

Bronze Colors

Advanced

What does a freshly made bronze object look like? Have you ever seen one? The bronze medals given to third-ranking athletes are not necessarily "fresh", showing the "true" color of the bronze. Not to mention that the color of bronze depends on the particular kind of bronze and its composition. [Brass](#) or zinc bronze is yellow and quite different in appearance from "regular" tin bronze

Or is it? Well, I have polished some of my bronze artifacts down to the bare metal and was quite surprised by what I got. Quite a few of the objects looked rather golden and not that kind of "bronze-brown" one is inclined to expect.

The problem is that photographs of shiny metal mostly do not give a good impression of the beauty and the color of the object. Subtle differences in the color of handle and blade of bronze daggers are clearly seen by the "naked" eye - and testify to different kinds of bronze used - but do not show very well in pictures. Nevertheless, I will give you a few picture below, often with objects of known color for comparison.



The one in the middle shows the typical greenish patina. The one next to it on the right was cleaned some time ago but started to turn dark again in the meantime. The other three are absolutely "fresh". Not that the handle typically is more "golden" than the blade.



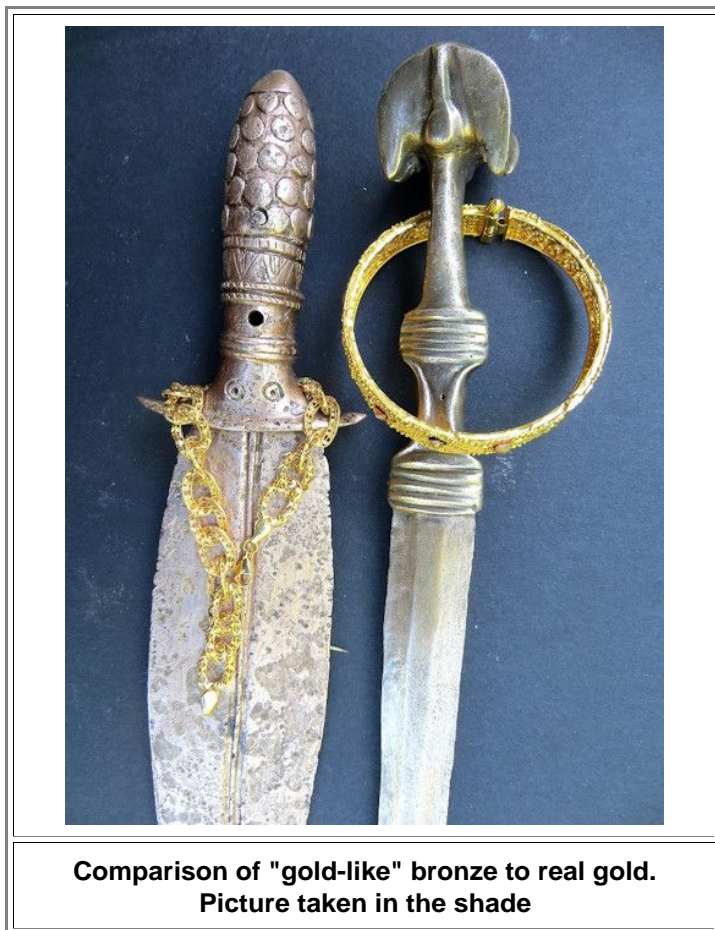
Two daggers from above in comparison with another untreated one. The dagger on the left has a handle that look rather similar to pure gold. That is probably not an accident but meant to be like this. After all, the blades is inside a scabbard, only the handle shows.

Next we look at some Luristan finials (the two in the middle are known as "[Master of Animals](#)"). Once more there are differences in the "goldiness", easily seen by eye but not so clear on photographs.



- The dark one is untreated, showing one of the "desirable" patinas. The other are "fresh". The brownish speckles are from corrosion pits. Viewed under a microscope, these pits are of the same color but illuminated with natural sun light they tend to be darkish.

- ▣ Does that one dagger look similar to pure gold? Only as long as you don't compare it to pure gold. Here is a direct comparison:



- This picture was taken on a sunny day in the afternoon, completely in the shade. Here is the same thing directly in the sun:



**Comparison of "gold-like" bronze to real gold.
Picture taken in direct sun light**

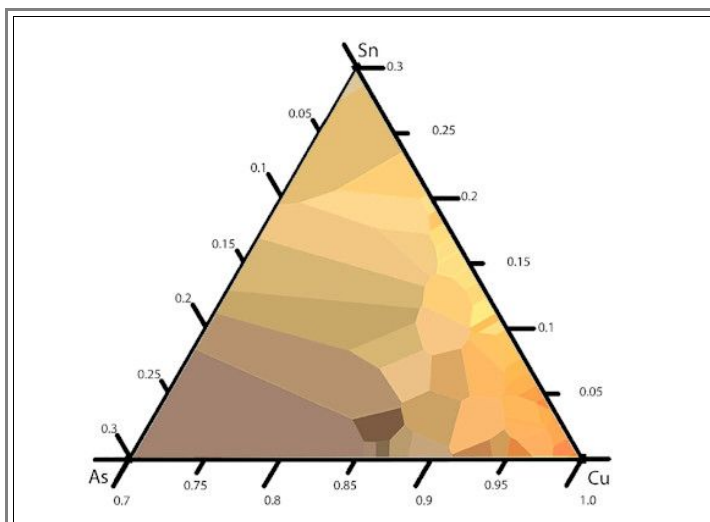
- Gold looks like gold in any illumination. The bronze colors seem to be more dependent on the illumination conditions.
- To be continued -

Well - here is the continuation I promised above.. Just go and read [this article](#):

Experimental design of the Cu-As-Sn ternary colour diagram

M. Radivojevic, J. Pendic b, A. Srejjic, M. Korac, C. Davey, A. Benzonelli, M. Martinon-Torres, N. Jovanovic, Z. Kamberovic
Journal of Archaeological Science xxx (2017) pp 1 - 14

- The link gets you there. The article contains many pictures showing the "true" colors of various Cu - Sn - As bronzes - as far as that can be done in print. Here is one of these pictures:



Bronze colors. Contrast strongly enhanced relative to the original

Source: From the publication given above

While the colors are somewhat exaggerated, it is clear that Cu plus 10 % - 15 % of tin does produce a rather gold-like bright yellowish color and not the brownish hue one typically associates with bronze at large. What that tells us is that those typically brown or green ancient bronze objects in our museum, kept clean and well-polished when in use, looked far more magnificent than we usually imagine.