HOW IS IT POSSIBLE TO LET PEOPLE VISUALIZE DISASTERS THAT THEY HAVE NEVER EXPERIECED?
-Disaster Educational Process Using the Case of the 1944 Tonankai Earthquake and the 1945 Mikawa Earthquake, Japan

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ABSTRACT :

Personal experiences of disaster are very important as instructional material for future disasters. This is because the feelings and behavior of the surviving victims, together with narratives describing their direct experiences, can provide researchers with new facts and ideas they would otherwise never have known. There is, however, no clear method for sharing such experiences. As such, we developed a method for converting victims' past experiences into educational materials that could be used for the development of disaster awareness in society. This method consists of 4 steps: 1) conduct semi-structured interviews with victims of past major disasters; 2) reconstruct the episodes to produce images of the damage experienced, the victim's behavior in the process of rebuilding their lives after the disaster, and the support received from the community and government administration; 3) pictorialize these episodes; and 4) make educational material combining information about the hazards involved in, and the extent of damage caused by, the relevant disaster with the newly created pictures of disaster episodes. The interviews consisted of questions that addressed the following three issues: 1) personal suffering and material damage from the earthquake, 2) the victim's state of consciousness and course of action following the onset of the earthquake, 3) the amount of support and relief available. We applied this method to the 1945 Mikawa Earthquake in Japan. The magnitude of this earthquake was M6.8. The earthquake resulted in the deaths of more than 2,300 persons, with more than 20,000 houses collapsing. Moreover, it was not well covered in newspapers, to either other areas of Japan or the rest of the world, because the event occurred at the end of the Second World War, when the Japanese Government was reluctant to disperse bad news both inside and outside Japan. We conducted 20 interviews with victims of the Mikawa Earthquake and produced educational materials based on this content, including 130 pictures. We used these in panel displays set up at local community facilities and high school festivals to disseminate concrete information on earthquake-related disasters. With the help of systematic lectures and training, the pictures served to impart a strong impression to our audiences, and it became clear that the pictures drawn based on the interviews can function as effective materials for outreach activities on earthquake disaster mitigation.

KEYWORDS: Ethnographic Interview, Pictorial Description, Personal experiences of disaster, Historical earthquake, 1944Tonankai Earthquake, 1945 Mikawa Earthquake

1. INTRODUCTION

The scope and nature of disasters will differ widely according to the geographical and social environment of the affected region. The level and nature of damage caused by the same earthquake will even differ widely according to area; equally, the specific characteristics of the vulnerability shown by a certain area will result in similar kinds of damage occurring even when the type and scale of the hazard causing the damage differ. Consequently, learning about the history of disasters experienced that have occurred in specific local areas, and passing on that knowledge and those lessons to the next generation, are essential elements in disaster mitigation education.

For the purposes of this paper, we have surveyed and researched two significant historical disasters. Firstly, the 1944 Tonankai Earthquake, the most important earthquake ever recorded in Nagoya, where we are based, and secondly, the 1945 Mikawa Earthquake. In this research we have not simply sought to discover the physical conditions caused by these disasters, but also, concurrently, to draw up educational material for disaster mitigation using pictures, and to implement various kinds of disaster mitigation educational activities – namely, we have adopted a new and innovative approach. This paper will introduce the processes through which these pictorial materials were drawn up, and the ways in which educational activities are implemented.

2. THE 1944 TONANKAI EARTHQUAKE AND THE 1945 MIKAWA EARTHQUAKE

The 1944 Tonankai Earthquake occurred at 1.38 p.m. on December 7 1944, in the offshore area of Mie Prefecture. It was a significant earthquake, with a magnitude of M7.9. The earthquake was caused by a subduction in the Philippine Sea Plate –a plate boundary earthquake– and resulted in the deaths of 1,223 people in the three prefectures of Mie, Aichi and Shizuoka.

The Mikawa Earthquake occurred in the Mikawa region of Aichi Prefecture, thirty seven days after the Tonankai Earthquake, on January 13 1945. This time, the earthquake was caused by movement in the inland active fault zone– what is known as an inland, near-field earthquake, or a local earthquake with a shallow focus – and had a magnitude of M6.8. However, since the earthquake occurred directly above the epicenter, the number of deaths reached 2,306. Moreover, since the two earthquakes occurred in close succession, the level of overall damage was increased due to a number of homes which had already sustained damage in the Tonankai Earthquake collapsing easily at the onset of the second earthquake. Figure 1 shows source areas of these 2 earthquakes.

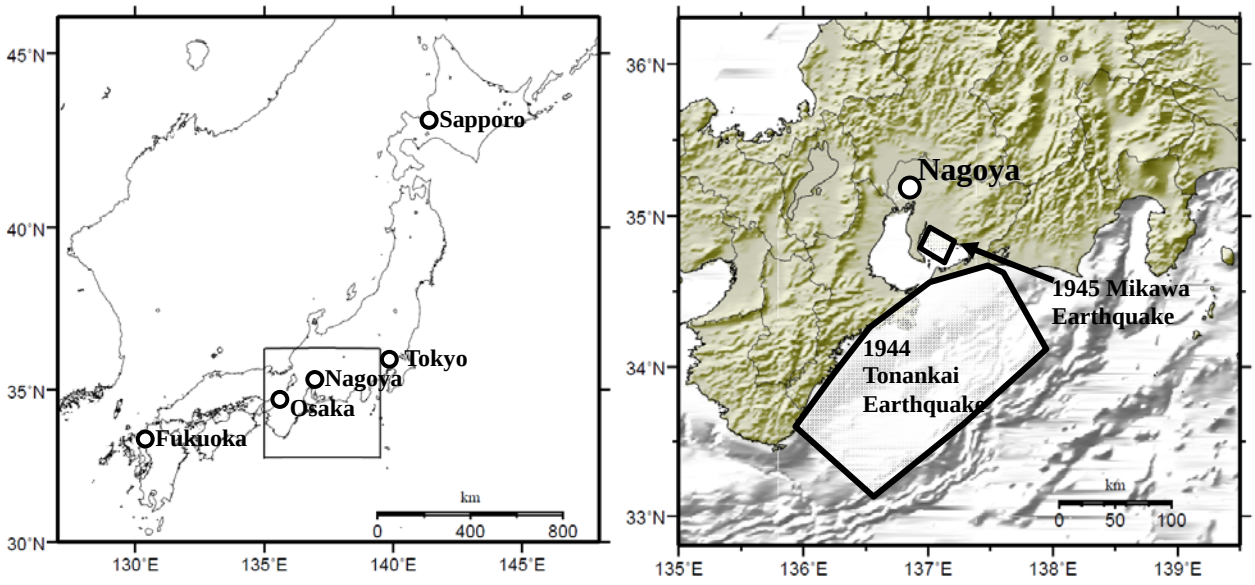

Figure 1 The source area of 1944 Tonankai Earthquake and 1945 Mikawa Earthquake and the location of Nagoya city.

What is particularly notable about these two earthquakes is the fact that, despite both being severe earthquakes with death tolls rising over a thousand, the local community was not made aware of the severity. Both of these earthquakes occurred as the Second World War was drawing to a close, and as Japan was suffering ever heavier losses; wartime censorship meant that harsh restrictions had been placed on reporting the level of damage that had occurred. Moreover, after the earthquakes, the affected areas were subjected to aerial attacks, which again were followed by the social confusion and unrest that arose after Japan's capitulation. This resulted in much valuable disaster-related data being lost. Consequently, the number of people in the region with any awareness at all of these earthquakes has dropped dramatically.

3. INTERVIEWS ON, AND THE PICTORIALIZATION OF PERSONAL DISASTER EXPERIENCES

Our research focused on reconstructing the conditions of the disaster and the nature of assistance provided on a direct and experiential level. This was achieved by conducting interviews with persons who directly experienced the earthquakes. Our investigation began in October 2003, and by August 2008 we had conducted a total of 38 interviews with victims of both earthquakes.

The interviews focused on three points:
1) The nature of damage suffered by the family or the village of the interviewee;
2) What kind of mindset s/he was in during the hours after the earthquake, and what s/he did;
3) Which people or organizations, if any, provided help.

Figure 2 The schematic process of making pictures which describe a personal disaster experiences.

Moreover, our research has been unique in that we have sought not simply to record, in plain text, the results of our interviews as a scientific research project, but rather also to use pictures to recreate the conditions caused by the disaster concerned, and the nature of disaster management and assistance provided. This allows us to achieve the following useful results: 1) garner interest from people otherwise uninterested in disaster and disaster mitigation; 2) create educational materials on disaster mitigation that children and students find easy to understand; 3) incorporate into pictures the knowledge and learning on disaster and disaster mitigation that we wish to communicate; and 4) compare, contrast and analyze pictures as units of knowledge and learning on disaster and disaster mitigation.

The precise process by which pictures were created is shown in Figure 2. Firstly, all interviews were conducted in the presence of an artist, who drew rough sketches whilst listening to the interviewees. The intention behind this was to allow the interviewee, the researcher and the artist to share a visual image of interviewees' personal disaster experience by listening directly to and empathizing with him or her.

Next, the researcher and the artist collaborated in deciding which particular information should be kept in the pictures, and in determining the precise nature in which it should be depicted. They then sought out the materials necessary to enable the pictures to be completed, and final versions were produced. A second interview was then carried out, with the completed pictures, enabling the interviewee to indicate any differences in the pictures to that which they actually remembered. Also, the interviewee was asked to review and confirm the written account of his or her experience of the relevant disaster that had been drawn up. This process allows third parties to relive, or re-experience, through pictures and text, the disasters that the interviewees themselves experienced. Memories over sixty years old are thus reinvested with life, and any specific improvements and alterations required in the pictures and interview content can be clearly indicated.

Moreover, we have found that memories previously buried deep inside the mind have, through this process, become unlocked – and verbalized to us. When, during the second round of interviews, pictures were found lacking in accuracy, they were redrawn as indicated by the interviewees; in some cases, where the number of revisions was extremely high, the pictures were drawn again from scratch.

These pictures play an important role in furthering the disaster mitigation education described further in section 5. As such, these pictures should be drawn in such a way that they will linger in the memories of those who see them. We sought, therefore, realistic pictures, of a high-quality, able to attract the attention of local citizens as individual visual items. We therefore asked Mr. Tetsuya Fujita, and Mr. Tomohiro Ban'no, both established artists with strong practical experience and engaged in the instruction of younger artists at art colleges, to work with us on this project. In addition both men have a strong interest in, and knowledge of, history and culture, and were invaluable to the completion of this project.

4. AN EXAMPLE OF DISASTER NARRATIVE COLLECTED THROUGH INTERVIEW

Here, we will introduce as an example of disaster narrative that provided by Mr. Namiji Nishimura, who directly experienced the Tonankai Earthquake.

> At the time, Mr. Nishimura was eighteen, and working as a fisherman. When the earthquake hit, he was asleep in his home. He then heard a strange noise, accompanied by a shaking that became stronger and stronger. After waiting for ten minutes, however, there had been no change in the sea, so he went home and fell asleep. After that, he awoke to a member of his family saying "a neighbor is saying that the water is coming", and he knew immediately that the predicted tsunami had arrived. Looking outside, he saw a middle-aged disabled woman, who was unable to escape, so he pulled her onto his shoulders and made his way to the local elementary school. He was aware of what had happened to water levels in the 1854 Ansei tsunami, and had determined that the elementary school was on high enough ground to be safe from the waters. As he was returning to the shore, he was asked by a local woman to "please, help my baby". He picked the baby up and took it, together with the woman, pulling her by the hand, back to the elementary school grounds. After helping with the evacuation, he went again to the shore to watch for the tsunami.
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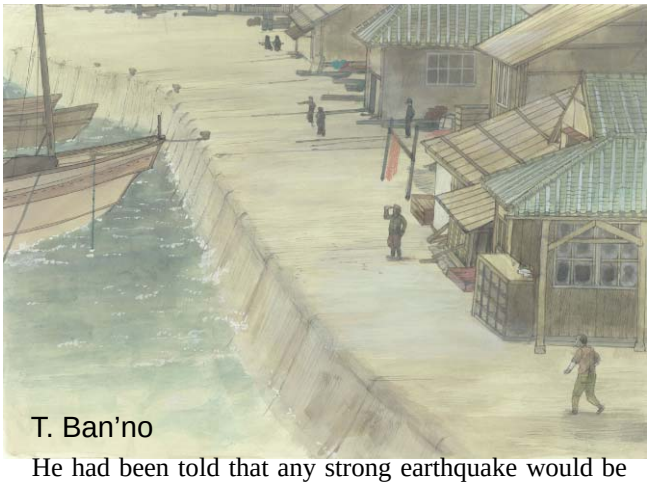
> As he was heading towards the shore, however, he realized that multiple houses had been entirely uprooted

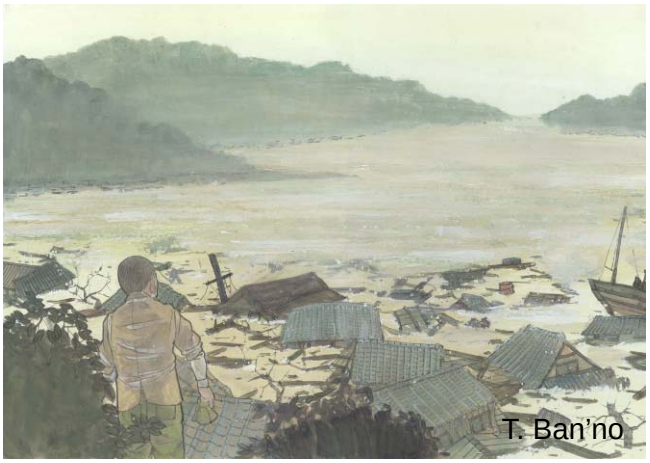


He had been told that any strong earthquake would be followed by a tsunami, so once the shaking subsided he went to the shore to see the tsunami.

He saw a middle-aged disabled woman, who was unable to escape, so he pulled her onto his shoulders.

As he was returning to the shore, he was asked by a local woman to "please, help my baby". He picked the baby up and took it, together with the woman.

As he was heading towards the shore, he realized that multiple houses had been entirely uprooted by the waters, and were sweeping directly towards him.



He was able to scramble up a nearby mountain, and escape. Looking down upon his town from his mountain vantage point, it was smothered in seawater.

The water drew back so far that the bay was drained of water, and he saw – for the first and only time – the local bay looking like a large, empty mortar.

Figure 3 An example of pictorial description which described a personal disaster experience.

by the waters, and were sweeping directly towards him. The uprooted houses smashed together, making a noise like a bomb had been dropped, and kicking up huge clouds of dust. At that moment, he caught a glimpse of the water, and thought to himself: So, this is what a tsunami is like.

He was able to scramble up a nearby mountain, and escape. Looking down upon his town from his mountain vantage point, it was smothered in seawater. His mind was in a daze, confused; he could not even feel fear, nor spare a thought for the fate of his family. Soon after, the water – now thick with wreckage and boats – began to draw back, and slid back to the shoreline, all the while making a terrible din. Yet still, he was in total shock – all he could think was how filthy the water was. The water drew back so far that the bay was drained of water, and he saw – for the first and only time – the local bay looking like a large, empty mortar. It was as if the whole town had been washed away – there were no obstacles – and then the third wave rose.

Once the tsunami had died down, he clambered down the mountain, but the wreckage had piled up, and he was not able to make progress. Then, following the directions of other townsfolk, he, along with other survivors, temporarily evacuated up to the elementary school in neighborhood blocks. One classroom was assigned to each neighborhood block, and rations were provided. After spending around three nights in the school, he went to stay with relatives whose home had not been completely destroyed by the tsunami.

Both his house and his boat had been washed away – his entire neighborhood had been destroyed. The various organizations in the town – the boys association, the volunteer defense corps, the women's club, amongst others – rallied themselves to rebuilding the town. Ten days after the tsunami, he went by boat to the nearest large town as a representative of the boys association, to pick up relief supplies.

After around two months staying with his relatives, he was moved to new accommodation – so-called "barracks" – which consisted of a single room, simple, at around 9 meters square. He had no futon, and heated the room by gathering wreckage and wood debris and burning it in a brazier. Around the same time, the local fishing industry began to resume.

He heard from a local carpenter that the "barracks" would not last more than two years, and instead began to live in a house belonging to his relatives. Landfill activities on the sea coast saw the ground level raised, and roads were expanded. This resulted in the ruins of his old home being raised by more than one meter. He lived in the borrowed house for around three years, and five years after the tsunami, he built a new house where his old home had been.

5. DISASTER MITIGATION OUTREACH ACTIVITIES USING PERSONAL DISASTER NARRATIVES INTRODUCED THROUGH PICTURES

Until now, much disaster prevention and mitigation education has been based on dry, matter-of-fact data, such as statistics, or figures on disaster distribution. There has been a distinct lack of educational material that focuses on disasters as events that can – and do – shatter the lives of individual victims. Personal disaster narratives, as gleaned by disaster prevention researchers, which trace the course of individual experience from before the occurrence of the disaster, right through to rebuilding and recovery, can provide us with valuable information in learning more about the disaster process.

We have worked together with local museums of history in disaster-affected areas to hold displays on earthquake disasters, and have held lectures and seminars for a wide range of groups and societies, such as local authorities, community business associations, and town associations. We are also conducting, concurrent to these displays and lectures, ongoing surveys of local areas. This will allow us to consistently modify our research as required by the needs of local communities, and continue to move towards discovering the most effective methods to display the pictures. This makes our research extremely rewarding, and the panel displays that use the pictures have been commended as being effective in introducing the significance of individual

behavior and during times of disaster in a way that can be easily comprehended by the public. Disasters occur in every corner of the globe, but concentrating on providing local communities with information about past disasters that occurred in their own areas helps to make the issue of disasters feel more immediate to these local communities, encouraging a sense of empathy and of immediate connectivity. Our efforts have been praised by local communities as succeeding in raising levels of voluntary participation in disaster mitigation activities.
As a result of the past five years of interviews and investigations, we have garnered the personal disaster narratives of around 40 people, and over 250 pictures depicting these narratives have been created. Now, we are able to present a number of different case studies of personal disaster narratives, each showing differing qualities and characteristics. By categorizing these narratives according to such factors as the scale of the disaster experienced and the environmental conditions at the time, we are able to make meaningful comparisons of the mental state and behavior of these individuals, according to differences in the extent of the disaster concerned. This allows us to work on further disaster prevention and mitigation materials that will help to foster an even greater understanding of the nature of disaster. We now intend to concentrate our efforts on formulating a curriculum and texts appropriate to a concrete disaster mitigation educational program that can be used widely, across all ages in the local community.

(1) A lecture using the disaster narrative in a neighborhood association

(2) A dialogue with the victims using the pictorial materials.

(3) An exhibition using the pictorial materials held in a junior high school

Figure 4 Example of various disaster management lectures and exhibitions which using pictorial description of personal disaster experiences.

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