



VI. Colour in Art and Media

Colour and Animation

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Abstract

This paper seeks to highlight the central challenges in the scholarly analysis of film colour in animated film. It shows that the complexity of the subject demands an interdisciplinary approach that considers aspects of film studies as well as other visual arts, such as painting. In addition, the history of animated film, the importance of analogue and digital production techniques and the influence of individual artists must be taken into account.

The colour design of animated films is therefore subject to a complex web of artistic handwriting, technical possibilities, and cultural conventions. Furthermore, the reception of film colour by audiences in an increasingly globalised media world needs to be examined, as colour effects and colour preferences are subject to both individual differences and cultural contexts.

Using *Bambi* and other Disney films as a case study, this paper shows how all these factors combine to create a unique work of art. To examine the colour of the film, both the technical prerequisites of Technicolor, the technical process of hand painting–inspired by Chinese ink painting and European impressionism–, and the creative effect of background and characters design must be considered. This paper shows how all these elements allow animated film a radical freedom of creative possibilities, but simultaneously complicate the systematic comprehension and investigation of colour. The Tübingen Centre for Animation Research has taken up this challenge of interdisciplinary investigation of the subject.

Keywords: Animation Studies, Colour and Animation, Disney, Pixar, Technicolor

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The examination of the topic Colour and Animation is currently a quite intriguing area of research in film studies and art history.² However, there are only a limited number of publications on this topic. Short chapters concerning colour can be found in application-oriented handbooks written

for animators. This may be due to the circumstance that the interaction/synergy between colour and animation film cannot be analysed without expertise in several significant research areas. These include neurobiological colour research, advanced studies of the international history of animation films in due consideration of the highly complex history of their productions and technology as well as a strong basis of knowledge in international art history, especially about materials science, the style of drawing or references to significant works of painting. The history of animation films is very rich in examples of abstractions and alienations of content, figures and spaces. Because of this, it can be interpreted as an outstanding proof of the constructive disposition of human perception. Therefore, it is inevitable to study general perceptual processes, such as the interactions of colour and form, colour and shadow or colour and object identification. Finally, extensive research is necessary due to the international dimension of the topic; for instance, the aesthetics of anime in Japan or the history of the Chinese, Russian and Czech animated films, among others. This list only depicts a small but effective selection of the current production of animation films. The progressive globalisation of both the production and reception of media is causing an increasing blending of different regional styles and, consequently, aesthetically hybrid modes of appearances in animation. Large, globally oriented production companies follow this trend.

² Paul Wells, *Understanding Animation* (London, New York: 1998), is one of the most important studies of the animated film. In this book, too, the topic of colour in animation is not dealt with in a separate chapter although the topic plays a part in the excellent case studies of Paul Wells. A group of Tübingen-based scholars (academic chair of film and TV studies) has been working on the international animated film for many years, sometimes in personal union with the research association Farbe.

Stop-motion animation, the technology animating paper silhouettes or puppets, is as old as the cinematograph, which simulated motion through a fast-paced sequence of initially 18 and later 24 pictures per second.² The use of brushes and colour has also linked live-action film and animation film from the start. When in the 1910s the individual pictures of the first film rolls still had to be painted manually to evoke the effect of colourfulness during the projection, this mode of production resembled the painstaking handicraft that still defines the nature of animated films today.³ When considering drawn and painted animated films specifically, one can describe their visual aesthetics as an extraordinarily multi-variant relationship between colour, form and motion. At the same time abstraction and disassociation determine the style and effect of many animated films, even if they are designed for a broad audience. In the context of abstraction and disassociation, colour plays a central part due to its nearly infinite diversity of possible uses. For instance, a living being or an object, which only exists in connection with a particular colour in reality, can cause an unfamiliar effect when depicted in an alienating colour.

In analogue, painted animated films, ‘worldbuilding’ (the invention and design of a narrative cosmos) is carried out using pen, brush and colour. Digital drawing computers and tablets mimic the handicraft of drawing and painting by offering similar tools such as pens, brushes, erasers and colour palettes. When analysing colours in animated films, one has to begin with material science; this includes

² Lotte Reiniger is a famous pioneer of the animated film and stop-motion-animation. She has worked with experimental filmmaker Walter Ruttmann on the colour design of her films. See Evamarie Blattner, Bernd Desinger, and Matthias Knop, eds., *Animation und Avantgarde: Lotte Reiniger und der absolute Film* (Tuebingen: Stadtmuseum, 2015); For more information on the colourisation, i.e. the virage, also see the documentary *Lotte Reiniger: Tanz der Schatten*, directed by Susanne Marschall, Rada Bieberstein, and Kurt Schneider (Tübingen: absolutMedien, 2012).

³ The film museum in Amsterdam published the richly illustrated volume *Fantasia of Color in Early Cinema*, which offers a lot of insight into the relation between the early film, animated film and colour design. George Méliès’s hand-coloured films stand out as an example of creative handling of colours and filmtricks. See Tom Gunning et al., *Fantasia of Color in Early Cinema* (Amsterdam: Amsterdam University Press, 2015).

the study of pigments, papers, carrier materials, pens, watercolours, acrylic paint, oil-based paint, modelling clay, brushes and other tools.

These materials differ greatly in their aesthetic effects, and new results emerge consistently when they are combined with the production forms of cartoons and animated films (analogue or digital drawing, construction of puppets, etc.) and with applied (analogue or digital) film technologies. Every single one of the listed means can be combined with every other one to create a new colour aesthetic. On the one hand, this makes a systematic analysis of the subject matter complicated, on the other hand, it adds to the fascination for the subject matter.

The practice of colouration in animated films is related to traditional forms in painting, graphic art or comics. It is impossible to oversee and very hard to cover the different handwritings analytically, and to cover all individual impulses of animation artists, whose colour palettes, colour compositions and painting techniques form their style. Many aspects of this creative work are not documented, other parts are located in archives, waiting to be reviewed.

Regarding invisible production processes, one finds that the history of colour composition in cartoons is connected to the topic of gender-specific tasks in the film industry and the appreciation thereof. For instance, in the 1930s and '40s over one hundred young women worked as colourists in Walt Disney's Ink and Paint Department. They were continuously pressed for time, and their craftsmanship had to meet the perfectionist requirements of the company patriarch.⁴ Since the beginning of film history, women have been tasked with the painting of negative images, as well as the manual colouration or template colouration of silent films. This division of labour proceeded throughout the mostly hidden production history of cartoons. So, the fact that Disney himself considered Mary Blair as essential for his company is noteworthy. Walt Disney did not just collect paintings from the whole world; he also organised exploration journeys for his

⁴ This phenomenon can also be found in other areas of colouration. For example, publishing houses like Perthes in Gotha had women colourise their maps and atlases. See Nils Güttler, "Unsichtbare Hände: die Koloristinnen des Perthes Verlags und die Verwissenschaftlichung der Kartographie im 19. Jahrhundert," *Archiv für Geschichte des Buchwesens* 68, (2013): 133-153.

animation artists to gain visual inspiration.⁵⁵ In 1941, for instance, the colourist Mary Blair travelled to South America with Disney and other colleagues and conducted visual studies. According to John Canemaker, these studies played a crucial part in the development of the lush colour palette she used in her work.⁶ Mary Blair and other Disney colourists, as well as the Chinese painter Tyrus Wong, influenced the visual aesthetics of films such as Mary Blair's *Cinderella* (USA 1950), *Alice in Wonderland* (USA, 1951) and *Peter Pan* (USA 1953) or Tyrus Wong's *Bambi* (USA 1942). Thereby, they have written history in the realm of colour film and animated film. Every one of these examples has made its mark in the collective memory, not least because of their outstanding colour composition.

When it comes to colour composition in animated films, the handwriting of the animation artists plays a vital role as well as other individual factors, such as their knowledge of film and pictures, their culture, gender, age, and religion. Usually, intercultural production teams work together as a creative community; thereby, heterogeneous forms of visual memory, as well as media experience, define their artistic practice. At the same time, big companies such as The Walt Disney Company pre-set recognisable styles, which are part of the corporate identity of the producer and thus are decisive in the advertising process. Some films are located in between visual branding, technological innovation and variations of colour aesthetics. One example for this is *Inside Out* (D: Pete Docter, USA 2015): the colour composition was produced with Adobe's wide-gamut RGB Color Space and as a result, the colour space of the film was drastically extended. Lastly, producers' considerations concerning the target audience also have an impact on the colour aesthetics of films. Projects that focus on children are an example for this, as well as productions that are meant to be received by viewers of all ages and cultures. This is often the case for creations of Disney, Pixar or DreamWorks.

⁵ Hans Bacher in an interview in Hannes Rall, *Animationsfilm: Konzept und Produktion*, (Konstanz and Munich: UVK Verlagsgesellschaft, 2015), 138; For more information on Disney's examination of masterpieces of the visual arts see Roger Diederer and Bruno Girveau, ed., *Walt Disneys wunderbare Welt und ihre Wurzeln in der europäischen Kunst* (Munich: Kunsthalle der Hypo-Kulturstiftung, 2008).

⁶ John Canemaker, *Magic Color Flair: The world of Mary Blair* (San Francisco: Insight Editions, 2014), 61.

The colouring in animation is based on the virtuosity and professionalism of animation artists.⁷ At the same time, they, like all other visually talented creatures - including animals who have colour knowledge regarding food or prey, even if their colour knowledge is limited - have access to an overflowing pool of tacit colour knowledge that refers to nature, the directly experienced environment or different cultures. Artists use this body of knowledge in a somewhat intuitive way. Beyond cinema and art, colour is used by humans, animals and plants as a general communication and signal system. Animals and plants even use colour to communicate across the borders of their species. Existential collaborations, for example between bees and flowering plants, are based on colours among other things.⁸ Communication processes that are inspired by nature influence the colours of animated films; however, the animation film tends to mix realistic and fairy tale forms of communication (talking animals, dancing plants).

In colour research, colour is described as a psychophysical perception phenomenon based on the particular physiological senses of humans and animals.⁹ Cultural colour preferences specify and expand the subjective effects and interpretations of colours. On one side, cultural colour preferences can be situated collectively to a certain extent, and they interact with religious iconology, symbolism and last but not least, the respective environment.

A human's subjective colour perception, on the other side, must be described as a network that consists of personal experience and memory. It is a well-known fact in design-oriented industries how difficult it is to ultimately determine cultural colour preferences. There is a correlation between sales of consumer goods, their colour design, and the respective colour preferences. The same is true for globally successful film productions that are perceived by culturally

⁷ See the following publications that concentrate on the artistic practice: Rall, *Animationsfilm*, 123; James Gurney, *Color and light: A guide for the realist painter*, (Kansas City: Andrews McMeel Publishing, 2010).

⁸ The Tübingen-based neurobiologist Annette Werner has been researching this area for many years.

⁹ See Susanne Marschall and Annette Werner, "Basics of Colour Research," *Colour Turn Journal* 1, (2018).

diverse target groups. This already existing complexity is increased by the levels of narration and film aesthetics. It is to be suspected that globally successful animated films rebound on the colour preferences of the audience, and they can influence children's colour preferences in particular. For example, specific effects can be traced back to the yellow minions from *Despicable Me* (D: Pierre Coffin and Chris Renaud, USA 2010), which are popular in the whole world, or Elsa's ice-blue look in Disney's *Frozen* (D: Jennifer Lee, Chris Buck, USA 2013). These effects manifest themselves in children's carnival costumes, in fashion or toys.

The international history of animation is defined by a fundamental aesthetic freedom in the invention of characters and their environments; it goes as far as to remove object-relations, which may be connected to the diversity of design in visual arts. Colour, form and movement are central elements of the unlimited variety of design; these three stylistic devices always need to be regarded in relation to one another. Each animation film represents – more radically than live-action films – an exclusive world of perception, whose uniqueness is also determined by its colour design. Animation artists develop the colour design for each film based on a “colour script” of their devising, which usually depends on a few colours and contrasts that are consciously arranged. Besides, usually only one person or a small team is responsible for experimental art-house films; thus, they arise from an individual artistic vision, comparable to an avant-garde painting.¹⁰

However, globally successful blockbusters also offer substantial material for the analysis of colour design. One reason for this is that they are realised by large, culturally diverse teams who are specialised in particular areas of work. These teams experience production-related influences and steady pressure to succeed due to the large budgets they receive.

Intercultural teams had already worked together in Walt Disney's times, but not in the same measure as today. The Chinese painter Tyrus Wong died on 30 December, 2016, aged 106 years. His art of ink

¹⁰ In this context, the nine DVD-boxes *The Animation Show of Shows* are very impressive. They contain 162 award-winning short films, which were produced from all over the whole world. Produced by Acme Filmworks. (2007 ff.).

painting turned the film *Bambi* into a masterpiece. When Tyrus Wong painted the landscapes for *Bambi*, the colours used in Walt Disney's cartoon films were beautifully luminous thanks to the colour film process, Technicolor. Walt Disney was one of the financially strong supporters of the development of the Three-Strip-Technicolor¹¹ and the dye-transfer process of Technicolor, a technology that is regarded as a pioneering achievement. Disney had produced the first cartoon film in Three-Colour-Technicolor as early as 1932; it was called *Flowers and Trees* (D: Burt Gillett, USA) and was one of his famous *Silly Symphonies* (USA 1929-1939):

Staged with real people or drawn: movement and dance in Technicolor colours, the synaesthetic fusion of visual and acoustic levels in the production and experiments with light, colour, shapes and rhythms became the new pattern of film entertainment. [...] Disney's animated films in Technicolor move between the intensively coloured, graphical cartoon aesthetics and the dramatic chiaroscuro of European painting, whose masterpieces are cited as clearly visible sources of inspiration. Therefore, Disney's masterpieces/pieces of art occasionally seem to be stylistically disparate like *Fantasia* or the subsequent *Pendant Make Mine Music* (D: Bob Cormack et al., USA 1946) - they are pioneers in a blank no man's land between cartoon and abstract experimental film.¹²

At the time of *Bambi*, Technicolor had reached a peak of quality. The three-strip camera, which was used in live-action films, had to be modified to be used as a multi-plane camera in animated films. So, the black-and-white camera that was used in the multi-storey animation table was reconstructed as the cameraman Winton High describes:

Cartoons and all types of animation photography also should be mentioned. The bulk of the cartoon and animation work is now handled by adapted black-and-white cameras using the successive-exposure method. These cameras are set up with a balanced set of three-color filters in the optical system at some point, the filters either rotating or

¹¹ See Susanne Marschall, *Farbe im Kino* (Marburg: Schüren, 2009); Susanne Marschall, "Somewhere Inside the Rainbow," in *Glorious Technicolor*, ed. Connie Betz, Rainer Rother, and Annika Schaefer (Berlin: Bertz and Fischer, 2015), 72-87.

¹² Marschall, *Farbe im Kino*, 74-76.

sliding, and the color-exposures are made by exposing one frame of film through each filter successively. At the head end of each roll of film, a special chart is photographed, permitting the laboratory to identify the various frames.

This negative, after development, is printed on a step printer that prints each third frame only. Thus the records are separated and the prints handled in a manner similar to other standard prints. This method is limited to work where no movements take place during the exposure, and great care must be exercised in the lighting, exposure, registration, development and colour-balance of the film.¹³

It was necessary to use a multi-plane camera, which had been optimised for coloured animation films, to produce animation films with depth. It was possible to suggest spatiality by layering various pictorial planes. The multi-storey animation table came into use in the production of the silhouette films of Lotte Reiniger in the 1920s. The animated film adaptation of Felix Salten's children's book *Bambi* – which Disney had his employees work on for seven years – perfected the aesthetic goal of suggesting three-dimensional spatiality.

The naturalistic representation of does and stags – which is based on intense studies on living animals, conducted by the animation artists – is not the only unique characteristic of *Bambi*'s pictorial design. The expressive landscape painting, which combines the styles of Chinese ink painting and European Impressionism,¹⁴ is equally distinctive. *Bambi* accomplishes an avant-garde variety of styles that is highly expressive by a combination of the following characteristics: Animals, which are drawn in a naturalistic fashion; animals, like Thumper, which look more like cartoon characters; a small amount of realistically portrayed objects in the foreground and blurry, profound backgrounds, which seem to dissolve in colour and light, while the forceful brush stroke remains visible. The scene in which *Bambi* is looking for his mother, who will not return because she had been shot dead by a hunter, is dark not only from the narrative perspective, but

¹³ Winton Hoch, "Technicolor Cinematography," *Journal of the Society of Motion Picture Engineers* 39, no. 8, (1942): 96-108.

¹⁴ The Disney colourist Hans Bacher spoke about this in an interview in: Rall, *Animationsfilm*, 14.

also from a colour design point of view, and it is likely to have impressed many people in a painful way. In the exposition of *Bambi*, the style of painting and the colour scheme mark the forest as a magical space, a place that should remain untouched by human influence. The colours intensify fundamental emotions in *Bambi*, they highlight existential borderline situations, and they pulsate in moments of passion, like the blood in the veins of the animal figures, which are brought to life by the art of animation.

Disney was not only ready for innovations and for investments in the Technicolor process, which guaranteed a high level of image quality in his films; his colour films were also defined by an aesthetic openness for new ideas.

Mary Blair, who had colourised *Cinderella* and *Peter Pan*, was responsible for the colour design of the animation film adaptation of Lewis Carroll's classic *Alice in Wonderland*. Clyde Geronimi, Wilfred Jackson and Hamilton Luske were the directors of all three films. The luminosity and graphic clarity of Mary Blair's wonderland matches the aesthetic concept of Technicolor. The film *Alice in Wonderland* takes place in a surreal, as well as threatening, dream world; on the colour level, however, it remains clear like in a cartoon and is composed in a way that is palpable in a childlike manner.

Colour in animated films is able to alienate the audience in a surreal way; it is the ideal ally of the wonderful, but also of the terrible, which often go hand in hand, not only in Walt Disney's fairy-tale films. Excessive colourfulness usually marks an exceptional state, an existential borderline experience, even if it is regarded in a calm way as in the case of the girl Alice. When Alice falls, or rather floats through the rabbit hole, Mary Blair fashions this gradual initiation into another world as a passage of bright colours that come and go, as if in a dream or high on drugs. Blair's colour games remain committed to an almost striking clarity contrary to this psycho-physical dimension, just as if they had arisen from the pages of a brightly coloured children's book. The world of wild colours in wonderland eludes any attempt at not only education, but any rationalisation. In her first song, Alice advocated the ideal of a radical un-disciplining of her world of experience, which is associated with a commitment to the expressive power of the picture. Pictures, sleep, dreams, drugs, music and colours

are the allies on this path into the depths and shallows of dreams and of consciousness.

In the animated film, the traces of the production process of the pictures are often deliberately exposed, in the case of *Bambi* by the visible brush stroke; a means that significantly strengthens the expressiveness of the scenes. Many animated films use unrealistic or alienating colours, which overspill contours or are blurred, mainly to underline emotional peaks. The animated film has developed its own aesthetics of allusion and the volatile, which includes an absence of colour as well as the reduction to black, white and grey, and the separation of body colours and local colours. The aesthetics of allusion and the volatile often lead to a formal aesthetic reduction or escalate into eccentric visual punch lines. They celebrate the fragment, the caricature and finally the nothing, the gap in the picture, and colours are always involved in this. The overpressure between the shown and the not shown, the visible and the invisible, deeply influences the imagination of the audience.

Regarding painted pictures, different creative thoughts take effect on the figure-ground relationship and the relation of colours in the foreground, middle ground and background than in live-action films. A painting is a still picture, which is a unique creation of an artist and which can be studied in peace. In contrast, single pictures in an animated film are volatile, and they are produced by many different persons; as an element of a simulated motion sequence, they show only briefly between a pre-picture and a post-picture. The painted picture in an animated film is always frame and passage at the same time, it is a short thrill for the eyes within the process of fluid metamorphosis of character and form. The colours assigned to the figures and forms are not only independent from realistic colours, but they are often only temporarily connected to an object. In animated films, colours do not seem to be connected firmly to objects since they can be used extensively like in a child's picture or in sharply encircled fields of shadow or even without a shadow. On the contrary, the colour can be detached from objects and surfaces any time, just to take on a life of its own in a vacuum of playful abstraction. Perhaps it returns to its original place in the following scene.

A systematic collection of the stylistic richness of colour in animation film is an endeavour that is as attractive as it is ultimately impossible. In animation films, the artistic process begins with handmade drawings or colour painting and the development of a film-specific colour palette and ends with the transformation of the materiality of pastose paint into the immateriality of light colours. Their aesthetics are essential for the effect of cinema projection. It cannot be overlooked that the colours of animated films develop in diverse ways. In Walt Disney's films, colour virtuosi like Mary Blair or Tyrus Wong celebrated the visibility of the painting material, whose materiality showed through the immaterial light art of the film. Such a double game of pastose colour and light colour distinguishes each hand-painted cartoon and directs the eye to a pre-film phase of animated pictures that went through a long process of revisions and editing operations. Even animated films that were produced exclusively on computers are reluctant to spare the effect of the traces of the analogue world of colours in the digital, even if they are fully simulated.

Freed from the shackles of filmic realism, the material of colour evolved in over a hundred years of animated films into a radical freedom of design on the big screen. Up to now, the diverse manifestations of this have neither been gathered systematically, nor have they been described satisfactorily. This is especially true for the experimental animation film: the diversity of form and colour is unimaginable, and the representatives of the experimental animation film do not feel tied to conventions of image design. Short films, such as the two *Guggug*-films¹⁵ by Sabine Groschup, challenge the audience regarding their perception and interpretation, but also acoustically. On the one hand, they use the anarchic freedom of children's paintings, on the other hand, they are evocative of experiments of modern painting. Colours represent emotions, they make jokes and signal irony, they support the audience's memory, they weave golden threads through the story and emphasise leitmotifs, they create an atmosphere and cause defamiliarisation, they evoke not only alienation but also delight, they indicate breaks and shape abysses, they can be terrifying,

¹⁵ See Sabine Groschup, *Guggug: Teil 1*, Youtube, Feb 19, 2010, <https://www.youtube.com/watch?v=4rDZRrKDcso>.

they are often dramatic, but sometimes also lyrically tender, they can be loud or soft, hot, warm or cold, they taste and smell good or bad, they make statements by their occasional absence, they merge with noise and music and thereby form synaesthetic experiences, they cite masterpieces of art history and coin highlights, but also sideshows in films in such a way that they remain entrenched in the collective memory. Many outstanding colour scenes are also self-reflective of their own production process, or they openly address fundamental questions of perception. *Colour and animation* is an interdisciplinarily and interculturally rich topic, which needs to be tackled from different perspectives and with the support of archives. This is the goal of the Tübingen research focus.

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