International Review of the Red Cross (2015), **97** (899), 543–552.
The human cost of nuclear weapons
doi:10.1017/S1816383116000084

INTERNATIONAL REVIEW of the Red Cross

VOICES AND PERSPECTIVES

Photo gallery: Ground zero Nagasaki

Akitoshi Nakamura
Akitoshi Nakamura is the Director of the Nagasaki Atomic Bomb Museum. He has received a number of Japanese literary awards under the pen name Yuichi Seirai, including most notably the Akutagawa prize in 2001 for *Holy Water*, set in Nagasaki.

Abstract
This selection of photos is meant as an appeal from the Nagasaki Atomic Bomb Museum to remember the atomic bombing of Nagasaki on 9 August 1945. It was compiled by museum director Akitoshi Nakamura based on the collection at the Nagasaki Atomic Bomb Museum.[1] *Readers are invited to visit the Nagasaki Atomic Bomb Museum and spend some time viewing its collection of over 1,000 photographs and remnants from the city at that time to get a sense of what happened before and after the atomic bombing that summer seventy years ago, and how devastating the atomic bomb's destructive effects were.*

: : : : : : :

Figures 1 and 2, below, show the area of the hypocentre in northern Nagasaki two days prior to the atomic bombing and about one month after the bombing.

The meandering black line that cuts diagonally across each image from top to bottom is the Urakami River, which flows from the north to the south of the hypocentre. The oval near the centre is the track of an athletic field.

In the second photo, one can see that the formerly varied cityscape of tightly-packed buildings has almost completely disappeared. All that remains are the ruins of school buildings and structures that were made of strong concrete. The area around the hypocentre has become as desolate as the surface of the moon. Records describe the damage:

> Those living in Nagasaki on the day the atomic bomb was dropped noted that air-raid alerts had been issued constantly since the night before. On the morning of 9

Figure 1. The hypocentre on 7 August 1945, two days prior to the atomic bombing of Nagasaki, photographed from the air by US pilots. US National Archives, RG 77-MDH.

Figure 2. The hypocentre one month after the atomic bomb was dropped on Nagasaki. US National Archives, RG 77-MDH.

Figure 3. A wall clock found at the site of the bombing, stopped at 11:02.

> August, the alerts were lifted and people, machines and trains began to resume their daily activity. People lined up at food distribution points throughout the city. At the Nagasaki Medical College (now the Nagasaki University School of Medicine), lectures were started and the hospital received patients.[2]

An American aircraft dropped the atomic bomb on the Urakami district of northern Nagasaki at 11:02 a.m. on 9 August 1945. Nagasaki thus became the second city in human history to be attacked with an atomic bomb, following Hiroshima.

The Nagasaki bomb was a plutonium weapon possessing explosive power equivalent to 21 kilotons of trinitrotoluene (TNT), which gave it greater destructive capability than the Hiroshima bomb, a uranium weapon with the explosive power

1 For more information, see the museum's website, available at: www.city.nagasaki.lg.jp.e.jc.hp.transer.com/sisetsu/5090000/p011036.html (all internet references were accessed in November 2015).

2 *Nagasaki wa Kataritsugu* (digest version of the *Nagasaki Atomic Bomb Damage Records*), Nagasaki City, 1991, pp. 40–45. There is a similar description in the *Nagasaki Atomic Bomb Damage Records* (General Analysis Version), Vol. 1, Nagasaki City, 2006, p. 166. These records are currently in the process of being translated to English.

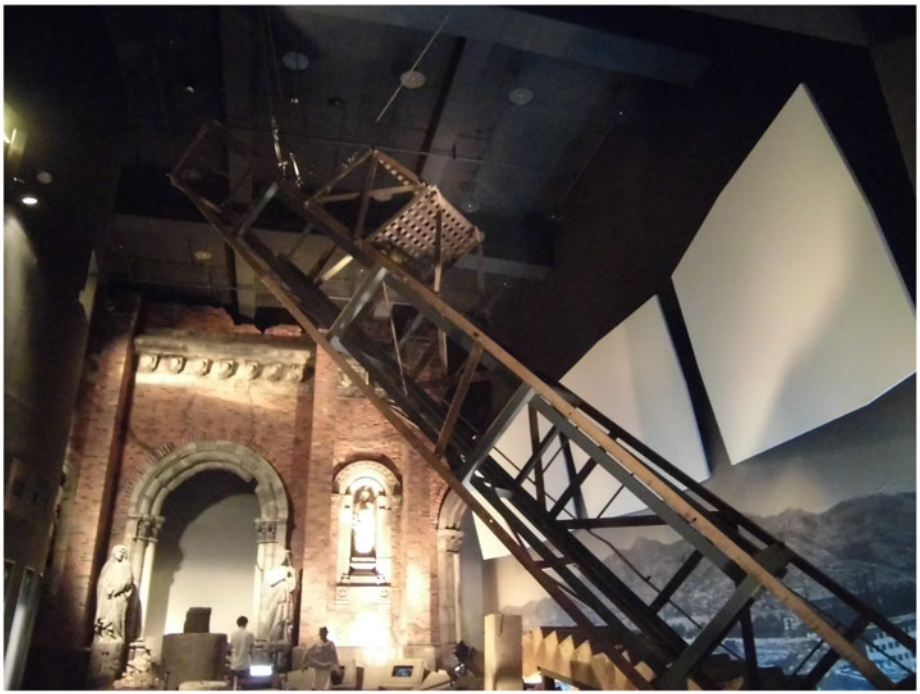

Figure 4. The fire lookout tower from Hamaguchi-machi.

of 15 kilotons of TNT.[3] However, the city's size, the mountainous topography around the target, and other factors meant that the level of destruction in Nagasaki did not reach that of Hiroshima, where 220,000 people were killed or injured. Nonetheless, some 74,000 people lost their lives and 75,000 people suffered injury as a result of this one bomb. Of the 240,000 residents of Nagasaki at the time, approximately 150,000, or more than 60%, became casualties.[4] Those who survived had to live their lives in constant fear of cancer and other radiation-caused diseases. Thus the atomic bomb brought to the world a new kind of horror, one that had theretofore been unknown in the human experience.

3 *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 4 (Nagasaki City Hall Version), 1984, p. 5; Samuel Glasstone (ed.), *The Effects of Nuclear Weapons*, revised ed., US Atomic Energy Commission, 1962; John A. Auxier, *Ichiban (Radiation Dosimetry)*, Energy Research and Development Administration, 1977; John A. Auxier, J.S. Cheka, F. F. Haywood, T. D. Jones and J. H. Thorngate, "Free-Field Radiation Dose Distribution from the Hiroshima and Nagasaki Bombings", *Health Physics*, Vol. 12, No. 3, 1966; Lord Penny, D.E.J. Samuels and G. C. Scorgie, "The Nuclear Explosive Yields at Hiroshima and Nagasaki", *Philosophical Transactions of the Royal Society of London*, Vol. 266, No. 1177, 1970.

4 There figures were released in July 1950 based on the estimation carried out by the Nagasaki City Atomic Bomb Records Preservation Committee. The City of Nagasaki has officially referred to these numbers since then. According to this estimation, 73,884 were dead and 74,909 were injured. Among the dead, 17,358 were autopsied right after the atomic bomb was dropped. *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, p. 710.

Figure 5. The Ohashi bridge post.

The destructive force of an atomic bomb is comprised of three elements: radiation, heat rays and blast wave. Along with them comes a conflagration that causes even greater destruction. It is thought that approximately 50% of the Nagasaki bomb's explosive energy was released in the form of a blast wave, 35% as heat rays, and 15% as radiation.[5]

When the bomb detonated, the first thing to hit the people was a massive burst of radiation, including neutron radiation. This was followed by heat rays that heated the ground directly below the blast to a temperature somewhere between 3,000 and 4,000 degrees. Then came the blast wave, which reached a speed of 160 metres per second even one kilometre away. In truth, almost all of the destruction from radiation, heat rays and blast wave was over within three seconds after the flash of white light. After that, a conflagration continued throughout the day and night, resulting in desolation over a broader area and creating the dramatic, moon-like landscape seen in Figure 2 above.

Among the many artefacts that survived the atomic bomb, one particularly striking object is available on display at the Nagasaki Atomic Bomb Museum: a wall clock that was discovered about one kilometre from the hypocentre. The clock is stopped at 11:02.

The clock, donated by Mr Tadahachi Kubo, was found in the ruins of a house near the Sanno Shinto Shrine located about 800 metres from the hypocentre of the

5 *Ibid.*, Vol. 4, pp. 13, 28.

Figure 6. A portion of the Urakami Cathedral, now housed in the Nagasaki Atomic Bomb Museum.

atomic explosion. It is assumed that the clock was stopped at 11:02 due to the impact of the blast, which destroyed the entire house.

Visitors to the museum will also see a repeating video of the mushroom cloud climbing into the sky. The video is from footage taken by the American aircraft that

dropped the bomb. In the darkness beneath the cloud, flames were rising, survivors were desperately trying to escape, and charred corpses lay under the rubble. One wonders if the crewmen who filmed the cloud could have imagined what was happening below it as it ascended to an altitude of over 10,000 metres.

The museum's first exhibit room displays items that remained following the bombing. There is an iron frame that is the twisted remains of a fire lookout tower from Hamaguchi-machi, which was located 250 metres from the hypocentre. The tower was ten metres tall. It received the force of the blast directly, bending the legs of the tower in the direction of the blast. This tower was under the supervision of the Nagasaki Fire Department, and was used by firemen to monitor the situation not only in times of fire but also during air raid alerts and shelling.

Another item in the same exhibit room is Ohashi bridge post. It was originally located at the south end of a bridge 500 metres north of the hypocentre. The post was blown into the river by the strong blast caused by the atomic bomb, despite weighing four tons. This and other physical articles show the force of the bomb blast, and even today silently speak of what happened under the mushroom cloud.

A restored brick wall that covers an entire side of the room is a destroyed sidewall from Urakami Cathedral. For approximately 250 years, the Urakami district in northern Nagasaki, an area that was destroyed by the bomb, was home to people who quietly maintained their Catholic faith even as Christianity was prohibited in Japan.

Although Japanese followers of Christianity were thought to have vanished as a result of severe oppression and persecution, some were discovered 150 years ago, in 1865. News of their discovery spread around the world and caused great excitement at the time. It was in this context that Urakami Cathedral was later built, brick by brick, over the course of twenty years by people who had held fast to their Catholic faith in spite of a very dark history, and it provided them with a place of comfort.[6]

6 "Supported by Christians in Urakami, the construction of the cathedral was completed in 1925. The brick neo-Romanesque building was the largest Catholic church in East Asia, with twin spires that stood 26 metres high. The atomic bomb destroyed the dome in a fraction of a second, and only the brick walls remained. The resultant collapse and heat-wave burned and buried all those present in the cathedral, including a few dozen parishioners and two priests, Mr Saburo Nishida and Mr Fusayoshi Tamaya. 2,482 *hyos* of rice (one *hyo* is 60 kilograms) and 1,000 boxes of noodles stored in the church as emergency food were also assumed to be burned instantly." *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, p. 710. Francis Xavier, Jesuit missionary, arrived Japan in 1549 to spread Christianity. Soon after, Portuguese ships started coming to Japanese ports. Opened in 1571, the Port of Nagasaki was developed as a trade centre with Portugal and was the base of the Japanese Christians. Although a part of Nagasaki was donated to the Jesuit Society, it was later disendowed by Hideyoshi Toyotomi, who longed to bring an end to the Warring States Period by unifying the country. While the entry of Portuguese ships was banned, the Tokugawa Shogunate in the Edo period permitted trade with two countries, the Netherlands and China, handled at the Port of Nagasaki. The Purge Directive Order to the Jesuits was issued by Hideyoshi Toyotomi to limit missionary activities in Japan and was further reinforced during the Tokugawa Shogunate, which completely banned Catholicism. As a result, many Japanese Christians were persecuted and became hidden Christians. Those hidden Christians were driven underground for about 250 years in Urakami. Urakami at that time was the so-called heart of hidden Christians. *Records of the Nagasaki Atomic Bombing and Wartime Damage*, Vol. 1, Part 1 (Nagasaki Atomic Bomb Museum Version), 2006, pp. 4–6.

Figure 7. A display showing some of the injuries suffered by survivors.

On 9 August 1945, the atomic bomb detonated in the air just 500 metres from the cathedral, completely destroying it. In the Urakami diocese, which had survived years of persecution, 8,500 of its 12,000 members perished.[7] Thus, the bomb did more than take lives and destroy buildings; it also obliterated the community, history and neighbourhood connections that had been built in Urakami amid great hardship.

The museum also displays shocking photos of people who were injured by the bomb. These people wanted to raise awareness of the bomb's terrible effects by showing what had happened to them to as many people as possible.

Doctors and nurses immediately started treating the injured, but equipment and medical supplies were too scarce to even provide first aid. A temporary medical train was built to bring the injured from the hypocentre to medical facilities within and outside of Nagasaki prefecture.[8] Before the atomic bomb, the population of Nagasaki was approximately 240,000 people. According to research carried out by the Atom Bomb Casualty Commission on 1 October 1950, the population of the city right after the atomic bomb detonation was 130,934 people.[9]

The boy featured in the photo in Figure 7, lying on his stomach with a bloody back, is Mr Sumiteru Taniguchi. The man whose upper body is disfigured by keloids is Mr Senji Yamaguchi. The boy with the half-burned face who

7 Out of 20,000 of Christians who lived in the city of Nagasaki, around 15,000–16,000 lived in Urakami. Among them, 10,000 were victims of the atomic bomb. *Ibid.*, p. 308.

8 *Ibid.*

9 *Ibid.*, p. 710.

Figure 8. Nagasaki today.

appears in two photos is Mr Katsuji Yoshida. All three were gravely injured by the bomb when in their mid-teens but somehow survived. In the years following the war, they continued telling people about the horrors of the bomb and participating in peace activities that demanded the abolition of nuclear weapons.

Mr Taniguchi was a 16-year-old postman when the bomb fell. His experience was described in detail in the non-fiction book *Nagasaki no Yubinhaitatsu* (*The Postman of Nagasaki*).[10] This year, at the age of 86, he is the last remaining survivor of those pictured in the four photos. Mr Taniguchi visited the United Nations Headquarters in New York at the time of the 2015 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons. There he called on government representatives and NGO personnel to realize a world without nuclear weapons.

As a person who can personally relate the horrors of the atomic bomb, Mr Taniguchi speaks openly of his intention to continue calling for the abolition of nuclear weapons so long as he is physically able. He readily shows people his back that was so bloodied seventy years ago, burned by the extreme heat caused by the atomic bomb. He will even stand before TV cameras and undress to reveal his disfigured back. Many are left speechless when they see its smashed sweat glands and smooth, seemingly melted skin. Even now, the devastation that was a consequence of the bombing can be seen across Mr Taniguchi's body. More than anything else, his back tells a powerful story about his long and painful recuperation, a time made even more agonizing as his ribs became exposed from the bedsores, and his life as an A-bomb survivor in constant fear of the effects of radiation.

Today, more than seventy years since being blasted to rubble by the atomic bomb, Nagasaki has made an astonishing recovery. Nonetheless, the hopes of the survivors remain far from fulfilled, as more than 16,000 nuclear warheads exist in the world.[11] Moreover, the power of many of those warheads is tens of times greater than the weapons dropped on Nagasaki and Hiroshima. What would

10 Peter Townsend, *The Postman of Nagasaki*, Harper Collins, London, 1984.
11 For more on the number of nuclear weapons in existence today, see the article by Hans M. Kristensen and Matthew McKinzie in this issue of the *Review*.

happen if nuclear weapons were ever used again? The answer should be easily imaginable to anyone who knows what happened at Hiroshima and Nagasaki seventy years ago.

On 9 August 2014, the mayor of Nagasaki, Tomihisa Taue, said the following as part of a peace declaration presented at a memorial for the atomic bomb victims: "Nuclear weapons are a continuing danger that threatens the present and future of our entire world. The terror that they bring is not confined to Hiroshima and Nagasaki's past."[12] This statement embodies the thoughts of all atomic bomb survivors and residents of Nagasaki. In this same sense, the Nagasaki Atomic Bomb Museum is more than just a facility for historical reflection. It is also a place for profound thought on the present and future of the human species.

12 Tomihisa Taue, "Nagasaki Peace Declaration", Nagasaki, 9 August 2014, available at: http://nagasakipeace.jp/english/appeal.html.