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Interpretation of colour and form in Picasso's *Guernica*: the bystander hypothesis

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Dear Editor:

In 1937, the government of the Second Spanish Republic, with Juan Negrín as prime minister, commissioned Pablo Ruiz Picasso (1881-1973) (who had been living in Paris since 1904 and, alongside Georges Braque, was the leading figure of cubism) to create a large mural that would be exhibited at the Spanish pavilion at the Exposition Internationale des Arts et Techniques dans la Vie Moderne, to be held in Paris that year. Only two months before the event, the newspapers *Ce Soir* and *L'Humanité*, which the painter read daily, reported on the devastating aerial bombing of a defenceless urban community that had taken place during the Spanish Civil War (Operation Rügen). On Monday, 26 April 1937, around half past four in the afternoon, the village of Gernika-Lumo, with approximately 7000 inhabitants, was brutally bombed by an air force squadron formed by Germany's Condor Legion and Italy's Legionary Air Force, in support of General Franco's forces, which had risen against the Republican government.

The disaster inspired the genius painter to create, in barely three weeks, a colossal mural immortalising the atrocity; the work became a timeless, universal symbol condemning war and violence, particularly that targeting unarmed civilians. He rented a large studio at no. 7, Rue des Grands-Augustins; after dozens of sketches and up to seven different versions, Picasso completed an oil-on-canvas painting that, due to its dimensions (3.49 × 7.76 m), may be considered a portable mural (Figure 1).

Picasso sought to reflect human cruelty in a way that forced the observer not simply to indulge in aesthetic appreciation, but rather to experience the most profound feelings of their soul.

To enhance the drama, he employed shades of grey, black, and white (*grisaille*); these colours evoke death. In fact, he had initially added touches of red and pink at key points on one side of the painting, to depict blood, but ultimately decided to remove these as he believed that these colours may distract the observer, reducing the impact of the scene.

Numerous interpretations have been made of the enigmatic message conveyed by this masterpiece in terms of theme and composition, which are as personal as they are unclassifiable. The German psychologist and philosopher Rudolf Arnheim wrote in 1976 that: "Nor was it merely an attack by the rebellious general; it was the manifestation of Fascist brutality..."[1,A] Víctor Cabré Segarra points out that: "Furthermore, the Basque population represented the pride and freedom of the people; therefore, the devastating bombing carried immense historical and human significance, and the reality of such a relevant theme gives a background for the artist."[1(p10)] In his 2011 analysis of *Guernica*, Josep Palau i Fabre argues that:

> The master painter's intention was for the painting to be captured in a single gaze, and its mystery lies precisely in that intention. Its power as a single, absolute space is so great that it is not the observer that captures the painting in a single gaze; rather, the observer is captured by the painting, as though devoured by an enormous eye. This explains the unease frequently perceived when one sees *Guernica* for the first time. The mural gazes at us, it absorbs us.[1]

[A]Translator's note: quote from Arnheim's work: Arnheim R. The genesis of a painting: Picasso's Guernica. Berkeley (CA): University of California Press; 2006.

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Figure 1. *Guernica*, by Pablo Picasso (1937). Oil on canvas, 349.3 × 776.6 cm. Photo by Joaquín Cortés / Román Lores. Museo Nacional Centro de Arte Reina Sofía. © Sucesión Pablo Picasso, VEGAP, Madrid, 2012.

Picasso's intention was to place the observer within the burning village.

It has also been suggested that Picasso intended to reflect the dense smoke caused by the bombing, which presumably would have plunged the village into deep darkness on that sunny spring afternoon; in that scenario, the only light would come from lamps and from the flickering of the flames engulfing the buildings.[1]

Víctor Cabré Segarra hypothesises that Picasso's decision to omit colour from the mural was influenced by the black-and-white cinema of the time, which used shadows to heighten fear, as well as the black-and-white newspaper photographs capturing the massacre.[1] This decision may have been encouraged by the surrealist photographer Dora Maar, Picasso's partner at the time, who had introduced him to darkroom techniques and photographically documented the whole creative process. Before the dawn of colour media, dreams were more frequently greyscale,[2] although Picasso himself never confirmed this.

Lastly, we should mention Picasso's loyalty to the Spanish black-and-white tradition, masterfully represented in Francisco de Goya's series of prints *The disasters of war*; print no. 30 presents a very similar scene to that depicted in *Guernica* (Figure 2).

In summary, for these authors, the mystery of the monumental painting either lies in the sheer impact it makes on the observer at first glance, the image that the painting returns to the observer, as if it were a mirror, or in the drama that overcomes the observer, blinding and deafening us, so deeply connecting the senses that it may cause colour-sound synaesthesia.[3] Víctor Cabré recalls that his first reaction to the mural was to close his eyes and cover his ears: the scene produced an unbearable noise that tore through the silence of the room.[1]

Most hypotheses about *Guernica*'s iconic composition and effect on the observer are based on the analysis of the images presented, without considering the horrors of the bombing itself.

Our hypothesis, however, is that the style and composition of the painting come from Picasso's imagining himself as an individual bearing witness to the apocalyptic scene: he or she is shocked and stunned, and perceives images as a distorted landscape, with no colour or movement, in the form of schematic, cubist shapes. The projection of the film of their life suddenly halts in this overwhelming moment, creating a black-and-white still frame that remains as a psychological imprint, later returning in flashbacks or distressing nightmares and making the bystander relive the traumatic experience.

Thus, we may interpret this heartbreaking, colourless, static view as the expression of non-organic achromatopsia and akinetopsia, triggered by acute stress.

Faced with this hypothesis, we may consider two possibilities: either Picasso was aware of the existence of colour vision defects, or he imagined that a deeply emotional situation, such as the one lived by this eyewitness, might temporarily abolish the ability to perceive colour and movement.

Colour blindness was already known at the time when *Guernica* was painted. The first description of the syndrome was made by the English ophthalmologist Daubeney Turberville, who reported a case of colour blindness in a letter to the Royal Society of London in 1684.[4] In 1794, the chemist John Dalton studied his own inability to distinguish red from green, reporting a syndrome that would later be named after him (daltonism).[5]

According to the *Oxford English Dictionary*, the first use of the term achromatopsia (from the Greek *achromatos*, colourless, and *opsia*, related to sight) was in *The Lancet* in 1849. At that time, the entity was defined as a rare, congenital, hereditary, incurable disease that caused inability to distinguish between some colours. It was known to be more frequent in men, and to be secondary to brain lesions and toxic agents, damaging the receptor (retina) or the organ of perception (brain).

With the boom in railway construction and commercial sailing, knowledge of daltonism became widespread, and the disease was perceived as potentially life-threatening. In 1875, the physiologist Frithiof Holmgren attributed the fatal railway accident that took place in Lagerlunda (Sweden) to the inability of the stationmaster or of the driver to distinguish between red and green signals[6]; the incident became widely known.



Figure 2. "Estragos de la guerra" (Devastation of war; print no. 30 from *The disasters of war*), by Francisco de Goya (1810). Source: Wikimedia Commons (Wikimedia Foundation).

We will now address whether stress (acute stress in this case) can impair photopic vision in the absence of an underlying physical lesion, causing functional vision disorder[7] or non-organic vision loss. This group of visual disabilities is characterised by a mismatch between patient-reported symptoms and objective clinical findings. The reported symptoms may affect visual acuity, central or peripheral vision, and trichromatic colour vision, and these conditions may present in different patterns, as monocular or binocular deficits. The study of their aetiology and pathophysiological mechanisms requires a biopsychosocial approach that acknowledges the physiological, psychological, and social dimensions contributing to the disorder.[8]

Cases of reversible, non-organic achromatopsia have been reported, mainly in children, adolescents, and young adults, associated with stress or attention-seeking behaviour.[9]

On the other hand, the literature includes cases of reduced contrast perception in association with depression, with patients perceiving shapes and colours; the severity of the dysfunction is linked to the severity of the mental disorder.[10] Although we do not believe that

Picasso's mood states were so deep as to explain the achromatism observed in *Guernica*, they did produce aesthetic changes in his work; for example, we may cite his "blue period" (1901-1904), coinciding with the suicide of his friend Carles Casagemas. During this period, he chose cool colours, reflecting "emotional cyanopsia"—a metaphor for hopelessness and melancholia.[11]

Among acquired dyschromatopsias, we should mention those related to frequently used medications: chloroquine, indomethacin, phenothiazine, thioridazine, trimethadione, digoxin and phosphodiesterase inhibitors (all of which are linked to blue-yellow colour discrimination deficits), and MAO inhibitors and ethambutol (linked to optic neuritis with impaired red-green colour discrimination). To our knowledge, Picasso did not use any of these medications.

We hypothesise that, in parallel to achromatopsia, Picasso presented a certain degree of impairment of movement perception, a disorder known as akinetopsia (from the Greek *a*, without, *kine*, movement, and *opsia*, sight) or visual motion blindness, a term proposed by Zeki in 1991. Patients with mild akinetopsia perceive motion as a series of consecutive static images, or snapshots, rather than a continuous, smooth sequence. In severe or macroscopic cases, patients are completely unable to process movement, and see fixed images jump between locations.[12] The first published evidence of this disorder was reported by Pötzl and Redlich in 1911; however, as early as 1903, Daniel Paul Schreber, in *Memoirs of my nervous illness*, described features compatible with akinetopsia, narrating the sudden appearance of people. This alteration may be elicited with transcranial magnetic stimulation of area V5. An association between achromatopsia and akinetopsia has been reported as a critical manifestation of focal epilepsy originating in the extrastriate areas ventral V4 and V5, which process and encode colour and movement.[13] In addition to epilepsy, akinetopsia may also be secondary to occipital-temporal stroke, posterior cortical atrophy secondary to head trauma or neurodegenerative disease, and drug toxicity linked to such selective serotonin reuptake inhibitors as nefazodone or 5-HT2 receptor agonists, such as psychedelic drugs.

Picasso is known to have used hashish, opium, and the opium alkaloid morphine, among other drugs. In his 1977 biography of Picasso, Patrick O'Brian recounts that Picasso suffered disturbing hallucinations after chewing hashish pills.[14(p189)] It is unclear whether he experienced a hallucinogen persisting perception disorder related to the use of cannabis, but it seems plausible. Among perception disorders recurring after drug discontinuation, the Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition, Text Revision) includes visual hallucinations of geometric shapes, lines, stripes, or bands suspended over the trajectory of a moving object; overlapping geometric patterns, fragmentation of static or moving objects; virtual snow; geometric phosphenes; and palinopsia (from the Greek *palin*, again, and *opsia*, sight). Palinopsia is a neurobiological phenomenon characterised by the persistence or recurrence of a visual image after the removal of the visual stimulus.[15] It is tempting to suppose that Picasso might have experienced some of these perception disorders, and that they may have inspired his work, particularly *Guernica*.

Palinopsia may be categorised as hallucinatory or illusionary. Hallucinatory palinopsia is linked to posterior cortical lesions (tumours, infarcts, etc) and epileptic seizures, whereas illusionary palinopsia is associated with migraine, head trauma, medications and recreational drugs, and post-traumatic stress disorder, with no structural correlation.[15,16]

Palinopsia should be distinguished from physiological afterimages, which typically appear immediately after looking at a bright stimulus; this physiological phenomenon depends on light intensity, fixation time, and the state of retinal adaptation. Picasso must have been familiar with afterimages, as he was frequently photographed and, consequently, exposed to flash powder and, later, to Ostermeier's flashbulbs, which used magnesium or zirconium filaments.

We have attempted to classify *Guernica* into a specific graphic style, albeit unsuccessfully. The mural does not seem to fit any of the styles of the rest of his oeuvre, from his blue and rose periods to the cubist period, or even the free figuration of his final years. *Guernica*, an imaginary product of a rather subjective approach, may belong to schematic synthetism, which combines features of cubism, expressionism, and symbolism.

To our knowledge, Picasso never explained the reasons for the achromatic palette employed in *Guernica*. He frequently stated that the painter should not reveal the meaning of symbols and other details in their paintings; rather, it is the viewer who must interpret them.

However, during the Juan Cantabrana exhibition at the Toisón art gallery in Madrid, the gallery's director, Daniel Sueiro, who knew Picasso personally, told the lead author of this article on 5 January 1973 that he had heard the genius painter say that, to conceptualise the scene of *Guernica*, he had adopted the position of an eyewitness who was shocked by the terrible event.

From these words, Sueiro inferred that the ideological viewpoint of the mural was clearly intentional: Picasso aimed to capture the terrible spectacle of death and despair, which are interpreted from the anguish a bystander might have felt; this person may be close to the protagonists of the scene, possibly a relative.

The facial expressions of the human figures depicted in the mural are dramatic; this effect is achieved with the use of strong contour lines and angular shapes. This "semi-cubist" geometrisation produces extreme, piercing grimaces that capture all sorts of deep emotions.

In conclusion, Picasso's asseveration to Sueiro would support our hypothesis about the reason for the use of a monochromatic palette and the original composition of the fabulous painting. In our view, based on his hypothetical knowledge of colour blindness (achromatopsia) and his personal experience with hallucinations (as well as other influences previously mentioned), Picasso placed himself in the position of a bystander and envisioned how this individual might perceive and internally experience the tragedy, capturing the scene so ineffably that it transcends reality and becomes truth itself.

Conflicts of interest

The authors have no conflicts of interest to declare and have received no funding.

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