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The Atomic Bombing of Japan: Necessity or Atrocity?
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Major Issues

The bombings of Hiroshima and Nagasaki are the only cases of nuclear weapons use in war. The effects of these two attacks were so horrifying that it is arguable that, through the example they offered, they helped secure the nuclear peace through the most dangerous periods of the Cold War.

The bombs were used to terminate the Pacific War. The United States actually hoped to end the war against Japan before its nominal ally, the Soviet Union, could enter it. In this aim the US was unsuccessful. The Soviets overran the Japanese forces in Manchuria and were able to establish themselves there and in the northern part of Korea, with consequences that are still being felt today.

The chain of events leading to the use of the atomic bomb has an air of inevitability about it. There was a concatenation of circumstances which jointly conspired to make Japan the world's first nuclear target. Among these were:

- The reluctance of the Japanese, for long-standing cultural reasons, to contemplate the humiliation of surrender. This meant that the hawks in the Japanese Government were extremely hard to convince. Even after the Emperor intervened on behalf of surrender, a rump of militarists staged an unsuccessful coup in Tokyo.

- The fierce resistance of Japanese forces defending the islands of Iwo Jima and Okinawa, where American forces took extremely heavy casualties.

- The US concern that a conventional military invasion of Japan would result in a long and bitter battle with even worse casualties.

- The western desire to terminate the war before the Soviets could enter it.

- The Soviet desire to exploit the Pacific War to improve its postwar strategic situation vis-a-vis the west. This led Moscow, while still neutral, to delay and stall the Japanese when the latter sought Soviet mediation with a view to ending the war.

- The production schedule of, and technical difficulties associated with, the bomb. Not until mid-July 1945 was the US sure that it had more than one workable bomb. This uncertainty affected the US decision-making process.

Australia held out for forcing Japan to surrender without any guarantees on the status of the Emperor, but could not secure Allied agreement.
Introduction

August 1945 saw the only use of nuclear weapons in warfare, with bombs dropped on the Japanese cities of Hiroshima and Nagasaki. Designed to force Japan to surrender, preferably before the Soviet Union could enter the Pacific War and seize advantageous East Asian positions like those it secured in Europe on the defeat of Hitler, the bombing succeeded in the first of these objectives, but not the second.\(^1\) The armistice came too late to prevent the Soviets declaring war and attacking Japan’s Manchurian and Korean possessions on 8 August. The next day Nagasaki received its bomb.

The purpose of this paper is threefold.

First, to provide basic information about the bombing, the nature of the weapons and their effects.

Second, to discuss the military and political contexts in which the principal actors - the US, Japan and (to a lesser extent) the USSR - made the decisions they did, and to consider issues of timing.

Third, to address the question as to whether the atomic bombing of Japan can reasonably be considered (in the context of the times) to have been a military necessity to secure an earlier peace and prevent enormous casualties in an invasion of the Japanese home islands, or whether it was a cruel and gratuitous use of force on a prostrate and beaten enemy.

There is also some material about the Australian role in the surrender.

Bombing Hiroshima and Nagasaki

On the morning of 6 August 1945 three American B-29 long-range bomber aircraft flying from a base on the Pacific island of Tinian approached the Japanese city of Hiroshima. Despite massive American supremacy over most of Japan, Hiroshima - with some other cities including the ancient Japanese capital of Kyoto, one of the world’s cultural treasures, and also Nagasaki - had been spared bomber attack over the preceding months.

The people of Hiroshima had no way of knowing that one reason for their immunity to attack was the desire of the United States military to preserve some pristine targets for a new type of weapon - the atomic (or fission) bomb.\(^2\) Nor could they know that the small formations (one to three aircraft)

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1. The Soviets and Japan had a Neutrality Pact and were at peace until Moscow declared war on Japan in August 1945.

2. Annex A provides basic information about nuclear weapons.
frequently seen over the city in recent times, and which the populace had come
to ignore as harmless, were practising approaches and exits from Hiroshima
airspace. Thus, when air-raid sirens sounded in Hiroshima on August 6 and
three enemy aircraft were spotted, most people remained unconcerned and went
about their business as normal. Indeed, Hiroshima radio, while suggesting
people take cover, said that the enemy aircraft appeared to be engaged in
reconnaissance.³

At 8:15am one of these aircraft, named Enola Gay after its commander’s
mother, was seen by observers to drop one object. About a minute later, after
the object had fallen from thirty thousand feet (about 9100 metres) to 1800 feet
(540 metres), a barometric pressure device activated the detonating mechanism
and the first nuclear weapon to be used in anger, a uranium bomb nicknamed
"Little Boy", went off.

Hiroshima was to all intents destroyed in an instant by a combination of heat,
blast and the subsequent fires. Of its 343 000 population, about 78 000 were
killed and a further 51 000 injured or missing. About 48 000 of 76 000
buildings in Hiroshima were destroyed and 22 000 severely damaged. Nearly
180 000 people were made homeless.⁴

So severe was the devastation, and so thorough the infrastructure destruction,
that it was at least a day before the Government in Tokyo got any clear idea
of what had happened in Hiroshima. In the interval, Japan was further
shattered by the Soviet declaration of war. Shortly thereafter (9 August) it had
to assimilate as well the news that a fate like Hiroshima’s had also befallen
Nagasaki.

Nagasaki was attacked with a plutonium bomb called "Fat Man". Due to a
navigational error, this weapon was dropped off-target and part of the city,
shielded by hills, was spared the worst effects. Nevertheless, 35 000 people
were killed and a large part of the city destroyed.⁵

³ The Reports of General MacArthur, Volume II Part II, "Japanese Operations in the South
West Pacific Area", p.706. This volume, prepared under the authority of MacArthur’s
Occupation Headquarters, is wholly based on original Japanese source material. As no
other volume of this work is used in this paper, it is hereafter cited as MacArthur
Reports.

⁴ MacArthur Reports, p.706. As might be expected given Japan’s chaotic state this late in
the war, records were not always accurate and casualty estimates are imprecise. Another
source, a United Nations Comprehensive Study of Nuclear Weapons (UN General
Assembly paper A/35/392, 12 September 1980) gives Hiroshima fatalities as "about
70,000" (para 162). This UN paper is hereafter cited as UN: Nuclear Weapons Study.

gives Nagasaki fatalities as 40 000.
The yield of the weapon dropped on Hiroshima was about 13 kilotons, on Nagasaki about 22 kilotons. A kiloton is a thousand tons of TNT. In both cities there were of course thousands of cases of medium to long-term radiation-caused sickness among the survivors.

**Japan’s military situation in mid 1945**

**Admiral Yamamoto’s prediction**

In 1941 Japan’s original intention in attacking the US and UK was not, as is sometimes thought, to defeat Britain and America. Japanese strategists well knew that their resources were no match for those of their potential enemies. But they calculated that, with their principal antagonists embroiled with Nazi Germany, Japan would stand a good chance of fighting the Allies to a standstill in the Pacific and then making an advantageous peace. Only Admiral Yamamoto, who had lived in the US, was doubtful about this approach, warning that he could "put up a tough fight for the first six months, but I have absolutely no confidence in what would happen if it went on for one or two years."\(^6\)

Yamamoto’s judgement was vindicated, though he did not survive the war.\(^7\) By mid 1945 Japan was far down the road to total military defeat. With the final defeat of Nazi Germany, the European surrender being signed on 8 May 1945, the complete and fully mobilised resources of the United States, Britain and the other Allied powers were free for redeployment against the Japanese, who had proven unable to hold off substantially smaller forces up to that time.

**Destruction of Japanese sea and air power**

Japan’s naval and air power was almost totally destroyed by mid-1945 and most of its merchant fleet was on the ocean bottom. Much of the Army, though still intact, was effectively cut off from the homeland by enemy sea and air power. In many cases the Japanese held onto their early conquests but because of the complete destruction of sea and air communications their forces, as at Rabaul on the island of New Britain, were essentially "self-managed prison camps" of no real military significance. Only in China did Japan have substantial military power outside the home islands.

Of the three major industrial complexes in Japan, Tokyo-Yokohama was 56 per cent burnt-out as a result of Allied incendiary air raids, Nagoya was 52 per cent destroyed and 57 per cent of the Osaka-Kobe complex was likewise

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\(^7\) He was killed when his aircraft was shot down in April 1943.
gutted. "It became almost impossible to move material or commodities either from the [Asian] continent or between ports in Japan itself." 8

Japanese industry was grinding to a halt as essential raw materials ran out. Imports of coal from China were cut off by enemy air and sea power and production from Japan's own mines could not be moved. As a result, by July 1945 iron, steel and carbon steel production was only 35 per cent of its wartime peak, while production of key chemicals used for explosives in the quarter ending June 1945 was only 43 per cent of that for the same quarter of 1944. And the situation with oil was worst of all: by the end of June 1945 Japan's net acquisition of oil was only a quarter of what it had been at the wartime peak of July-September 1943. The national oil reserve was only eight percent of what it had been in December 1941, when a US oil embargo had helped tip Japan towards war. At the same time, Army ordnance industries were producing at about 45 per cent of wartime peak and Navy facilities at 55 percent. Only aircraft production was maintained at reasonable levels, something which facilitated the use of aircraft in kamikaze attacks. 9

**Strong Japanese resistance: Iwo Jima and Okinawa**

Even in these difficult conditions, Japanese ground forces put up strong resistance when assaulted. As the American "island hopping" strategy brought them closer to the Japanese homeland, enemy resistance stiffened even as their resources shrank.

The Pacific island of *Iwo Jima*, garrisoned by twenty thousand crack Japanese Marines, was assaulted by US amphibious forces on 17 February 1945. The ensuing battle, which went on for a month, cost the Americans six thousand dead and twenty five thousand wounded. Of the Japanese garrison only 216 were taken alive. 10

*Okinawa* is a large Pacific island, about 100km long, and was part of Japan's prewar sovereign territory. Desired by the Allies as a base for bombing Japan and a jumpoff point for later invasion of the home islands, it was garrisoned by well over 100 000 Japanese troops.

The Americans landed on Okinawa on 1 April 1945. The Japanese commander did not oppose the landing, withdrawing his forces to carefully prepared positions in the southern third of the island, where the terrain was good for defence. His strategy was to allow the Americans ashore and engage their ground forces on favourable terms in a battle of attrition. Meanwhile, *kamikaze* aircraft would attack the US fleet off Okinawa hoping to stem the

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8 *MacArthur Reports*, pp.613-14.

9 *MacArthur Reports*, pp.615-17, and 631 (re aircraft production).

flow of supplies and reinforcements ashore. These suicide aircraft inflicted serious losses on the fleet but failed to cut off the US forces ashore. Meanwhile the Japanese Navy sortied in support of Okinawa but suffered a disastrous defeat, including the loss of the most powerful warship then afloat, the *Yamato*.

The struggle for Okinawa went on until 22 June 1945. At its end, the Japanese had about 130 000 fatal casualties, though for the first time in the war there were large surrenders, with about 11 000 laying down their arms. Sixteen Japanese warships and more than eight hundred aircraft, mostly *kamikaze*, were lost.

Allied ground losses were more than 7300 dead (including the ground force commander) and almost 32 000 wounded. The fleet lost 34 ships to *kamikaze* attacks and nearly five thousand sailors died. Over 760 aircraft were lost.11

The horrendous casualty rates in these two operations could not but affect future Allied thinking when it came to the question of mounting an invasion of the Japanese home islands.

**Invading Japan: plans on each side**

**Japanese plans to resist an invasion**

In mid-1945 both Japan and the Allies assumed that there would be an invasion of the home islands. By July 1945 the Japanese had drawn up detailed plans for the defence of the southernmost home island, Kyushu, and for that of the strategically important Kanto plain on the main island of Honshu.

Japanese planners assessed that the most likely initial target of an American invasion would be Kyushu, and began concentrating forces and preparing defensive positions there. But, after that,

...the consensus was that, so long as Japan was resolved to resist to the end, the final battle would be on the plains of Kanto, since it was not only the political and strategic center of the nation, but also the most favorable area for the deployment of enemy armoured and mechanised equipment.12

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11 Both sides’ losses from Costello, *Pacific War*, p.578.

12 *Macarthur Reports*, p.636.
Therefore, it was assumed that the invasion of Kyushu would be followed by that of the Kanto plain. Maps showing the planned Japanese dispositions, and their assessment of Allied plans, are attached at Annex C.\textsuperscript{13}

Japanese Imperial General Headquarters (IGHQ) summed up its situation in mid-1945 as follows:

\begin{itemize}
  \item a. The enemy is mustering enormous and overwhelming military strength for use against Japan, and the issue will be joined between now and next [northern] spring.
  \item b. Although Japan is faced with an exceedingly precarious strategic situation, there are certain circumstances that are working to her advantage.
    \begin{enumerate}
      \item While the end of the war in Europe has given the United States a comfortable reserve of national war potential, industrial mobilization and reconversion have already begun due to the desire to grab quick postwar profits.
      \item The fighting morale of the United States is being weakened by the fear of large casualties.
      \item There has been an increase in [US] labor strife, criticism of the military, and agitation from the ranks to engage in a precipitous demobilization.
    \end{enumerate}
  \item c. Should the United States be defeated in the battle for Japan itself, public confidence in the President and the military leaders will decline abruptly, fighting morale will deteriorate in the flurry of recriminations, and Japan will be placed in a much more favorable strategic position.\textsuperscript{14}
\end{itemize}

Japanese strategy was thus to exploit the perceived American concern about huge casualties and attempt to inflict as many as possible on an invading force, hopefully forcing a withdrawal and subsequent moderation of peace terms. On such desperate measures was the once powerful Japanese Empire now obliged to depend if military resistance was to remain national policy. But IGHQ was right to the extent that it correctly assessed the impact of the Okinawa and Iwo Jima operations, with their high US casualty rates, on Allied planning. If Japan had any hope of achieving favourable peace terms, it seemed to lie in exploiting this US concern. But what Tokyo did not know was that the United States had another option which would not involve any risk of serious Allied losses: this option would render the sacrifices of the defenders of Okinawa and Iwo Jima not only futile but, in the end, disastrously counterproductive.

\footnotesize

\textsuperscript{13} Source for all three maps: \textit{MacArthur Reports}.

\textsuperscript{14} Quoted in \textit{MacArthur Reports}, p.641.
Allied invasion plans

The Japanese assessment of Allied intentions quoted above was remarkably prescient. On 1 December 1944 the US Joint Chiefs had adopted policy for the future conduct of the war against Japan. This said:

The concept of operations for the main effort in the Pacific is:

A. Following the Okinawa operations, to seize additional positions to intensify the blockade and air bombardment of Japan in order to create a situation favourable to:

B. An assault on Kyushu for the purpose of further reducing Japanese capabilities by containing and destroying major enemy forces and further intensifying the blockade and air bombardment of Japan in order to establish a tactical condition favourable to:

C. The decisive invasion of the industrial heart of Japan through the Tokyo [Kanto] Plain.\(^\text{15}\)

The Allied conventional military plan, then, was in the broad exactly as the Japanese expected: a preliminary invasion of the southern island of Kyushu, followed up by a decisive assault on the Japanese heartland, the Kanto plain on Honshu. That this anticipation would have helped the Japanese defence is undoubtedly true; but given the massive Allied superiority, admitted by IGHQ, the effect would only have been to delay the inevitable. But this, of course, was the essence of Japanese strategy: inflict enough casualties and perhaps better terms could be obtained.

Forward estimates of casualties are always dubious; nevertheless the Americans, with Iwo Jima and Okinawa behind them by July 1945, had to reckon on potentially heavy losses in an invasion of the Japanese homeland. Although some thousands of Japanese soldiers surrendered at the end on Okinawa - for the first time - there was no guarantee that this would occur on the main Japanese islands, or that if it did it would happen before the Allies had taken serious losses.

At the same time, it is clear that the Allies, had there been no nuclear option available, would have mounted a final invasion to put Japan out of the war and accepted the cost of so doing. It was simply the case that the option was available and, to the war-weary Allies, offered a chance to save the lives of their troops. What the long-term costs of this option might be was something much less concrete and more difficult to assess.

Some other options were considered. US Army Chief of Staff General George C. Marshall canvassed the use of chemical weapons in an invasion of Japan.

He suggested that areas to be assaulted be "saturated with mustard gas" while the US forces "just stand off [the coast]". He recognised the adverse public relations consequences of such action, although he considered that chemical weaponry was "no less humane than phosphorous or flame throwers [used extensively in the Pacific] and need not be used against dense concentrations of civilians."\(^{16}\)

### The Soviet Union: joker in the pack

The Soviet Union and Japan had signed a five year Neutrality Pact in April 1941. This would expire in April 1946 and, significantly, in April 1945 the Soviets informed Japan that they did not propose to renew the pact when it expired.

Nevertheless, the Pact was expected to remain in force throughout 1945 and the Japanese considered that they could use their continuing diplomatic relations with Moscow as a conduit to the Allies.

The Soviets of course were partners of the United States and Britain in the war against Hitler. Unbeknownst to the Japanese, at the February 1945 "Big Three" (Roosevelt, Churchill, Stalin) meeting at Yalta in the Crimea, it was agreed between US President Roosevelt and Stalin that the Soviet Union would enter the war against Japan three months after the final surrender of Nazi Germany.

In fact the Western Powers had secured Stalin’s agreement in principle to joining the Pacific War as early as 1943, but not until Yalta was a definite commitment, with a date, given.\(^{17}\) On this occasion, unlike many others, Stalin was to prove as good as his word.

After the Nazi defeat (8 May 1945), relations between the Soviet Union and the western powers began to deteriorate as Stalin established Soviet domination in several eastern European countries. There were exchanges between Roosevelt and Stalin over Soviet policy in Poland, and strong words between President Truman (Roosevelt had died on 12 April 1945) and Soviet Foreign Minister Molotov when the latter visited the US. In this climate, western enthusiasm for Soviet participation in the war against Japan began to fade.

Stalin’s, however, was increasing in inverse proportion to that of his nominal allies. The full capacity of the trans-Siberian railway was used to shift experienced Soviet combat units from Europe to the Soviet-Manchurian border, and Stalin initially intended to commence operations in September 1945. Concerned, however, that the Pacific War might have ended by this time, he

\(^{16}\) Costello, *Pacific War*, p.579.

advanced the date to 1 August. But his generals informed him that it was not possible to launch an offensive by this date, and it was finally decided to strike on 8 August.18

The path to use of the bomb

While these developments were unfolding, however, other events were moving in parallel. First, in mid-June 1945 the peace party in Japan secured a decision to approach the Soviets with a view to obtaining "mediation" between Japan and the West. This was not, however, an offer to surrender and in any case the Soviets stalled and obfuscated. Second, on 16 July 1945 the US successfully tested its first plutonium bomb. Stalin was informed personally of this development - albeit in vague terms19 - by Truman at the last Big Three meeting (Potsdam, July 1945). With nuclear weapons available, the western powers now saw an opportunity to end the war against Japan without a bloody invasion - in Truman’s words, an Okinawa "from one end of Japan to the other".20 Moreover, it might be possible to defeat Japan without the increasingly alarming prospect of Soviet armies overrunning large areas of Japanese-held China and Korea.21

"Unconditional Surrender" and the Potsdam Declaration

The Allied demand for both Germany and Japan was "unconditional surrender". This was first articulated by President Roosevelt after his Casablanca meeting with Churchill in January 1943. Though Roosevelt later said that this was a spontaneous utterance, and Churchill claimed that he heard the words at Casablanca "with some feeling of surprise", it appears that the demand was in fact premeditated.

On 18 January 1943 at Casablanca Churchill suggested privately that "unconditional surrender" be included in the conference final communiqué; Roosevelt, when speaking after Casablanca, spoke from notes in which the words appear several times, showing that it could not have been entirely spontaneous.22


19 He was told that the US had a new weapon of "unusual destructive power" and replied that he hoped that good use would be made of it against the Japanese.

20 Costello, Pacific War, p.582, quoting US official sources.

21 Costello, Pacific War, p.584.

22 Bauer, History of World War II, p.335.
Critics of the unconditional surrender demand argue that it only stiffened enemy resolve to fight on by confronting Germany and Japan with the prospect of being utterly at their foes' mercy.

In any case, Germany did surrender unconditionally in May 1945, leaving Japan alone. It was decided by the UK and US at Potsdam (the Soviets still being neutral vis-a-vis Japan at the time) that a declaration should be issued making the Allied demands crystal clear.

The Potsdam Declaration of July 26, 1945 called for the "unconditional surrender of all the Japanese Armed Forces", and committed the Allies to a range of measures. These included demilitarisation of Japan, end of Japanese military occupations outside Japan, Allied occupation of parts of Japan and, significantly, the creation of a new post-occupation Japanese Government "in accordance with the freely expressed will of the Japanese people." It promised repatriation of Japanese troops abroad, said that the Japanese would not be "enslaved as a race or destroyed as a nation" but warned of "prompt and utter destruction" if surrender was not quickly forthcoming. In Tokyo it was noted that the declaration demanded unconditional surrender of the armed forces (as distinct from the state), and that it allowed the Japanese people to choose their future form of Government. This last was seen as significant by ruling circles, because it was believed that the people would of course wish to retain the Emperor.23

The Tokyo Government was divided over how to respond to the Potsdam declaration. Hard-liners urged its rejection, and demanded that it be suppressed in Japan lest it undermine "fighting spirit". The peace party argued that it should be neither accepted nor rejected in public, and that its terms be further explored with the enemy via Soviet mediation. In a dubious compromise, it was decided to publish an edited version of the declaration in Japan and to downplay the document in the press. The controlled press therefore reported that the Government was "paying no attention to the enemy pronouncement, which appeared to be a propaganda device designed to drive a wedge between the military and the Japanese people."24 This reaction to the Potsdam declaration was, however, interpreted in the west as an offhand rejection, and made it appear that Japan was determined to fight on.

The Japanese were fatally misled by their belief that Soviet mediation was a practicable option as late as the Potsdam Declaration. They had in fact ordered their Ambassador in Moscow to see Molotov before he (Molotov) left for Potsdam but the Soviet Foreign Minister, for reasons already noted, was not prepared to make himself available. They did, however put proposals before a subordinate official, who promised to forward them to Molotov at Potsdam (see pp.11-12, below).

23 MacArthur Reports, pp.702-3.
The American decision

Once it had become clear that the atomic bomb project was likely to produce a useable device, President Roosevelt set up a committee under Secretary of War Stimson, and including the brilliant nuclear scientist J. Robert Oppenheimer, to advise him as to the use of this weapon. Some of the nuclear scientists were in favour of using the bomb but opinion was divided, with those favouring a demonstration making submissions to the committee. Roosevelt died before Stimson’s committee reported on 1 June 1945, and its recommendations were dealt with by Truman.

The committee considered a wide range of options, including issuing a warning to Japan and demonstrating the bomb. But it unanimously found that it could "see no alternative to its direct military use" and that it could "propose no technical demonstration likely to bring an end to the war." It recommended that the weapon "be used against the enemy as soon as it could be done."25

A warning to Japan without a demonstration was considered pointless; the Japanese would have no reason to believe. But a demonstration was also risky. On 1 June 1945 the Americans had only one uranium bomb and no assurance that the plutonium weapon would actually work. As Annex A notes, nearly all the US weapons-grade uranium went into the Hiroshima bomb. If they had demonstrated their only uranium bomb the US could not have replaced it for some time. The plutonium bomb could not be demonstrated to the enemy until the Americans were themselves sure it would work. A failed demonstration might have disastrous consequences in stiffening Japanese resolve and discouraging them from believing any future Allied threats or warnings.

The Stimson Committee’s recommendation was accepted by Truman at a White House meeting on 18 June 1945. After this time, Japan’s fate was sealed unless it surrendered before the bomb was ready for use.

Japanese deliberations in the last weeks

War and peace parties

The deterioration of Japan’s military position was increasingly obvious as 1945 went on, and this added strength to the party in Japanese ruling circles which sought a termination of the war. But these were opposed by a hard-line group to whom surrender was unthinkable, or who believed that better terms could be obtained if Japan fought on, threatening the Allies with heavy losses. War Minister Anami was prominent in this faction. The equivocal Japanese response to the Potsdam declaration had arisen out of a compromise between these groups. Moreover, both of them thought that Soviet mediation was a

25 Costello, Pacific War, p.581.
possibility, as demonstrated by the Japanese proposal to Moscow, just prior to Potsdam, to end the war without unconditional surrender "on broad terms of compromise, so long as its [Japan's] honor and existence are guaranteed."26

From mid-1945 onwards the war and peace factions manoeuvred for position, putting forward various schemes and options, while a public facade of resolute unity was maintained. But no resolution could be found to their differences.

Publication - even in edited form - of the Potsdam text in Japan added strength to the peace faction, although the military and Anami remained adamant advocates of no surrender. Significantly, however, Navy Minister Yonai was becoming less intransigent as his Service almost ceased to exist. But both sides were awaiting a Soviet response to the proposals put just before the Potsdam conference. They were still waiting when the bomb exploded over Hiroshima, and the next day received a Soviet response in the form of a declaration of war.

The decision to surrender

Hardly had the Japanese realised what had happened at Hiroshima, and assimilated the fact that they were now at war with the Soviets as well, than they had to adjust to the destruction of Nagasaki by a second atomic bomb. Even now, some hard-liners held out against surrender, arguing that a guarantee of the Emperor system be sought, and that a military occupation of Japan could still be avoided; this kept the Government deadlocked. At this point, however, Emperor Hirohito intervened and told a meeting of the Supreme War Council that "the time has come when we must bear the unbearable". The Government finally agreed to this on 10 August. A message was sent to the enemy powers via neutral Sweden and Switzerland, that Japan would accept the Potsdam terms "on the understanding that the said declaration does not comprise any demand which prejudices the prerogatives of His Majesty [the Emperor] as a Sovereign Ruler."27 To this the Allies responded - after some difficulty with the Australian Government, which harboured a powerful hatred of Hirohito (see Annex B) - that from the moment of surrender "the authority of the Emperor and the Japanese Government shall be subject to the Supreme Commander of Allied powers."28

This was enough for Japan: the Emperor would be retained. Although a small minority of junior officers unsuccessfully attempted a coup in Tokyo on the night of August 14-15, seeking to prevent the Emperor's pre-recorded message

26  MacArthur Reports, p.705.
27  MacArthur Reports, p.715.
28  Costello, Pacific War, p.594. Note that some other versions give the text as: "the authority of the Emperor and the Japanese Government to rule the state shall be subject to..."
to the Japanese people being broadcast, Japan surrendered on Allied terms as from 11:00pm, 14 August 1945. Hirohito’s broadcast went ahead the next day as planned. Thereafter the problem of Japan was one of postwar justice and reconstruction.

Conclusions: victims of culture and timing

The bombings of Hiroshima and Nagasaki were among the most terrible events of the Second World War. But if the yardstick is to be the horror, death and destruction involved, there were even worse things perpetrated by the Allies. More people (about 100,000) died in one night in the incendiary bombing of Tokyo in March 1945 than at either Hiroshima or Nagasaki. The destruction of Dresden by conventional bombing in February 1945 killed perhaps 100,000 people. And of course these figures are as nothing when compared with the mass murders committed by the Nazis and Japanese against the Jews and Chinese, respectively.

The atrocious fatality figures at Hiroshima, Nagasaki, Dresden, Auschwitz and Nanking (to name only a few) recall to mind the famous comment of US Civil War General Sherman, when reproached for his burning of the Confederate city of Atlanta in 1864, that "war is cruelty". World War II certainly validated that comment.

Culture

The United States, it should be recalled, was gratuitously attacked by Japan in December 1941, and remember Pearl Harbor was a propaganda cry for the rest of the war. The US thus felt itself to be the victim, and as such considered that it had the right to respond militarily in any manner it chose. The cultural context includes a belief that an innocent victim of aggression has a right to retaliation.

Without doubt, the high cost of the operations on Iwo Jima and Okinawa, more than any desire for vengeance, weighed heavily in the balance when the decision to use the bomb was made. Fighting from one end of Japan to the other against a foe that preferred death to surrender, and to take an enemy with him into death, could only horrify military leaders brought up in the western tradition, where surrender in a hopeless position is an honourable course. The unwillingness of the Japanese to see surrender in these terms - in other words, a cultural difference - cost the Americans heavily, but in the end cost Japan more.

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29 Costello, Pacific War, p.552.

Timing

For a variety of reasons the timing of various events and processes leading up to the bombing of Hiroshima conspired against the Japanese.

One factor was the progress of the American atomic bomb project. Not until the test on 16 July 1945 did the US have more than one bomb at its disposal, because the plutonium bomb design had to be tested and this could not be done any earlier than it was, and only one uranium bomb was available.

A second was the course of the Pacific War itself. By the time of the first nuclear test, the US had already taken heavy losses on Iwo Jima and Okinawa, driving home fears that an invasion of Japan itself would prove very expensive in American lives.

Another was the progress of the war in Europe and of events immediately after the German surrender on 8 May 1945. At Yalta (February 1945) the Allies were anxious to bring the USSR into the war against Japan, so as to maximise the military power which could be used and, hopefully, minimise overall losses. Stalin had agreed to enter the war three months after VE Day. But in the period following Hitler’s defeat the seeds of the Cold War were taking root and mistrust of Soviet intentions was increasing. Therefore a desire to terminate the war before Stalin could enter it began to grow among US decision-makers.

In a process parallel to what was happening in the west, Stalin became increasingly suspicious of his nominal allies and looked to improve the Soviet position in the Far East, especially in Manchuria and Korea, by entering the war against Japan. He knew that the Japanese were on the brink of defeat, and pushed his generals to expedite preparations. But the USSR had only the single-track trans-Siberian railway to move huge numbers of men and large quantities of materiel to the east; it took them all of Stalin’s promised three months to be ready to attack Japan.

The other key factor of timing was the rate at which the Japanese peace party could erode the political influence of its militarist opponents. Because of the exceptionally strong Japanese aversion to the humiliation of surrender, this was a slow and painful process. Not until mid-June did Japan attempt to gain Soviet mediation, a course which (though Tokyo could not know this) was doomed to failure no matter how sincere Japanese intentions. But in fact at this stage Japan was not willing to contemplate surrender terms of the type she eventually accepted. Indeed, it took not only the atomic bomb and the Soviet declaration of war, but the personal intervention of the Emperor himself, to break the deadlock.
Should Nagasaki have been bombed?

Finally, it is appropriate the consider whether the bombing of Nagasaki was supportable. It can be argued that Hiroshima should have been sufficient, and that the attack on Nagasaki was not required. Immediately after the Hiroshima bomb, the US announced publicly what it had done and said:

It was to spare the Japanese people from utter destruction that the ultimatum of July 26 was issued at Potsdam. Their leaders promptly rejected that ultimatum. If they do not now accept our terms they may expect a rain of ruin from the air the like of which has never been seen on this earth.31

US Secretary of State Byrnes recalled:

We were hoping that the first bomb would bring to their senses the members of the [Japanese] war party...and hoping hour after hour that we would hear they had surrendered. But as time went by when it would be possible for us to stop the dropping of the second bomb, there was no evidence that the peacefully inclined people...could influence the action of the government... It seemed to us imperative that we stand up to our promise to continue to bring them to the realisation that we meant what we said.32

Forecasts of several days adverse weather over Japan meant that the second bomb had to be used either at once or delayed for perhaps a week. The field commanders, having no orders to the contrary from Washington, proceeded to use the second bomb against Nagasaki before the weather closed in.

In fact, the second bomb was to be dropped on the city of Kokura; Nagasaki was the "backup" target. But on August 9 Kokura was blanketed by cloud, and so the aircraft proceeded to Nagasaki. Visibility was poor there as well, but just good enough to allow a drop. But the poor conditions probably caused the navigational error which saved Nagasaki from the worst of the bomb's effects.

However even after the Nagasaki bomb, the younger hard-line militarist officers still attempted to stage a coup to prevent the surrender going ahead.

Necessity or Atrocity?

In what amounts to the normal justification for use of the bomb against Japan, Winston Churchill told the House of Commons on 16 August 1945 that he was "surprised":

32 Giovanniti and Freed, The Decision to Drop the Bomb, p.270.
that very worthy people, but people who in most cases had no intention of proceeding to the Japanese front themselves, should adopt the position that rather than throw this bomb, we should have sacrificed a million American, and a quarter of a million British lives in the desperate battles and massacres of an invasion of Japan. Future generations will judge these dire decisions, and I believe that if they find themselves dwelling in a happier world from which war has been banished, and where freedom reigns, they will not condemn those who struggled for their benefit amid the horrors and miseries of this gruesome and ferocious epoch.\textsuperscript{33}

Whether the atomic bombing of Japan can be justified in moral or ethical terms as a legitimate requirement of war, or whether it was an unnecessary and excessive use of force against an opponent obviously on the verge of defeat, are questions people are much more likely to ask with the benefit of hindsight, though Churchill’s comment shows that it was first asked within days of Hiroshima and Nagasaki. If this question is to be addressed fairly, it should be addressed in the context of the time and the knowledge then available to American decision-makers, rather than with that now available.

It needs to be remembered that when the decision to use the bomb was made, nobody had any real idea of the effects, short or long term, of a nuclear explosion on a city. That it would be very destructive and cause heavy casualties was obvious enough, but given the history of strategic bombing in World War II, where whole cities had already been destroyed by non-nuclear raids, this was unlikely to be an overriding concern.

Furthermore, the unwillingness of Japanese forces in the field to surrender even when in a hopeless position was well-established fact by 1945, and Japan’s opponents had no reason to believe that the Japanese Government would behave any differently when confronted with an invasion of the homeland. Indeed, the apparent Japanese rejection of the Potsdam declaration (cited by the US in its post-bombing statement quoted above) would have reinforced this perception. It was easy to conclude from all this that the application of overwhelming military power would force Japan to accept unconditional surrender.

This being so, the question became one of what type of military power might be applied to this end. Prior to the development of the atomic bomb, this would have meant mounting a conventional invasion of Japan or, perhaps, resort to other ill-favoured means such as the large-scale use of mustard gas canvassed by General Marshall.

Iwo Jima and Okinawa suggested to US planners that the Japanese homeland might be defended inch by inch by fanatical troops (and perhaps even civilians) only too happy to die if they could take an American with them. They knew that an invasion would ultimately succeed; but they feared the cost and sought alternatives. The bomb became this alternative.

Also, as relations with Stalin's USSR became more strained, western leaders felt under pressure to end the Pacific War quickly in order to forestall the Soviet intervention they themselves had once eagerly sought. Nothing but the atomic bomb appeared capable of achieving this in a matter of days or at most weeks. It was this pressure, no doubt, which resulted in the use of the second bomb on Nagasaki. It was, it will be noted, less than a month after the first nuclear test that the bombs were used, and less than a week after its use that Japan surrendered.

Questions of morals and ethics rarely attract broad consensus. But it is this writer's view that given their circumstances and knowledge at the time, the Americans really had little choice but to use their new and powerful weapon in the hope that by ending the war quickly, even at the appalling cost that this course demanded, they would in the long run save lives. Not only Allied lives but also those of thousands of Japanese soldiers and civilians who would have died had it been necessary to conquer Japan by conventional invasion. Atrocious as the effects of the bombs were, their use was not an atrocity but a military decision justifiable by the situation at the time. Parenthetically, and by way of comparison one might speculate whether acts such as the destruction of Dresden would stand up to a similar analysis.
Underlying all nuclear weapons is the discovery of Albert Einstein early this century that "matter" and "energy" are two forms of the same thing and that they are, under some circumstances, interchangeable. Einstein discovered that even a very little matter, if converted, yields a vast amount of energy in return. It is this relationship which makes nuclear weapons work.

There are two known ways in which it is possible to convert matter to energy. Nuclear fission is one, nuclear fusion the other. Bombs relying on fission are called fission weapons, atomic bombs or A-bombs, while those which use fusion are known as fusion weapons, hydrogen bombs or H-bombs. Fusion bombs are a postwar development not further discussed here. The fission bomb was developed by the US Manhattan Project during World War II.

Fission Bombs

The first way discovered of releasing energy by conversion of matter was through "splitting the atom", or nuclear fission. It was found that atoms of certain heavy elements particularly uranium and plutonium if bombarded by small subatomic particles known as neutrons would actually split, yielding two smaller atoms. Importantly, it was also found that the total mass of the smaller atoms, plus any other pieces from the reaction, added up to less than that of the original uranium or plutonium atom. The missing matter is converted to energy, and this is the source of the bomb's power.

Researchers found that for useful energy to be released, it was necessary to assemble a certain mass of "fissionable material" (an isotope of uranium or plutonium). Below this mass (the "critical mass") a would-be bomb would

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1 Einstein's famous $E=mc^2$ is the basic equation of nuclear weapons. $E$ is energy, $m$ the amount of matter involved and $c$ is the standard symbol for the speed of light (about 300 000 km per second). Thus $c^2$ is $300\,000 \times 300\,000$ or 90 billion: it is the size of this number which means so much energy released for a very small mass.

2 An isotope is a particular form of a chemical element. For example, the most common form of the element carbon is the isotope Carbon-12. This means that an atom of Carbon-12 contains six "protons" (positively charged particles) and six "neutrons" (particles with no electrical charge), the charge of the protons being exactly balanced by that on six "electrons" (negatively charged particles) which "orbit" the nucleus containing the protons and neutrons. However, archaeologists use the well-known Carbon-14 method of dating: Carbon-14 is identical to Carbon-12 except that it has an additional two neutrons in its nucleus. It is still carbon, however, because the chemical nature of an atom is determined by the number of protons in the nucleus (and the same number of orbiting electrons), not by the number of neutrons. But Carbon-14 is slightly radioactive, whereas Carbon-12 is not, and this is the key to its usefulness in archaeological dating. The best known fissionable isotopes are Uranium-235 (Uranium 238 is useful in some circumstances) and Plutonium-239.
"fizz" or fail to react at all: above it, a self-sustaining chain of fissioning atoms is set up, releasing large amounts of energy in a very short time.

A fission bomb therefore essentially consists of two or more masses of fissionable material, each of which is well below the critical mass, and some means of bringing these masses together quickly, so that the combined lump is above the critical mass. A difficult engineering feat for many reasons (a major problem being that the combined mass - the "supercritical mass" - tends to blow itself apart before enough power is released, so that a poorly designed bomb will "fizz"), the fission bomb is simplicity itself in theory.

The bombs used against Japan were of two types. The Hiroshima weapon used Uranium-235. It consisted essentially of a tube with two masses of uranium inside, each below the critical mass (subcritical masses). A TNT charge is detonated and the two subcritical uranium masses smashed together. If the two masses together exceed the critical mass, and the engineering is sound, a fission explosion will result.

The Nagasaki bomb used plutonium, created artificially by the Manhattan Project scientists. For technical reasons it proved necessary to use a different, more complex, design for the plutonium bomb. Several subcritical plutonium masses are arranged in a spherical configuration. To detonate the bomb, these masses are brought together in the centre of the sphere, creating a critical mass, and the explosion takes place. The spherical configuration gave the Nagasaki bomb its nickname of "Fat Man".

It was also found easier to create plutonium artificially in a nuclear reactor rather than painstakingly separate the useful but rare uranium isotope (U-235) from the common U-238. Almost all the American stock of U-235 was used in assembling the "Little Boy" bomb, and much time would be needed to obtain another of this type, even though as an engineering task the uranium bomb was easier to build and did not need testing. But the Nagasaki-type plutonium bomb had to be tested to verify that the design would work: until this was done the US could not be sure it had more than one workable bomb. Once the plutonium bomb was proven, the US had one uranium bomb (used on Hiroshima) and one plutonium bomb (used on Nagasaki), with a capacity to build more plutonium bombs at need (a second plutonium bomb would have been available for use against Japan by mid-to-late August).

Effects of Nuclear Explosions

A nuclear weapon detonated in the atmosphere normally produces half its energy in the form of blast and shock, 35 per cent as heat and 15 per cent as nuclear radiation (5 per cent initial, 10 per cent residual). Bomb yields are expressed as equivalent to so many thousand tons (kilotons - KT) or million tons (megatons - MT) of TNT. Hiroshima was about 13KT, Nagasaki 22KT.
The effects of nuclear explosions vary according to a number of conditions such as, whether the weapon is air or ground-burst, the terrain at the target, prevailing winds and so on. Terrain plus navigational error played a large part in keeping casualties lower at Nagasaki than Hiroshima, despite the greater yield of the Nagasaki bomb. Thus, there is no generally applicable formula for assessing the effects of an explosion on a particular target. Nevertheless, some generalisations are possible.

**Blast and Shock**

This is measured as "overpressure" in pounds pressure per square inch (psi). By way of example, a blast overpressure of only 3psi is sufficient to blow people out of modern office buildings. A one-megaton device air-burst at a height of 2000 metres will (subject to terrain) produce an overpressure of over 14 psi at a distance of 3 kilometres.

**Heat**

Most heat released by a nuclear weapon is produced and dissipated in a few seconds, but while it lasts it can be deadly. The effect is rather like bringing a small sun into being for a short period of time. A one megaton weapon air burst will produce second-degree burns (blistering the unprotected skin) at a distance of 18 kilometres in clear air.

**Initial Radiation**

This consists of gamma rays and neutrons in the first instance, though a wide variety of "secondary" radiation will be produced by interaction of the gamma rays and neutrons with material in the environment. It has been estimated that a 1MT air-burst will produce radiation sufficient to kill all people exposed out to a distance of 2.6 kilometres, and 50 per cent fatalities out to 2.8 kilometres. (This initial radiation weakens rapidly with distance through atmospheric attenuation. In fact, in the case given, most if not all people inside 2.8 kilometres of a 1MT explosion would be killed anyway by heat or blast effects and would not live long enough to die of radiation sickness.)

**Residual Radiation**

This is radiation which persists after the fireball has gone. It consists primarily of fallout - particles of radioactive material from the explosion or material made radioactive by exposure to initial radiation. Larger particles will fall out of the atmosphere (hence the term) quickly and relatively close to the site; smaller ones will be carried on the prevailing winds and fall out more slowly, thus contaminating downwind areas; the smallest particles of all will be

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3 A nuclear weapon is said to be a "ground-burst" if the fireball formed on detonation touches the ground, and "air-burst" if it does not. Ground bursts are much dirtier - i.e. produce more fallout - than air-bursts because the fireball renders radioactive anything it touches.
injected into the upper atmosphere by the mushroom cloud and may remain there for years. Generally speaking, fallout becomes less dangerous with passing time as the radioactivity decays according to the half-lives of the various elements involved. However, some radioactive isotopes produced have half-lives measured in years or decades rather than days or weeks and thus present a long term threat.

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4 The half-life of an isotope is the time taken for its radioactivity to decline by 50 per cent. Thus, Strontium-90, with a half-life of 28.1 years, will be half as radioactive at the end of this time as it was at the start, a quarter as radioactive after 56.2 years, an eighth after 84.3 years and so on.
AUSTRALIAN CABLES TO LONDON AND WASHINGTON ON THE STATUS OF EMPEROR HIROHITO

When Japan finally resolved to accept the Potsdam terms "on the understanding that the said declaration does not comprise any demand which prejudices the prerogatives of His Majesty [the Emperor] as a Sovereign Ruler", the Allies had to decide whether this was an acceptable response. The major western powers were prepared to say that this was so, but Australia was less willing to agree.

The Chifley Government first cabled London on August 10:

WE WOULD INSIST THAT THE EMPEROR AS HEAD OF STATE AND COMMANDER IN CHIEF OF THE ARMED FORCES SHOULD BE HELD RESPONSIBLE FOR THE JAPANESE ACTS OF AGGRESSION AND WAR CRIMES AND WOULD THUS DEMAND HIS REMOVAL.

Later that day the Government cabled Washington:

THE EMPEROR SHOULD HAVE NO IMMUNITY FROM RESPONSIBILITY FOR JAPAN’S ACTS OF AGGRESSION.... WE ARE OPPOSED TO THE ACCEPTANCE OF SURRENDER ON THE UNDERSTANDING WHICH THE JAPANESE ARE TRYING TO ATTACH TO THE POTS DAM TERMS.... THE PERSON OF THE EMPEROR ...[SHOULD] BE REGARDED AS AT THE DISPOSAL OF THE ALLIED GOVERNMENTS IN THE SAME WAY AS EACH AND EVERY OTHER PERSON OF THE SURRENDERING ENEMY STATE.

But in the end the United States persuaded Australia to accept the terms, by including in the Allied response to Tokyo the explicit statement that the Emperor’s authority was subordinate to that of the occupying Powers.

Note on Sources:

The cables are quoted in David Bergamini, Japan’s Imperial Conspiracy, London 1971, pp.90-91. This book is not highly regarded as an analysis of Japanese history, but the quoted cables are sourced directly to Department of External Affairs files in the Australian Archives.
Japanese assessment of Allied invasion plans

Japanese plans for defence of Kyushu

Japanese plans for defence of Honshu

All three maps are from *The Reports of General MacArthur*, Volume II Part II, "Japanese Operations in the Southwest Pacific Area", USGPO, Washington 1966. In the order given, the maps are from pages 637, 653 and 661, respectively.
PLATE NO. 155

Estimate of Allied Invasion, 1 July 1945
Plan for Decisive Battle on Kyushu, July 1945
PLATE NO. 162
Plan for Decisive Ground Battle on Kanto, July 1945