between the community and environment over time. Scientific forecasts may also be more useful if ways are found to integrate local knowledge, which has enabled generations to live through severe floods and droughts, into current decision-making strategies. But, custodians of forecasting information are mainly the elderly population while the mode of communication of such information is largely informal and undocumented. In this way only limited knowledge transfers from one generation to the other. It is a loss of centuries' matured indigenous knowledge. In the below mentioned section we will present twofold typologies of the early warning system which are presently active in the study area: i). weather predictions on the basis of wind and ii). weather predictions depending on the behavioral change in animals.

Wind Based Weather Predictions

Early warning system is always an important aspect of indigenous knowledge. People keep trying to predict the environment on the basis of the winds and devise strategies to overcome disaster situations. In case of droughts this early warning system helps people to overcome the disaster situation. Bhatti (2000) writes about the occurring of drought and its effects whilst giving a comparison to other natural disasters like earthquake. Community members in Nahar Kot have developed their own system of weather prediction based on their indigenous knowledge as well as traditional knowledge. There are many factors like wind, its speed and direction, movements of clouds, sun and moon and celestial bodies which help the people to predict the weather. Wind is a very important source of weather prediction in the social and cognitive mapping of the community. It has great value in the life of the community and their cultural stock of knowledge. The natives recognize about seven types of wind (*wa*) which enable them to predict weather, its severity, drought, hailstone and other climatic changes. These predictions help them to formulate disaster coping strategies well in time so that the risks of the coming disasters could be vanished or at least minimized.

Dakanr wa is the first category of the winds recognized by the community members. It starts by the mid of the June and ends at mid of September in the direction of east to west. It brings clouds and causes rains and prosperity in the region and ultimately helps in the growth of herbs, shrubs, trees and crops. Such growth of herbs and crops is beneficial to the livestock. Locally this beneficiary for the community is called as a "*qaal*". After assessing this type of wind, people feel pleasure and get ready for the bowing seasons of the crops. *Gari wa* (Winter wind) is second category of the winds recognized at local level. It normally blows in the direction of north to south from mid of the January to mid of March each year. It brings a sudden and severe increase in cold. This sudden cold causes many diseases like fever, flue, cough and "*sir saam.*[*]" *Gari wa* causes great damage to crops by drying these up and decreasing yield multifold because. So, keeping in view the severity of this wind people take preventive measure to get rid of this cold wave of weather. There are foods and dressing based preventive measures. Animals also suffer from this kind of wave of cold weather because their folder dries up.

The third major type of the wind is known as "*Lakhe watt ti wa*." It normally blows form west to east in opposite direction of the *Dakanr wa*. It brings drought, famine and rains scarcity in the region. So, keeping in view the typology of wind people take certain preventive measures to get rid of droughts and famine. The fourth major form of wind is "*Phal Vikerni* or *Run Chorr*" also known as summer wind. It most of the time blows from North to South. It starts in the month of April and ends in July. In local folk wisdom it is known as an anti cloud wind. There is a folk saying in the

community that when this wind blows, the land owners and farmers sell their "*phal*" (a pointed device used to plough the land) as it is vain to plough and sow the farm because this type of wind devastates the crop and there is no yield at all. There is another myth in the community that this wind only blows when a villager divorces his wife.

Purkho wa is fifth category of wind. It most of time blows by the mid of the July to the mid of August from east to west and decreases the severity of hotness of weather. It makes the weather pleasant. It brings clouds and causes immediate rain(s). This wind is useful in lowering down the temperature. It helps herbs and shrubs to grow increasingly. By the vast and fast growth of the herbs and shrubs the pastorals celebrate this season because they love to graze their cattle in this season. The sixth form of wind is called as *Lawar wa*. This is also called as mid day summer wind (this is also known as a *loo* but mainly in the central Punjab region). *Lawar* is very hot wind which blows in the peak of summer season and increases the severity of the hotness. Normally in hot summer the possibility of rains is reduced to many-folds in the study area. It damages crops and other herbs and shrubs. It is almost impossible to go out and carry on daily routines even grazing the cattle. Sometimes it blows for the whole day and sometimes with some intervals.

The role of elders in mitigating strategies is obvious such case has also been identified by UNEP, (2007). There is majority of the elders in the context of the Kenya who tries to predict rainfall. On the basis of the predictions made by these elders majority of the communities get benefited by these. Due to lack of rain and high evaporation, community faces water deficit for the growth of crops. There is no other source than rain because the ground water is either too low in depth to pull out or it is not suitable for cropping and even for drinking. Due to severe hot winds, livestock face stomach diseases. This season results in crop failure and loss of livestock. *Khooni wa* (blood-wind) is the last type of wind. It is a very special type of wind which is recognized by the community as a wind of injustice. It is an effect rather than a cause. The community believes that it blows on when there any of injustices occurred in the region and someone is killed mercilessly. *Khooni wa* blows from two sides i.e. from west to east and south to north. It approximately blows for three days with dust storms. It distresses both animals and human beings. The community members narrate so many incidents of injustice where innocent people were killed mercilessly and the gusty wind blew with storms of dust for about three days.

Predictions Based on the Behavioral Changes in Animals

Can animal predict weather? This is a kind of questions which pushed the environmentalists to think about it. Although there are some assumptions that animals

have a sense to foresee the environmental changes. Toothman (2011) explains that before the start of the storm, animals can easily asses it and start making certain sounds because these animals desire for the shelter and signaling it out for it. In the study area the shepherd and owners of herds are closely associated with the livestock and they easily understand the nature of their animals. While living with their herds of cattle they observe even minor behavioral and physical changes in their stock of animals. So, living in the natural environments they sometimes rely on animals for weather predictions. It must be taken into account that behavioral and physical changes in animals like dogs, jackals, goats, sheep and other insects like termites and birds are also noticed and used for weather and disaster predictions in the community.

Shepherds and livestock owners have observed strange behavioral changes among sheep and goats whenever there is a change in the weather in near future. They believe and have experienced that when sheep and goat keep their face towards the east put their fore limb on the stone and look upward in the sky then it is a harbinger of clouds and rains. There is another behavioral change in the sheep which enables the community members to predict climatic change in the region. The sheep move their head very fast at night, causing their large ears to strike their faces and make a noise. We take this sound of the ear of sheep as a symbol of clouds and rains, said a farmer who owns a large number of livestock. Then we prepare for rain. The third behavioral change which has been noticed by the community members in the sheep and goat herds is that animals look very happy and dynamic when taken out to the meadows in the morning or coming back to the shelter after grazing. They can be seen jumping here and there, playing with each other and dancing while going out or coming back or even in the meadow during grazing. This behavioral change is taken as good news for rain and prosperity in the area. There is special regard for sheep in the community as compared to other animals. Sheep are considered to be harmless, innocent, and sacred. Natives believe that a ewe has certain spiritual powers which enable her to predict any expected change in the environment.

Dogs and jackals are also considered for weather forecasting. The community members have observed that whenever a dog barks in a loud, elongated voice, then there is a danger of some unknown disaster likely to occur in the village in near future. While on other hand when a jackal comes near village and start howling it is perceived as unpleasant. It is believed by the villagers that the howling of jackals is a symbol of impending calamity. The natives also observe the movements of ants very closely to predict weather. Based on the their repetitive experiences they have concluded that when ants are moving in large rows carrying their eggs and other food items toward another destination, it symbolizes that rain is expected within a few days. The ants, in the natives' point of view, move to a safer place where they could

save themselves and their food. Voice and movements of frogs are used as weather prediction by the community members in Nahar Kot.

In the community's cultural stock of knowledge, frogs making a lot of noise by their calls are the indicators of rain within a week. The frogs normally come out of their hide-outs in large numbers and start croaking at noon. The farmers, while moving in the fields, observe everything very closely. They have a keen eye on each and every change in the field. New insects and creatures in the fields draw their attention. When a large yellow colored termite is seen in the fields, it is an indicator of rain in the coming days. In above mentioned all predictive events, elders have specific role to perform. In Rural Balochistan, indigenous knowledge is being passed by the elders as it has been observed in the some African States. All in all, the people revered the elders in their role of divining climatic conditions and natural disasters. For instance, some of the elders in Kenya's most communities noticed about the hazards and gave advice to community preemptive measures (UNEP, 2008). A social scientist is always interested in examining and analyzing social issues that prevail in communities being studied. Referring to the topic of this research, the interest may focus on forecast of weather, predicting rains, storm or any sudden change in the climate based on different symbols utilizing indigenous knowledge. Anthropologists have been focusing on the issue of indigenous knowledge in the field of ethno-science was introduced by Conklin (1954).

CONCLUSION

The scope of the indigenous knowledge has been widened. It is considered worldwide but more specifically in the less developed countries. Its significance is obvious. With the help of lifelong experiences on the community elders' early warning system emerged out of it. The early warning system helps people to devise their coping strategies in the rural setting of the most of the developing world. As it was noted by the UNEP (2007) that each community has an array of early warning indicators and well-developed structures through which the wisdom of community is applied to deal quickly and efficiently with disasters. The structures include a council of elders. Major practices of early warning system based on observation of changes in physical environment and behavioral changes in animals and insects are found in majority of the African States. But to some extent such early warning strategies are also found in the other parts of the world like Indian Sub-continent. In the case of Nahar Kot weather predictions based on changes in the wind and behavioral changes on the animals and insects are more common. People easily predict the future changes in the environment and make certain adjustments to cope with these environmental changes.

[*] . It is an ailment similar to pneumonia, which is caused by exposure to extreme cold.

REFERENCES

Bakhsh, M. K. (1974). *Searchlights on Baloches and Balochistan,* Karachi: Royal Book Co.

Bhatti, A. (2000). *Investigation the Political Economy of Drought in Pakistan,* Disaster Dispatch.

Conklin, H.C. (1954). *The Relation of Hanunoo Culture to The Plant World*, Ann Arbor, MI: Yale University, University Microfilms Inc.

Farrington, J., & Martin, A. (1988). *Farmer Participation in Agricultural Research: A Review of the Concepts and Practices,* Agricultural Administration Unit Occasional Paper 9. Overseas Development Institute, Regent's College, Regent's Park, London NW1 4NS

G.O.B. (1906). *Gazetteer of Balochistan*, Government of Balochistan, Pakistan.

Shaw, Rajib, Noralene Uy, & Jennifer Baumwoll (2008). *Indigenous Knowledge for Disaster Risk Reduction*, UN ISDR Asia and Pacific.

Toothman, J. (2011). *Can Animal Predict Weather? How Stuff Work? A Discovery Company*, Retrieved from <http://science.howstuffworks.com/nature/climate-weather/storms/animals-predict-weather2.htm> Retrieved on June 1, 2011.

UNEP (2008). *Indigenous People in Disaster Management in Africa*, United Nation Environment Program, Nairobi, Kenya.

UNEP (2007). *Environmental Emergencies News.* Issue 6. April 2007. http://www.unep.org/DEPI/PDF/EEsnewsletterissue6.pdf [Accessed 9 October 2007]