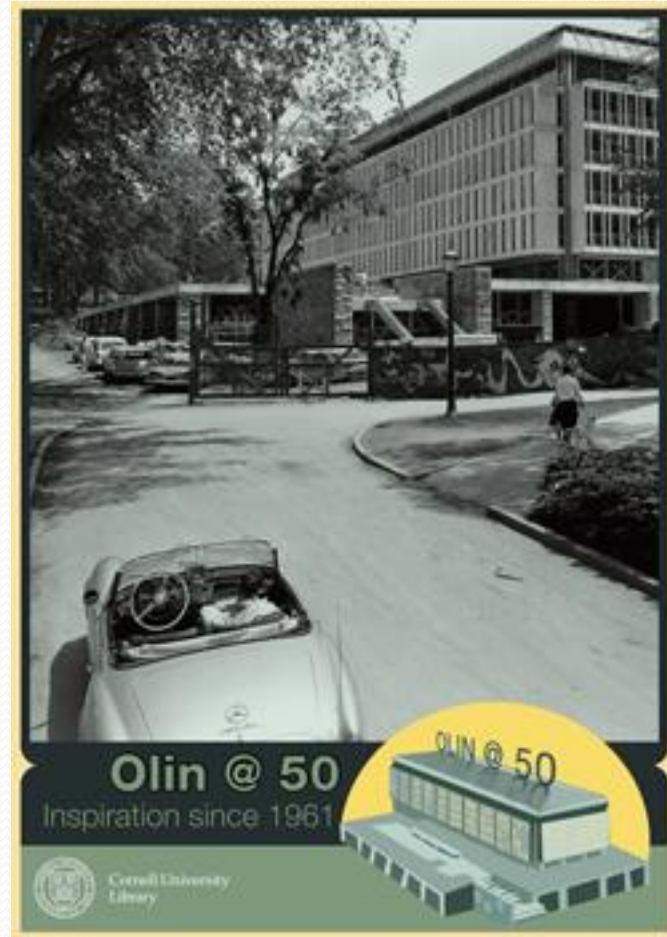


A Newborn Library and the World Beyond

Using GIS to Map Some of the Most Crucial Events of
1961

Olin Library

- 1961 – Olin library built; first library in the country to be purpose-built as a research facility
- Various events to celebrate the anniversary, including an exhibition on display in Olin and Uris, and online at <http://olinuris.library.cornell.edu/exhibitions/olinat50>
 - traces Olin's history through photographs, drawings and artifacts
 - examines how Olin has kept pace with evolving research needs
- Map exhibit – different approach
 - place a concrete local event in a global geopolitical context
 - Demonstrate the opportunities the various mapping presents to visualize our experiences



Kennedy Inauguration

- Arguably the most important event of the year
- Took place at the front steps of the U.S. Capitol building
- Poster:
 - red star in the Google Earth image indicates place of inauguration
 - Photos show different stages of the ceremony; note Kennedy does not wear a coat or hat
- Inaugural address -- fourth-shortest in U.S. history and one of the most important: addresses the most crucial issues of the time, which became parts of the exhibit



“Let Us Invoke the Wonders of Science Instead of Its Terrors”

“The terrors of science” however caused disasters all over the globe as seen from the poster:

- the deadliest nuclear reactor incident in U.S. history – the SL-1 explosion on Jan. 3 that killed 3 operators
- the “Tsar Bomba” hydrogen bomb – the most powerful nuclear weapon ever detonated
- the K-19 Soviet nuclear submarine accident that caused the death of almost 30 crew members within a year due to radiation exposure
- The Goldsboro, NC incident where a B-52 dropped a nuclear bomb that has not been retrieved yet

“The Terrors of Science...”
J.F. Kennedy

The SL-1 Nuclear Reactor Explosion

The SL-1 was a United States Army experimental nuclear power reactor that underwent a steam explosion and meltdown on January 3, 1961, killing all three of its military operators. The event is the only known fatal reactor accident in the United States, and is considered the deadliest in U.S. history. It resulted in planners abandoning its design and completely overhauling the structure of future reactors. While the tests had shown that nuclear power was likely to have lower total costs, the financial pressures of the Vietnam War caused the Army to favor lower initial costs. Therefore it halted the development of its reactor program in 1965, while allowing the existing reactors to operate. The remains of the SL-1 reactor are now buried near the original site.



SL-1 burial ground, capped with riprap. EPA took the image in 2000.

Tsar Bomba

Tsar Bomba (“King Bomb” in Russian) is the nickname for the AN02 hydrogen bomb, the most powerful nuclear weapon ever detonated. Developed by the Soviet Union, the bomb was originally designed to have a yield of about 100 megatons of TNT; however, the yield was cut to 50 megatons to reduce nuclear fallout. This attempt was successful, as it was one of the cleanest nuclear bombs ever detonated. Only one bomb of this type was ever built and it was tested on Oct. 30, 1951, in the Novaya Zemlya archipelago. Weighing 27 tons, the bomb was so large (26 feet long and 6.6 feet in diameter) that the Soviets had to remove the bomb bay doors and fuselage fuel tanks on the bomber carrying it. The bomb was attached to a 1,760-pound fall-retardation parachute, which gave release and observer planes time to fly about 26 miles from ground zero. The shockwave prevented the fireball, about 5 miles in diameter, from touching the ground, but it nearly reached the 6.5-mile altitude of the deploying Tu-95 bomber.



A simple graphic showing comparative blast radii for a selection of nuclear weapons, including the Tsar Bomba. Full blast effects extend much further beyond the radii of the fissile substances, image by Fathima, posted on Wikimedia Commons.



The Goldsboro Nuclear Bomb Accident

On January 24, 1961 a B-52 Stratofortress carrying two nuclear bombs was re-fueling in mid-air, when the tanker crew noticed a leak in its port wing fuel cell. The aircraft was immediately directed to land. During their approach to the airfield, the pilots lost control and ejected at 9,000ft. Three crew members perished in the crash. The two nuclear weapons separated from the gyrating aircraft as it broke up. One of the two bombs parachuted to earth, imbedding its nose 18 in. into the ground, which presented no difficulties for recovery crews. The other bomb hit the ground at high speed with no parachute deployment, disappearing in a farmer's field and leaving an eight-foot-wide, six-foot-deep crater. Recovery crews were never able to retrieve all of the free-falling bomb's components. The deeper they excavated, the more problematic soil conditions became. Rather than continue a losing battle to recover the entire bomb, the military covered over the great hole it had dug, and purchased the land to prevent access to the bio-hazard. They never excavated the bomb.



MK 39 nuclear bomb retrieved after the 1961 Goldsboro B-52 crash. The weapon's parachute deployed, resulting in a soft landing and straightforward recovery. The U.S. Airforce took this image on January 29, 1961.

The K-19 Soviet Nuclear Submarine Accident

K-19 was a first-generation nuclear submarine equipped with nuclear ballistic missiles. On July 4, 1961, K-19 was conducting exercises in the North Atlantic close to Southern Greenland when it developed a major leak in its reactor coolant system, causing the water pressure in the aft reactor to drop to zero and the coolant pumps to fail. A separate accident had disabled the long-range radio system, so the crew could not communicate with its home base. The reactor temperature rose uncontrollably, reaching 800 °C (1,470 °F) – almost the melting point of the fuel rods – and set off chain reactions. A team of seven engineering officers and crew members worked for extended periods in high-radiation areas to implement a new coolant. Because the ship carried chemical suits instead of radiation suits, the repair team was certain to be lethally contaminated, and the leak did contaminate the crew, parts of the ship, and some of the ballistic missiles carried on board. The entire crew received large doses of radiation, and all seven men in the repair crew died of radiation exposure within a week. Twenty other members of the crew died within the next few years.



This is reported to be a photo of K-19 Soviet nuclear submarine. The U.S. Navy took this picture.

“Together Let Us Explore the Stars, Eradicate Disease, Encourage Commerce”

Instead, confrontation continues:

- Bays of Pigs invasion
- Alliance for Progress, a U.S. assistance program for Latin America created
- Berlin Wall erected
 - greatest symbol of division among people
 - built in a span of 24 hours
 - by 1975 – 45,000 separate sections of reinforced concrete, each 3.6m high and 1.5m wide
 - image to the right – a .kmz file of the wall overlaid on a Google Earth image

