

**Material from the "WHAT Are You Looking At?" Discovery Station
[Supporting NASM's *Looking at Earth* Gallery]**

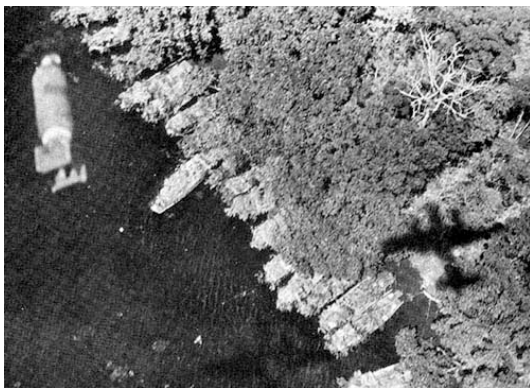
Concealment, Camouflage, and Deception

The elements of image interpretation are powerful tools for the successful gathering of information from afar. However, there are times and circumstances where it is more important to PREVENT somebody else from interpreting images of sensitive sites. This is particularly true in a military context; one wants to prevent ones enemies from performing successful reconnaissance.

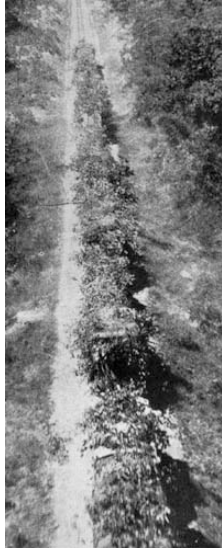
The problem is that prevention of observation of large military targets is difficult. They typically are big, have distinctive shapes, and are associated with other readily-identifiable objects. In such cases, three tactics may be of use: concealment, camouflage, and deception. The simplest is concealment; one cannot interpret images of objects that cannot be seen from afar. But the concealment tactic really only works well for smaller objects. For larger objects, the use of camouflage is called for, a tactic of adjusting the appearance of the object in ways that make application of the elements of image interpretation difficult. For example, if an object has a distinctive *shape*, then camouflage would not hide the object outright, but would alter its outline so as to remove its "distinctiveness." Some objects are too large/unusual even for camouflage to work; for them the best tactic might be to create multiple objects that present a similar appearance to the interpreter.

The examples below are from *Impact*, an internal magazine produced and distributed in World War II by the U.S. Army Air Corps.

Concealment

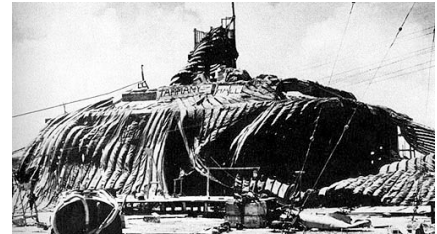


If the object one wishes to protect from observation is small enough, it can be concealed by covering it with material that resembles its surroundings. The example at left is of supply barges under attack off the coast of Borgen Bay in the Bismarck Islands. The barges have been (partially) covered by palm fronds/tree branches and have been parked beneath tree canopies that extend out from the beach over the water. The concealment is obviously ineffective; note the bomb falling and the shadow of the attacking plane. If only a few barges were being concealed in this area, the ruse may have worked better. As it is, so many barges are in this location that some had to be anchored in the open, leading to an attack on all. The cut branches and fronds alone were insufficient for effective concealment; the canopy of living trees was needed to prevent attack.



A similar concealment tactic was used for the train shown at left. The long, linear, cleared area of railroad tracks were easy to see against the background of dense vegetation in this location (Burma), so concealing trains with cut branches in this manner was usually ineffective, especially if patrolling planes were flying parallel to the tracks.

The image at right is of a captured airfield control tower on the island of Saipan. Its characteristic shape and association with a nearby easy-to-identify runway would have made it an obvious target, so it was covered by tarps to conceal it.



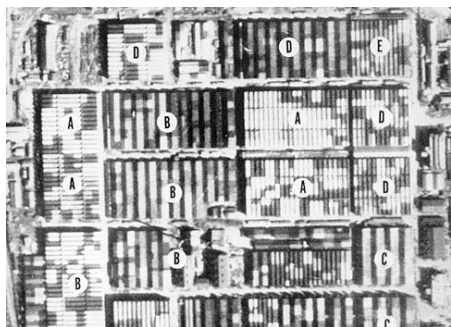
Camouflage

In some cases, the object to be shielded from interpretation is too large to be concealed effectively. The strategy then becomes taking steps to prevent the use of the "**Big 8**" elements in interpreting the true nature of the object, a process called "camouflage" from the French word *camoufler* meaning "to blind or veil." The distinction between concealment and camouflage is sometimes as blurry as the camouflaged object itself.



An example of a mix of concealment and camouflage is shown on the building in the upper-left image. It is a prison complex in the city of Pilsnen, in what is now the Czech Republic. Prison buildings radiating in a distinctive **pattern** from a central structure made it an excellent guide to nearby targets, even though

it was not a target itself. The overall structure was too large to conceal completely, but by hiding the distinctive radial **pattern** with screening material, the camoufleurs hoped to prevent the use of the prison complex as a landmark.



Large manufacturing plants were very hard to hide. Shown at left is the Ota Nakajima aircraft plant. The Japanese tried to camouflage the distinctive **shape** and **texture** of its corrugated roof with a patchwork **pattern** to match the surrounding residential area, but were not very successful.



The image at left shows a jungle airstrip under construction at Munda Point on the island of New Georgia. Initial construction was concealed from photo-reconnaissance by cutting the tops off of the coconut palms in the plantation and suspending them from cables slung between intact trees to conceal the runway construction beneath. As the runways grew and the severed treetops turned brown, green spots were painted on the runway to continue the palm plantation **pattern**. This tactic actually worked, for a few weeks.



The V-1, the world's very first operational cruise missile, required a long launching rail aimed at its target. The missile was placed on a rocket-powered carriage that rode on the rail and dropped away as the V-1 gained sufficient speed for its ramjet to operate. The distinctive rail, and nearby guidance building aligned parallel to it, marked the launch site. In this case, the rail is only partially concealed /camouflaged in the nearby woods ("P"). Its presence, and the control building's orientation and recent addition of an access road to it ("Q") mark this as a high-priority target.

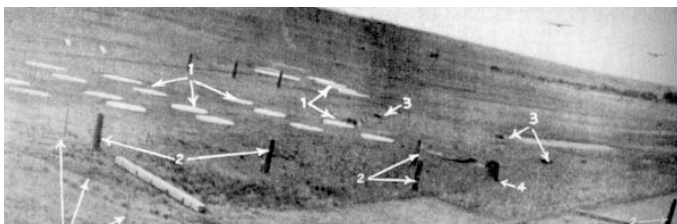


The phony bow wave painted on the *Taimei Maru* did not protect it from a successful air-based attack at the Battle of the Bismarck Sea. However, the bow wave, when viewed through a submarine periscope, might have caused the sub commander to overestimate *Taimei's* speed and, hence, aim his torpedoes too far ahead for a hit. Such a tactic is not really camouflage in the sense that it makes

the ship difficult to identify, but it is deceptive, which leads us to the next topic.

Deception

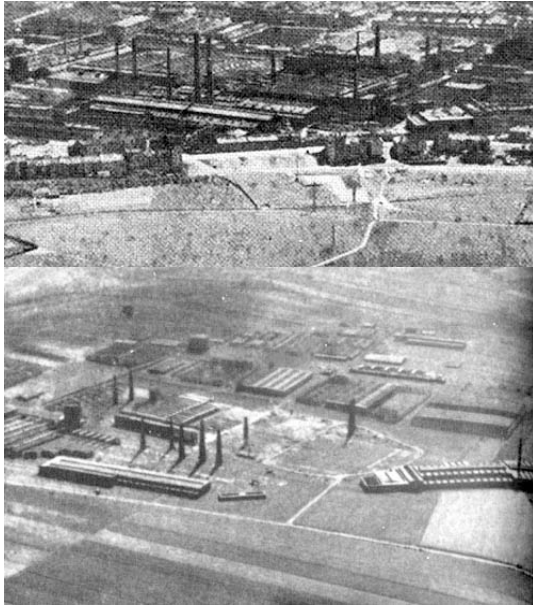
What would you do if you were trying to protect from observation an object too large to conceal or effectively camouflage? One strategy is not to make the potential target difficult to identify, but rather to present your opponent with a multitude of targets by using numerous decoys.



The area around Ploesti, Romania, produced much of the petroleum products vital to the German war effort. Oil refineries are hard to conceal or camouflage, so life-size decoys were built cheaply in the

hope that they would attract the attacks that were sure to be made. The decoy shown here would not stand low-altitude scrutiny, but might have been effective against a high-altitude attack (the decoy smokestacks were only ~30 feet tall).

Many bombing attacks were conducted at night. In some cases, simple decoys were constructed by finding a site in the boondocks and stringing lights in patterns resembling those at the real target.



The Skoda Works was an important armaments manufacturing plant located in the city of Pilsen, southwest of Prague in what is now the Czech Republic. To protect it, a full-size decoy plant was built out of cheap materials (lower left). The layout (***size*** and ***shape***) of the plant was duplicated to confuse the bombardiers. The decoy effort was partially successful.

[By the way: Today, a number of items are manufactured at the Skoda Works, including streetcars purchased by the Washington Metro system.]