2026

PROGRESS IN COLOUR STUDIES



- University of Wrocław
- The Eugeniusz Geppert Academy of Art and Design in Wrocław

PROGRESS IN COLOUR STUDIES 2026



ABSTRACTS

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PLENARY LECTURES



Carole P. Biggam
University of Glasgow, Scotland, UK

Madder: A dye-plant of early medieval England

Madder is the principal English name for those species of the *Rubia* genus from which a red dye can be obtained. That madder was used in Anglo-Saxon England has been proved by the chemical investigation of surviving textiles and pottery containers, many of which have been examined by specialists like the late Penelope Walton Rogers of the Anglo-Saxon Laboratory. Further evidence emerged in the Anglo-Scandinavian city of York where a large dump of madder plants was found. My purpose in this lecture is to present a range of linguistic evidence from that early medieval period which should augment the scientific evidence and, perhaps, provide new insights. I will attempt to address the following questions, among others: what vocabulary survives from Old English (the language of the Anglo-Saxons) which denotes this dye, and do different terms indicate different species? What items of clothing and other textiles were dyed with madder? Which Latin and other terms did the Old English words translate and do they provide further information? Were madder dyed-textiles prestigious or commonplace? In searching for answers to these and other questions, I intend to provide a multidisciplinary survey of the use and value of madder dye in early England.



Łukasz Huculak
The Eugeniusz Geppert Academy of Art and Design in Wrocław

Where the brain meets the universe

Colour is the place where our brain and the universe meet – this phrase, attributed to Paul Klee, culminates several centuries of European reflection on the aesthetic role of color. It also reverses the hierarchy founded on the Renaissance distinction between rational disegno (drawing) and capricious colorito. Although it is uncertain whether Klee uttered these words, they echo the awareness characteristic of modernism that visibility arises at the intersection of light and consciousness. This presentation will consider color as means of artistic expression in the context of knowledge in physics and biology. Using Guido Reni's painting "L'Union du dessin et de la couleur" as an example, the historical dynamics of color's status as an art medium will be outlined, in the context of knowledge about the nature of electromagnetic radiation's impact on the human perceptual apparatus. Does color exist? And if so, in light, in an object, or in the subject's nervous system? By pointing out the complex factors influencing the perception of chromatic phenomena (the object's own characteristics, the conditions prevailing in the environment and the physiology of perception), I will consider, in reference to skepticism and phenomenology, the reasons why color was treated in art theory as an unstable and subjective emotional aspect.



Galina V. Paramei
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Experiential and linguistic factors attune colour concepts: 'Blues' of Italian speakers

Colour concepts are phenomenological entities formed by communicative efficiency in a language population. In my lecture I will focus on the main Italian 'blue' categories denoted by *blu* 'dark lue', *azzurro* 'light/medium blue' and *celeste* 'light blue', and report on a series of recent psycholinguistic experiments, which elucidate the malleability of colour representations by specific experiential and linguistic factors. We sought to quantify the semantic power of *blu* and *azzurro* (Paramei et al. 2026). In a Stroop task, we presented the words *blu* and *azzurro* either in dark or light blue ink, and measured the response speed of naming the ink colour. We hypothesized that in incongruent combinations, *blu* word–light blue ink and *azzurro* word–dark blue ink, highly frequent in Italian *blu* would manifest greater semantic (inhibitory) power. Unexpectedly, not *blu* but *azzurro* revealed strong Stroop interference. We argue that the semantic power of *azzurro* reflects its stronger ideation and greater processing automaticity driven by its deep entrenchment in Italian, in spite of its lower use frequency. We investigated the dynamics of the main 'blue' categories in an experiment with late Italian-English bilinguals, who named stimuli in the blue area of colour space (Paramei & Douven, in preparation). The immersion context was found to modulate, in both L1 and L2, the structure of the 'blue' categories, whose denotative extent was larger than in monolinguals. In L2, bilinguals' *blue* prototype is considerably darker than that of English monolinguals. The *blue*→*blu* prototype shift is probably explained by these cognates being near-homophones/-homographs, while also manifesting that Italian (L1) dominates in the colour domain.

SECTIONAL PAPERS

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Subjectively felt and objectively measured emotions in response to colour: A study in virtual reality

"Colours can impact how we feel" – such claims are popular and widespread. Empirical studies confirm that, indeed, people form systematic conceptual relationships between colours and emotions, linking yellow with joy, red with love and anger, blue with calmness, etc. These studies, however, test associations and do not predict how colour might impact our emotions. Causal studies must be designed differently. Specifically, one should first (i) physically *immerse* participants in coloured spaces instead of presenting colour terms or patches, and (ii) measure participants' *felt emotional experience*, rather than conceptual associations. Moreover, the effects of hue, lightness, and chroma should be disentangled through the strict control of colour parameters. Only such rigorous methodology can help us understand whether colour impacts emotions and if so, in which way.

Responding to these requirements, we immersed 80 participants (61 women, 19 men, M_{age} = 20.46) in coloured spaces using Virtual Reality and assessed their emotional response using subjective and objective measures. In these virtual rooms, the walls were rendered in each colour as painted surfaces. All participants saw 18 rooms in total: six hues (red, orange, yellow, green, blue, and purple), each in three appearance conditions: light, dark, and prototypical. In the light and dark appearance conditions, chroma was set constant at C^* = 30 (CIE *LCh* model), while lightness was manipulated to create light hues (L^* = 85) and dark hues (L^* = 29). The CIE *LCh* values of the prototypical colours corresponded to the best category exemplars identified in a previous experiment and freely varied on all three dimensions. Participants stayed in each coloured room for one minute before indicating how they subjectively felt, by selecting one of nine affective terms presented in the form of labelled, non-gendered robot graphics (*neutral, excited-lively, happy-joyful, relaxed-carefree, calm-serene, bored-weary, gloomy-sad, irritated-annoyed, tense-nervous*). Moreover, participants' psychophysiological parameters (i.e., heart rate, skin conductance, respiration,

pulse, and temperature) were continuously recorded throughout the experiment to obtain objective measures of emotion.

We present preliminary results on the subjective measures. A nested multinomial regression analysis revealed no significant effects of hue or appearance condition on participants' self-reported emotions. In other words, participants chose similar affective terms irrespective of hue or lightness, most frequently reporting feeling *relaxed-carefree, calm-serene, bored-weary,* or *neutral.* The correlations between the hue-emotion association patterns were strong across all appearance conditions: light-dark ($r = 0.71$, $R^2 = 0.50$, $p < 0.001$), light-prototypical ($r = 0.73$, $R^2 = 0.53$, $p < 0.001$), and dark-prototypical ($r = 0.58$, $R^2 = 0.33$, $p < 0.001$), further highlighting the similarities.

Our results do not support the hypothesis that being exposed to different colours lead to different emotional experiences, putting in question the widely held assumptions. It is possible, however, that colour effects are not observable at the conscious level, measured through self-report, but might be detectable with objective psychophysiological measures. However, if we observe similar results with physiological measures, the overall findings would suggest that although colours carry affective meanings, these do not automatically elicit corresponding emotional responses.

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Mapping color: A comparative overview of *żółty* and *yellow* in plWordNet and Princeton WordNet

The aim of the presentation is to provide a comparative overview of the conceptualization of colors in Polish and English, using the example of the relational paradigm of lexicographic description in plWordNet and Princeton WordNet. plWordNet (Piasecki et al. 2009, Rudnicka et al. 2025), which describes the Polish language, is currently the largest wordnet in the world (GWA – Global WordNet Association). The English Princeton WordNet (Miller et al., 1990) was the first wordnet in the world and serves as a model for resources of this type (Fellbaum 1998, Miller, Fellbaum 2007). Due to differences in the structure of these wordnets (discussed in detail in: Piasecki et al. 2009:25, Maziarz et al. 2013, Alberski, Jankowski 2025: 70), it was necessary

to develop a method for their precise linking (Rudnicka et al. 2012, 2018, 2019). By linking at the lexical unit level, it is possible to compare the conceptualization of colors in both languages.

Certain differences are already visible on the surface of the description: plWordNet records 91 units that include the shape *kolor*, including 6 single-segment noun units with this form. Princeton WordNet records 54 units that include the shape *color*, including 7 single-segment noun units with this form. Moreover, the synset containing the unit *kolor* 1 has 112 hyponyms (not counting other types of relations), while the synset *color* 5 has only 12 (not counting other types of relations).

Similarities can also be observed: on the English side, the shape *yellow* appears as a noun, adjective, and verb lemma. In plWordNet, there are also corresponding forms: the noun *żółć*, the adjective *żółty*, and verbs such as *zżółtknąć*.

Since linguistic reflection on colors covers a wide range of issues (see, e.g., Goethe 1981, Gonigroszek 2008, Wittgenstein 2014, Kuster 2014, Janowski 2021), it is necessary to narrow down the subject of analysis. Therefore, a comparative overview of descriptions in plWordNet and Princeton WordNet, along with a presentation of the mapping between these resources, will be illustrated using the example of the words *żółty* and *yellow*, which are used to name the colors of a canary, a buttercup, and a banana.

Bolormaa Algaa
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Chromatic memory: A neurophenomenological analysis of Balgansuren Natsagdorj's *Taiga* landscapes

This paper establishes a neurophenomenological framework to analyze color as "embodied memory," moving beyond traditional optical and physiological models of color vision. The study centers on a large-scale landscape by the Mongolian artist Balgansuren Natsagdorj (Taiga Natsagaa), titled *Taiga*, painted in 2007. Notably, this work was created seventeen years after the artist's extended period of residence in the northern Mongolian taiga (1984–1990). By integrating Maurice Merleau-Ponty's phenomenology of perception with

Francisco Varela's neurophenomenology, the research examines how artistic color practice functions as a long-term cognitive reconstruction of lived environmental experience.

The analysis utilizes the artist's personal diaries from the 1980s as primary phenomenological data. These records document daily immersion in sub-arctic conditions, specifically focusing on fog density, atmospheric pressure, and the shifting chromatic fields of the tundra. The seventeen-year latency between the original sensory input and the final composition suggests that the painting's chromatic structure is not a retinal imitation of nature, but a "mnemonic residue." As the brain filters ephemeral details over time, it retains the felt-sense of the environment, which Natsagdorj translates into specific tonal structures.

The study identifies three distinct chromatic strategies in the work:

Atmospheric Desaturation: The dominance of cool greys and desaturated blues to evoke the temporal suspension and sensory dampening of high-altitude fog.

Thermal Anchoring: The strategic use of warm ochres and localized yellow light within the reindeer camp to trigger the viewer's embodied sense of warmth (thermoreception) against a vast, cold field.

Tactile Tonal Vibration: Layered foreground textures that engage haptic perception, simulating the physical resistance of the taiga terrain.

Furthermore, the paper contextualizes this "chromatic austerity" within Mongolia's post-socialist transition – a period when artists moved from institutional realism toward subjective, autonomous expression. The findings argue that color in Natsagdorj's practice operates as embodied cognition: a synthesis of neural processing and the rhythmic adaptation to a landscape stored in the body's memory for nearly two decades. By bridging diary-based first-person data with formal color analysis, this study expands color studies beyond optical representation toward a dynamic account of how chromatic atmosphere is encoded into artistic consciousness.

David Bimler
Independent Researcher, Wellington, New Zealand

A study in scarlet and bright red: Using colour-naming data from the 'xkcd' survey to quantify gender differences in usage of English colour-term modifiers

The evolution of the English language includes a growing capacity for finer distinctions in colour description, made possible by additional Basic Colour Terms (BCTs) like 'orange', 'rose' / 'pink', and arguably 'turquoise'/'teal' and 'lilac'/'lavender' (Mylonas & MacDonald 2015). However, new colour terms are not adopted across the entire community of speakers in synchrony. Notably, though men and women both seek precision in colour-naming tasks by modifying, particularising or combining BCTs ('bright pink', 'sky blue', 'red-purple'), women tend to use finer less-basic descriptors more often, with less reliance on BCTs (Lindsey & Brown 2014). Just as with colour terms, the modifiers fall along a spectrum of salience, so that one can speak of 'basic' and 'non-basic' modifiers – the latter are used less frequently, are only applicable to specific terms, and are recognisable as originally metaphors (e.g. 'pastel', 'dusty', 'neon'). The question arises, are there comparable gender differences in term-modifying choices?

I examined a colour-naming data-set collected and made available by the science writer 'xkcd' (Randall Munroe), in which ~154,000 participants provided over three million unconstrained descriptions for colours picked randomly from the RGB cube. Indeed, as well as relying less on a core set of BCTs, female participants employed fewer modifiers than males, and preferred less-common modifiers. They did make more use of 'bright', 'deep' and 'dull', perhaps reflecting saturation-related lexical gaps in the non-basic terms available as alternatives. Whether these different colour-naming strategies extrapolate to other language communities is a question that the present data set cannot answer.

The effect of each modifier can be expressed as vectors in colour space: how the centroids of distributions of (e.g.) 'light blue', 'light green', etc. are displaced from 'blue', 'green' etc. (Bimler 2025). Calculating these vectors for men and women separately with the 'xkcd' data, we find minor but intriguing gender differences in how each modifier is understood.

Anna Cisło
University of Wrocław, Poland

Is there anything beyond green? The colours to represent Ireland on book covers published in Poland

In the life of nations and ethnic or social groups, colours serve both integrative and representational functions. They unite people and stimulate their collective imagination through references to myths and historical events. Today, in the case of Ireland, it is the green colour – associated with St. Patrick's Day and used in the Irish tricolour, beside white and orange – that evokes strong patriotic feelings in the minds of the Irish and makes them recognisable. However, Flaitheas Éireann, the embodiment of Irish sovereignty in mythological times, sported blue, and sky blue is historically connected with the Order of Saint Patrick, founded in the 18th century to reward the Irish for their loyalty to the British and their political support for the idea of the union in the Irish Parliament. It is thus possible that St. Patrick was once represented as wearing blue robes, the way leprechauns, mythical Irish little people, today all in green, were depicted as wearing red, traditionally associated with the supernatural. The colour blue was also used under the reign of King Henry VIII when he split from Catholicism and declared Ireland a separate kingdom, which was granted its own coat of arms – a golden harp placed against a blue background. Although a hundred years later the Irish Catholic Confederation replaced the blue background in this design by a green one, it is the azure shade of blue, known as presidential blue, that is used in the present-day Irish coat of arms. This paper will concentrate on the colours employed to symbolically represent Ireland – blue, green, white, and orange. It will briefly discuss their symbolic meanings in the context of Irish history and politics. It will explain the reasons why green has become the dominant colour in the external representation of that country. This will be exemplified with the covers and dust jackets of selected books about Ireland, its culture and history, published in Poland over the last thirty years. Novels, whose content influence the cover design, and guide books, on whose covers photographs are normally placed, will not be considered. Examples of the use of the other three colours in the context of specific cover designs will also be presented.

Donald Dedrick
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Integrating different types of explanation for basic colour terms and categories

A number of different explanations, or explanation types, have been proposed to account for the robust regularities pertaining to basic color terms and basic colour categories. [1] [5] Here are the four explanations most commonly mentioned:

- Visual ecology hypothesis. Colour is distributed across the natural environment in a way reflected in basic terms and the categories they name. [8]
- Anthropological-historical hypothesis. Basic colour names are derived from socially or culturally significant things or properties. [7] [2]
- Perceptual salience hypothesis. Basic colour names and/or categories reflect some aspect of underlying human psychology and/or physiology. [3] [4]
- Communicative efficiency hypothesis. Basic colour naming aims for communicative efficiency. [6]

In this paper I argue that the different explanation types do different things, and get traction at different points in the process of developing, coming to use, and mastering basic colour vocabulary. If we look to the capacities of the different explanation types--what they can do and when they apply--we find that the anthropological-historical hypothesis (B) is essential in the formation of pre-basic colour terms which nonetheless become the foundation for the basic terms; that communicative efficiency hypothesis (D) is the only explanation type with the ability to account for the formation of colour categories as well as their variation; that perceptual salience (C) is best suited to operate in the context of an account of category formation given by (B), and (A), the ecological hypothesis can be viewed as an envelope of possibility, in which (B) and to some extent (C) operate.

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Imagined vs experienced: Do colours make us feel what we think they would?

People hold beliefs on how colours could make them feel. For instance, blue is believed to be calming and red – energising. However, these beliefs might not coincide with what people really feel when exposed to colours. When assessing what people feel in response to colour, results were inconsistent, and studies did not account for peoples' beliefs on how a given colour would make them feel.

To investigate whether beliefs people hold about colours translate into lived emotional experience, we recruited 77 participants (17 men, 60 women, *M* = 20.49 years), who completed two conditions. In the first part (*experience* condition), participants were immersed in 18 coloured rooms (six hues, appearing in light, dark, prototypical versions). Immersive virtual reality allowed us to systematically control hue, lightness, chroma, and spatial context while maintaining a realistic sense of presence. After having spent 60 seconds in each

room, participants reported how they felt during the immersion by selecting one of nine emotions expressed by animated drawings of gender-neutral robots labelled with corresponding emotion adjectives. In the second part (*imagine* condition), participants were asked to imagine twelve simple rooms that differed only in their wall colour. Each time, they reported how they think they would feel in that room in the analogous way.

Since different colours were used in the two conditions, we selected eight colours that were present in both – six prototypical hues (red, orange, yellow, green, blue, purple), dark orange (named brown), and light red (named pink). To compare the experience and imagine conditions, we first created patterns of colour-emotion correspondences based on how frequently each emotion adjective was chosen on average for each colour on a group level. Weak correlation of the two colour-emotion patterns suggested differences between the conditions, Pearson's $r = .37$, $p = .001$. The most striking divergence occurred for red: 36% of participants anticipated feeling *tense* in a red room, compared to 6% who reported feeling *tense* after being in the red room (most participants reported feeling *calm*: 22%). Correspondence analyses further supported these differences. In the imagine condition, a two-dimensional structure explained 76.1% of variance, whereas in the experience condition, the first two dimensions explained 61.9% (76.7% with three dimensions). The configuration overlap between conditions was moderate, Procrustes' $r = .54$, $p < .050$. Low congruence was also found on an individual level. On average, participants chose the same emotion adjectives only for 1.52 out of 8 colours, indicating that, for most coloured rooms (i.e., 6.48 or 81.0%), participants chose a different emotion in the imagine vs. experience conditions.

Our results indicate low to moderate overlap between emotional response to colours when being vs. imagining being in coloured rooms. Potentially, when anticipating emotional reactions to colour, participant responses reflect culturally shared colour-emotion associations, rather than true experiential reactions. This is also the classical effect of affective forecasting where emotions are anticipated as being stronger and longer lasting. The current results indicate that self-report belief or association questionnaires cannot inform on the causal impact of colour on emotion.

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Using semantic associations to test theories and assumptions in colour psychology

Colours are thought to carry meaning that goes beyond the visual experience itself. Yet there have been few systematic attempts to test what these semantic associations are and how they might help test theories and assumptions in colour psychology. Notably, semantic associations are thought to provide insight into how people think and organise knowledge. First, we developed a semantic coding scheme that allows us to organise and categorise semantic associations systematically. In the first study, we identified nine semantic themes: Sensory and Affective Experiences, Human-made Entities, Natural Entities, Scenery, Abstract Concepts, People, Colour Terms, Personal Responses, and Ambiguous Words. This coding scheme was applied in the following series of studies that form the first author's PhD thesis.

In Study 1, we tested whether the central prediction of the EVT (i.e., past affective experiences with specific colours determine colour preferences) holds when participants (N = 135) generated free semantic associations for their favourite and least favourite colours. Results supported the central prediction but revealed important asymmetries. Support was high for favourite colours, with mostly positive, object-based associations, whereas least favourite colours yielded diverse associations, with a surprising number of positive associations.

Then, we investigated the semantic meanings of PURPLE, which had yielded highly varied results in previous colour-emotion association studies. In Study 2, 274 French speakers from Switzerland (n = 153), France (n = 55), and Algeria (n = 66) provided free associations for *violet* (basic term), *lilas*, and *pourpre* (non-basic terms). There was no difference between countries, and the results supported the basic status of *violet* in French. Violet had the most diverse semantic associations, whereas *lilas* was mainly related to Natural Entities and *pourpre* to Colour Terms. The broad semantic meaning of *violet* might explain why PURPLE shows varied emotional associations. Thus, in Study 3, we compared the semantic associations of PURPLE with RED and BLUE (colours with stable emotional associations) across English, French, German, Italian, Spanish, and Lithuanian speakers in 13 countries (N = 1,138). We investigated the semantic associations of PURPLE vs RED vs BLUE to assess whether PURPLE was the most varied and diverse (analysis ongoing).

Results across studies showed that semantic associations are a useful tool for examining theories and assumptions in colour psychology. The semantic scheme was helpful in showing EVT's strong standing while also revealing previously unknown asymmetries. It also showed that PURPLE carries highly abstract associations, which may explain inconsistencies – the more abstract a colour's meaning, the less likely people are to converge on the same emotions. Future research could apply this semantic scheme to the other basic colour categories or explore how semantic breadth develops across age or gender.

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Metaphorical extensions of color terms: A corpus-based comparison of English and Polish

This study investigates the metaphorical extensions of basic color terms in English and Polish through a comparative, corpus-based approach. While color vocabulary is often considered universal, the figurative meanings associated with color terms vary across languages and cultures. The aim of this paper is to identify which metaphorical patterns are shared between English and Polish and which are culturally specific, thereby contributing to a broader understanding of how color concepts are structured in the two linguistic communities.

The analysis draws on two types of data: (1) English collocational patterns extracted using ColCat, a tool for semantic categorization of collocates, and (2) Polish data obtained from the National Corpus of Polish (NKJP) and Sketch Engine. For each of eight selected color terms, the study examines the most frequent metaphorical collocates and categorizes them into semantic domains such as emotion, evaluation, social relations, physical appearance, and abstract concepts. The cross-linguistic comparison highlights both convergences and divergences in the metaphorical extensions of color terms.

Preliminary findings indicate that while some metaphorical associations – such as *black/czarny* with negativity or *white/biały* with purity – are shared, others diverge significantly, reflecting culturally embedded conceptualizations (e.g., English *blue* for sadness vs. Polish *zielony* for inexperience). The study demonstrates how corpus-based methods can illuminate the interplay between universal cognitive tendencies and culture-specific semantic developments.

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Exploring synonymy among BLUE pigments terms in French

Colours and the ways they are named across different languages have long been a subject of scholarly interest (for the French, see e.g. Pastoureau 2000, Mollard-Desfour 2004, Grimaldi 2020, Gostkowska & Kaliska 2022). However, studies that approach colour from a strictly terminological perspective remain relatively rare (Gostkowska, Kaliska & Pantazara 2025, Kaliska 2025). Our research focuses on French pigmentary colour terms for BLUE, with the objective of analysing the nature of their synonymic relationships. Our list of terms, collected from Bernard Guineau's *Glossaire des matériaux de la couleur* (2005), contains 146 distinct designations beginning with *bleu* (such as *bleu égyptien*, *bleu minéral*, *bleu de Prusse*, *bleu de smalt*). These terms have been used over centuries by various specialists, including art historians, chemists, colour professionals, and artists (such as painters, ceramists, and dyers), who operate within distinct cultural and geographical backgrounds. The history and evolution of pigments have played a significant role in shaping the complexity of the underlying conceptual system.

In terminology (Kockaert & Steurs 2015, Piselli 2021), synonyms are assumed to designate the same concept and, therefore, to stand in a symmetric and fully bidirectional relationship (A = B and B =A). In Guineau's Glossary, the indication "Synomymes" within the lemma brings together lexical synonyms, along with variants from previous periods and equivalents in other languages. For example:

- bleu égyptien […] Syn. azur vestorien, bleu de Pouzzoles, bleu d'Alexandrie, (XIXe s.) fritte d'Alexandrie;
- bleu de Pouzzoles [...] Syn. azurum Puteolanum, azurum Vestorianum, azur vestorien, bleu égyptien.

The relationship between the terms *bleu d'alexandrie*, *bleu égyptien*, *bleu de Pouzzoles* is confirmed by the Getty Art & Architecture Thesaurus and described in the record for the concept "Egyptian blue" (https://vocab.getty.edu/page/aat/300013280).

However, the synonymic relationship is not symmetric in Guineau's Glossary, partly because such relationships are not indicated systematically. This lack of systematicity is accentuated by two structural factors. On the one hand,

a single pigment designation (term) may exhibit polysemy, (e.g. the lemma *bleu minéral* includes four distinct meanings), and each meaning may have its own set of synonyms. On the other hand, synonyms are not always indicated by "Synonymes"; they may also appear in the form of cross-references introduced by "Voir" ('see').

For example, the term *bleu minéral* is included as a synonym in three lemmas: *bleu d'Anvers*, *bleu charron*, *bleu de France*. The following inconsistencies may be observed:

In the lemma *bleu minéral*, there are no synonyms, only references to *bleu d'Anvers, bleu de France* (for meaning 1), *bleu charron* (for meaning 2), *bleu Maya* (for meaning 3), and *azurite* (for meaning 4).

In the lemma *bleu d'Anvers*, there are references to *bleu de France* (for meaning 1) and to *bleu charron* (for meaning 2), while *bleu minéral* is given as a synonym (only for meaning 3).

In the lemma *bleu charron*, the synonyms are *bleu d'Anvers, bleu minéral,* but also *bleu de Prusse*.

In the lemma *bleu de France*, the synonyms are *bleu minéral*, but also *bleu de Paris*.

The observed lack of systematicity may also stem from the fact that Guineau's work is based on historical data and therefore reflects the actual patterns of usage attested in the source materials. In our paper, we aim to investigate the complexity of these relationships by comparing terms identified as synonyms, quantifying and analysing symmetric and non-symmetric relations among blue pigment terms, and ultimately proposing a digital model capable of representing the structural complexity of this terminological system.

Declaration on Generative AI

During the preparation of this work, the authors used ChatGPT-5.2 in order to: check grammar and spelling, paraphrase and reword. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the publication's content.

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Finnish purple: Do *violetti* and *li(i)la* differ in meaning?

Finnish does not have a basic colour term (BCT) for the category of purple (Koski 1983; Uusküla 2007). Instead, the category is referred to with two separate words, *violetti* and *li(i)la*, neither of which appears unambiguously primary. For the definition of BCT, it is central that a cognitively salient focal area of the category, which is most often referred to with the given BCT, appears, and a word is not viewed as a BCT if there is a parallel term for the category (Berlin & Kay 1969). Neither *violetti* nor *li(i)la* has the salient focal area, and their referent areas in colour space significantly overlap (Uusküla 2007). The reason for the coexistence of parallel terms for purple, or the semantic differences between *violetti* and *li(i)la*, however, has not been addressed in previous studies.

In this presentation, I explore the semantic differences that arise in the everyday use of the words *violetti* and *li(i)la*. The different usage patterns associated with words are a vital part of their semantic structure (Evans 2009). Thus, the semantic differences of close synonyms can be revealed by studying their usage patterns. Therefore, rather than focusing on the colour categories

denoted by *violetti* and *li(i)la* or on their focal areas, I examine the kinds of entities these terms describe and the syntactic structures in which they occur.

I employ collocation analysis and compare the results using two different corpora, fiTEnTen24 and Suomi24. I also pay attention to the syntactic positions that violetti and *li(i)la* occupy and whether their collocational patterns vary across syntactic positions. Preliminary results suggest that *violetti* has a higher number of distinct collocates than *li(i)la*, and that as predicative complements, both violetti and *li(i)la* often modify the word väri 'colour' (e.g., *tunnusväri on violetti* 'the identifying colour is purple', *lempiväri on lila* 'the favourite colour is purple'). By contrast, when *violetti* and *li(i)la* function as adjectival attributes, their collocates are considerably more diverse.

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Visual experience is not necessary for colour-emotion associations: Evidence from people with congenital and acquired blindness

Colours carry certain affective meaning to most people, and there are many assumptions about the effects of colours on emotions. For instance, spending time surrounded in red colour is believed to make one feel excited while spending time in blue – relaxed. Such and similar beliefs place strong emphasis on colour perception: one needs to see the colours to experience any change in their emotions. However, research on colour-emotion associations consistently demonstrates that these associations are conceptual. Namely, previous studies found high congruencies in the patterns of colour-emotion associations between (i) colour terms and colour patches, and (ii) participants with and without colour

vision deficiencies (i.e., colour blindness). Here, in two studies, we put these assumptions to the ultimate test, namely, by assessing colour-emotion correspondences in people with total blindness (both congenital and acquired), and people with intact vision.

In Study 1 (qualitative), we conducted interviews with 11 participants – 2 congenitally blind, 8 with acquired blindness (2 early blind, 4 late blind, 2 late blind with synaesthesia), and 1 achromatope. Our thematic analysis revealed that all participants had detailed knowledge of colours and displayed opinions and attitudes. Furthermore, all our participants associated colours with diverse objects, concepts, and emotions, and also had colour preferences, indicating that semantic (conceptual, symbolic, affective) meanings of colour exist without direct visual experience. Thus, we confirmed that totally blind people do make colour-emotion associations. To systematically test whether their associations resembled colour-emotion associations of the sighted, we conducted Study 2.

In Study 2 (quantitative), we investigated colour-emotion associations in participants with congenital blindness (n = 25), acquired blindness (n = 18), and intact vision (n = 60). Participants rated the association strength between 12 colour terms (*red, orange, yellow, green, turquoise, blue, purple, pink, brown, white, grey, black*) and 20 emotion concepts from the Geneva Emotion Wheel on a scale from 0 (*no association*) to 5 (*very strong association*). Colour-emotion association patterns were remarkably similar across all three groups, with correlation coefficients ranging from r = .865 to r = .900, all p's < .001. The strongest associations in all groups included *red-love, red-anger, yellow-joy,* and *black-sadness,* but participants with congenital and acquired blindness showed weaker associations for certain pairs, particularly *turquoise* with positive emotions. Correspondence analyses revealed that, for every group, *valence-lightness* was the primary organising dimension (71-75% of explained variance) and *arousal-warmth* the secondary dimension (11-18% of explained variance) of colour-emotion correspondences. Procrustes' analyses confirmed extremely high congruence of colour-emotion correspondence configurations between the three groups (r's = 0.935-0.947, all p = .001).

Together, these findings demonstrate that visual experience is not necessary for conceptual colour-emotion associations. The high similarity in association patterns across groups suggests that these mappings are acquired primarily through language and cultural exchange rather than direct perceptual experience, challenging the view that colour-emotion associations depend fundamentally on visual experience. The findings also question the assumption that conceptual colour-emotion associations are informative for colour effects on felt emotions.

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Linguistic and cultural aspects of colour in the Spanish language

The linguo-cultural methodology adopted in this study allows for a dual perspective on the phenomenon of colour. On one hand, the focus is placed on the linguistic aspect, involving an analysis of how colours are named and how their meanings are understood. In this context, prototype theory is employed to explain why certain shades are perceived as primary or most representative of a given category. On the other hand, a cultural method is applied, which enables a detailed discussion of the role colours play in the lives of the inhabitants of the Iberian Peninsula. In other words, colour terms are examined as linguistic elements deeply embedded in Spanish tradition and history.

The primary subject of the description consists of basic color terms and linguistic expressions containing a colour component. The analysis encompasses not only individual words but also phraseological units and metaphors. The research material has been divided into two main categories:

1. Achromatic colours - m white, black, and grey.

2. Chromatic colours - from which red, yellow, green, and blue have been selected for detailed analysis.

The study is conducted from a synchronic perspective, meaning it examines how these colours are understood and utilized in contemporary times. The cultural aspect is treated broadly, ranging from the connection between colours and religion, psychology, or philosophy, through their presence in painting, fashion, and decorative arts, to their function in folk traditions, dances, and Spanish festivals (fiestas).

In the linguistic section, the formation of meaning within specific phrases is investigated. All colour-related expressions have been categorized into subgroups to better understand their semantic specificity. The paper also provides detailed semantic explanations of Spanish colour terms. Furthermore, a comparative element has been introduced by juxtaposing selected Spanish idioms with their Polish equivalents.

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Millennial Pink: The colour of a generation. Design in the context of social and cultural changes in the 21st century

This presentation explores the phenomenon of Millennial Pink – a specific spectrum of shades ranging from dusty rose to salmon beige – which dominated architecture, industrial design, and visual communication during the second decade of the 21st century. The analysis posits that this color transcended mere aesthetic preference to become a cultural manifesto for the millennial generation. A central focus of the study is the "de-gendering" of pink; unlike the 20th-century associations of the color with femininity and infancy, Millennial Pink has acquired a neutral, androgynous status. This shift is examined within the context of blurring binary divisions in fashion and design, as well as broader inclusivity movements and the redefinition of masculinity in Western culture. Crucially, the discourse is enriched by the perspective of contemporary art, where the hue has been utilized as a tool for subversion and political critique. From the immersive light installations of James Turrell to Richard Mosse's use of infrared film to depict conflict zones in surreal pink tones, artists have reclaimed the color to challenge viewer perceptions and deconstruct traditional narratives of power and violence. The paper further investigates key milestones of this "pink revolution," such as the 2015 introduction of Apple's Rose Gold – a catalyst for the tech industry – and the rise of "Instagrammable" public spaces influenced by the nostalgic, cinematic aesthetics of directors like Wes Anderson. In the digital age, Millennial Pink functions as a visual symbol of calm and escapism within an overstimulated environment. Ultimately, the study concludes that the ubiquity of the hue stems from a profound collective nostalgia for the late 20th century combined with an ironic detachment from traditional concepts of luxury. Though commercially saturated, Millennial Pink remains one of the most significant visual artifacts of the early 21st century, reflecting a societal craving for empathy, softness, and openness in contemporary design and artistic practice.

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On the distinctiveness of color and shape as signs in culture

The author situates research in the context of the color turn in culture. The specific discipline that makes color the object of its researchers' interest is chromatology. The text advances the thesis that color, as a semiotic resource, conveys content understandable within culture or discourse communities. Research by media linguists has established that color in culture and discursive practices, as a sign, performs informative, expressive, phatic, persuasive, and socially regulative functions. The author sees a place for color in two specific linguistic methodologies: text linguistics and media linguistics. Public discourse is rich in minimal texts with the obligatory presence of specific colors and shapes. These include the Amazons' pink ribbon, the boy's blue suit, the protester's yellow vest, the yellow crocus cotillion, the colorful Olympic rings, and the black umbrella emblem. In media linguistics, it is assumed that the content of mass and social media directs social attention and shapes the attitudes of discursive communities gathered in media groups. Color is a constant component of on-screen media texts (banners, fonts, boards, infographics, identification logos). The researcher aims to demonstrate that (1) color is a constant component of discursive and media practices, (2) shape has a distinctive value in cultural texts, and (3) color has a distinctive value in cultural texts.

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Bilingual colour naming: Preliminary study of Estonian-English bilinguals

Previous research with bilinguals has indicated that they process colour differently in their two languages (Athanasopoulos 2009, Athanasopoulos et al. 2011, Paramei et al. 2014, Simoncelli & Kihlstedt 2025, Winawer et al. 2007), and that colour-naming patterns may differ between bilinguals' first and second languages. We investigated the colour vocabulary of Estonian-English bilinguals

with emphasis on colour word production and comparison between the two genealogically and typologically different languages. We recruited eleven Estonian-English volunteer bilinguals who took part in two tasks: a free-listing task and a colour-naming task where 65 Color-aid Corporation coloured papers were presented to the participants. Bilingualism in our study is understood as a usage-based phenomenon, defined by François Grosjean (2010). Each participant completed the test twice in both of their languages, once in Estonian and once in English with a one-week gap. Morphological differences between the two languages resulted in different word-formation which may contribute to richer colour vocabulary in Estonian. The results of the free-listing task indicate that bilinguals tend to name more colour terms in Estonian. Furthermore, more complex terms were identified in the participants' Estonian colour vocabularies. However, the most frequent terms in either of bilinguals' languages were basic colour terms which supports the hypothesis that these terms are psychologically salient.

In the colour-naming task we observed the different pattern of bilinguals' colour production. While in the list-task participants produced more colour terms in Estonian, in the naming task they produced more English colour words instead. We conclude that the participants' colour vocabulary is larger in Estonian in the spontaneous production task. However, their high proficiency in English allows them to produce more colour terms in the colour-naming task when describing colour patches more precisely. For example, some colour terms appear as culturally extended (e.g. *Laker's purple* referring to the colour used as a symbol of the Los Angeles Lakers' basketball team or *Halloween orange* referring to the holiday known and celebrated in many parts of the world, but only recently introduced in Estonian society). We therefore hypothesise that the Estonian colour lexicon is psycholinguistically acquired, whereas their English colour vocabulary is learnt at the later stage and used . We acknowledge the different morphological nature of the two languages - Estonian using more compounds and English more object-related colour terms. However, this cannot be accounted for by this phenomenon alone. Further conclusions could be drawn based on a larger sample.

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The construction of astronomical terms including colours and their extensions in everyday language: A cognitive-linguistic comparative study of English, German and Polish

The study investigates astronomical terms containing colour names--such as *blue moon*, *black hole*, *red giant* – as lexicalizations and examines their conceptual content and structure, semantic motivation and usage in both scientific and everyday discourse. Adopting a cognitive-linguistic framework, this paper compares data from English, German and Polish in order to identify cross-linguistic similarities and differences in the construction and extension of these terms.

The analysis focuses on the role of colour names in meaning construction in the investigated expressions, establishing a distinction between the descriptive function of colours in scientific terms and their role in metaphorical mappings and conceptual integration processes in everyday language.

The theoretical foundation for the study draws on Conceptual Metaphor Theory (Lakoff and Johnson 1980), Conceptual Integration Theory (Fauconnier and Turner 2002), Prototype Theory (Rosch 1978), Cognitive Grammar (Langacker 2008), and Embodied Cognition (Varela et al. 1991, Johnson 2007).

The research material consists of expressions from scientific papers on astronomy, as well as from language corpora in SketchEngine.

At the centre of the investigation is the question of how domain-specific scientific concepts are mapped onto everyday-life domains and how color terms function at the interface between specialized terms and everyday vocabulary. The study includes an investigation of the emotional dimension of the analysed astronomic terms and examines whether, and if so how, their affective content is modified when they are extended from scientific discourse into everyday and metaphorical usage.

In line with embodied and 8E approaches to cognition, the study assumes that meaning arises from dynamic interactions among bodily experience, affective processes and the environment highlighting the role of experience, including emotions, in conceptualizing meanings.

The findings contribute to research on lexical semantics, metaphorical meanings, cross-linguistic variations, and the cognitive mechanisms underlying meaning construction in both scientific and everyday contexts.

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Visual semantics in African pastoral societies: A comparative study of Maa, Fulfulde and Hamar

Building on the framework of visual semantics (Wierzbicka 1996, 2008, 2014; Wierzbicka and Goddard 2014), this paper investigates the categorization of visual experience in three African pastoral communities. The social, aesthetic, and communicative worlds of these communities are structured around livestock (intended as cattle, goats, and sheep). The languages spoken by these societies are typologically different and genealogically unrelated: Arusa Maa (Tanzania), Fulfulde Juguureere (Togo), and Hamar (Ethiopia), respectively, belong to the Nilosaharan, Niger-Congo, and Afroasiatic language families. Rather than treating color as an abstract, hue-based domain, speakers of pastoralist societies conceptualize visual experience through livestock appearance, giving rise to integrated semantic categories that combine color, pattern, sheen, and visual contrasts within a livestock-centered model of perception.

Drawing on multimethod elicitation adapted to pastoral settings (Petrollino 2022), the study compares lexical and semantic structures across the three languages. Comparative data were collected across the three speech

communities to examine both shared and language-specific structuring principles of appearance categorization. The analysis shows that appearance terminology is anchored in salient environmental and cultural referents, including livestock coats, vegetation, and landscape features. Several terms for visual properties originate from descriptive terms for livestock phenotypes, while other categories derive from salient ecological prototypes such as grass, fruits, ash, and clouds. Across the three languages, no dedicated term corresponding to the Anglo concept "color" is attested (cf. Wierzbicka 2008: 410–411); instead, colorific and pattern expressions are subsumed under broader hypernyms and expressions: e-mwá (Arusa Maa) 'kind'; dantá 'essence' (Hamar); no waʔi (Fulfulde Juguureere) 'how someone/something is'.

The comparative data further demonstrate that color and pattern are often inseparable in pastoral visual categorization. Numerous lexical items encode complex color-pattern configurations, such as longitudinal banding, speckling, patching, and mixed pigmentation, with distinctions often grounded in brightness, sheen, saturation, and stand-out effects rather than geometrical shape alone. These findings complement hue-centered approaches in color studies (cf. Saunders and van Brakel 1997) by highlighting culturally grounded dimensions of visual categorization that emerge from livestock-based ecological and aesthetic practices.

The study contributes to visual semantics by providing cross-linguistic evidence for livestock-centered appearance systems and by extending color research to pastoral societies in which visual meaning is structured through animal appearance. More broadly, the paper argues for an expanded understanding of color within visual semantics, demonstrating how pastoral visual systems offer key insights into the diversity of human perceptual categorization.

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Colour Spinner: Exploring diversity in colour categorisation across languages

Languages partition colour space to different degrees of granularity (Mylonas et al. 2026). Such diversity poses challenges for cross-linguistic colour communication, yet most existing colour naming models assume a universal colour categorisation in a fixed set of just eleven basic colour categories, treating colour names as directly translatable across languages (Benavente et al. 2008, Berlin & Kay 1969/1991, Parraga & Akbarinia 2016, Weijer et al. 2009).

We present *Colour Spinner*, a novel interactive online application (available at: https://colorspinner.colornaming.com) that allows users to explore colour naming in six languages. Colour naming responses in American & British English, French, Greek, and Spanish were collected via a large-scale crowdsourcing experiment (available at: https://colornaming.com; Mylonas & MacDonald 2010), complemented by field data from OtjiHimba speakers in northern Namibia (Mylonas et al. 2022). In total, 84,500 responses from 1,858 speakers were mapped to 600 Munsell samples approximately uniformly distributed across colour space. These empirical data were used to train the Spin Colour Forest model to identify, without typological criteria (Berlin & Kay 1969/1991), the minimal set of colour names necessary and sufficient to name all colours in each language, what we term indispensable colour names. American English requires 47 indispensable colour names, British English and Greek 32 each, Spanish 31, French 27, and OtjiHimba just 7.

The interface consists of six synchronised components: (1) a colour *Picker* supporting multiple colour spaces (e.g., RGB, CIELAB, CIE LMS06, CAM16-UCS); (2) a *Namer* displaying the most likely indispensable colour name with confidence and native-speaker audio pronunciation (Mylonas et al. 2013); (3) a *Thesaurus* linking within-language synonyms and antonyms based on Jensen–Shannon divergence between colour naming distributions and maximum ΔE colour differences in CAM16-UCS between centroids of lexical colour categories (Mylonas et al. 2021); (4) a *Translator* visualising translations of colour names in target languages; (5) a *Mapper* showing the distribution of colour names in colour space (Griffin & Mylonas 2019, Mylonas et al. 2010); and (6) a *Profiler* quantifying linguistic (frequency in corpus, word length), behavioural (response time, consensus), and geometric (lightness, chroma, size) properties of

lexical colour categories (Mylonas & Griffin 2020). Additional controls simulate colour perception diversity due to age-related increases in lens density at ages 40, 60, and 80 (Pokorny et al. 1987), and colour-vision deficiencies including protanopia, deuteranopia, and tritanopia (Viénot et al., 1999).

Altogether, *Colour Spinner* transforms the linguistic diversity of colour categorisation into an interactive multimodal resource, making it visible, audible, and explorable for researchers, designers, educators, and language learners.

Mark Ó Fionnáin
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'An Dubh a Chur ina Gheal': Irish colour definitions re-examined

The aim of this talk is to analyse the latest definitions, uses and samples of basic colour terminology in Modern Irish as provided in the newest lexicographical works. Ó Fionnáin (2023) has previously researched Irish basic colour terminology and its development from the point of view of lexicography, placenames and sayings, and then presented native speakers' responses to pictures and to being asked to name the colours seen, in order to see whether such actual usage matches the way such terminology is presented in dictionaries and material for learners. The results obtained showed that there is a lot of variation in actual use amongst native speakers, usage which is not always in keeping with learners' material. Terms such as *liath/glas* 'grey', *uaine/glas* 'green', *bán/geal* 'white' and *oráiste/buí* 'orange', for example, seem to vary from speakers to speakers.

However, such findings shall be compared to those to be found in the examples of colour terminology as presented in the *New English-Irish Dictionary* (*NEID*, 2013–2025). This is the most modern such lexicographical work, finally replacing de Bhaldraithe's English-Irish (1959) and Ó Dónaill's Irish-English (1977) dictionaries, and is available both on-line and in print (Ó Mianáin 2020), although the print version is somewhat smaller. Moreover, *NEID* also contains a (currently partial) monolingual Irish-language dictionary, *An Foclóir Nua Gaeilge* (*AFNG*, 2025). This new *AFNG* contains 20,000 entries and 40,000 sense units at present (and is aiming to have 80,000 sense units by its completion). The entries in *AFNG* are defined in Irish itself, which finally permits Irish speakers to understand terms in their own language without having to go through the medium of English, and such terms also include basic colour terminology. In

light of these recent lexicographical developments in Irish, this paper analyses the presentation of such basic colour terms in both *NEID* and their monolingual definitions in *AFNG* in order to see whether they are in keeping with the more traditional usage or are further yielding to the more common English-language applications.

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Chromonymic surnames in Polish and English: Origins, distribution, and cultural significance

Colour terminology has long played a significant role in naming practices across Europe, yet colour-derived surnames remain an understudied area within colour linguistics. This article offers a comparative analysis of Polish and English chromonymic surnames, examining their etymology, semantic motivations, morphological patterns, and geographical distribution. By focusing exclusively on hereditary surnames rather than contemporary nicknames, the study highlights how colour concepts became embedded in naming traditions and what they reveal about historical perceptions of appearance, identity, and social categorisation.

The analysis draws on publicly accessible datasets, including Polish surname frequency statistics (PESEL), geographical surname maps (moikrewni.pl), and occurrences in the National Corpus of Polish (NKJP), alongside English surname dictionaries and corpus resources. For each selected colour term, the study identifies its surname derivatives (e.g., *Biały, Czarny, Rudy, Zieliński* in Polish; *White, Black, Brown, Green, Gray* in English) and traces their origins, such as references to physical traits, occupational associations, or symbolic meanings. Special attention is given to the markedly different productivity of specific colour terms in the two languages: for instance, *Zieliński*

is among the most frequent surnames in Poland, whereas its English counterpart *Green* is comparatively less common.

The findings demonstrate both universal and culture-specific tendencies. In both languages, colour-based surnames frequently originate from salient physical characteristics, yet Polish exhibits greater morphological diversification (e.g., *Białek, Białas, Rudnicki*), reflecting Slavic derivational patterns. English, by contrast, favours uninflected colour adjectives as surnames. The study argues that chromonymic surnames provide valuable insight into how colour categories were historically perceived and how linguistic communities encoded social distinctions through colour terminology.

By integrating corpus data, etymological sources, and geographical evidence, this paper contributes to colour studies by showing how colour terms function not only as lexical items but also as enduring markers of identity within naming systems.

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Colour idioms in Turkish and Estonian: Evidence from Free-listing and Machine-Assisted Translation

Colour carries (sometimes culture-specific) meaning across languages. Beyond their literal reference, colour terms frequently occur in figurative expressions such as idioms. This study focuses on colour idioms, defined here as figurative expressions that contain colour terms and whose overall meaning cannot be derived from the sum of their constituent parts. In addition to semantic non-compositionality, such expressions are treated as carriers of shared cultural meaning, often (but not always) grounded in conventional conceptual metaphors (see Lakoff and Johnson 1980).

Previous research has compared colour idioms across languages and examined their semantic and cultural distribution (e.g. Bazzanella et al. 2016, Hastürkoğlu 2017, Oguz 2026), mostly drawing from dictionaries and corpora. Fewer studies (e.g. Kalda and Uusküla 2019, Oguz and Uusküla 2023), however, have investigated how colour idioms are processed during translation, particularly between culturally distant languages. Even less attention has been

paid to how recent advances in machine translation and AI- tools influence the translation of figurative colour language.

This study examines Estonian and Turkish colour idioms and their translation through two complementary empirical experiments. First, a free-listing experiment with native speakers of Estonian and Turkish maps the cognitive salience and availability of colour idioms in both languages. Second, a process-oriented translation experiment investigates how four professional Estonian translators translate and post-edit two Turkish texts rich in colour idioms. The translation-process-focused experiment triangulates think-aloud protocols, screen recording, and a retrospective questionnaire.

By combining lexical salience data with translation-process evidence, the study explores (1) cross-linguistic similarities and asymmetries in colour idiom inventories, (2) strategies used to resolve figurative meaning in translation, and (3) the role of AI-mediated workflows in shaping translator decision-making. The findings contribute to colour studies, translation process research, and emerging discussions on human – AI interaction in figurative language transfer across languages.

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Innovative *-i* forms in Japanese color terms: Evidence for the fluidity of the adjective category

Traditionally, Japanese adjectives have been referred to as *adjective verbs*, as they inflect and can function as predicates without an additional verbal element. Their attributive form ends in *-i* (so-called *i-adjectives*), as in *utsukushi-i* 'beautiful', *atarashi-i* 'new', and *oishi-i* 'delicious'. However, this class is considered relatively unproductive, consisting of only a few hundred members and forming a closed lexical class. With regard to color terms, only four adjectives have traditionally been recognized: *aka-i* 'red', *shiro-i* 'white', *ao-i* 'blue', and *kuro-i* 'black'.

Japanese also has a category known as *adjectival nouns* (so-called *na-adjectives*), such as *ooki-na* 'big', *kirei-na* 'beautiful', and *anzen-na* 'safe', which have compensated for the limited productivity of *i-adjectives* in attributive modification. In addition, nominal modification in Japanese has another highly productive strategy, namely the genitive construction consisting of a noun followed by *-no*. In color expressions, color terms other than the four basic *i-adjectives* have typically been expressed through the construction "color noun + -no."

Moreover, as a broader trend in Japanese color terminology, traditional native color terms are increasingly being replaced by loanwords, primarily from English. The noun + *-no* construction has shown high productivity in this respect as well, since nearly all foreign-derived color terms can be used attributively by attaching *-no*.

However, in the Tokai region of Japan, particularly in Aichi Prefecture, forms such as *murasaki-i* 'purple', *pinku-i* 'pink', and *midori-i* 'green' – that is, nouns with the suffix *-i* – are used as color adjectives. These forms are widely recognized and used especially among younger speakers, particularly teenagers. This study investigates whether these forms should be analyzed as mere dialectal variants or instead as a new innovative adjectival category, subsequent to the so-called "no-adjectives" proposed in recent discussions (Muraki 2015).

Based primarily on questionnaire data concerning the use of these color terms, this study analyzes them from syntactic and morphological perspectives. The results show that while these color adjectives are widely accepted in attributive modification, their inflection as *i-adjectives* (e.g., past, conditional, imperative forms) receives low acceptability ratings except in present predicative use. Furthermore, even when competing with traditional noun + *-no*

constructions, speakers tend to prefer the *i-adjective*-type forms. Given the tendency for innovative forms to emerge in nominal modification in Japanese, these color adjectives may develop into a productive morphological pattern in the future. This development reflects the inherent fluidity of the adjective category, a property that appears particularly pronounced in Japanese.

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Digital twins in illumination and colour in microscopy and spectroscopy

Background: Digital twins, virtual counterparts of physical systems, have emerged as powerful tools in the advancement of microscopy and spectroscopy. Particularly in the context of illumination and colour, digital twins provide novel approaches for simulating and controlling optical environments. Traditionally, optimization of lighting conditions and spectral fidelity required repeated physical adjustments. With digital twins, these parameters can now be explored virtually, enhancing both efficiency and reproducibility in experimental design.

Methods: This review synthesizes recent developments in the application of digital twins for illumination and colour management in microscopy and spectroscopy. Methods for virtual simulation, including ray tracing, light-field modeling, spectral response prediction, and integration with machine learning algorithms are evaluated. Emphasis is placed on adaptive illumination systems, spectral unmixing models, and the use of real-time feedback loops. Additionally, we assess platforms for virtual prototyping of optical systems, enabling the exploration of high-NA objectives, multi-photon setups, and AR/VR-assisted imaging environments.

Results: Studies demonstrate that digital twins significantly improve the predictive power and adaptability of optical system design. For example, adaptive illumination strategies guided by digital twins reduce photobleaching

and optimize fluorescence intensity. Colorimetric simulations enable better discrimination of overlapping fluorophores and enhance multi-channel imaging. Virtual experimentation has led to reduced development time and cost in microscope system prototyping. Moreover, AI-enhanced digital twins allow for real-time parameter adjustment, increasing throughput and accuracy in data acquisition.

Conclusion: Digital twins are redefining the standards of precision and flexibility in microscopy and spectroscopy. Their ability to simulate complex illumination and colour scenarios, coupled with real-time optimization, makes them essential tools for modern imaging workflows. As digital twin frameworks become increasingly sophisticated, their integration with artificial intelligence and multimodal imaging promises to further revolutionize the field, bridging the gap between virtual modeling and experimental microscopy.

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Prototypical colour selections and their associations with emotion concepts across 35 countries

Colours and emotions are tightly linked, seemingly on a universal level. However, previous cross-cultural studies often relied on presenting colour terms rather than colour patches, limiting insights into how colour relates to emotions as a perceptual stimulus. Methodologically, colour terms have been the easier choice, as most cross-cultural studies recruit participants online, avoiding the challenge of colour calibration. Here, we investigated colour-emotion associations with a novel two-step approach that allows to examine i) what participants chose as prototypical colours for the 11 basic colour categories and *turquoise*, and ii) how these self-selected colour patches are associated with 20 emotion concepts.

We collected these data within the framework of the International Colour-Emotion Association Survey. At data extraction, we had data from 6995

participants (aged 18-90 years, 5196 women, 1747 men, 58 other gender, 54 preferred not to respond) across 35 countries and 38 languages: Austria (*n*=159), Azerbaijan (*n*=162), Bosnia and Herzegovina (*n*=150), Brazil (*n*=126), Brunei (*n*=319), Canada (*n*=86), Colombia (*n*=77), Croatia (*n*=98), Cyprus (*n*=52), Czech Republic (*n*=183), Denmark (*n*=105), Estonia (*n*=103), Finland (*n*=139), France (*n*=72), Greece (*n*=458), Iceland (*n*=157), Japan (*n*=263), Kosovo (*n*=151), Mexico (*n*=215), Mongolia (*n*=200), Norway (*n*=275), Oman (*n*=197), Philippines (*n*=751), Poland (*n*=117), Portugal (*n*=202), Romania (*n*=223), Russia (*n*=120), Saudi Arabia (*n*=254), Serbia (*n*=252), Slovakia (*n*=265), South Korea (*n*=148), Spain (*n*=171), Switzerland (*n*=586), Turkey (*n*=108), and United States (*n*=51). Participants were asked to first select the best example for each colour category (i.e., the prototypical colour) using a digital colour picker. Then, participants used the Geneva Emotion Wheel to associate each self-selected prototypical colour with one, several, or none of the 20 emotion concepts, varying in valence, arousal, and power.

We examined the variability of the median colour choices per country in terms of hue, lightness, and chroma in the CIE *LCh* colour space. The highest agreement across countries was observed for *white* on lightness and chroma (*SD* = 0.00), and for *red* on hue (circular *SD* = 0.75). Conversely, the lowest agreement was observed for *blue* on lightness (*SD* = 7.03), *turquoise* on hue (circular *SD* = 15.9), and *green* on chroma (*SD*= 5.87). For colour-emotion associations, their overall patterns showed a high degree of similarity across countries, with an average pattern correlation of $r = 0.92$ (range = 0.73-0.96). Similarly, correspondence analysis indicated consistent spatial relationships between colour categories and emotion concepts structured primarily along the dimensions of valence-lightness (55.6% of explained variance) and arousal-warmth (21.7% of explained variance). Together, these results support the universality and stability of colour-emotion associations across countries when working with both, colour terms and self-selected prototypical colours. Our results pave the way for future research to examine how emotions are structured within the perceptual colour space and to assess the contribution of individual representations of colours on these associations, both within and between countries.

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The case of Marek Grechuta's *Śpiewające Obrazy*

The topic of this paper focuses on color in song. The subject of the study comprises the works from the *Śpiewające Obrazy* (*Singing Images*) cycle by Marek Grechuta (1945–2006) – a Polish singer-songwriter, representative of literary song, author of both lyrics and music, performer, and painter. The research material includes the songs from the album released in 1981, as well as the poems corresponding to them, contained in the volumes *Będziesz się uśmiechać* (1985) and *Na serca dnie* (1990).

The aim of this paper is to analyze selected songs from the *Singing Images* album from the perspective of musical ekphrasis, with particular attention to the relationship between the color schemes of the visual artworks and the choice of key, meter, and musical character of the compositions. The analysis is interdisciplinary, employing tools from musicology, literary studies, and intersemiotic research.

The study is based on findings by scholars working on ekphrasis in artistic song, including Kamil Dźwinel, who examines the work of Jacek Kaczmarski, and Małgorzata Lisiecka, who defines ekphrasis as a literary text describing a work of art. Special attention is given to the relationships between sharp and flat keys and the impressions of brightness, darkness, radiance, or mutedness (referring to the work of Ilona Iwańska, Jarosław Mianowski, Candace Brower, and Rita Steblin).

An important interpretive context is the fact that Grechuta was also an active painter, producing numerous works in pastel, which allows *Singing Images* to be seen as the result of a dialogue between the artist's own visual experience and his musical language. The conclusions drawn from the analysis indicate that the choice of keys and musical means on the album is deliberate, forming part of a coherent expressive strategy that realizes the idea of artistic syncretism and deepens the significance of ekphrastic song as an autonomous artistic form.

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Conceptualization of colors in Polish culinary discourse

In the conceptualization of colors, food products play a significant role as the onomasiological basis for naming a given color. Such products constitute the best exemplars of a color, that is, objects that are prototypical in this respect. Linguistic evidence confirming the prototypical status of these objects manifests itself in language and texts in several ways:

The names of specific prototypical food products appear in dictionary definitions of a given color, cf. *yellow* 'having the color of a lemon fruit.'

The names of prototypical products function as components of fixed, lexicalized comparative expressions containing the name of a given color + the conjunction *like/as*, cf. *as white as milk*.

The names of prototypical products occur as particularly frequent nominal collocates of color terms expressed by adjectives, cf. *red meat*, *brown sugar*.

On the basis of linguistic data drawn from the National Corpus of Polish (NKJP) and texts representing both contemporary and historical culinary discourse in Poland: https://wilanow-palac.pl/seria-monumenta-poloniae-culinaria, we will attempt to identify the comparative expressions mentioned above as well as the most frequent nominal collocates of adjectival color terms. The presentation of the material will begin with the primary colors according to Berlin and Kay (1969). In this way, we aim to provide further arguments supporting the thesis that, in the case of color, it is not language that determines perception (cf. Sapir and Whorf), but rather perception that determines language (cf. Kay and McDaniel 1978).

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The dictionary of chromatic poetic language (Romanian postmodern poetry): Project, methodology, and preliminary notes on the investigated chromonyms

This proposal presents a lexicographic initiative launched at the "Alecu Russo" State University of Balti: the Dictionary of Chromatic Poetic Language (focused on Romanian postmodern poetry). The study aims to outline the conceptual framework of the DCPL dictionary – its architecture, internal and external parameters, methodology, and preliminary findings.

The DCPL documents, systematizes, and interprets the poetic meanings of the chromatic lexicon specific to Romanian postmodernist poetry. The evolution of the literary phenomenon demonstrates the creators' sensitivity toward color. Since individual styles (aesthetic idiolects) lend themselves to semiotic definitions as phenomena of overcoding, color acquires unique meanings and valences within literary texts. Thus, the universal symbolism of chromatics – the general-cultural chromatic invariants stemming from a collective chromatic mentality – undergoes lexico-semantic transformations within individual styles, leading to the construction of an individual variant model: the occasional model of the chromatic symbol.

The methods for developing the dictionary include the following: automatic text processing for the creation of Concordances (automatic lemmatization of chromonyms), electronic and print support, and the analysis, interpretation, and generalization of factual material. The investigation is inter- and transdisciplinary, encompassing linguistics (poetic lexicography), literature, psychology, visual arts, and computer science.

The design of the dictionary was carried out at the "A.I. Cuza" University of Iaşi, Romania, within the Erasmus Mundus Program, Ianus Project. The Dictionary of Chromatic Poetic Language consists of two main components: Chromatic Concordances (I) and Poetic Signs and Meanings (II). Currently, at both national and international levels, there is no other dictionary of chromatic poetic language of this nature. Only author-specific poetic dictionaries and chromatic dictionaries (listing names of colors and shades) are attested.

The first notes on the research results concern the BLACK Fascicle, the dictionary's first unit-chromonym. This fascicle investigates the values and semantic-poetic configurations of the chromonym "black" and the lexemes associated with its semantic-poetic field based on a representative corpus of postmodern poetry belonging to authors from the Cenaclul de Luni (The Monday Literary Circle). Moving away from traditional alphabetical ordering, the DCPL proposes a methodological organization of chromatic entries, offering a dynamic perspective on color as a poetic sign.

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Vivid Arizona, drab Nebraska? A colorful view of American geographical names

Previous studies have demonstrated that color terms are not randomly distributed in toponymy. Their overall frequency in a given area often conforms to Berlin and Kay's sequence of color terms, and individual countries also differ in the prominence of particular colors, with suggestions that such differences are connected to local geographical and landscape characteristics. This study draws upon the Geographic Names Information System – a database maintained by the United States Department of the Interior that comprises nearly one million geographical names in the United States – to investigate patterns of color terms in toponymy. The analysis demonstrates that the fifty states vary greatly not only in their share of geographical names containing color terms, but also in the conformity of the relative frequency of these names to Berlin and Kay's canonical sequence. Moreover, there is a clear geographical pattern that distinguishes "more colorful" states from "less colorful" ones. Most strikingly, American states can be grouped by the frequency of the three

principal color terms (i.e., black, white, and red) in their geographical names. This results in a pattern that closely mirrors climate zones in the United States and that has parallels in other country-wide studies (in particular, for Estonia, Mongolia, and Scotland). Attention is drawn to the difficulties created by color terms that primarily name objects (e.g., orange, gold, and silver) and why these should be excluded from typological consideration, and it addresses the problem of opaque names that at first glance do not appear to contain color terms. It is recommended that in-depth geographical studies of color terms go beyond simple tallies of names and take into account a variety of factors, including etymology, demography, and economic activity. The article concludes by suggesting further avenues of research to investigate the complex interaction of color with history, geography, climate, and culture in toponymic landscapes.

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Zenithal light in the wardrobe

When we look through a window from inside a dwelling, it's about viewing out of our home, whereas a skylight that washes zenithal light down into the interior (and its occupants) is more about creating an ever-changing atmosphere with the attendant light levels changing with each passing cloud. Artists such as Donald Judd, Walter De Maria, and James Turrell challenged the notion of going to an art gallery or museum to view art. They wanted viewers to travel to site-specific projects to view their Art in person. But what if natural zenithal-coloured light were with us every day (and night), tumbling into our dwelling like a Celestial clock? Such night and daytime light washing down into our abode, softened as it bounces down the deep light shaft, producing an ever-changing coloured light for us as we work, bathe, dress, and slumber in our dwelling? Our planet, Earth, rotating on its axis while orbiting our star - the Sun, we often forget this primal relationship that defines our place in the universe. The methodology of this study involves a literature review of the above artists and as well as many on-site photographic surveys. This paper will unpack the art theories of site-specific light artists, and use a case study duplex in Auckland, New Zealand, to demonstrate how zenithal coloured light can be present with us 24/7, affecting our moods as we dwell. The goal of this research is to build on the significance of natural-coloured light in our daily lives.

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Language-mediated colour perception: The influence of linguistic development on colour categorisation in 3- and 6-year-olds – a pilot study

The pilot study examines the relationship between the acquisition of colour vocabulary and visual colour perception in children. Comparing 3-year-olds, who are at the stage of early conceptual mapping, with 6-year-olds, who possess a well-established colour lexicon, allows for an investigation into how the

mastery of colour names influences the so-called categorical perception of the colour spectrum (Harnad 1987). Participants take part in a two-stage experiment divided into a verbal component (naming presented colours to determine the level of lexical competence) and a non-verbal component (an "odd-one-out" discrimination test measuring reaction times in the colour discrimination process). The hypothesis assumes that 6-year-old children, possessing a fixed conceptual system, will demonstrate significantly faster reaction times in the second part of the study when distinguishing between colours from different categories (e.g., blue vs. green) than in the case of purely chromatic within-category differences (Roberson et al. 2005). Conversely, 3-year-olds are expected to show a lesser influence of language and a greater reliance on purely sensory discrimination, consequently yielding similar results both across and within categories. It can be inferred that this effect is related to lateralization – while in 3-year-olds this process occurs primarily in the right hemisphere, in 6-year-olds there is a shift toward the left hemisphere, where the speech centres are located (Franklin et al. 2008, Gilbert et al. 2006). The results are intended to prove that as speech develops, children's perceptual boundaries shift to align with the lexical structure of their native language.

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A dictionary's palette of colours

This paper will present the results of diachronic dictionary searches on colour vocabulary in Polish. It will provide a general overview of the lexical resources contained in selected general Polish dictionaries, discussing the different types of colour names included in each and highlighting quantitative variations. The main topic will be the conventions for defining colour names in dictionaries and how these conventions have changed over time. The structure of definitions in

individual works and the elements contained in them will be discussed, primarily with regard to the concepts or terms to which the dictionaries refer and the associated factors, such as the type of name, its etymology, the general dictionary concept, the intended audience of the dictionary and cultural conditions. Dictionary descriptions of names considered both basic and more original will be analysed. Encyclopaedic descriptions of colours contained in Wikipedia will also provide important references. The following dictionaries will form the basis of the analysis: *Wielki słownik języka polskiego* ed. by P. Żmigrodzki (2007-…), *Uniwersalny słownik języka polskiego* ed. by S. Dubisz (2003), *Inny słownik języka polskiego* ed. by M. Bańko (2000), *Mój pierwszy prawdziwy słownik* by Maria Krajewska (2000), *Słownik języka polskiego* ed. by W. Doroszewski (1958-69), *Nowy słownik języka polskiego* ed. by T. Lehr-Spławiński (1938-39), *Słownik języka polskiego* ed. by J. Karłowicz et al. (1900-1927), *Słownik języka polskiego* ed. by A. Zdanowicz et al. (1861).

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Embodied conceptual model of color applied

This paper illustrates an original idealized cognitive model of color conceptualization (ICMCC) in English through examples extrapolated from past Progress in Colour Studies (PICS) publications (2011, 2014, 2018, 2026). The objective is to employ my ICMCC and verify how color specialists conceptualize color linguistically. We know that color has been used to discuss many distinctive linguistic phenomena: e.g. universality vs. relativity, categorization, prototypes, primitives, vantage theory, metaphor, metonymy, embodiment, frames, domains, minimal concepts, grammatical classes, among others. Nonetheless, a model of the frame of COLOR has been lacking. The concept of "frame" is how one understands the meaning of a word by accessing the essential knowledge that relates to that word; the word evokes a semantic frame of encyclopaedic meaning. Cognitive linguistics establishes a central role to meaning through the ideas of embodied experience and cognitive models that are evinced through usage-based analysis of constructions and conceptualization. The proposed model reassumes my research of the past 20 years that has employed empirical methods (Sandford 2021). It culminates in five types of distinction in a conceptual mapping of color. The mapping reveals the conceptualization process as surmised from usage of color terms in

contemporary English. The ICMCC proposes an organization of linguistic knowledge through primary embodied conceptual correlations in experience that are established through the dynamic interactions and conceptual integration of COLOR both as a source and a target domain. I have gone back through the PICS publications to exemplify the various aspects of the model, considering COLOR through metaphor, metonymy, images schemas, and conceptual integrations. For example, from the 2018 abstract "renowned for their insights into colour in language" would be considered as conceptualising COLORS ARE LOCATIONS. Whereas, in the expression from 2011 "color allows us to process" emerges from the conceptual metaphor COLORS ARE ENTITIES, that is *color* is an entity that enables us. And from the latest 2026 PICS publication in the question: "How do we structure the conceptual nature of language and our experience of color?", *color* is the noun used to describe the type of experience. We may say "of" means "to indicate the cause, motive, or reason", which fits with the Event Structure Metaphor of CAUSES ARE COLORS from CHANGE IS MOTION and CAUSE IS FORCE. Or simply we may say that the common expression "**color terms**" indicates a type of term, it is using the ATTRIBUTE FOR THE KIND OF OBJECT/CONCEPT, in keeping with primary conceptual metonymy. It seems pertinent to discuss how color experts express the concepts of color in their writings, and it should be revealing to verify this through multiple examples.

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Colored Shirts - a participatory art practice in color semantics

Color is the primary language through which we construct immersive installations, performances, and video works that reflect on balance, fragility, identity, and sustainability. Our long-term project, *Colored Shirts* (2004–ongoing), explores how chromatic presence can shape the perception of self and collective belonging within shifting ecologies. Through monochrome shirts in natural and urban landscapes, the work investigates the dynamic relationship between individuality and community, between embodied presence and context.

The *Colored Shirts* function simultaneously as sculptural objects, symbolic surfaces, and devices. Installed physically or presented through photographic and video documentation, they generate contemplative spaces that invite

viewers into a poetic atmosphere of reflection. The intention is to cultivate a sense of wonder and empathy by foregrounding the intuitive dialogue between color contrasts and category formation. To wear a single color becomes a ritual gesture: an act of alignment with a place, a temporary declaration of belonging that remains open to transformation. Color signals affiliation, like in flags or uniforms, yet its mutability reminds us that identity is never fixed.

Central to the project is the proposition that there is no history without color. Monochromatic shirts are containers of meaning: *white - black / red - green / blue - yellow*. They create visual interruptions within open landscapes, forming anthropomorphic presences that oscillate between figure and environment. These portable forms establish zones of chromatic tension where perception, symbolism, and awareness intersect. Color operates here as both illusion and reality – an encounter shaped by light, matter, embodied sensory processing, and cultural naming; mediating emotional response and linguistic categorization.

The conceptual framework of the series is linked to the notion of ecotone: the boundary or transitional space between distinct ecological communities. In our practice, the ecotone extends beyond biology to encompass cultural and perceptual thresholds, image schemas and force dynamics – the spaces between inside and outside, self and other, stability and change. Performance actions and photographic sequences are conceived as ecotonal events, where chromatic bodies and the backgrounds merge or collide, revealing zones of negotiation and coexistence, liminal territories embodying inherent tensions of contemporary linguistics and social realities.

Working within a globalized context of mobility and migration, we consider geographic displacement an integral component of the artistic process. Changing locations allows each iteration of the project to respond to new cultural landscapes, emphasizing color as a living dialogue shaped by movement and perspective. Our collaborative practice, SANDFORD&GOSTI, spans video, performance, site-specific installations, and silkscreen works, investigating cognitive semantics, color theory, and the politics of belonging.

Since 2004, we have presented our work in over 150 exhibitions across 14 countries, supported by institutions including the Italian Cultural Institutes in Seattle, Tunis, Cologne, and Washington, D.C. Our artwork has been exhibited at venues such as the Hirshhorn Museum at the Smithsonian Institution, the Biennale of Larnaca in Cyprus, and the Fundació Pilar i Joan Miró in Mallorca. Across diverse contexts – from forests and coastal landscapes to historical architectures and contemporary urban sites – our installations explore how color can articulate the fragile boundaries that shape man-made and natural coexistence.

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Bridging the gap? The relationship between colour science and applied colour design

Colour design practitioners often operate within limited scientific foundations. Across fields such as architecture, interior, product, communication, or trend forecasting, designers frequently rely on tacit knowledge, individual experience, heuristics, and repeated claims that are only loosely linked to empirical evidence (e.g., "85% of purchase decisions depend on colour" or "natural colour concepts have a positive effect"). Scientific findings, when used at all, often appear as anecdotal justifications rather than the transfer of scientific research outcomes into design practice. This reveals a symmetrical gap: colour scientists produce results not informed by actual design practices, while designers produce solutions not grounded in actual scientific methodology.

The paper takes on the perspective of practitioners. It investigates how colour designers currently understand, access and use scientific knowledge, what prevents them from applying it, and what kind of results would meaningfully support their design practice. Through a quantitative and qualitative survey with colour practitioners from various fields of design, we explore the needs in terms of argumentation, decision-making, communication, client engagement and design processes.

Central to this inquiry is how designers understand, access and apply colour knowledge, whether related to perceptual, material, emotional, spatial, cultural or functional aspects, and how scientific research and results could be formulated in a way that genuinely supports design decisions and strengthens argumentation. Aren't colour science and colour design operating in parallel rather than in tandem nowadays, and what could each field gain if this gap were bridged again?

Our analysis maps cross-disciplinary and field-specific research gaps and identifies the forms of evidence-based colour knowledge that would strengthen design credibility, pedagogical work, and project communication. By articulating how colour science could become more practice-informed, and how designers' implicit expertise could inform future research agendas, this project contributes to bridging the long-standing gap between colour science and applied colour design. It argues for a new model of colour research: collaborative, practice-based, closer to the realities of design processes.

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Aspects of the color white in the history, culture, and natural environment of Inner Asia

This paper presents new, systematic data on the use of the color white in Inner and East Asia. The paper builds on different groups of sources. (A) The first part introduces the most relevant examples of the use of white color, including symbolic contexts in classical antiquity and in Western culture (Pastoreau 2022). (B) The second part focuses on differences and specific connotations in the use of white color in Inner Asian cultures, philosophy, and especially in religious contexts (Liu 1969, Shin 2004, Wu 2011, Gao 2012, Kósa 2015/2016, Gibson et al. 2017, Walravens 2022). (C) The third part comments on new data from the author's fieldwork regarding the occurrence of white objects in the Inner Asian natural environment. This part explains the reasons for the connection between objects perceived or described as white and the specific meanings given by other contextual properties of white objects in steppe culture (e.g., white bones – durability, white fat – positive value/polarity regarding nutrition). These specific meanings are also attested in metaphorical expressions in Mongolian and other languages, e.g., the snowy coverage of mountain peaks is sometimes associated with fat rather than snow or ice. (D) The fourth part provides interdisciplinary synthesis in connection to archaeological data (Linduff & Rubinson 2022) and cognitive science (Alcorta & Sosis 2005, Corbett & Davies 2009, Wooten & Millner 2009, Taylor & Davis, & Rastle 2019, Twomey et al. 2021).

Besides a comprehensive overview, the paper improves understanding of how the notion of the color white was constructed in early history. For example, the earliest traces of the term for white in the reconstructed Indo-Iranian lexicon are from pastoral culture and the leather industry (Bailey 1974). The evolutionary context and the focus on the economic conditions of societies in the preliterate period and early history are illustrated by the spread of precious white objects in material culture (Ching 2011, Dusenbury 2015, Bell 2022). Interdisciplinary analysis finally indicates historical changes in material culture (introduction of new technologies, e.g., for processing of cotton textiles), shifts in terminology and core reasons for values connected to white color in periods, when white objects and even white animals were rare, luxurious and marking special status through gifts, early currencies (*gaurī* shells, silk), dresses (Kidd & Brite 2015), and even honorific appellative "White" given to more royal houses in medieval Inner Asia.

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"My mother wore a yellow dress": Yellow as memory and motif in Louis MacNeice's work

The paper aims to examine the semiotics of the color yellow in Louis MacNeice's biography as reflected in his autobiographical writings and poems about childhood. Notably the colour evokes the poet's mother's dress and carries the associations with all things gentle, lively, but at the same time it brings a painful memory of that comfort lost (MacNeice's mother died when he was seven). Therefore yellow, also implied in the images of light, fire, and sun, most often signifies in MacNeice's poetry the feminine element as well as the colour of affection. Many of MacNeice's love poems are set in the sunlight, which, in turn, has the quality to transform the otherwise ominous elements into something positive, and create small eternities ("timelessness suffused the scene like sunshine"). Consequently, the dying of the sun introduces into the poems the elegiac tone of the dying of love. I begin with elements of MacNeice's biography, in the spirit of the kind of criticism the poet himself practiced, in order to show what partly shaped his poetic inclination toward contrasts. I want to demonstrate the movement toward light in his poetry – how light breaks through some of the darkest images in his poems and transforms them, or opens them for the reader. Moreover, in an essay about a one-day trip to Belfast in his adult life, MacNeice writes about how a single sunny day forever transformed his experience of that dark city in which he was born; how, in his eyes, a metamorphosis of the previously disliked Belfast occurred through the mediation of sunlight. There are many such moments in his work when the sun becomes a catalyst transforming the shabby into the beautiful, the negative into the positive; he writes then about the "alchemy of the sun," about the "prism." The discussion will also focus on poems that have a highly painterly quality. Here I will return to the concept of the transformations of fire and to the colors of fire, drawing on the philosophy of Heraclitus, MacNeice's early fascination with Hearaclitean fire. The paper will also include elements of color theory (yellow, gold), as developed in, for example, Goethe's *Theory of Colours*.

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Classes of English colour names across the adult lifespan

Humans can discriminate millions of colours, yet they are grouped into a smaller set of named categories, ranging from Basic Colour Terms (BCTs) such as *red*, *blue*, and *green* to more elaborate names like *maroon*, *light blue*, and *lime green*. Elaborate names can account for up to 48% of colour-naming responses in unconstrained tasks (Mylonas & MacDonald 2016). Previous attempts to group colour names centred on the BCT/non-BCT distinction (Rich 1977, Simpson & Tarrant 1991). Whether linguistically defined classes are coherent, and how their coherence varies across adulthood, remains unknown, despite preliminary evidence that younger English speakers have richer colour vocabularies than older speakers (Sinkeviciute et al. 2024).

We analysed data from 2,418 native English-speaking participants aged 16–87 who provided 103,317 unconstrained colour-naming responses to 606 uniformly coloured stimuli in a web-based experiment (www.colornaming.net). We propose and evaluate a four-class system: C1 (BCTs, such as *yellow* and *blue*), C2 (monolexemic non-basic terms, such as *turquoise* and *lilac*), C3 (adjacent or compound names, such as *lime green* and *navy blue*), and C4 (modified names, such as *light blue* and *dark teal*). For each of 1,085 colour names, we extracted nine features: linguistic (corpus frequency, name length, synonymy index); behavioural (relative naming frequency, median response time, consensus); and geometrical (lightness, chroma, hue). Class coherence (Mylonas & Griffin, 2020) was estimated using a histogram-based gradient boosting classifier with leave-one-out (LOO) cross-validation, trained separately at each age to track lifespan changes.

Overall classification achieved a Mean Average Precision (MAP) of 0.785, forming a clear coherence gradient (C1: 1.000 > C2: 0.862 > C3: 0.674 > C4: 0.604) across the four classes. Per-age robust power law analyses showed that all four classes had significant age-related trajectories: C1 ($b = -0.061$, $p = .010$) and C2 ($b = -0.052$, $p = .032$) declined modestly, C3 declined most steeply ($b = -0.245$, $p = .005$), and C4 alone increased ($b = +0.099$, $p = .005$), indicating increasing coherence of modified colour names with age. Pairwise bootstrap comparisons of age-related power law exponents (Bonferroni corrected) confirmed that C4 differed significantly from all other classes (all $p \leq .001$).

Feature importance analyses using LOO showed that the age-related decline in MAP was steepest when linguistic features were excluded ($b = -0.176$, $p < .001$), followed by behavioural ($b = -0.086$, $p = .003$) and geometrical exclusions ($b = -0.040$, $p = .033$), suggesting increasing importance of linguistic colour features in older age.

Together, these findings validate the four-class system and show systematic lifespan reorganisation of the English colour lexicon across linguistic, behavioural, and perceptual features.

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Celadon in Polish: Salience, associations, connotations and possible prototypical references

Linguists investigating colour vocabulary concentrate on basic colour terms more often than on the non-basic ones. This comes as no surprise since corpus studies demonstrate that non-basic terms happen to be infrequent and, for this reason, are not particularly salient to speakers of a language. Polish *seledynowy* 'celadon' is one of the non-basic terms which have not been thoroughly examined yet.

The words for the colour celadon in Polish and other languages come from the name of a character, Céladon, in the pastoral novel sequence *L'Astrée* by the French writer Honoré d'Urfé, published between 1607 and 1627. Céladon wore greyish green clothes, which motivates the colour *celadon*, the ceramic *celadon* and the mineral *celadonite*. The Larrouse dictionary defines the French adjective *céladon* as "vert pâle" [pale green] https://www.larousse.fr/dictionnaires/francais/c%c3%a9ladon/13990), and Paterson (2003: 85) claims that *celadon* is "pastel green". In Polish dictionaries, the adjective *seledynowy* is also defined as pale green: "bladozielony" (https://sjp.pwn.pl/sjp/seledynowy;2519844.html) or "koloru powstałego z połączenia koloru zielonego z dużą ilością koloru białego" [having the colour resulting from the mixture of the colour green with a large amount of the white colour] (https://wsjp.pl/haslo/podglad/89958/seledynowy). Tokarski (2004: 182) describes *seledynowy* as a light, pale and delicate shade of green. As regards its psychological salience, *seledynowy* belongs to the group of the top five non-basic colour terms (Stanulewicz 2009: 254).

Seledynowy seems to have no clear prototypical reference point(s), like *beżowy* 'beige' (see Stanulewicz and Komorowska 2026). It is worth noting that because of their origin, many other borrowed colour terms have obvious prototypical references, e.g. for *pomarańczowy* 'orange', it is the fruit called *pomarańcza* 'orange', and for *fioletowy* 'purple', it may be the flower called *fiołek* 'violet'.

The aim of this paper is to investigate how Polish speakers understand the lexeme *seledynowy*. In a survey study, the respondents are asked to write down their own definitions of this adjective, provide the associations the colour celadon evokes and give names of objects and phenomena (both natural and artificial) which are typically celadon. The objectives of the survey include checking if this colour term has a possible prototypical reference point.

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Black lists, black holes and black angels: The word for BLACK in the Polish press

The Polish word for black, *czarny*, has been analyzed from various perspectives by numerous scholars, including, inter alia, Ampel Rudolf (1994), Komorowska (2010, 2017), Tokarski (2004) and Zaręba (1954). The aim of this paper is to examine the uses of *czarny* in the Polish press released in 1945–1956, 1957–1971 and 2010. The data will be extracted from ChronoPress (Chronologiczny Korpus Polskich Tekstów Prasowych), a corpus of Polish newspapers and magazines available at http://chronopress.clarin-pl.eu, and the National Corpus of Polish (Narodowy Korpus Języka Polskiego), available at https://nkjp.pl.

So far, we have investigated the occurrences of the words for red and green – *czerwony* and *zielony*, respectively – in press texts. We concentrated on the occurrence of these lexemes in fixed expressions, names of organizations and geographical names, paying attention to their ideological uses (Stanulewicz and Pawłowski 2018, 2026).

In this paper, we analyse the occurrences of *czarny* in the Polish press in the same way, taking into consideration its ideological and non-ideological uses. Moreover, we wish to focus on fixed expressions, such as *czarna lista* 'black list', *czarny scenariusz* 'worst case scenario' (lit. black scenario), *czarna dziura* 'black hole' and *czarna godzina* 'rainy day' (lit. black hour). The corpus tools will allow us to identify the changes in the uses of *czarny* which occurred in the years 1945–2010.

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Colour in darkness... Colour metaphors in *Nobody's Girl: A Memoir of Surviving Abuse and Fighting for Justice* by Virginia Giuffre

Colour is a universal phenomenon and acts as a significant feature of various walks of human existence. It can be investigated with reference to physical properties as well as from a variety of perspectives, also including the linguistic aspect. The language of colour and colour terms are used not only in their literal senses, but they also have a great symbolic as well as figurative potential. The paper intends to provide a comprehensive exploration of the use of colour metaphors in the *book Nobody's Girl: A Memoir of Surviving Abuse and Fighting for Justice* written by Virginia Giuffre. It aims not only to identify but also to interpret the role that colour-based imagery plays in building and shaping the narrative as well as conveying the emotional depth together with other aspects of the author's experiences brought to attention and discussed in the memoir.

The analysis primarily focuses on the colour lexicon present throughout the text, and attempts to examine how specific colours are employed metaphorically to represent psychological states, fear, trauma, resilience, and/or transformation. Particular attention is given to the frequency and distribution of these metaphors, allowing for the identification of the most recurrent patterns and images utilised by the author, in addition to their potential symbolic significance within the account.

All instances of colour metaphor usage are systematically collected and analysed in relation to their immediate and broader narrative contexts. The study further distinguishes between metaphors with predominantly negative connotations - often associated with fear, pain, or oppression, and those with more positive or restorative undertones, namely reflecting hope, empowerment, or recovery. Through this detailed examination, the paper aims to demonstrate how colour metaphors function as a powerful stylistic and interpretive tool, enriching the reader's understanding of Giuffre's lived experiences and the way they affect the emotional landscape of her story.

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Colour naming in the Circum-Baltic languages: Similarities and variation under areal contact

While areal linguistics has largely concentrated on grammatical and phonological features, an areal perspective on lexical-semantic domains is relatively recent (Koptjevskaja-Tamm 2015). The colour domain nevertheless offers a particularly revealing testing ground for evaluating the limits of linguistic convergence. Colour systems can be compared across languages through established linguistic and psycholinguistic field methods, enabling fine-grained cross-linguistic analysis (Majid, Jordan and Dunn 2015). The present study examines the colour lexicon of five languages spoken in the Circum-Baltic area: Finnish, Estonian, Latvian, Lithuanian, and Russian, in order to explore both shared tendencies and variation within a historically interconnected region.

Empirical fieldwork conducted with a large number of participants shows that all five languages correspond to Stage VII in the Berlin and Kay (1969) hierarchy of basic colour terms. At the same time, the data reveal important internal variation. Russian and Lithuanian have expanded the basic colour term inventory by splitting the blue category into two distinct basic terms (Paramei 2005, Bimler and Uusküla 2018). All languages display rich lexical differentiation in the pink and purple categories, while the boundaries between blue and green categories appear stable across languages. Recent findings demonstrate that the location of the blue–green boundary does not depend on whether a language distinguishes multiple basic terms for blue (Uusküla and Bimler 2026).

Despite structural similarities, prototypical exemplars for several colour categories differ across languages, even in the context of close historical, linguistic, and socio-economic contact. These findings suggest that areal proximity alone does not lead to full convergence in colour categorisation. Rather, the Circum-Baltic languages illustrate how shared typological structure can coexist with language-specific patterns of lexicalisation and category salience, supporting a weak relativity perspective. No unique Circum-Baltic colour lexicon emerges from the comparison. Instead, the observed patterns align with broader European and global tendencies, indicating that areal contact does not override deeper cognitive-linguistic structuring of colour categories.

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From silk to semantics: Teaching colour in Han China (206 BCE–220 CE)

This paper examines how colour was taught and learned in Han China (206 BCE to 220 CE) by focusing on transmitted texts that package colour vocabulary in distinct pedagogical formats. The aim is to show how colour categories were made memorable and communicable, especially through the textile domain, where colour functions as a property of dyed goods, materials, and social value.

As an orientation point, the synonymicon *Erya* 爾雅 (*Approaching Correctness*) is introduced as a foundational glossary received as authoritative in the early imperial tradition, whose compilation is commonly placed between late pre-imperial and Western Han (206 BCE to 9 CE) contexts. Its organisation by semantic fields provides a baseline for discussing how early readers encountered colour terms within larger taxonomies of things, rather than through explicit definition.

The first case study is the rhymed character textbook (primer) *Jijiupian* 急就篇 (*Quick Progress Chapters*), traditionally attributed to Shi You, commonly dated to around 40 BCE. In its textile-related section, colour terms are integrated within list-based and rhythmic sequencing of fabrics. This offers a clear instance of colour teaching as commodity literacy: the learner acquires colour vocabulary together with cloth types, processing terms, and graded material qualities. The analysis considers how sequence and grouping in the list support memorisation and classification, for example through clustering, contrast, and formulaic recurrence.

The second case study is the folk-etymological dictionary *Shiming* 釋名 (*Explaining Names*), attributed to Liu Xi and generally dated to the late Eastern Han (25 to 220 CE). In the chapter "Shi cai bo 釋綵帛" ("Explaining Colours and Silks"), colour terms are presented in short definitional units that link a colour name to a paronomastic explanatory cue and/or to a concrete anchor, for example sunlight, ice, darkness, water, plants, mud, and other material reference points. Several entries also express explicit evaluation, including contrasts between proper colours and problematic mixtures. These explanations are treated as a didactic rhetoric of definition, designed to teach colour

categories through memorable verbal links, rather than as direct evidence for original etymology.

Comparison across *Erya*, *Jijiupian*, and *Shiming* suggests that Han period colour knowledge was stabilised through complementary textual strategies, taxonomy, list-design, and definitional explanation, and that the textile domain was a privileged environment for learning colour as a culturally meaningful attribute. This perspective contributes to colour studies by highlighting education and text genre as mechanisms through which colour categories become durable, transmissible, and available for later aesthetic, artisanal, and theoretical elaboration.

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Typological tendencies in semantic changes of color terms

This paper deals with semantic change in the color lexicon, as it can be identified by studying the most common lexical sources of color terms and the semantic paths leading to the establishment of chromatic targets. In the growing literature on color terms, studies of semantic change, as well as diachronic studies in general, remain relatively neglected or are limited to language-specific analyses, which often challenge Berlin and Kay's (1969) generalizations regarding basic color categories and basic color terms and are more compatible with the tenets of linguistic relativism (see, for example, Swinkel 2015). However, diachronic data have also been shown to provide substantial support for color theories developed within the universalist tradition (cf. Kay and Maffi 1999). For example, Biggam's (2012) study shed light on many aspects of past color systems through rich interdisciplinary evidence drawn from linguistics, literature, archaeology, etc. More recently, Viti (2024) studied semantic change and semantic reconstruction in the Indo-European color lexicon by analyzing the etymology of the main basic color terms of this language family. In line with these researches, we compare the origins of Indo-European color terms with typological findings, in order to establish the main similarities and differences between these languages in structuring the color lexicons. In particular, we examine the main lexical sources of basic color terms used to denote basic color categories, such as white, black, red, green, yellow, blue, brown, purple, pink, orange, and gray, on the basis of a linguistic sample of approximately forty

ancient and modern languages belonging to different language families, different language areas, and different language types. Our data come from authoritative lexicographical resources and, where possible, from interviews with native speakers. In addition to their lexical sources, we examine whether basic color terms typologically have a denominal formation denoting an object or whether they derive directly from a color root, and whether they are inherited or borrowed, or whether they exhibit polysemy with other lexical domains. We also compare our linguistic data with the representation of color expressions used in certain ideographic writing systems, as in Mandarin Chinese. This study will allow us not only to identify the main semantic shifts in the color lexicon across different languages, but also to uncover potential semantic universals in the color domain – semantic universals being rare and subject to controversy in the literature. Furthermore, the analysis of ideograms denoting color terms may suggest interactions between language change and writing change, a largely unexplored field which may therefore be of some theoretical interest, even beyond our case study.

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The color of cherry on the covers of European literature

The theme of the cherry, its color, and its symbolism is not unfamiliar in art, literature, and science. My aim is to examine this subject through the lens of how cherries are depicted on book covers. The case under study is the real tree and the full range of its colors. The tree's cycle of vegetation, naturally unfolding through annual transformations, is juxtaposed with its representations on the covers of books whose titles include a word referring to the cherry tree.

For the purposes of this research, I analyzed the resources of libraries in several countries with regard to their collections. I selected monographs containing the word "cherry" in their titles. For the study, I chose catalog databases of the largest libraries in Poland, as well as those representing the most widely used Western European languages – English, French, and Spanish – and also libraries from countries bordering Poland: Germany and the Czech Republic. The criterion for selecting library catalogs was the assumption that libraries of national, regional, or university rank collect most books with an ISBN number, both thematic and regional. National libraries, in turn, should have their entire domestic output cataloged in their collections. Today, all books are cataloged digitally, and their descriptions are publicly available in online databases (e.g., PRIMO, StabiKAT). This made it possible to identify appropriate institutions for searching literature with titles containing the word "cherry" on their covers.

The etymology of the term "cherry" was also examined, which allowed for the introduction of appropriate criteria in categorizing the collected literature. The analyzed covers were divided into those illustrating the "fruit," the "flower," and those that did not feature any depiction of cherries. The research showed that none of the covers popularized the most commonly observed aspect of the cherry tree throughout the year – that is, the sheen of its bare branches.

Richard Změlík
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How to analyze the color settings of fictional worlds using quantitative models?

Fictional worlds represent a type of world that, in literary studies, is distinct from the real world, as well as from any possible worlds that represent different versions of how the actual world could exist. If possible worlds are based on branching, according to Ruth Ronnen, fictional worlds are based on parallelism, which makes them specific structural-ontological domains that are not necessarily subject to the a priori rules of the world that apply to our world and any logically possible world.

From this perspective, it is interesting to examine how fictional worlds function, what rules and laws apply in them. The same applies to the color settings of fictional worlds, which are governed by their own laws and rules. The

question is whether we have the methodological tools at our disposal to examine this question in a way that is not merely introspective, i.e., based on subjective evaluation, which in this case has proven to be inaccurate.

In this paper, we will focus on the entire prose of Jan Čep, a Czech Catholic author who makes significant use of color motifs in his prose. Based on quantitative models, we will attempt to show that the color settings of his fictional worlds have their own clear logic and rules.



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