



The Flak Towers

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PRELUDE

Albeit the United Kingdom and Nazi Germany had been adversaries since Chamberlains declaration of war on September 3, 1939, large scale clashes on the ground nor in the air did not commence in earnest before the German assault on France and the Low Countries in May 1940. Up until August that same year both the Luftwaffe and the RAF had been careful not to inflict unnecessary collateral damage on each others population, but, as best could with the technology of the day, focused mainly on military objectives and targets of strategic value to the enemy.

Starting August 13, 1940, in preparation for 'Operation Seelöwe'¹, the Luftwaffe initiated a veritable war of attrition to attain air supremacy over England, targeting RAF airfields, radar stations and infrastructure as well as factories involved in aircraft production. This strategy put a heavy strain on the RAF and might have been successful had it been continued relentlessly, but, on August 24, a German bomb squad attacking harbor installations on the Thames got lost over London and by mistake dropped its ordnance on residential areas, killing nine people. Angered by what appeared to be a blatant breach of a hitherto silent understanding, Winston Churchill ordered the RAF to retaliate. The night after, a mix of two-engine Hampden and Wellington bombers totaling 95 aircraft, stretching their maximum operational radius to the limit, were dispatched on Berlin.

The term Flak is an acronym of the German word Fliegerabwehrkanone, literally; aircraft defense cannon, and the concept is of German origin. In an English-speaking environment, Flak is known as AAA or triple A, an acronym for anti-aircraft artillery, or 'Ack-Ack' (from the World War I phonetic alphabet for AA).

Hampered by intense German anti-aircraft fire however, not all bombers reached their target and the relative modest twenty-two tons payload they were able to carry between them - intended for the Siemens factories and the Tempelhof Airport - fell mostly in the northern suburbs of Wedding, Reinickendorf and Lichtenberg, causing little damage and no fatalities.

HITLER'S RETORT

While this first RAF air raid on Berlin in the night of August 25 was of little significance in terms of deaths or destruction of property, it turned out to have other, far-reaching consequences. An infuriated Hitler felt that he had lost face with his own people and demanded immediate retaliation upon the Britons; he wanted to take the war to London!



Photo 01: Firefighters cleaning up and Joseph Göbbels inspecting the modest damage resulting from the RAF raid somewhere in Berlin.

Thus, he inadvertently weakened Luftwaffe's slow, but hitherto rather successful grinding down of RAF strength, allowing this overstretched force to recuperate, reorganize and rebuild its bases. This change of Luftwaffe strategy a key factor for the sheer survival of the RAF as a fighting force and thus, notwithstanding the

staggering cost of civilian lives that would follow in the 'Blitz', a blessing in disguise that eventually would be instrumental in the years to come.

Another important reaction from Hitler to the British raid was his order for the erection of massive anti-aircraft fortifications to defend the German capital against future aerial assaults. With immediate effect, work was initiated on three locations; Friedrichshain and Humboldthain parks and in Berlin's Zoological Garden, the latter structure being operational after just six months.

These first-generation towers were sturdy fortresses, forty meters high and seventy meters square. Because of their up to three meters thick concrete walls and roofs, and because they were sporting immense firepower; impressive even by today's standard, they were considered virtually impregnable.



Photo 02: Postwar photo of the Zoo G-Tower with the guns still in place. On the right hand photo you can just make out the Charlottenburger Tor in the background.

The gun laying was assisted by radar and advanced optics, situated on the nearby control bunkers, but the battery could also fire over open sights if necessary.²

In addition to their anti-aircraft function, the towers also served as shelters for the civilian population, designed to accommodate up to 15.000 Berliners each.³ Art treasures and archeological artifacts from Berlin's museums were also stored here for safekeeping, i.e. the famous bust of Egyptian queen Nefertiti, some 3500 years old.



Photo 03: Nefertiti, one of the most famous women of the ancient world and an icon of feminine beauty. The bust is believed to have been crafted in 1345 B.C. by the sculptor Thutmose, as it was found in his workshop in Amarna. Today it is on display in the Neues Museum in Berlin.

The flak towers were largely autonomous entities with each tower having its own artisan well; its own power station with underground supplies of fuel; huge storages of ammunition, food and other necessities; its own kitchen facilities

including a bakery; dormitories for the crew and amenities for up to 15.000 Berlin citizens during air raids.

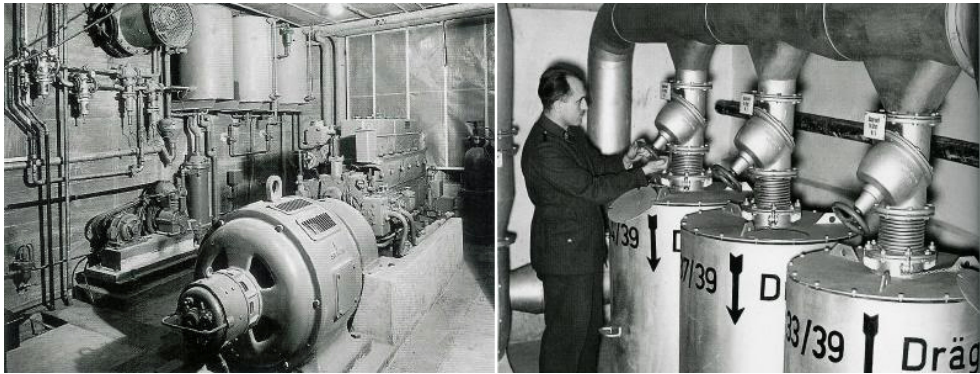


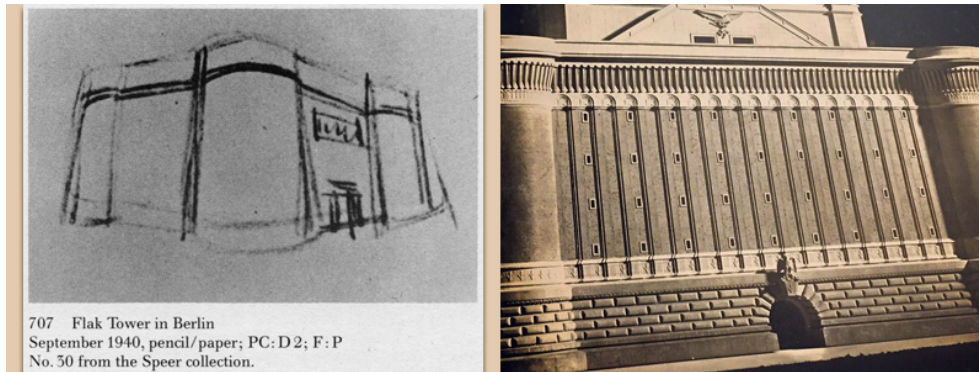
Photo 03a: Inside the Zoo tower, generator room and air purification filters

As the hostilities in Berlin ended during the day of May 2, the towers held out a little longer until the futility of persevering was clear to the commanders. Thousands of civilians emerged from each tower, some having spent more than a fortnight under appalling conditions, while the garrison became Red Army POW's.

CONCEPTION AND CONSTRUCTION

The idea of elevated gun positions was not a new one, but dated back to the infancy of military aviation. Especially in an urban environment with tall buildings, park trees, church towers and chimneys, it is mandatory for a successful anti-aircraft combat to obtain the higher ground to create unobstructed observation of the sky and a free line of fire.

It is sometimes claimed that the architect behind the Flak Towers was Hitler himself, and according to Speer it is true that he initially produced a few sketches (resembling sinister medieval castles, straight out of Tolkien), but the final design was, despite some outer similarities, much different from the Führer's plans.



707 Flak Tower in Berlin
September 1940, pencil/paper, PC: D2; F: P
No. 50 from the Speer collection.

Photo 04: Hitler's alleged sketch and the intended postwar appearance – meaning when Germany had won the war. By then the towers were to assume a new role as museums; hence the window openings, a rather unusual feature in a bunker. Here the children of 'Germania' should gaze in awe at the relics of the war their fathers fought and learn about the greatness of the Nazi State.

After much deliberation - i.e. the preliminary layout consisted of four towers, linked by underground tunnels and with a command bunker in the center - a basic concept was agreed upon. It was mandatory that the tower should 'rise above the trees of the Tiergarten' and that the fortress should be self-sufficient for a period. Further, for reasons explained later in the text, the radar and range finding facilities were to be installed away from the artillery, and tower thus became towers. Finally geography was agreed upon, and given the size and nature of the buildings and the area to protect [Government Quarter], the choice of locations was almost a given.

The design job was entrusted one of Fritz Todt's close associates; Dr. Friedrich Tamms, a seasoned architect and an expert on 'Autobahnbau' [construction of highways] and bridges, who managed within two months to present a first layout and a model to Albert Speer; at that time General Building Inspector for the Reich Capital. Speer – and Hitler - agreed in essence to the plans.

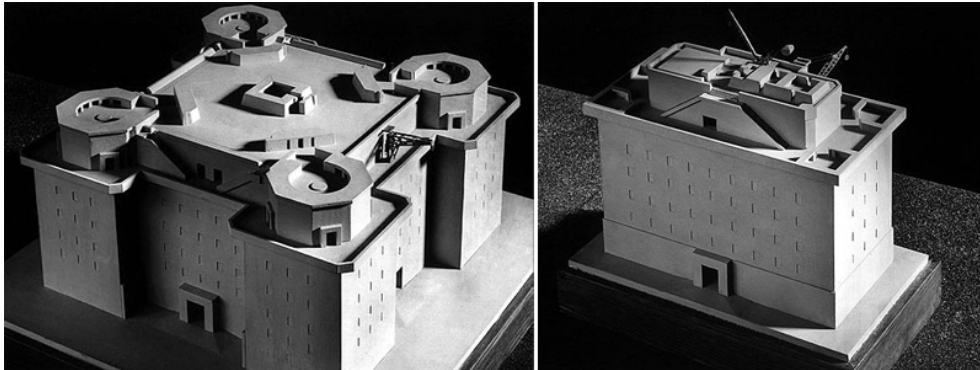


Illustration 05: Early models of the 'Gefechtsurm' [Note that there are no 'swallows nests' yet] and the 'Leitturm'. Source: Michael Foerdrowitz 'The Flak Towers'.

Some four months later, on March 6, 1941, detailed plans were ready for the contractor. The job was given top priority; even the German Railways were ordered to alter their timetables to be able to deliver 1600 tons of material every day. The men at the building site worked around the clock and barges swarmed the Spree River with materials, supplying a further 500 tons each day. When at night a British night raid was reported in progress by the radar stations in the Kammhuber-line⁴, all lights went out on the building site, giving nearby Berliners preliminary notice of what was in store even before the sirens began to wail.

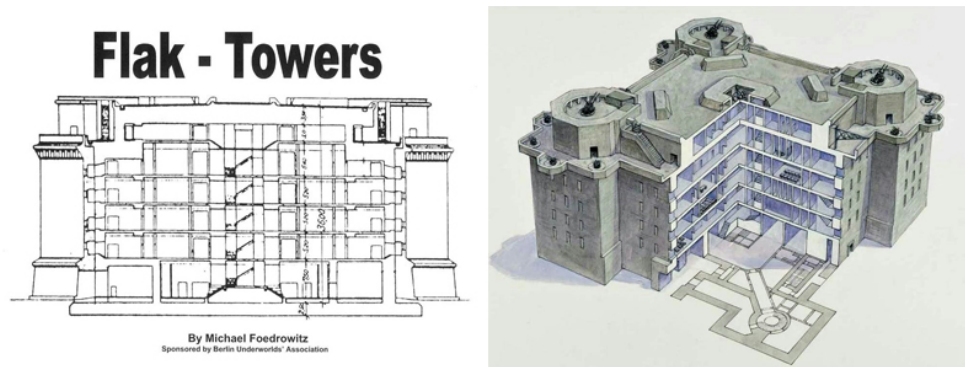


Illustration 06: Cut-through. The first-generation towers were designed to gain maximum stability through independent load-bearing properties in outer walls as well as in the inner storey partitions. With its steel reinforced concrete walls and ceiling several meters thick, all poured in one process without vulnerable joints, the outer casing was virtually impenetrable for all but a direct hit from a very large bomb. Thus, a collapse of a wall or storey partition would not affect the overall integrity of the tower, a fact clearly illustrated during postwar demolition attempts. Source left; Michael Foerdrowitz, right: weaponsandwarfare.com

The towers at the Berlin Zoo were erected in just six months. A stunning achievement considering that the construction required 78.000 tons of gravel, 35.000 tons of cement and 9.200 tons of steel along with 15.000 cubic meters of wood for the scaffolding and formwork.

HJ Flakhilfer Harry Schweizer: *“The Zoo Bunker was the most comfortable of the three big Flak-towers in Berlin. It was well equipped with the best available materials, whereas the interior fittings of the Friedrichshain and Humboldthain Bunkers had been skimped, only the military equipment being first rate. The Zoo Bunker’s fighting equipment consisted of four twin 128 mm guns on the upper platform, and a gallery about five metres lower down with a 37 mm gun at each corner, and a twin barrelled 20 mm gun in the centre of each side flanked by solo*

20 mm guns left and right. The twin 128s were fired optically (by line of sight) whenever the weather was clear enough, otherwise electronically by remote control. The settings came from the smaller Flak bunker nearby, which only had light Flak on its gallery for its defence, but was especially equipped with electronic devices. A long range 'Blaupunkt' radar was installed there and our firing settings came from a 'Giant Würzburg' radar as far away as Hannover.⁵ That bunker also contained the control room for air situation reports and was responsible for issuing air raid warnings to the public."



Photo 07: Zoo Bunker entrance area after the siren has wailed; to the left, mothers leave the prams outside as they rush to safety, the sign to the right says that 'Men, aged 16 to 70, are required for service and not allowed in the bunker'.

G-TOWER

The Gefechtsturm or combat tower, measuring 70 by 70 meters square and raising six stories - some 40 meters - above ground level, was essentially an elevated gun platform from where an array of heavy armament pounded the sky with grenades of various calibers. The ground floor had three entrances to the north, east and south, one of them large enough to accommodate ambulances and even trucks, and housed the diesel power plant and the ammunition chambers. Ammunition was transported to the gun deck by a paternoster type hoist, protected by 72 ton steel copulas with massive doors. Hitler Youth boys or foreign conscripts fed the hoist with grenades for the guns above.



Photo 08: 'Man battle-stations' has been sounded and the Flak crew rush to their positions [most likely a drill here]; the 128 mm shells start to appear at the paternoster and the gun is ready for action.

Initially it was planned to have the gun laying apparatus integrated in the G-tower, but the idea was abandoned due to the heavy muzzle smoke that would obscure the view for the rangefinder, and the tremor from the recoil [35 tons!] that might jeopardize the sensitive radar equipment. However, the G-tower *did* have an auxiliary fire control station in case the L-tower was knocked out or the connection interrupted, comprising a four meter rangefinder and a Command Device 40 for target calculations.

Harry Schweizer: *“The 128s were used mainly for firing at the leading aircraft of a group, as these were believed to be the controllers of the raid and this would cause the others to lose direction. Salvoes were also fired, that is several twins firing together, when according to the radar’s calculations, the circle of each, explosion covered about 50 metres, giving the aircraft in a wide area little chance of survival.*

When we were below on the gallery with the 37s or 20s driving off low flying aircraft, we would hear the din and have to grimace to compensate for the pressure changes that came with the firing of the 128s. We were not allowed to fasten the chin straps of our steel helmets so as to prevent injury from the blast.”

L-TOWER

The more modest-size Leitturm or control tower, measuring 50 by 23 meters, was the command bunker from where the enemy planes were detected and guns were aimed. Under normal circumstances, actual gun-laying took place from this tower whereas the crews manning the guns at the G-tower were mere feeders and troubleshooters in case of a jammed shell or similar. Some 40 meters in height, the L-tower housed a Würzburg Riese (Giant Würzburg) radar dish that could spot enemy planes up to 80 kilometers away and sink to safety 12 meters into the tower before bombs started falling.

Thus, this device did not assist in gun-laying per se but primarily provided direction and altitude of the attack wave. The radar was at a later stage fitted with equipment to counter the Allied use of “windows”, metal foil strips released from lead aircraft to jam German radar. The L-towers or control bunkers housed about one hundred rank-and-file and six officers and were protected by 20 mm and 37 mm cannons on a balcony encircling the tower.



Photo 09: The Zoo control tower in the background, seen from the G-tower. Inserted the Giant Würzburg radar that could be lowered into a 12 meter deep internal shaft as enemy planes approached.

Chaff, or windows as it was called in a British context, was a simple but initially effective radar spoofing device. Consisting of cheap and easily produced aluminum foil strips dumped from the lead aircraft, it filled enemy radar screens with a multitude of spots, thus giving the impression of numerous aircrafts.

It gave German radar operators a severe headache before the engineers came up with a ‘filter’ for the radar, allowing them to disregard the input from the tin foil.

The Zoo control tower had another important function as 'Amt 200' also called 'Zentrale 200', a substation to 'Amt 500', the telephone exchange in the mighty underground communications bunker at Zossen, south of Berlin, which connected the vast net of Wehrmacht positions throughout Nazi-occupied countries.

THE REICHSTAG AND THE SHELL HOUSE

It was briefly contemplated to turn the burnt-out Reichstag into a Flak position. It too had the medieval castle shape with a tower in each corner, but the structure was deemed unfit and hence, it remained disused until the SS turned it into a last stand stronghold during the battle for Berlin.

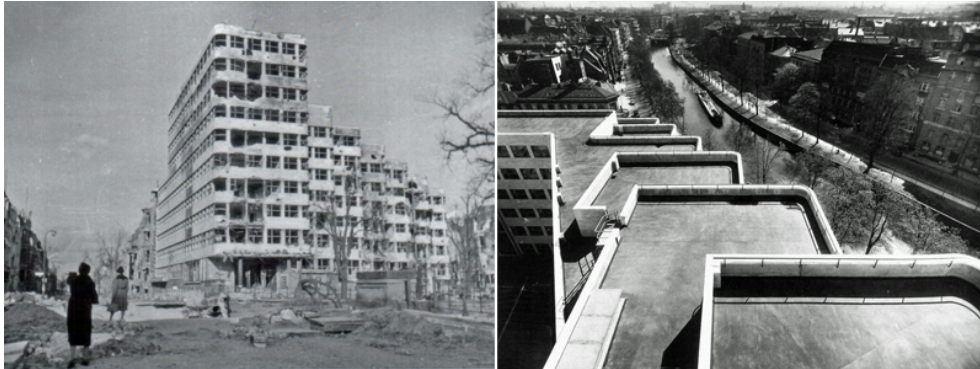


Photo 10: The flat-roofed Shell House allegedly also housed a flak battery. I have not been able to find any contemporary photos though.

The six-storey Shell House at the edge of the Landwehrkanal, on the other hand, already the seat of the Naval High Command and sporting an emergency dressing station in its cellars, was furnished with a Flak battery, but it is unclear how large and with what guns it was equipped; in all probability the trusty, Krupp-designed 88 mm.

HOSPITALS AND SHELTERS

The Zoo Tower boasted a fully equipped 95-bed hospital with eight doctors, twenty nurses and thirty aides. One tower even had a maternity ward where several new Berliners were born during air raids. Two cargo elevators could transport not only ammunition and supplies, but also patients up and down inside the tower.

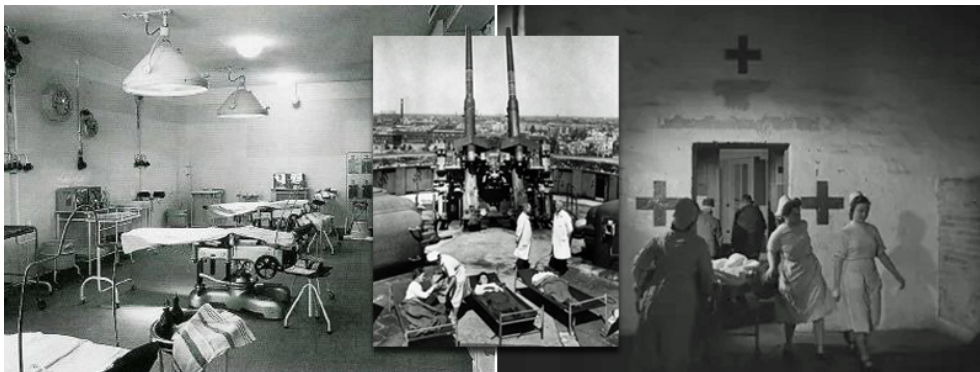


Photo 11: The Zoo Bunker Hospital. Operating theater and patients enjoying sun and fresh air on the gun platform.

The hospital and the maternity ward were situated on the third floor, which also provided space for offices, workshops and production of war material.

During the final days, the passageways of the hospital units became make-do mortuaries for the dead, the nurses and doctors fearing death themselves if they dared venture outside to bury the corpses. Buckets of severed limbs and other putrid body parts lined all the corridors.

Renowned aviatrix Hanna Reitsch spent time in the hospital after being injured during an air raid in October 1944. Appalled by the devastation she saw in the city and realizing that flights into Berlin might soon be virtually impossible, she conceived the idea of landing a 'Hubschrauber' [early type of helicopter] on top of a flak tower if need be. She relates; *"As soon as I was out of hospital, I went into training and systematically flew in to the Ack-Ack tower from a variety of landmarks on the outskirts of the city, in all weathers and at a very low altitude"*

The training and the intimate knowledge of Berlin's topography she thus obtained should prove invaluable when she and Ritter von Greim flew into besieged Berlin in late April 1945.

Fourth and fifth floor, just below the gun deck, were the quarters for Luftwaffe troops and Flakhilfer, and for various laboratories and workshops⁶. This area was off limits even for other service branches without a special passport.

The ground floor served as civilian air raid shelters along with the first and second floor. Together they could accommodate up to 15.000 people, but as many as 40.000 are reported to have sought shelter here during the final Battle for Berlin.



Photo 12: Civilians flocking outside the shelter, apparently after the all-clear has been sounded. Date unknown, but must be while conditions were still tolerable. 27 mm and 20 mm guns are not immediately visible which could indicate a postwar photo, but why then would so many be congregating there?

The role as refuge for the civilian population and the conditions, the inhabitants had to endure, threefold cramped inside the creepy environment is described in sickening detail by HJ runner **Armin Lehman**:

"Men, women and children would exist for days on end, squashed side by side like sardines, along every corridor and in every room. The lavatories would very

quickly cease to function, clogged up by overuse and impossible to flush because of scarcity of running water."

Ursula von Kardorff, a Berlin journalist and diarist, otherwise prone to take shelter in the Adlon bunker during air raids (she lived next door), once was forced to use the Zoo shelter. Her impression:

"I was recently with Klaus in the Zoo bunker during the seven o'clock air raid [on January 25, 1944]. Ghostly! A heard of people in the darkness, running like animals - while the anti aircraft guns had already opened up - towards the entrances; too small and much too narrow. Flashlights are lit and everybody shouts: 'Turn off the light!' People are pushing and pressing on and it is really a wonder that it turns out alright.

The walls of the bunker, mighty monoliths, resemble the stage for the prison chorus in "Fidelio" [Opera by Beethoven]. An elevator, lights on, is going up and down without a sound, apparently catering for the sick. Ernst Jünger might have described it all in his "Capriccios". Rude policemen and officers heard the unwilling crowd up the stairs for distribution on the various floors. For every new floor, the crowd grinds to a hold. A woman broke down screaming. She was convinced that she would be in greater danger on the upper floors. 'I have a husband and a son at the front', she shrieked in a high-pitched voice, 'I am not going up there!' At long last she was taken away.

The towers have spiral staircases. Loving couples seek them out - a travesty on a carnival. When the anti aircraft guns on the roof are firing, the building trembles and all heads duck as if a reaper was swung over them. People are standing pell-mell; scared bourgeois, weary wives, shabby foreigners dragging all their belongings with the in huge sacks and soldiers, emitting an air of embarrassment. I thought: God have mercy upon us if panic strikes."

THE TECH STUFF: ARMAMENT AND GUN LAYING

The earliest known use of weapons specifically made for the anti-aircraft role occurred during the Franco-Prussian War of 1870. After the disaster at Sedan, Paris was besieged and French troops outside the city started an attempt at re-supply via hot-air balloon. Krupp, the No. One German weapons manufacturer mounted a modified 1-pounder gun (~32 mm) on top of a horse-drawn carriage for the purpose of shooting down these balloons, the configuration aptly named the 'Ballonkanone'.

Following the introduction of the airplane in military service during the Great War, the need for effective countermeasures was quickly acknowledged. The first custom-made AA guns were regular artillery cannons with modified mountings allowing skyward fire. These, however, proved unsuccessful as the first problem in ground-to-air combat is not just throwing a shell to at sufficient height, but determining where a given target will be when the projectile reaches the targets altitude. The second problem is securing that the projectile will detonate at that precise moment.

Intense research and development during the interwar years largely solved these problems and just a couple of decades later, the flak towers could be armed with the formidable radar- and optics guided double-barreled, 128 mm 'Flakzwillig 40', capable of targeting and taking out an enemy plane at any altitude⁷.

"The most beautiful weapon yet fashioned..."

The Flakzwillig 40 design by Rheinmetal-Borsig dated back to 1936 whereas production started in earnest only in 1942. The gun could send a 29.5 kg. shell to a maximum ceiling of 14.500 meters. In its static mount the gun could traverse 360° and elevate from -3° to 88°. The muzzle velocity of 880 m/sec also made Flakzwillig 40 a formidable anti-tank weapon, which was demonstrated during the land-battle for Berlin.

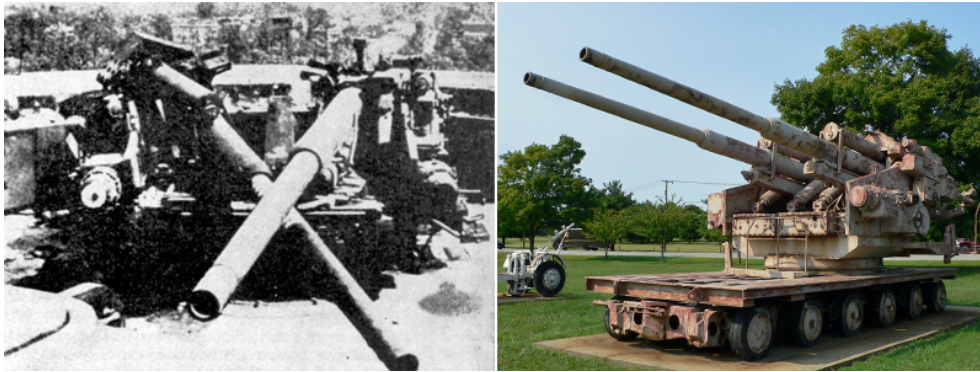


Photo 13: Few Flakzwilling 40 survived the war. To the left, a demolished gun on one of the towers, to the right, a surviving specimen on display in a museum somewhere in the USA.

With a barrel length of almost eight meters and a weight exceeding 27 tons, this weapon was primarily a stationary one or mounted on railcars, albeit a dolly for cross-country towing was developed. These powerful gun combinations were so costly and difficult to produce that there were never many of them; even by February 1945 there were only 34 in service. Hitler called the guns the most beautiful weapon. A total of 450 were produced.

Each G-tower had a crew of approx. 160 troops and six officers, with 21 men and one Sergeant to load and operate each of the four primary positions. This may seem somewhat redundant as half that many would have been sufficient, but carrying shells weighing close to 30 kg from the ammunition elevators to the gun at a rate of up to 20 per minute [10 for each gun] took its toll on the men and casualties from fragments or enemy fire also had to be calculated.



Photo 14: Left, the ferocious 20 mm Flakvierling, also mercilessly effective against infantry when used in the field; here mounted on a flak tower. Right, the 37 mm twin-barrel Flak 43; here in a field role.

Secondary armament, installed on a terrace below the main guns, consisted of several small-caliber automatic cannons that could cope with low altitude aircrafts. These were the 37 mm, two barrel ‘pom-pom’ type and 20 mm quadruple, fast-firing machineguns, known as ‘Flakvierling’.

Table 1	Flakzwilling 40	Flak 43	Flakvierling
Design	Rheinmetal	Rheinmetal	Mauser
Caliber	128 mm	37 mm	20 mm
Elevation	-3° to +88°	-7.5° to +90°	-10° to + 100°
Traverse	360°	360° (*)	360° (*)
Rate of fire	Up to 20/sec.	Up to 300/sec.	Up to 800/sec.
Effective range	14.400 meters	4.400 meters	2.200 meters
Feed system	Electric rammer	8 round mag.	20 round mag.
Crew	21	5	8



Photo 15: B17 Flying Fortress in heavy flak. The small black puffs are exploding shells. The air around the plane is full of razor-sharp shrapnel.

The Flak gunners of WW2 were not expected to score a direct hit on an airplane at several thousand meters altitude with an unguided projectile; a virtually impossible task even today. Instead Flak ammunition explodes, either after a preset time [and thus at a calculated altitude] or when a sensor detects the proximity of an airframe. Fragments will then scatter over some distance and, hopefully, hit the plane.

The three towers in Berlin could be controlled from one bunker [Zoo], thus being able to align the guns so that a ‘Flak window’, saturating 250 by 250 meter with shrapnel, could be created. To assist this control, the crew of the L-tower could rely on radar for early detection and an estimate of the altitude and number of enemy planes.

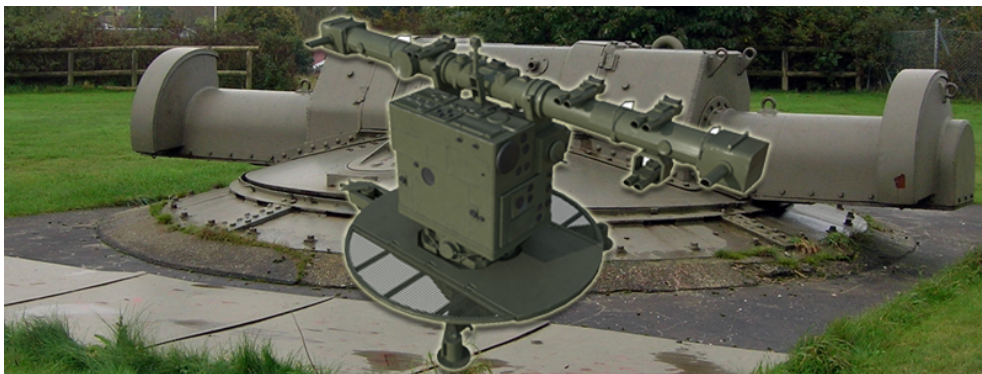


Photo 16: Kommando-Gerät 40 in its naked version [cutout] as it was used i.e. by mobile Flak regiments. In the background an armored version on a command bunker in Denmark. The one atop the Leitturm must have looked pretty much the same apart from being a ten-meter version.

However, as radar technology was still in its infancy at the time and too inaccurate for precision gun-laying, optical range finders took over when the enemy was within firing range. For actual target calculations, a device known as ‘Kommando-Gerät 40’ was used. This was basically an analogue computer working in tandem with a stereoscopic range finder. It was set with the parameters of gun condition, weather condition, enemy speed, azimuth and altitude. It was operated by a crew of five. Two operators were required to track azimuth and elevation and a third marked slant range by means of a stereo range finder mounted on the director. The

fourth man would set in horizontal angle of approach and the fifth man operated various switches.

The Kommando-Gerät 40 could handle diving and curving targets and was able to pick up a target within a time frame of 20 to 30 seconds. It was able to shift to a new target close to the target previously computed and, provided it was flying at a reasonably parallel course, new target data could be computed in as little as 10 seconds. Even evasive maneuvers with abrupt changes in the targets course, speed or altitude were overcome within 10 to 15 seconds. Data were transmitted to the guns via cables, but could also be conveyed orally to the gun crews who adjusted the 128 mm guns.

BATTLE FOR BERLIN (AIR)



Photo 17: B17 over Berlin. Tempelhof can be seen to the left, Landwehrkanal and Belle Alliance Platz [Mehringplatz] to the right.

“The flak was so thick you could get out and walk on it”

The US Eight Air Force crews, flying mighty B17 Fortresses, were well aware of, and respected, the firepower of the Flak towers as this excerpt illustrates:

“The main feature of the old inner ring of guns was twenty-four massive 128-millimetre guns mounted in pairs on three Flak towers built in parks in the Zoo, Friedrichshain and Humboldthain districts. These guns had been developed by the local Borsigwerke factory. The eight guns on each tower could fire a salvo every ninety seconds⁸, to a maximum ceiling of 45,000 feet (14,800 metres) and, when the eight shells exploded in the planned pattern, they had a lethal zone of 260 yards (240 metres) across.

The gun platform crews on the towers were all trained German soldiers⁹, unlike most German Flak batteries which had many pressed Russian prisoners and German schoolboys in their crews; the only Russians were down in the basement ammunition chambers, loading the shell hoists. Many of the gunners on the towers were from a Hamburg unit with much to avenge.¹⁰

The construction of the towers themselves, by the Todt Organization on plans by Speer, had commenced as early as 1940. Hitler wished to show the people of Berlin and of the world that the city was ‘Fortress Berlin’ which would survive the war and last for ever. Hamburg and Vienna were the only other places to be blessed with such massive edifices. The Flak towers in Berlin were to be the first buildings of the proposed post-war remodeled city named Germania which would replace old Berlin. The towers had thick concrete walls, steel windows, air-conditioning and an independent Daimler-Benz generating plant six metres underground. All

had a hospital floor, and the Zoo tower had one level in which the most valuable of Berlin's art treasures were stored.

The local residents were, at first, not happy to see their parks disfigured in this way but they were later to be well pleased when certain levels in the towers were thrown open to the public as air-raid shelters. The Humboldthain tower had passages leading to the nearby Gesundbrunnen Station¹¹, one of the deepest of the U-Bahn system. Up to 21,000 people at a time would take shelter in the combined tower and U-Bahn during the coming winter." ["The Berlin Raids"]



Illustration 18: It is not surprising that no actual combat photos of the Flak towers in action exist, so here is an artist's impression of what it may have looked like. Horrifically convincing, I think.

Albert Speer, Hitler's architect and Minister of Armament, whose office was on Pariser Platz only a few minutes away from the Zoo Bunker, visited it during an air raid in 1943. He relates:

"I was having a conference in my private office on November 22, 1943, when the air-raid alarm sounded¹². It was about 7:30 P.M. A large fleet of bombers was reported heading toward Berlin. When the bombers reached Potsdam, I called off the meeting to drive to a nearby Flak tower [Zoo], intending to watch the attack from its platform, as was my wont. But I scarcely reached the top of the tower when I had to take shelter inside it; in spite of the tower's stout concrete walls, heavy hits nearby were shaking it: Injured anti-aircraft gunners crowded down the stairs behind me; the air pressure from exploding bombs had hurled them into the walls. From the Flak tower the air raids on Berlin were an unforgettable sight, and I had constantly to remind myself of the cruel reality in order not to be completely entranced by the scene: the illumination of the parachute flares, which the Berliners called 'Christmas trees', followed by flashes of explosions which were caught by the clouds of smoke, the innumerable probing searchlights, the excitement when a plane was caught and tried to escape the cone of light, the brief flaming torch when it was hit. No doubt about it, this Apocalypse provided a magnificent spectacle.

For twenty minutes explosion followed explosion. From above I looked down into the well of the tower, where a closely packed crowd stood in the thickening haze formed by cement dust falling from the walls. When the rain of bombs ceased, I ventured out on the platform again. My nearby Ministry was one gigantic conflagration. I drove over there at once. A few secretaries, looking like Amazons in their steel helmets, were trying to save files even while isolated bombs went off in the vicinity. In place of my private office I found nothing but a huge bomb crater."

“Pyrrhic victories”

It is unclear just how many victories the Flak towers can claim as the general picture most often is blurred during battle, and claims tend to be either too overconfident or too conservative. I.e. many enemy planes may have been hit by Flak but managed to limp out of the Berlin airspace before finally crashing on the way home.

The Humboldthain tower is accredited 32 confirmed kills, not an impressive figure considering that a single wave of enemy aircraft could number 1000 or more, but it reflects the difficulties in gun-laying against a moving target at high altitude. In fact, the expenditure of ammo in all types of Flak defense was staggering, producing only a very modest yield;

“At the end of 1941, Generalleutnant Otto Wilhelm von Renz, Commander I. Flakdivision [proposing a new strategy in air defense] reported to the HWA that the amount of ammunition expended per enemy aircraft destroyed was disproportionately high and would deteriorate further as the enemy built faster machines. For each victory, German Flak needed: 16.000 8.8 cm (Flak 36) rounds, or 6000 10.5 cm (Flak 39) rounds, or 3000 12.8 cm (Flak 40) rounds”.

Although the guns of the three towers benefited from state-of-the-art targeting devices and thus may have used less than average ammunition, the figures illustrate the inherent difficulties in gun-based air defense, each victory being a Pyrrhic one. In that perspective, the most important impact that the towers in Berlin had on Allied sorties over the city will have been a degree of area denial; that the Government quarter within the triangle formed by the three towers may have been spared some bombing out of reluctance by airmen to getting too close.¹³ The roles as shelter for the civilian population has also been of significance, and let us not forget the preservation of cultural artifacts that we thus can enjoy today.

“They sowed the wind, and now they are going to reap the whirlwind”

A total of 45.000 tons of bombs was dropped on Berlin by the RAF and the American 8th Air Force from August 1940 till the end of the campaign in April 1945. Then the Red Army took over



Photo 19: British bombs. At the top is the massive ‘Grand Slam’, weighing 11 tons and allegedly capable of penetrating 7 m+ of reinforced concrete.

The Humboldthain G-tower was hit by Allied bombs on at least three occasions, but no damage was recorded, not even cracks in the concrete. It is likely, however, that had the tower taken a direct hit by a massive 6 ton Tallboy bomb, it might have

been put out of action. Bombs like these and their even bigger counterparts, the Grand Slam, weighing in excess of eleven tons are reported to have penetrated a seven meter thick concrete ceiling in the U-boat pens of Saint Nazaire in France.

A very real danger for all Berliners; firemen, air-raid wardens and other unfortunate souls forced to brave an air raid outside a bunker, was shrapnel. What goes up, must come down and with a barrage as describe above, thousands, if not millions of metal shards would have been raining from the sky every minute.

BATTLE FOR BERLIN (LAND)

In the night of April 20/21, the RAF delivered the last raid on Berlin of thirty-six in succession and thus left the scene to the Red Army air force. The next day, on the 22nd, Russian artillery was close enough to send grenades into the city center, killing several women queuing for the extra rations released to celebrate the Führer's 56th birthday.

"Drizzling rain began to fall. Near Biesdorf I saw batteries preparing to open fire. 'What are the targets?' I asked the battery commander.

'Centre of Berlin, Spree bridges, and the northern and Stettin railway stations,' he answered.

Then came the tremendous words of command: 'Open fire on the capital of Fascist Germany.'

I noted the time. It was exactly 8:30 a.m. on 22 April. Ninety-six shells fell in the centre of Berlin in the course of a few minutes."

[Red Army war correspondent]

“The tower’s defenders brought their guns to bear, pinning down the attackers”

Although never designed or intended for land warfare, the 128 mm guns of the Flak Towers took the enemy under fire early the battle¹⁴, and the Russian forces respectfully kept their distance. Rittmeister **Gerhardt Boldt** of the Hitler entourage and resident of the Führerbunker recounts in his memoirs; *“The backbone of the defense in the inner area of the city now consisted only of the Flak Towers in the Humboldthain, Friedrichshain and Zoo parks and the anti-aircraft guns on the Shell building. In the areas within range of these fortifications the Russian could make no significant progress”*.

General **Karl Koller**, Luftwaffe Chief of Staff, reported on Hitler's request that in the late evening of April 21, the Zoo Flak tower had counted some five hundred enemy shells directed at the city center. The main armament on the tower had in return hurled 400 heavy shells against the Russian batteries at Marzahn and surrounding armored positions.

Danish journalist **Jacob Kronika**, who lived through the entire battle in Berlin, describe how the guns at the Zoo tower, just a kilometer away from his Kielganstrasse residence, made the whole house shiver and tremble with their rolling thunder. Russian fighter planes attacked the tower relentlessly and it responded with guns of all calibers against the onslaught.

Historian **Anthony Beevor** describes the situation this way, as he relates General Weidlings predicament after he has been appointed leader of the city's defenses; *“The only real strong points were the three concrete Flak towers – the Zoo bunker, the Humboldthain and Friedrichshain. They had plenty of ammunition for their 128 mm and 20 mm guns as well as good communications with underground telephone cables. Their greatest problem was to be overfilled with wounded and civilians in their thousands”*.

After his appointment to 'Kampfkommandant Berlin', general Helmuth Weidling briefly considered to establish his headquarter in the Zoo Bunker and sent his

Operations Officer, Siegfried Knappe to investigate: *“Weidling decided to move corps headquarters to a big anti-aircraft bunker near the Berlin zoo. I was quite happy to be ordered to go to the air raid shelter bunker at the zoo, with Major Wolff, as an advance party to establish our new headquarters.”* and a little later; *“The bunker could house six hundred people¹⁵. Every room was occupied, so we selected those we would need and told their occupants they would have to leave because the rooms were needed by the commanding general of the Berlin Military Command”*. And later again; *“Finally, the next morning [April 27], Wolff returned with the news that Weidling had decided to move instead to the old headquarters of the Supreme Command of the Armed Forces [Bendlerblock]. It was closer to the Führer Headquarters and had direct telephone lines to it”*.



Photo 20: Russian tanks at the Molke Brücke. The bridge was only partly demolished due to lack of explosives and still passable for tanks. However, passing the Ministry of the Interior on the other side, there was a wide open space to traverse where the troops and vehicles were within easy reach of the guns at the Zoo tower.

In the last run for the Reichstag, the Russians brought up a large number of tanks and self-propelled guns along with massive forces, but were forced to retreat, as they came under fire from the nearby Zoo bunker. Anthony Beevor; in Berlin, the downfall 1945; *“The German anti-aircraft guns on top of the Zoo bunker, two kilometers away, had opened up on them. They were forced to take cover again and wait until nightfall”*. And later on the same page; *“The 8th Guards Army in the southern part of the Tiergarten and the 3rd Shock Army in the north were held back only by fire from the huge Zoo Flak tower”*. And a few pages forward; *“The 3rd Shock Army had bypassed the immensely powerful Humboldthain Flak bunker which was left as a target for their heavy artillery and the bombers. Continuing in a clockwise direction, the 5th Shock Army, driving into the eastern districts, similarly bypassed the Friedrichshain bunker”*.

SURRENDER AND DEMOLITION

The Zoo bunker capitulated on May 1st after guarantees were given, that SS and SA men in the bunker would not be executed, and the Friedrichshain tower followed suit later that day. Following Gen. Weidling's surrender of the Citadel the previous day, Humboldthain gave up on May 3rd, 1945, at 12:00 and the remaining crew and Hitler Youth 'Flakhilfer' boys became Red Army POW's.

The hospital in the Zoo bunker continued until September 1945 where the Moabit-based Robert Koch moved in with departments for surgery, typhus and dysentery.

Regardless of the intended postwar use of the towers and the fact, that several institutions and private companies had already settled in some towers whereas others were in use as shelters for homeless people, the occupation forces considered Flak towers military installations, bound for demolition in accordance with the surrender terms, and a program for their destruction was laid down in Allied Control Council Directive 22 of December 6th, 1945, taking their cue from the Potsdam Conference:

“All arms, ammunition and implements of war and all specialized facilities for their production shall be held at the disposal of the Allies or destroyed. The

maintenance and production of all aircraft and all arms, ammunition and implements of war shall be prevented.”

Apparently that was only valid for Berlin as the towers in Hamburg and Vienna stands to this day.



Bundesarchiv, Bild 146-1992-028-14
Foto: Hoffmann, Otto | 1946

Photo 20: Friedrichshain tower demolished. The remnants were eventually covered with debris and dirt and vegetation planted. Today you must venture to the top of the 'Bunkerberge' to see a little concrete sticking out.

After the post-war dividing of Berlin, the Flak tower lay in different control zones; the Zoo towers were in the British zone, the Friedrichshain towers in the Russian zone and Humboldthain lay in the French zone. The Soviets were to go first and on April 20th, 1946 (coincidence?), the first big bang took place as the Friedrichshain L-tower was (partly) demolished. Unsatisfied with the result, the Soviets made another attempt later and in the meantime, the G-tower was demolished.



Photo 21: Zoo demolished. This was not as easy as the Britons first thought and required two attempts – and a lot of explosives!

The Britons followed on July 28th, 1947, blowing up the Zoo L-tower and went on to the Grand Finale a month later by stuffing the G-tower with 25 tons of explosives. The world press watched in awe as the fuse was lit at 16:00 hours on August 30th, but when the thunderous explosion was over and the dust had settled, the tower still stood! One American newsman is reported to have laconically commented; “Made in Germany” It took another 40 tons of explosives to knock the tower down in June, 1948.



Photo 22: Humboldthain towers were only partly demolished and the G-tower is accessible today during organized tours.

Humboldthain, being in the French sector adjacent to the Soviets, presented a special problem. The G-tower was situated very close to the railroad, which ran through the Soviet sector, and in 1948 the air between the former allies was getting colder by the minute. The French authorities did not want to risk a confrontation with Stalin if some of the debris from the explosion should fall on the tracks, and consequently only the southern part was blown up.

A lucky punch that was, for the historically interested, because today Humboldthain gun tower is the only Berlin tower to remain [partly] intact and accessible to the public. Tours are available via Berliner Unterwelten. Tickets can be purchased online or at the Gesundbrunnen S-Bahn Station at Brunnenstrasse.

OUTSIDE BERLIN

As we have seen, the first generation towers as built in Berlin were immensely expensive both in material and in building costs. Consequently, more cost-effective types were developed and erected in i.e. Hamburg and in Vienna, Austria, and towers were planned for Munich and Bremen. Most of those were of the leaner 2nd and 3rd generation, developed as supplies of concrete and steel declined at the end of the war. Post-war, some of the towers in Vienna and Hamburg were converted to other purposes.

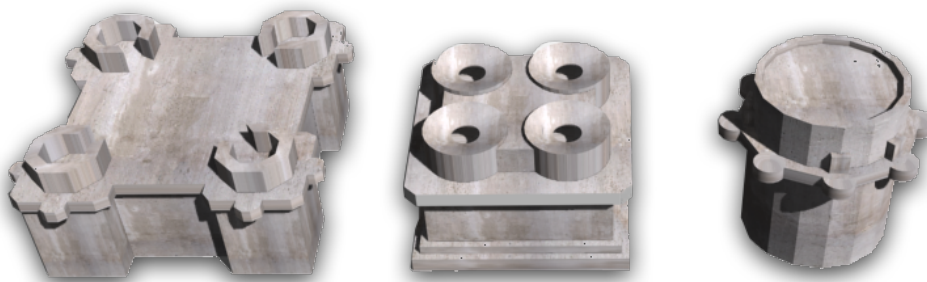


Illustration 23: Three generations of flak towers. They can all be seen today – some visited – in Hamburg and Vienna.

A young ‘Flakhilfer’ served in a second-generation tower at Wilhelmsburg¹⁶, south of Hamburg proper, and left us an interesting account [<http://www.gustave-roosen.de/hamburg-e.htm>]. An excerpt is included here at it illustrates part of the danger these ‘helpers’, mostly young boys, faced in their service:

“Formations of bombers on their way to Berlin used the estuary of the Elbe and the river as their approach path. Naturally the harbor in Hamburg and the oil tanks and refineries in Harburg-district and here in Wilhelmsburg, were regular targets of these heavy air-raids. There were hellish battle situations but one had, here especially, the feeling that one could defend one's self.”

To be sure, we suffered under very difficult battle conditions, because the 128mm caliber ammunition which we were firing came out of a munitions factory which employed 'forced labor', and probably also prisoners, who were busy carrying out sabotage. They sabotaged the shell by drilling into it so that the propellant and the explosive material of the actual shell were ignited when firing took place. The result in the most favorable case was a ruptured barrel, and in the most unfavorable case, an exploding barrel.

After one of the numerous heavy air-raids we found our tattered barrel again in the neighborhood at a distance of 100 m and it looked like the skin of a banana that had been ripped off in strips. In the heat of the air-raid we had not immediately noticed that we were firing only with the stump of the barrel. The rate of fire was enormous: 7 rounds per minute¹⁷ for each gun meant approximately a total of 4000 rounds per hour.

We had in fact spare barrels in the cellar, but heaving the barrel up to the top by crane and then installing it (Position 'Zero'), took some time during we were not ready for action. The changing of a barrel happened several times during my time there.

Aside from shattered ear-drums no one was seriously hurt. One of the gunners had his helmet ripped off and later on we joked with him about his helmet going up (coincidentally at this time a popular hit-song from Ilse Werner was 'Wir machen Musik - da geht euch der Hut hoch...' [We're making music, that's your hat going up']")



Photo 24: Three representations of the Wilhelmsburg tower in the southern outskirts of Hamburg; during erection in the 1940ties; again in 2011 while undergoing transformation to 'Energiebunker', and finally the finished building a few years ago. There is a restaurant at the top, so you can enjoy lunch – with a view to history.

This particular tower has today been transformed into a so-called 'Energiebunker'. I witnessed the early stages, where the interior was demolished and a large hole caved in the side, but have not yet had the opportunity to see the finished result. Undoubtedly very interesting and must be a fantastic view from the top where a café has been installed.

However, a fully-fledged first-generation combat tower, undamaged by war but minus armament, can be seen at the Heligengeistfeld. It is also accessible, as it today is turned into a 'Medienbunker' where the Hamburg School of Music resides [<https://theschool.de/>], but unfortunately you cannot get access to the roof. I tried.



Photo 25: Heligengeistfeld bunker. Plans to turn the place into a luxury hotel are brewing. To the left the tower as it looks today and to the right an artist's conception of a hotel with a 'roof garden'. (To my mind it resembles an old Inca temple somewhere in the Peruvian jungle. Gröfaz would probably spin in his grave).

TODAY IN BERLIN

If you take a walk in the southern part of the Humboldthain Park, entering from the Gustav-Meyer-Allee, and follow the path winding upwards, you will eventually encounter some concrete debris; remnants of a wall with steel-lined window frames and a platform-like structure. This is what is left of the so-called 'Leitturm', the control bunker from where enemy planes were spotted on radar and the guns of the nearby 'Gefechtsturm', combat or gun bunker, were controlled.



Photo 26: What is left of the Humboldthain L-tower. To the best of my knowledge no attempts to excavate the remnants have been performed. The area is scenic and perfect for a stroll – if you are in reasonably good shape.

Go directly north for some 3-400 meters and you will – after a somewhat strenuous climb up a circling path and then a steep staircase – find yourself at what seems to be the foot of a tower-like structure resembling a medieval castle. Actually, you are (almost) at the top of one of three mighty fortresses that once guarded the airspace over Berlin.



Photo 27: At the platform of the Humboldthain G-tower, ready to start the tour in 2009. Our guide issue instructions i.e. that photographing inside is strictly prohibited! Nevertheless it's a great tour and highly recommendable-

In 2004, the Berliner Unterwelten (Berlin Underground Association) started guided tours of the upper floors of the tower, and if you are into bunkers and fortifications of the Second World War, and the history of a metropolis under siege, which you probably are since you are reading these lines, a visit to Humboldthain is highly recommendable. Tickets are obtainable online [<https://www.berliner-unterwelten.de/en.html>] or at the associations' office at the Gesundbrunnen S-Bahn station.

Remember to bring a sweater! Even on warm days temperature within the bunker is constantly around 8-10° Celsius. Also note that sandals and clip-clops are not allowed; sturdy footwear is required. Minimum age is 7 years, but some tours may have further restrictions. You will have to be in relatively good physical shape and most tours do not cater for the disabled. You will **not** be allowed to take photos inside!

I recommend that you familiarize yourself with the Important Notes section before booking. [<https://bit.ly/329zbzv>]

FURTHER READING

Foedrowitz, Michael: **'The Flak Towers'**. © 1998 Schiffer Publishing Ltd.
Speer, Albert: **'Inside the Third Reich'**. © 1970 Weidenfeld & Nicolson.
Middlebrook, Martin: **'The Berlin Raids'**. © 1988 Cassell Military
Nijboer, Donald: **'German Flak Defences vs. Allied Heavy Bombers'**. © 2019
Le Tissier, Tony: **'With our backs to Berlin'**, © 2001, Sutton Publishing
Le Tissier, Tony: **'Berlin Then & Now'**, © 1992, After The Battle Magazine
Knappe, Siegfried: **'Soldat'**, © 1992, Dell Publishing
Koller, Karl: **'Der letzte Monat'**, © 1985 Bechtle Verlag
Kronika, Jacob: **'Berlins Undergang'**, © 2014 Lindhardt & Ringhof
Hamilton, Stephen: **'Bloody Streets'**, © 2008 Helion & Co.
Reitsch, Hanna: **'Fliegen, mein Leben'**, © 1979 Fa. Herbig, Munich
Lehmann, Armin: **'In Hitler's Bunker'**, © 2004 Mainstream Publishing
Bernhardt, Jan: **'Humboldthain G-turm'**, © 2012 Private publication

Several members of Hitler's entourage also have brief references to the towers in their memoirs.

Notes

¹ The abandoned plan for a German invasion of the British Isles; Hitler was never more than lukewarm to the idea, preferring a negotiated peace with England, and quickly gave up on the thought when neither air superiority nor dominance on the seas could be attained. The failure to do so was also the first chink in Göring's hitherto high standing with Hitler.

² During the Battle for Berlin, the Zoo tower partook in the fighting, training its guns at the advancing Red Army. Russian counter-fire made little impression on the concrete fortress.

³ In the days of the final battle for the city up to three times that number are reported to have sought refuge in these fortresses.

⁴ The line was named after Colonel Josef Kammhuber, who designed an 'early warning system', comprising a series of forward control posts, covering sectors from France, through the Low Countries to Denmark and equipped with radars and searchlights and designated night fighter squadrons.

⁵ With a range of about 80 kilometers, such radar in Hannover 250 kilometers away could not possibly have been of any use in Berlin. Harry Schweizer must have things confused here and is probably thinking of the early warning system. Gun-laying was to some extent helped by the Würzburg Riese radar mounted on the Leitturm just 500 meters away and possibly by small, movable Würzburg radars on the towers themselves.

⁶ Highly classified research and reverse engineering of captured enemy equipment took place here, i.e. the British H2S ground radar, obtained in February 1943. This led to the development of the FuG 350 Naxos radar detector in late 1943, which enabled Luftwaffe night fighters to home on the transmissions of H2S.

⁷ On some photos of the flak towers, you will notice that the guns are single barrelled. These are 105 mm marine flak cannons, replaced by Flakzwilling 40 in 1942.

⁸ This correlates badly with factory specifications, stating a rate of fire of some 10 rounds per minute, per gun equalling a salvo every six seconds under optimal conditions.

⁹ The author is not entirely correct here, as some of the eyewitness accounts will demonstrate. In fact, quite a few boys served at the Flak towers.

¹⁰ Author must be referring to 'Operation Gomorrah' in July 1943, where Hamburg was all but obliterated by a firestorm, killing 40.000+ inhabitants.

¹¹ I cannot issue a guarantee that such a passage did not exist, but I have never heard of it. If true, it would be more than 100 meters long and pass under the Brunnenstrasse. It is most likely one of the abundant myths, flourishing post war. What seems to be true, however, is that the G and L towers were connected by a cable duct wide enough to allow passage, provided you were prepared to crawl the some 300 meters. Also, at the station there actually is an air-raid shelter which is one of the offered tours by Berliner Unterwelten.

¹² This particular raid counts as the most effective RAF unleashed on Berlin; the Gedächtniskirche was destroyed; burning "like a torch" as one diarist recorded, and several

other important buildings were either damaged or destroyed, including the British; French; Italian and Japanese embassies, the Schloss Charlottenburg and the Berlin Zoo, killing numerous animals. The casualties and devastation were horrific. The raid killed 2000 Berliners and rendered 175.000 homeless. The following night, an additional 1000 were killed and 100.000 made homeless.

¹³ “The fire power of the three towers was quite noticeable and we could see that after the first salvo following units would turn away to get out of firing range.” [Harry Schweizer]

¹⁴ “Later when we fired the 128s at clusters of tanks as far out as Tegel, the barrels were down to zero degrees [lowest negative elevation was actually -3°, according to factory specifications] and the shock waves were enough to break the cement of the 70 cm high and 50 cm wide parapet of the gallery five meters below, exposing the steel rods beneath.” [Harry Schweizer]

¹⁵ This is a misunderstanding by the author, as the Zoo bunker housed up to 40.000 people in the final days, but Knappe has in all likelihood only seen a small part of the bunker.

¹⁶ This tower has today been converted into something that should be able to arouse joy in the heart of any devoted environmentalist; an 'Energy Bunker'. Read about it here: <http://tiny.cc/nudmez>

¹⁷ There seems to be a slight discrepancy here from the factory specifications of twenty rounds per minute. On the other hand; he was there, and perhaps his recollection constitute real-life conditions as opposed to the ideal conditions.