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INDIGENOUS DISASTER MANAGEMENT CULTURE :

A Comparative Study Between the Cyclone Affected People of Bangladesh and Japan

Md. Shahed HASSAN

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Md. Shahed HASSAN

INTRODUCTION

In recent years, the anthropologists are showing great interest in the Indigenous Knowledge System(IKS) approach to reveal the body of knowledge built up through observation and hand-on-experience by people living in close contact with nature which, is transmitted from one generation to the next through oral tradition. It is equally a major concern for the anthropologists to describe the content and organization of many and diverse bodies of knowledge and to examine the extent of difference among cultures. Without such studies, it is impossible to find the underlying similarities that unite people from varied regions and countries as humans.

Using this paradigm, the present research was envisaged to examine the specialized disaster lore which the vulnerable or risk exposed people mentally process and store their knowledge so that they can retrieve as needed. To this end, the cyclone affected people of Bangladesh and Japan were selected to know their way of perceiving and predicting the onset of calamities, including local terminology used as and when warranted.

More specifically, the study was outlined a) to describe the study areas and the extent and frequencies of cyclones, b) to reveal the indigenous perception and prediction capacity, c) to explain survival strategies, and d) to assess the ability to understand the current warning signals and its effectiveness.

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METHODOLOGY

The methodology of the present research has three major components: a) Sources of Data, b) Data Collection Procedure, and c) Data Analysis.

a) Sources of Data

As it was a comparative research, data were collected for two countries, extensively using secondary and primary sources. While using secondary sources, historical records, government and related agency documents, census and survey reports, internet web sites and relevant published and unpublished articles were scanned thoroughly. Primary data were collected from the Maheshkhali Island of Bangladesh and Saigasaki and Tano of Wakayama, Japan.

b) Data Collection Procedure

While collecting secondary data, emphasis was given on identification of data gap, and therefore, all available materials were examined from a dearth-filling perspective. With regard to primary data, field visits and in-depth discussions with key respondents of both countries were conducted. In this exercise, a purposive sampling/selection procedure was observed to meet the research need. As indigenous knowledge is almost in the process of withering away and possessed only by the elderly persons to some extent, key respondents were selected from the cohort of older age (50 years and above) bracket. However, to examine the age-sex differences of opinion, few respondents from younger generation and women folk were approached. In addition, the research sites in Bangladesh and Japan were identified and selected keeping certain ecological and occupational similarities. In both cases, the fishermen were deemed potential informants. Prior to fieldwork in Wakayama, a structured questionnaire was mailed to a few residents of Shikoku Island. This exercise was essential to identify certain indicators to develop the guideline for actual fieldwork.

c) Data Analysis

To keep consistency with objectives of the research, data were analyzed purely from a qualitative perspective. Accordingly, a holistic view was essential for a total mapping of the cyclone/typhoon scenario in both countries. At micro-level, appropriate and aptly related indigenous vocabularies and terminology were put into operational meaning. Application of statistical tools were avoided and simple statement of facts were remained as essential ingredients of the analysis plan as well as organizing the report.

FINDINGS

This comparative research was conducted in two coastal areas of Bangladesh (Maheskhali) and Japan (Wakayama). The Maheshkhali Island of Bangladesh experiences almost all cyclones formed in the Bay of Bengal and unleash on the coastline. Same is the case of Wakayama which is also exposed to the Pacific and, hence, hardly escapes any typhoon that approaches towards south-west of Japan.

a) Study Areas and Cyclones

The Maheshkhali Island is situated of the Bay of Bengal coast with an area of approximately 60 square km. The average height of the island is little less than 1 meter, although it has a hill 86 meter high from the sea level. It is assumed that the island was once connected with the mainland, which was separated by a channel of the same name (Rizvi, 1975). While the study areas of Japan i.e. Saigasaki and Tano districts (often called villages), adjacent to each other, of the Wakayama prefecture shows more or less similar ecological setting. These two villages of Wakayama also have hills, much higher than Maheshkhali in the north and the southern side faces the turbulent *Kii* channel (Ashahi Shimbun, 1997). In fact, both study areas of Bangladesh and Japan have spectacular stormy coastline and are ideal fishing spots. From ecological perspective, the only difference between Maheshkhali and Wakayma is the absence of mangrove forest in the latter.

As regard to socio-economic scenario, fishermen predominantly inhabit the study areas of Bangladesh and Japan. This very activity of fishing compels them to depend on sea and, thereby, force them to experience minor to mightiest disasters. Beside fishing, a negligible number of residents are engaged in other vocations i.e. self-employed, petty business and services. In terms of structural facilities, communication and technologies, the Maheshkhali islanders obviously have a serious dearth. Poor communication and transport system has left them as dwellers of a hard-to-reach area. A few mechanized and mostly non-mechanized boats along with age-old fishing equipment have an adverse impact on their amount and types of catch. In contrast, the fishermen of Saigasaki and Tano have more sophisticated technology, all mechanized boats and other accessories, including a good communication network. Besides, the two study villages have fishermen association offices to help the coorporate endeavor. Nevertheless, both fishermen of Maheshkhali and Wakayama suffer during cyclones and typhoons, and the extent of difference is only a matter of degree.

In Bangladesh, cyclones usually occur in two seasons of a year i.e. April–May and November–December. Due to poor recording system, the detailed historical background of this calamity could not be estimated. Nevertheless, at least ten major cyclones have crossed the country during last three decades (Chowdhury, 1991). The cyclone of 1970, 1991 and 1994 are remembered due to their strong wind force, velocity, water surge and damages (both lives and properties) and encompassing the entire 700 km coastline of Bangladesh, including the galaxy of islands. None of these cyclones caused deaths to less than a million and materials losses are simply guessed to the tune of several millions in US dollars. In Japan, the tropical storms occur in the Pacific are called Typhoons, similar to that of Hurricane in the Atlantic, Cyclone in the Indian Ocean, Willy Willy in Australia and Baguio in the South Atlantic. Typhoons in Japan are prevalent during the late summer and early autumn. They are usually characterized by a wind velocity exceeding 17 meters per second in their center, capable of releasing tremendous energy that causes loss of hundreds of lives and damages amounting to several hundred billion yen every year. Some of the major typhoons occurred in recent past are *Isewan* typhoon, *Makurazaki* typhoon, *Muroto* typhoon, *Katheleen* typhoon, *Toya maru* typhoon and *Kanagawa* typhoon (Suda, 1983). According to the record of Disaster and Fire Prevention office of the Wakayama City Hall administration, about 60 typhoons have crossed the prefecture since circa 772, of which 25 occurred in this century (Wakayama City, 1991). These typhoons mostly associated with tidal and water surges, damaged structures such as dams and embankments, houses and other buildings and passenger and fishing boats. In spite of such devastating and almost periodic phenomenon, people continue to live in the vulnerable areas, which obviously raises the genuine research question of their survival strategy.

b) Indigenous Perception and Prediction

Cyclones are the greatest enemy of the coastal people. It has also been noticed that some people somehow survive and the entire human settlements were never completely eliminated even in the face of mightiest cyclones. While conducting the research in Bangladesh and Japan, it was revealed that certain indigenous perception and prediction capacity possessed by the local people always helped them to anticipate and take necessary precautions. It was, therefore, imperative to understand these codes, or rather the hidden transcript of knowledge. People in Maheshkhali, as also in other parts of the country, use the word ***tufan*** to describe a cyclone, which apparently seems close to the pacific word of ***taifu***, without having any etymological relationship. However, prefixes are also used to classify the intensity of cyclones. For example, cyclones with low and high

intensity are called ***choto tufan*** and ***boro tufan***, respectively. The mightiest cyclones, such as those of 1970 and 1991, are flavored with religious terminology and often perceived as the Doomsday or Curses of God.

In Japan, the word ***taifu*** is commonly used to describe similar calamity. The word is traced to two possible sources. According to one etymology, the word was originally Chinese and meant strong wind off the coast of Taiwan. Alternatively, ***taifu***, together with the English word typhoon, is seemed to derive from Arabic. Conventionally, the words ***Oogata taifu***, ***Chyuugata taifu*** and ***Kogata taifu*** refer to large, medium and small wind hazards. But, traditional Japanese names for typhoons include ***nowaki*** (wind that levels fields), a season word used is ***haiku*** to evoke the late summer. Traditional Japanese almanacs referred to the storms as ***nihyakutoka*** and ***nihyakuhatsuka*** (the 210th day and 220th day of the year respectively, in the old calendar) to denote the prevalence of typhoons in early September at the peak of the rice-flowering season. As Japan frequently experiences different types of calamities, some of which are extremely devastating, it has been noticed that some people try to look at such occurrences from their religious faith and superstitions. In case of typhoons, an anthropomorphic explanation became evident when it was reported by a few believe that a monster, with human form, slowly approaches from the south to north and engulfs the entire region. Some also consider mightiest typhoons, as well as earthquakes as ***Tokubetsuna*** (unusual/special) or ***Amari ohkunaiga*** (not too common) and a few perceive the phenomenon as ***Ten batsu*** (God's punishment) or ***Kamino Otsuge*** (an act of God). Unlike the Maheshkhali islanders, the residents of Saigasaki and Tano were found not making any difference between large and small typhoons. The word ***Shike*** denotes all types of wind blowing. However, they do have a word ***Ame taifu*** to describe strong wind associated with water surge.

When the Maheshkhali islanders of Bangladesh were asked if they can anticipate and predict occurrences of cyclones, most of them replied positively. However, these respondents all belonged to the older generation, i.e. 50 years and above. It was further revealed that five major indicators are operative in their process of anticipation and prediction of a cyclone. These are :

- wind direction,
- temperature and salinity of sea water,
- color of cloud,
- appearance of rainbow, and
- behavior of certain bird species.

As regards the direction of wind, the respondents believed that a wind blowing from ***Agni con*** (southeast) has more chances to create a storm. The wind direction is also associated with other attributes i.e. rise of seawater temperature, red colored cloud and appearance of rainbow (if it is a daytime) implying formation of a deep depression in the sea. Abnormal behavior of tree living birds, particularly deserting the island a few days before cyclone lands, is a symptom of rapid storm approach. Cloud with elephant trunk shape is considered (with high prediction accuracy) as an indicator of tidal surge. The wind direction from ***Ishan con*** (northeast) does have a chance to generate cyclones but not to the extent of southeast blow.

The predictive indicators among the Saigasaki and Tano dwellers were found to be more or less similar to that of their Bangladesh counterpart. These include :

- wind direction,
- color and movement of cloud,
- fishing potential,
- abnormal sound of waves, and
- behavior of birds and honey bees.

As wind direction is an important indicator of typhoon, the indigenous classification was an imperative need of the research. Accordingly, it was observed that the local people use three different words to classify wind direction. The Maze or wind blows from the south, ***Kochi*** or from the east, and ***Inase*** or the northeast. The ***Inase*** is perceived to be the major sign of a strong typhoon. It was further revealed that as soon a depression is formed the sky becomes gray and cloud moves faster than usual at low altitude. The experienced fishermen also take into consideration the amount of fish available before each typhoon hits. This is due to the increased temperature of seawater, caused by formation of a depression, the underwater fish stock come to the surface. Once a deep depression is formed, the sea wave raises and creates abnormal sound. The sensitive people take this symptom seriously. The most significant living barometer used for indigenous weather reading is the behavior of birds and bees. The dwellers of typhoon affected areas always keenly observe the too quick eating habit of birds prior to typhoons. Another important aspect of this creature is the building of nests. Usually, ***Tsubame*** (swallow) birds build their nests at second floor of houses in the neighborhood. In case nests are built at third or fourth floor gives a strong and convincing impression that the forthcoming typhoon would be too big with high water surge. The dwellers also apply the same rule for honey combs and reported their apprehension as highly accurate.

It is important to note that in both countries, the women folk were found not to possess such predicting skills.

c) Survival Strategies

Given the extreme vulnerability of Maheshkhali and absence of modern facilities it was deemed that the islanders have certain short term survival strategies of their own. Accordingly, it was informed that simple tactics like holding onto and binding themselves to trees, looking for comparatively more dependable places like embankments and polders, using floating items such as timbers, roofs of thatched houses, straw piles and bunches of coconuts are the spontaneous survival strategies. The survivors of mightiest cyclones informed that the self-protection instinct dominated their immediate responses to cyclones. The post-disaster coping depicts a diametrically opposite picture of community and group cohesiveness, together with the altruism of the surge-battered people. The victims were reported to havesurvived by eating stems of roots and edible plants before arrival of outside relief. For drinking water, the survivors collected rainwater that is not very difficult to obtain as all cyclones are always succeeded by rain for several hours. It was also known that coconut water, though insufficient, serves immediate need. With regard to minor injuries such as fever and diarrhea, the people use herbs and other local substances. Nevertheless, major injuries remain unattended till Medicare services are received from governmental and non-governmental sources.

In case of Saigasaki and Tano, the typhoon damage is not to the extent of Maheskhali, while frequency of occurrences are much more. Although there were reports on a few deaths and missings in the past, the present protection facilities have reduced the magnitude of human casualties. Hence, the immediate life-saving strategy could not be known. However, they do take necessary precautions to protect their houses and fishing boats. As soon as the residents are confirmed about an approaching typhoon, they store food and dry cells (batteries) good enough to sustain till food and power supply resumes normal. Regarding houses and other similar structures, the dwellers revet boards on the windows and doors by nails so that can stop falling when the ***Taifu no me*** (the eye of the typhoon) hits the landmass. To save the boats, the nearby refuge port located at the back of the cape is usually used. Besides, several boats are also tied together so as not to be dismantled, broken or taken away by surges. Due to availability of emergency treatment facilities, the typhoon victims receive immediate attention. In short, the Saigasaki and Tano villagers have more access to modern means and ways to survive and protect their possessions, and therefore, any indigenous survival strategy could not be

noticed.

d) Warning Signals and Effectiveness

After the devastating cyclone of 1970, the countries around the Indian Ocean developed the current warning signals, which has 1 to 10 sequential numbering (Haidar, 1991). Signal no.1 starts with inception of any tropical disturbance that maintains its identity for 24 hours or more, followed by signal no.2 that explains a tropical depression i.e. rotary circulation at surface highest with constant wind speed of 38 miles per hour. The signal no.3 is used to describe a distinct rotary circulation, having constant wind speed of 74 miles per hour or more. The remaining signals are determined on the intensity of cyclones and distance from the shore. It has been observed in Bangladesh that most depressions are formed near the Andaman island of Indian ocean, and thereby, proceeds towards the Bay of Bengal to ultimately hit the country's coastline. There are also instances of changing courses. Sometimes it appears almost certain that a cyclone is approaching towards Bangladesh, but due to changes in the wind direction it finally hits either Orissa or Andhra Pradesh of India.

However, with the formation of a depression, the Meteorological Agency of Bangladesh starts to broadcast cautionary statements through radio and television advising small crafts to remain in port or shore and not to venture into the open sea. The broadcasting frequency increases with gradual intensity of a cyclone and its approaching magnitude. Nevertheless, all these bulletins primarily address the maritime and inland river ports, hence, the non-navigator coastal people and islanders remain undecided as well as misguided. It has been further reported that the sequential numbering also confuses many, as it is often believed that warning signal no.8 suggests a lower intensity of storm than warning signal no.9, as warning signal no.9 suggests less intensity than 10, except the only change in wind direction. While talking to the Maheskhali islanders, it was known that they cannot understand the change in wind direction, as explained in the warning bulletin, and, therefore, cannot use the numerical coding in their own way of understanding the phenomenon. In many cases, it was noticed, that the islanders did not take signal no. 8 seriously as they assumed it to be of less intensity and wait for higher numbers. Thus the current warning signals may be useful for the navigators, but not an effective tool to alert the other vulnerable people of the coastal region.

In Japan, the Kishōchō or the Japan Meteorological Agency (JMA) provides separate warning services for public, for shipping, for aviation and for other specialized users. Using the conventional Saffir-Simpson Scale, the JMA broadcasts 5 warning signals for

typhoons with their corresponding central pressure, water surge, and anticipated damages (Meteorological Services in Japan, 1997). The signal no.1 describes a central pressure of >28.94" with 74−95 mile per hour (MPH) wind speed and a surge of 4−5 feet that anticipates minimal damage. The signal no.2 denotes a central pressure of 28.91−28.50", wind speed of 96–110 MPH with 6−8 feet surge and moderate damage. The signal no.3 demonstrates 28.47−27.91" central pressure, wind speed of 111−130 MPH, having a surge of 9−12 feet and the damage is apprehended to be extensive. The no.4 signal corresponds to 27.88−27.17" central pressure, having 131−155 MPH wind speed, water surge of 13−18 feet and the damage is expected to be extreme. The signal no.5 describes the central pressure as <27.17" with >155 MPH wind speed, causing >18 feet water surge and the damage is obviously catastrophic.

When the residents of Saigasaki and Tano were approached, their understanding of the warning signals were found sharply divided between the older and younger generation. The young respondents were noticed to understand and comprehend the signals clearly and accordingly take necessary actions and precautions. While the older people were found more confident about their own way of reading the weather. They claimed it more reliable and effective than the JMA's warning signals. It was further reported by some that the warning signals and forecasting differ from channel to channel, and thus, make them more confused. A few respondents also said that if the government considers them (the fishermen of Saigasaki and Tano) as the beneficiary of such forecasting through radio and television, it is not necessary and only a wastage of public money. The experienced fishermen confidently expressed effectiveness of their indigenous prediction and anticipation capacity, while JMA's bulletin comes to them only as reference.

CONCLUSION

It may be concluded from the study that (1) in spite of cultural, socio-economic and technological differences between Bangladesh and Japan, the cyclone or typhoon exposed people have their own, but more or less similar way of weather reading and identifying certain indigenous indicators to perceive, predict and to take necessary precautions against natural calamities; (2) these indicators or skills have been traditionally acquired while in close association with nature and transmitted through generations; (3) the indigenous knowledge, particularly the one related to natural calamities, is transmitted through the male line and preserved by the older generation; (4) the knowledge seems to be in the process of withering away with gradual decline of the possessors; and (5) the modern

warning codes and the mode of dissemination have certain limitations, and therefore, the potential users find difficulties to decode and relate them to their stored knowledge base. Against this backdrop, it may be recommended that there is an urgent need to document the indigenous knowledge, particularly the local GIS, as the process of modernization and global climatic change is seriously affecting the indicators and their dynamics of operation. For programme planning, there is a strong need to ensure a fine-tuning between indigenous knowledge and modern knowledge for sustainability and effectiveness.

As the 21st century has already started knocking the door, researchers and academics are to ensure that all conditions are available for an undisturbed carryover of past experiences and their proper blending with the forthcoming intervention of more advanced sets of knowledge, which can be attributed as "Intermediate Knowledge" —— an imperative research paradigm of both developed and developing societies and cultures.

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INDIGENOUS DISASTER MANAGEMENT CULTURE : A Comparative Study Between Cyclone Affected People of Bangladesh and Japan

Md. Shahed HASSAN

The paper is based on primary data collected from Bangladesh and Japan, the two cyclone affected countries of Asia. Using the IKS research paradigm, data have been collected from the risk-exposed people living around coastal belts of the countries. The paper attempts to highlight the traditional ways of weather reading, particularly the prediction, perception and survival strategies. In both cases, the traditional environmental knowledge seems to be disappearing rapidly, and to some extent, is possessed by the elderly people. Moreover, the knowledge is predominant among male only. It is, therefore, essential to document this rich treasure of knowledge before it withers away. Attempt has also been made to explain certain predictive indicators from scientific perspective. In both countries, vulnerable people hardly pay any attention to modern warning signals. The modern weather signals, although uses sophisticated receiving and transmission equipment, often confuses the end users. The paper concludes with an expectation that there remains a need to blend two sets of knowledge, which can be attributed as Intermediate Knowledge, for any sustainable program intervention. It is also expected that similar studies may be undertaken to reveal indigenous knowledge regarding mitigation of other form of natural calamities.