Abstract: In present days there is a strong influence of the concept incorporating increased use of low intensive colours and small “digitalized” form structures for modern army camouflage designs. It was proclaimed as a revolutionary “universal” design line. It was supposed to be superior to others patterns designs and to be optimal for most types of environment. Meanwhile, some arm forces insist on developing more limited as terrain range camouflage design but with better efficiency and specialization. These two concepts in design reflect the political and the military philosophies of the countries they represent. However, at the end for the soldiers at the battlefield it is a matter of survival.

Key words: camouflage patterns, field grey, additive mix, colour.

INTRODUCTION

For almost a century an answer for the question: “Is there a universal camouflage or is the camouflage applicable only for certain operative zone making it unsuitable for other environment or season” is being searched. From conceptual point of view, from the moment of creation until present days, the majority of opinions are completely bi-polar “universal” versus “specialized”. In this context it needs to be clarified if “universal” stands for “optimal”. The examples from the American studies from the beginning of the XXI century imply that the two ideas are not equal but universal which similarly is rather ineffective for a larger group of environment.

2. ORIGINS AND MAIN CONCEPTS OF THE CAMOUFLAGE PATTERNS

In the beginning of the XXI century the camouflages of many armies are defined as retreating from the camouflages of saturated colours while acquiring new ones with lower colour intensity and predominant use of the grey-dark beige shades. The US has been experimenting for more than twenty years with the so called „Multicam” although later a digital UCP was is introduced. At the same time, the Italian army is applying grey-brown tons in the achromatic range for some of the elite parts such as division „San Marco”. Seven years ago, even the conservative British army, introduced a new model „Multi terrain”. Further, in the last years US army seems to be returning to the modified and improved „Multicam” camouflage.

From a designer’s perspective it is fascinating to clarify the tendency for decreased chromatic and to identify the practical effect of using the “grey” uniforms. As known, the first camouflage military uniforms aim at making the soldier visually hardly detectable through painting the textile in the colours presented in nature [1]. Such colours are khaki, grey, brown, different tons of green. It is a common search for “universal” utmost concealing colour but based on different principles and criteria. Germany reaches the well-known „Feldgrau” (Field grey) while the US, Great Britain and Russia choose different types of khaki. Both approaches imply a complex tone with many nuances which is well integrated in different environments. It is paradoxical that through minimal changes of the exit pigments [2] variations result in ranging from khaki to “feldgrau” and even in German production of the WWII major differences are tracked down with transition to and from with no clear definition. Hence the choice – due to its acceptance as “universal” through both, the practice and the theory this broad range of shades can be found in original exponents from the military production (Fig.1). Due to the differences in technology and materials used, the variation is meant by the producer and the targeted object (uniforms, greatcoats, helmets, boxes for gas masks, cups, flashes).

Fig. 1. “Feldgrau” in different nuances from original German equipment or from the WWII (Collection M. Tachev)

The first fully camouflage uniforms from the World War I (WWI) created for snipers and observers were done by hand in a variety of overflowing “earth” nuances. In this way diffusions of tones are achieved. Interestingly, such result is impossible to achieve for many of today used colours. Experiments in this direction are executed by both belligerents. The conception is for maximum specialization in terms of developing military uniform effective for specific conditions while being applicable for different locations, seasons, daytime, etc. This way despite being a universal attire, it still remains specialized to a certain climate area.

Subsequently, the period of the World War II (WWII) witnessed a substantial development in the field of camouflage. And while in the beginning of the war the camouflage shade for uniforms was created in an abstract manner with decreased coloration such as Splittermuster 31, in the climax of the war the specialists of the
belligerents experiment in two lines. The first was in terms of using similar colours and nuances. This designer concept experiments with nature-like elements in support of the theory for close specialization for certain geographic zones (Fig. 2).

Fig 2. A Camouflage model of the SS troops - Germany, WWII (Author’s archive), B – Shade used by certain units of the Red army USSR in WWII (World War II, Moscow, Russia; Author’s photo archive)

The second direction of experiments was exploring the more saturated colours. Some of these camouflages reflect the principle of optics and colour science in which bright and intensive tones are allocated consequently and a watcher’s eye mixes them and this - in theory – is to give a stronger effect. The technique relies on the fact that more intensive colours from distance lead to the additive colour mixing while from closer distance the stronger colour contrast will break down the figure. Meanwhile, the different colours even though contrasting adapt a silhouette to different environments.

After the end of WWII in the countries from the ex Warsaw pact a lot of experiments were made. During this period camouflage was not a priority due to which the main concept was towards university.

Fig. 3. A. Germany 1943 SS division uniform [3], B- Swiss army camouflage (collection M.Tachev)

For example the DDR army developed camouflage colouring (Fig. 4) built by complex nuances with main protective colour to which gradually were added linear raster. The lines built even network of lines with same size and form. The idea this time was not to break down the silhouette but rather the contour to be dissolved and the raster to connect, to communicate with the surrounding environment so that it could be hardly detectable. Definitely, the effectiveness of diffusive principle was strongly limited in this way and from certain distance the figure became in one colour which no matter how close was to the environment, still isolated the silhouette visually. An interesting development was the one of the Bulgarian army from the 1970s which in our opinion outclassed most models from that time. It has become known as the “frog skin” camouflage (Fig. 6). In general, the design approach is known from the ex Warsaw contract (Fig. 5). The advantage of the Bulgarian model in comparison to the uniforms of the other ex communist countries is in the stronger colour contrast. In terms of concept for these models an original combination of spots and linear raster. It is impressive with the abstract and consistent designer approach. In a more irregular composition, fragmented through linear raster and better matched colours this camouflage will be perfectly relevant today.

Fig 4. A - DDR model,B- Pattern of the Czech Army, marked 1964 (Collection M. Tachev)

Fig. 5. Bulgarian army model from 1970s, detail (Collection M. Tachev)

It is an interesting observation that after the WWII the massive introduction of camouflage for the NATO member countries was also targeting at versatility. Hence the variety of semi-colours finally being removed. All spots were created in a certain system of geometric or amorphic figures, targeting at breaking down the silhouette. Although different techniques were used along with various approaches for breaking down and then in gradual overflow or silhouette adaptation it could be concluded that most camouflages from the second part of XX century rely on certain colourness and on the principle of a mixture of two, three or four colours in certain gamma combined with a dark tone to imitate.
shades. This technique is suitable for more humid and northern areas where nature is darker and greener. The development of the field grey in the second part of the XX century is also rather impressive. The unpopular at that point traditions of the Third Reich were neglected on the account of practices of the winning countries in the WWII. Despite this some European countries continue the use variations of the Feldgrau as main uniform colour especially in the 1960-1970s when gradual withdrawal from the idea of camouflage army uniforms is evident.

3. MODERN TRENDS

From the 1990s a tendency for adopting camouflages in predominant grey – beige nuances and pastel colours started. This “grey wave” is due to several factors. The main one is the „urban" model of the concealing spots. They are very popular for the recent past and are considered as a stereotype for police, guards, peace enforcers, etc. which from psychological perspective has been leading for choosing them giving the task for creating a “peace keeper” vision rather than an occupier impression for the local public.

On the other hand the way battles are lead and mainly a tendency is formed one and the same unit to take part in fights on different terrains in various locations and scenery. Hence the need to search for combinations of desert, forest and urban camouflage combined in one. From the other hand in the temperate climate there are also certain differences in terms of nature and landscape. In the Mediterranean and Southern European countries such as Bulgaria, France, Italy, Spain, etc. the seasonal range in nature colours is significant. From the experiments made with “woodland M81” and “DPM M91” (Fig. 6) it can be concluded that the traditional green-brown camouflage known as forest practically de-masks a soldier’s silhouette in a grass-bushes environment in Central and Southern Europe during the year except for the period May - August. The contrary case is not as striking – a soldier in “light” uniform can be concealed by the tree shades of the surrounding darkening the silhouette optically. These conclusions lead to final dismissal of the specialized camouflage idea for the mass uniform colours and bringing forth the concept for “optimal” shades for certain operative areas. Obviously, the last concept is supported by a strong economic rationale as well. These ideas logically revive the concept for “universal” colour in spotted version of the long forgotten “Feldgrau”.

Fig. 6. British DPM (A) and American „Woodland M81 -B (Experimental and illustrative materials- Private archive M. Tachev).

Fig. 7 Comparison of nuances with brighter colour and with higher chromatic colour in relevantly same size spots. A - Czechoslovakia 1960s, B. France 1990s. (Collection M. Tachev)

Fig. 8. Comparison of the Feldgrau in original German gas mask and the American UCP camouflage (Collection M. Tachev).
4. CONCLUSIONS:

4.1 In the search of maximum “universality” some contemporary colours prove to be inefficient in most of the moist forest areas.

4.2 In the UCP models the size of the “digital” raster and the similar achromatic colours are not contrasting enough in terms of colour intensity. Therefore from a certain distance the figure becomes mono-coloured.

4.3 The specialized camouflage can not lose its actuality although for economic reasons it is applicable only for certain military divisions.

4.4 A combination and balance of the two concepts should be searched with maximum projection of the operative zones for military actions in relation to the defence practice of the country.

4.5 In designing an optimal, effective camouflage model a richness of shades and moderate contrast with valuable use of decreased border and simultaneous contrast should be searched.

REFERENCES


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