What has the army got to do with make – over's ?

The object at hand is an army helmet chosen for NMS's exhibition "Weapons of Mass Desire". It looks like an army helmet should. Grimy, stained, disfigured by burnt marks, holes and abraded. It is the epitome of a helmet having gone through some hard times. Had it gone through warfare? Or was the distress it had suffered been incurred through the daily wear and tear of vigorous army training? Were the burns caused by a streaking bullet? Did rough thorny bushes of jungle warfare abrade the tough twill weaved fabric of the helmet? These were just some questions that we pondered upon, as we prepared to give this helmet a new lease of life.

At a glance, the helmet seemed strong, it did not crumble upon the slightest touch, or so we thought.

Getting to know the helmet

This helmet comprises three parts, the camouflage fabric, the metal outer helmet and the fiberglass inner liner. In HCC, different materials are conserved by different conservation sections. In this case, the three dimensional components such as the metal outer helmet and fiberglass inner liner were treated by Objects Conservator Ishak Ahamad. Textiles Conservation took over the treatment for the camouflage fabric. The fabric layer had a ruched opening and to

remove it from the metal helmet, the entire fabric tie had to be slowly loosened before the fabric helmet was gently eased off.

To satiate our curiosity of its history, we spoke to Hong Suen Wong, one of the curators for the exhibition .She informed us that from research done on camouflage designs ,this helmet possibly belonged to the Singapore Armed Forces, during the period of 1960's ,c 1968. Singapore was not at war during this period, hence it is likely the holes and burns it suffered were from the reportedly arduous training [1] during those times!

Close – examination of the helmet cover

Upon closer inspection of the entire camouflage helmet cover, we realized that appearances can sometimes be deceiving. The twill – weave is one of the strongest textile weaves. However, the helmet had clearly been abused. Frays and abrasion at the helmet edges had led to areas of losses. The areas of burns were crumbling and brittle to the point of breakage. The entire interior of the camouflage helmet cover was speckled with rust stains which had probably transferred from the metal helmet. Tiny holes scattered throughout the fabric was made more obvious with the removal of the metal helmet. As we completed our thorough examination, we realised the acid – free tissue we had laid the camouflage helmet cover on was covered with fine fabric fibers and dust. It was shedding as we handled it. At that point, we realized that the structure of the camouflage cover especially at the burnt areas was weak. With all these in mind, we set about thinking of a solution to the problems of the camouflage helmet cover.

[1] "The tough training of BMT is still the same but the unreasonable punishments are gone. The notorious change parade has been banned. Recruits no longer have to trim the grass around their accommodation blocks with nail clippers. Toilet cleaning with a tooth- brush is unheard of now." " 35 years of National Service " Pg 3. http://www.mindef.gov.sg/ns35/pdf/main/35yearsofNS.pdf

Sad gaping burnt holes.

The makeover

There were three issues to address: preventive, achieving the look of the helmet when it was first used and ensuring its structural stability.

We first addressed the preventive issues. The camouflage helmet cover would at all times be in contact with the metal helmet .However, this was not ideal. If the climate condition fluctuates, and the metal begins to rust, the helmet could be further damaged. Hence, our solution was to place a barrier between the metal helmet and its fabric cover. Tyvek – a tough high density polyethylene fibers white sheet that looked like paper was our choice. Tyvek is waterproof, flexible and interestingly can actually be made into garments like sportswear. Using acid free tissue and a draping technique, a draft of the helmet cover was taken. With this, we sewed a Tyvek helmet cover. Tyvek is slightly stiffer than fabric and darts had to be introduced to the Tyvek cover to ensure a closer fit to the helmet. This took about 14.5hours.

The white Tyvek layer on the metal helmet.

Cotton tape used as a ruching tie to tighten the Tyvek cover.

The Tyvek helmet cover slipped on the metal helmet before the acrylic paints were applied.

Secondly, the issue of integrating conservation treatment in areas of loss. The whiteness of the Tyvek cover could be seen in the area of holes. This created a stark contrast against the camouflage fabric of the helmet cover. It is visually disturbing and would affect the appearance of the helmet. After a discussion with the curator, it was decided that the helmet be conserved in a manner that would return it as closely as possible to its original appearance. This decision was in agreement with the theme of the exhibition which is design and consumption after World War II. The focus is on the camouflage design of the helmet. Hence, we decided to touch-up the Tyvek in areas where there was fabric loss. There were various mediums to choose from, acrylic, watercolor and color pencils. After testing them out on Tyvek, acrylic was an obvious winner due to its opacity and its resistance to water. The only drawback was the suspected slight tackiness of acrylic at high temperatures, which could result in the paint transferring onto the helmet cover. An experiment was carried out to test its tolerance. (Refer to the experiment box below to find out how the acrylic passed our test). Touching-up the Tyvek was tricky. The first thing was to note the areas of losses on the helmet cover on the Tyvek cover. Next the actual designs of the camouflage fabric were drawn in. And after which, the actual touch-up was ready to be done. For this, we had the help of our Paintings Conservator Selina Halim. We identified the appropriate colors that were needed for blending as well as the various strokes to use. Mixing the exact shade of paint was not easy. In many areas, the camouflage helmet cover was stained and the base color varied. After various attempts at mixing to get the right colors and getting the right shade of “stains” on the Tyvek to match the camouflage helmet cover, it was finally completed in 15 hours. It was my first attempt working with paints and it was really a very enjoyable experience experimenting on the various ways of creating “washes” and mixing the right colors.

Here is a photo of me painting the Tyvek. My palette is almost a camouflage pattern itself with all my testing and mixing of paints. The helmet is seated on a “lazy suzy” which enables me to swivel it around when painting. At the left top side of the photo there are some glass weights, which I used to weigh down calico fabric on acrylic painted Tyvek. (See Experiment box below).

We thought the painted Tyvek looked cute, a new design for hats maybe?

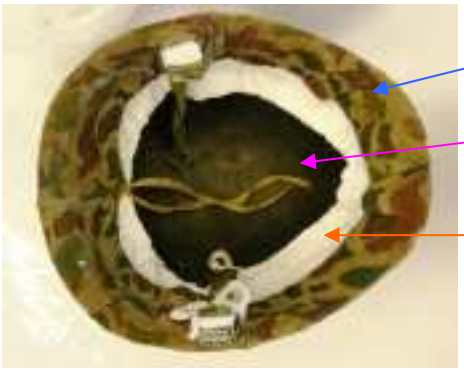
Finally, we turned to the structural issues of the helmet cover; it was in dire need of full structural support. It needed a support that would reduce the widening of the burnt holes, the shedding of more fibers and the prevention of further distortion in areas with losses. This support

would be the exact replica of the fabric cover with the exception of fabric choice. We wanted to choose a fabric lighter in weight, of a looser weave than the original cover and of a translucency that would not interfere with the look of the helmet. Although the support would be on the interior of the helmet, it would be seen in the area of losses. We chose brown colored polyester, an open - weaved fabric known as stabiltex. It blended in well with the fabric cover and was able to provide the support it needed. Using the draft we had previously taken of the helmet cover, we sewed a helmet cover of stabiltex. We then began the process of attaching our stabiltex helmet cover to the original helmet cover. Holding stitches were first inserted to ensure the stabiltex was held in place. Laid couching stitches were then used to attach the areas of losses to the stabiltex. The entire process took 17 hours to complete.

In this image, the brown stabiltex has been attached on the underside of the helmet cover. Finding it difficult to see the stitches? This is because the thread used was extracted from the same stabiltex itself. The fineness of the thread causes minimal damage to the fabric and is less obtrusive.

Here the inner view of the helmet with its full stabiltex support is revealed. This is something no member of the public except yourself reading this now is ever likely to see.

Again, no member of the public is likely to see this revealing image except you, the reader. Would you have imagined the painted layer to be originally white?



The Acrylic paints on the Tyvek layer seen under the stabilitex through the hole of the camouflage helmet cover.

As a teaser: The inner side of the helmet with its Tyvek cover, and a close up shot of the completed helmet.

In the similar way it was eased off the metal helmet, it was placed back in. The ties had to be tightened back to its original state such that the fabric cover fitted snugly to the metal helmet. This completed the make over for the helmet.

How did the make over fare? Make your own judgment by paying it a visit at "Weapons of mass desire" at NMS this August! The exhibition is on until the 4th of January 2009 at the Canyon.

Experiment carried out by applying acrylic onto Tyvek

Two sets of Tyvek were prepared. Each set comprised of 4 pieces of Tyvek . The 4 pieces were split into pairs . For both sets,1 piece of Tyvek in each pair was painted with one layer of acrylic and the other piece with two layers. Each pair in the both sets were dried in two ways, by blowing with a cold blower and air drying naturally. Upon drying, one set was hung outside the building exposed to uncontrolled humidity and temperature. The other set was kept in our environmentally controlled lab. After a week, both sets were brought back to the lab. Calico strips were placed onto the Tyvek and weighed down with glass weights. Over a week, the calico was checked for acrylic transference. As there was none, we decided to proceed painting the Tyvek.

Acknowledgements

I would especially like to thank Selina Halim , Ishak Ahamad , Jacinta Loh Boon Nee and Wong Hong Suen for making the conservation of the helmet and the writing of this article possible.