

## No Blue 'til the Neolithic

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I am stating the title of this essay as a fact rather than posing it as a question. Blue did not occur in painters' palettes until the Neolithic. I don't know why, many humans today love the colour blue and geological deposits of bright blue and green copper minerals would have stood out in a pre-agricultural landscape as much, if not more so, than the ubiquitous ochres and chalks. Research has been conducted on the use of colour terms in language and it seems a term for 'blue' is late to enter most languages. But colours are named only when it becomes useful to do so<sup>1</sup>. Erroneous and unscientific speculation has been made that the ability to see blue was a late step in our evolution, a ridiculous assumption given that *Homo sapiens* (Anatomically Modern Humans; AMH) living in the African Middle Stone Age, were exactly that; they could see what we could see. They saw that the sky was blue and that some birds have blue plumage. They simply did not *need* words to describe the firmament or a kingfisher's wing.

Nevertheless, it seems that red was a more attractive colour when it came to painting rock and bodies and red ochre is common on the Earth's surface. Ernst Wreschner stated that '*Prehistory has produced evidence for two meaningful regularities in human evolution: tool making and the collection and use of ochre*'<sup>2</sup>. We, AMH, have been collecting ochre to make paint for 220 thousand years and the Palaeolithic palette is limited; red ochre, carbon black, manganese oxide black, clay, chalk and other forms of calcium carbonate. These colours are seen in the shell palettes of Blombos Cave, the parietal art of central France and within burials. Ground chalk at the Gravettian site (26,580 ka) of Krems-Wachtburg was found amongst red and yellow ochres, graphite black and charcoal. Nearby a burial of two babies was found, sheltered by the scapula of a mammoth and bedded into a womb-like pit lined with red ochre<sup>3</sup>. Manganese oxide blacks were used as pigments in the cave art of the Dordogne, and long before the AMH came there, by Neanderthals<sup>4</sup> who were also exploiting red ochre<sup>5</sup>. This palette did not change over the *longue durée*.

Fundamental changes came about 10,000 years ago. People settled in one place to tend crops. Villages were established with homes passed down through generations of families. Some of the best evidence of this sedentary lifestyle comes from eastern Anatolia on the Konya plain, where at the Neolithic site of Çatalhöyük the inhabitants made time to paint the walls of their houses in red ochre and even cinnabar, sooty carbon black and white clay; a familiar and human palette. But the earliest evidence of the use of the colour blue as a pigment also comes from Çatalhöyük. The Neolithic East Mound has stratigraphy dating from the early 8<sup>th</sup> Millennium to 5950 BCE. Here, pouches filled with a carefully prepared azurite pigment are found amongst grave goods associated with some women and child burials. We can only speculate on how and why blue pigments were being used in Çatalhöyük. What is known is that they were not used in the wall paintings<sup>6</sup>; they may have been used as a cosmetic, in rituals or even as pyrotechnics (finely ground copper compounds produce a blue flame when thrown onto a fire). Were these pigments used by a society who were on the cusp of discovering or adopting the knowledge used to produce copper? Or indeed, did the knowledge of smelting copper come from (accidental or intentional) burning of copper pigments? It has been speculated that the latter might well have been the case<sup>7</sup>. Çatalhöyük also reveals some of the earliest Chalcolithic deposits on the nearby West Mound.

Copper mineralisation is easy to spot in a pre-industrial landscape with low vegetation. Streaks of bright blue rocks on the surface would have been obvious before these were mined out. Why were they ignored for so long as sources of pigment? Why 10,000 years ago did these colours suddenly become attractive as pigments? With our scant understanding of the development of human cognition, these are questions that cannot be easily answered. However it is clear that colour palettes expanded with the advent of metallurgy; pigments are readily produced as by-products of industrial processes and this is still the case up until the present day.

*Ruth Siddall, July 2021*

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<sup>1</sup> Gibson *et al.*, 2017, PNAS, 114, 40, 10785–10790.

<sup>2</sup> Wreschner, 1980, *Current Archaeology* 21, 631-44.

<sup>3</sup> Händel *et al.*, 2008, *Wiss. Mitt. Niederösterr. Landesmuseum.*, 19, 91-108

<sup>4</sup> Pitarch-Martí & d'Errico, 2018, *JAA*, 50, 54–68.

<sup>5</sup> Roebroeks *et al.*, 2012, PNAS, 109, 1889-1894.

<sup>6</sup> Camurcuoğlu & Siddall, Presentation at AIA Washington DC, January 2020

<sup>7</sup> Radivojevic *et al.*, 2017, *JAS*, 86, 101-122.