

Polychromy on Greek Sculpture:

The Archer on the West-pediment of the Aphaia Temple, Aegina

Antique Greek sculpture was at all times polychrome. The sculptures were made of different materials, but their polychromy always lead to a homogenous aesthetical effect. An antique Greek clay figure would first of all be covered with a priming of white stucco, limestone sculptures with marble stucco, in order to create the illusion of a marble sculpture. Whereas abundant polychrome fragments and even intact paint layers are preserved not only on Greek terracottas¹ (Colour plate front cover) but also on early Greek limestone sculpture, there are few preserved traces on the works of art in marble.

In the last years the polychrome paint layer of Greek marble sculptures has been extensively examined in a research project, largely financed by the „Deutsche Forschungsgemeinschaft“ using foremost scientific examination methods. With the help of technical photography, especially different shooting techniques in ultra-violet light, but also a special side-light technique many traces of earlier painting could be observed and documented. Chemical analysis of the pigments and binding agents as well as intensive microscopical analysis accompanied the documentation. For some of the figures it was possible to recover the almost complete form and polychromy of the paint layer. These findings led us to consider reconstructions of the sculptures using moulded stone copies.

The figure of the Archer on the West-pediment of the Aphaia Temple at Aegina, the kneeling Archer, dating from the early 5th century BC and created in Greece wears an oriental costume: a type of pullover, close-fitting leggings and a jacket (colour plate IX, fig. 4).

The surface of the figures on both pediments of the Aphaia Temple show only sparse traces of red, green and blue colouring. The use of gold-leaf on the pediment warriors has also been established. At the time of the excavation of the Archer in 1811, the discoverer Charles Cockerell and the architect Jakob Ignaz Hittorff, who was very interested in questions concerning polychromy, believed to have discovered the coloured shadow (ghost) of a costume of scales. More information has not been passed down by the excavators, whose account on the polychromy was otherwise very keen and correct. Adolf Furtwängler, who did further excavation work and research at the site of the sanctuary in 1901, devoted a lot of attention to questions concerning the polychromy of the pediment sculptures. He ventured a complete reconstruction of both pediments from the west and east side of the building² (colour plate IX, fig. 2). However, only the colours blue and red were used, because these were the only pigments which had at that time been discovered on the originals.

Due to the lack of any traces of colour on the Archer, he reconstructed this figure in close accordance to the so-called Persian Horseman (colour plate IX, fig. 5), a fragmented marble sculpture, which had been found on the Acropolis in Athens shortly before the turn of the century. This sculpture has an unusually well preserved paint layer³ (colour plate IX, fig. 1). The horseman wears the same type of close-fitting leggings and jacket. A lozenge-shaped ornament is painted on the leg-

gings; the jacket it decorated with slightly displaced lanes of scales.

The polychrome paint layer of the Persian Horseman is quite elaborate, but the coloured ornamentation of the Archer on the West-pediment of the Aphaia Temple exceeds all expectations. Photographs, shot in ultra-violet light and with raking light, made with the help of a number of colleagues⁴ since the 1980's, clearly show the splendor of the original sculpture.

On the ultra-violet-reflex shot of the leggings (colour plate IX, fig. 3), one can see a type of weathering, which most probably resulted from the different fastness of the pigments used. The complicated ornamentation, which originally decorated the complete leggings can be seen on this weather-worn area on the photograph: interlaced lozenge-stripes with lancet-shaped tips, which are again filled with small lozenges.

Using side-light, one can see a far more intense weathering on the sleeves, due to mechanical abrasion. This proves that leggings and upper garment were differentiated by their ornamentation. The sleeves of the „pullover“ were covered with lozenges, with every second lozenge-strip again filled with small lozenges.

The findings on the jacket of the Archer are spectacular. The hem was trimmed with a sumptuous ribbon. Painted animal pairs, face to face in combat position covered the main areas of the jacket. Again using side-light, the rear region of a griffon can be clearly seen. The preparatory work that the artist did on the marble surface is of exquisite precision: using a metal graver each feather quill was individually grooved to form a tensioned swoop. Remarkable is that the lowest, that is the smallest feather quill is just 1 to 2 mm wide. This type of love to detail surprises, on account of the fact, that the figure is positioned at least 12 meters above the viewer.

Due to the different weathering of the individual coloured areas, which can be seen using raking-light as well as in ultra violet light, it is possible with high certainty to determine certain pigments. This procedure can be confirmed in the comparison with late archaic Greek sculptures, which show definite traces of polychromy. One of the best preserved examples to compare is the above mentioned Persian Horseman from the Acropolis in Athens. Here one can observe creative features in general, typical for Greek sculpture around 500 BC: colours are always applied with the greatest possible contrast. This enhances the recognisability of the elaborate ornamentation. The choice of pigments is also canonical: for blue and green the copper-carbonate azurite and malachite are used, for red a natural cinnabar or red ochre. The brown and yellow tones were produced by using ochre.

Our reconstruction, which was realised on a marble mould copy considers all observations and possibilities concerning the analogy (colour plate IX, fig. 6). Natural pigments, similar to those found in Antiquity were used.⁵ For the outer side of the Archer's bow gold-leaf was applied. The naked skin was painted with haematite, a pigment, which was last discovered on the colossal kouros of Samos.⁶

Notes

- 1 Brinkmann, Vinzenz: *Farbigkeit der Terrakotten*, in: *Hauch des Prometheus. Meisterwerke in Ton* (Hrsg. F.W. Hamdorf, 1996) pp. 25 ff. See also Brinkmann, Vinzenz: *La polychromie de la sculpture archaïque en marbre*, *Pact* 17 (1987) pp. 35 ff.
- 2 Furtwängler, Adolf: *Aegina. Das Heiligtum der Aphaia* (1906) p. 301.
- 3 Martini, W.: *Die archaische Plastik der Griechen* (1990), p. 53.
- 4 Special thanks to Mrs. Doris Lauenstein-Senff.
- 5 Red = cinnabar / blue = azurite / green = malachite / yellow ochre and brown ochre.
- 6 Kyrieleis, H. / Kienast, H. / Neumann, G.: *Der grosse Kuros von Samos, Samos X* (1996) pp. 23 ff, footnote 61.

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古希腊雕塑彩绘－以埃吉那岛阿菲亚神庙西面三角板上的弓箭手为例

各个时期的古希腊雕塑的材料各异，但这些雕塑都有彩绘，每每上色，总能达到统一的审美效果。为了获得象大理石雕刻的表面肌理，一件古希腊的陶塑先用白石灰，而石灰岩雕刻甚至会使用仿大理石的石膏打底。迄今，我们还能在希腊的陶俑身上(彩图，见封二)¹、包括希腊早期的石灰岩雕刻的表面，发现残留下来的丰富颜色，时不时甚至能看见完整的彩绘层，但大理石雕刻上的彩绘痕迹却不常见。

近几年，古希腊大理石雕刻的彩绘得到了立项研究，这个科研项目主要是由德国科学研究会赞助的。在项目中，自然科学的研究方法占有突出的地位。借助于科技摄影的手段，尤其是在紫外线下各种摄像技术和一种专门的侧光技术，可以观察和记录许多当时施色的痕迹。记录的同时，对颜料和粘合剂进行了化学分析，并作了大量的显微分析。最后，在几座雕像上，几乎完整地重新获得了其彩绘的形和色。这些结果引起我们思考，通过人造石模型来复原彩绘。

埃吉那岛阿菲亚神庙西面三角板上的一个弓箭手像

这个跪射手像创作于公元前五世纪初的希腊，他看来穿着一件毛衣、一条贴身裤和一件夹克(彩图 IX, 4)。

阿菲亚神庙两面三角板上的雕像表面只留下不多而且很弱的红、绿和蓝色残迹。在三角板上的战士身上使用了金箔，在此之间也得到了证实。当弓箭手像于 1811 年发掘出来时，发现者查尔斯·科克雷尔和对彩绘问题极其关心的建筑师雅各布·伊格纳茨·希托夫都以为看到的是鳞甲的影子(ghost)。发掘者没有给我们提供更多的信息，尽管他们对彩绘作了十分认真和忠实的说明。²

阿道夫·富特文勒于 1901 年对神庙作了新的发掘和研究，对三角板上的雕刻彩绘问题，他重新予以关注。他大胆地复原了神庙西、东两面的两块整三角板(彩图 IX, 2)。但他把颜色局限在蓝和红色，因为当时在原作上还没有观察到其它的颜料。

由于弓箭手身上缺乏彩绘痕迹，在复原他时，富特文勒依据的是所谓的波斯骑士(彩图 IX, 5)，这是一件残破的大理石雕刻，它是在此之前没有几年在雅典卫城发现的，其彩绘保存状态甚佳(彩图 IX, 1)。³ 这个骑士亦着贴身裤和夹克。裤子上画着菱形纹饰，夹克上装饰有稍微偏移的鳞片道。

波斯骑士的彩绘已经十分讲究，但是阿菲亚神庙西面三角板上弓箭手的彩绘装饰却超出了所有人的期望。紫外线照

相和用 80 年代以来一些同事⁴研制的侧光灯所拍的照片，再现了这座雕像的华丽。

在裤腿的紫外线反光照片上(彩图 IX, 3)，可以观察到一种风化，这是由于不同颜料的牢固性各异所至。在这张风化图上可见曾经覆盖全裤的图案：交错的菱形带，柳叶刀般的菱尖，里面又布满小菱形。在雕像的袖子上，这一次通过侧光，可以看见极深的、受力造成的风化，这表明，裤子和上衣因装饰的不同而明显有别。“毛衣”的袖子有菱形纹饰，隔一排的每个菱形中又布满小菱形。

最轰动的最后还是在弓箭手的夹克上的发现。衣边由绚丽的带子作装饰。夹克的大块面上画着成对的动物，它们对视，摆着搏斗的架式，使画面活跃。侧光下，一只巨鸟的下半身清晰可辨。画家画在大理石表面上的羽茎，充满张力，艺术家再用金属雕刻刀把它们一丝不苟地刻出来。值得注意的是，最下面的、也是最小的羽茎仅有 1 至 2 毫米宽。这件摆在观者头上至少 12 米高处的雕像竟如此讲究细部，让人吃惊。基于不同的色面风化程度的不同，这在侧光下和紫外线下均能识别，便可相当有把握地将某些颜料鉴别出来。通过与彩绘痕迹较为明显的古风晚期的希腊雕塑进行比较，这种方法显得更有说服力。保存最好的、可以比较的例子之一，便是上面提到的雅典卫城的波斯骑士像。这里可以看到适用于公元前 500 年左右希腊雕塑的一般造型方式：设色时，相邻颜色的反差总是愈大愈佳。这使人们更易辨别精巧的纹饰。而且颜料的选择也是有规范的：蓝色和绿色多为碳酸铜石青和孔雀石，红色是天然朱砂或红赭石。褐色和黄褐色调当然是用赭石分解的。

在用人造大理石模型进行复原时，我们考虑到了类别的所有情况和可能性(彩图 IX, 6)。因此，我们用的是与古希腊使用的颜料相应的天然颜料。⁵ 弓箭的外边的金色使用的是金箔。男子的皮肤系用赤铁矿作颜料画的，在此之前，萨摩斯岛的庞大少年雕像上也证实了这种颜料。⁶

注：

1. 参见英文文本注 1。
2. 参见英文文本注 2。
3. 参见英文文本注 3。
4. 这里要特别感谢多丽丝·劳恩施泰因-森夫女士。
5. 红色=朱砂/蓝色=石青/绿色=孔雀石/金赭石和褐赭石。
6. 参见英文文本注 6。