# Perpetual iridescence, or Impressionism's minor harmonies

Alex Weintraub

> Et ces couleurs, quel nom leur donner! C'est l'éclat mat de la perle marié aux lueurs mystérieuse de l'opale. Rien ne saurait suppléer la vue, car le pinceau ici lui-même serait impuissant.[1]

The painter Paul Signac has had a large impact on the art histories of modern colour. In his 1899 treatise, *D'Eugène Delacroix au néo-impressionisme,* Signac distils a disparate array of colour theory-inflected writings by Félix Fénéon, Georges Seurat and Charles Henry—among others—into a protocol for modern colouristic painting. As his book's title suggests, Signac also traces his own Neo-Impressionist manner back to Eugène Delacroix's self-conscious, if eclectic, application of Eugène Chevreul's theory of simultaneous contrasts, in which vivid pictorial harmonies could be achieved through the adjacent placement of complementary hues. Subsequently, Monet and Cie intensified the appearance of these same contrasts by taking their colours straight from the tube and applying them in broken touches onto canvases primed in white. With the arrival of Seurat, this same approach to colour composition was renewed systematically, and then with Signac, it became nearly doctrinal.

Signac's account has a fair degree of explanatory force; it certainly achieved sufficient influence to precipitate one of Modernism's most famous acts of apostasy: when Henri Matisse abandoned the Divisionist touch to discover new qualities in his colours—though scholars are not in complete agreement as to which.[2] By following Signac, one can chart a compelling formal through-line that builds from Delacroix's striking chord of blue, green and red at the top left of his *Sultan of Morocco* (1845, Musée des Augustins, Toulouse) [figure 1] to the moment when

[1] *Collection importante de verres antiques, bijoux, terres cuites, fouilles faites dans l'ile de Chypre par M. Piéridés*, Paris, 1873, 1: "And these colours, what names should we give them! They have the matte brilliance of a pearl mixed with the mysterious glow of opal. Nothing would be capable of recreating this sight. Here, the paintbrush would be useless."

[2] See Yve-Alain Bois, 'On Matisse: The Blinding', trans. by Greg Sims, *October*, 68: 2, Spring 1994, 60-121; Alistair Wright, *Matisse and the Subject of Modernism*, Princeton, 2006; and Todd Cronan, *Against Affective Formalism*, Minneapolis, 2014.

Figure 1 Eugène Delacroix, *Moulay Abd-er-Rahman, Sultan of Morocco, leaving his palace in Meknes, surrounded by his guard and his main officers*, 1845. Oil on canvas. 377 x 340 cm. Musée des Augustins, Toulouse. © Photograph: Daniel Martin.
Figure 2 Henri Matisse, *Dance*, 1910. Oil on canvas. 260 x 391 cm. The Hermitage, St. Petersburg. © Succession H. Matisse/State Hermitage Museum, St. Petersburg

Matisse imbued this same trio of colours with new, scintillating rhythms in his *Dance* (1910, State Hermitage Museum, St. Petersburg) [figure 2].[3] More recently, Laura Anne Kalba has emphasised that this general account of modern colouristic painting is also historically substantive—but only once the new vibrancy achieved within the fine arts is recontextualised as just one critical effect of a broader visual culture of *bariolage*, or the disorienting arrangement of brilliant, synthetic hues.[4] Like Signac, Kalba also traces Impressionist colour back to Eugène Chevreul, and she too caps this epoch with Neo-Impressionism; her book, however, develops a much richer analysis of art's entanglements with science and commerce in a constellation that considers oil paintings alongside aniline dyed cloth, artificial flowers, chromolithographic posters and fireworks displays.
Simultaneous contrast has thus attained the status of a historiographical *idée fixe*, which, in turn, has affected how scholars and critics characterise the modernity of

[3] See Jennifer Olmstead, 'The Sultan's Authority: Delacroix, Painting, and Politics at the Salon of 1845,' *The Art Bulletin*, 91: 1, March 2009, 92-95.
[4] Beyond Kalba, one could also cite George Roque, *Art et science de la couleur: Chevreul et les peintres, de Delacroix à l'abstraction*, Paris, 2009; José Argüelles, *Charles Henry and the Formation of a Psychophysical Aesthetic*, Chicago, 1972. A similar affect-driven approach to colour is adopted in Maika Pollock, 'Odilon Redon: The Color of the Unconscious', PhD diss., Princeton University, 2015. Finally, the most comprehensive study of the technical uses of color in Impressionist art can be found in Anthea Callen, *The Art of Impressionism: Painting Technique & the Making of Modernity*, New Haven, 2002.

modernist colours. Chevreul's ideas about simultaneous contrast concern the physiological facts about our subjective chromatic perceptions or how one hue may appear to amplify or offset our experience of another nearby hue. As a logical consequence of this shared point of origin, prevailing accounts of modernist colour have tended to foreground the maximisation of chromatic and luminous intensity. This is especially apparent in Signac's polemical text. He writes that the 'desire [was to] attain a maximum of luminosity, of coloration, and of harmony'.[5] This is a claim he will make repeatedly: 'The point of neo-impressionist technique is to obtain, as we have said, a maximum of colour and of light'.[6] 'Each local colour is pushed to its maximum intensity'.[7] Despite the rhetorical stress that Signac places on the intensification of pictorial effects, he is also clear that he is equally committed to the maximisation of harmony in his paintings. He believes that ambitious artists should strive for compositional unity, not merely perceptual razzle-dazzle. Luckily, according to Signac's theory, the same laws of simultaneous contrast that he uses to generate ever greater pictorial brilliance could also be applied to guarantee a painting's formal coherence: 'It is not simply that the divisionist technique assures, by the optical mixture of pure elements, a maximum of luminosity and coloration; -- by the dosage and equilibrium of these elements, according to the rules of contrast, of degradation, and of irradiation, [division] also guarantees the complete harmony of the work'.[8]

The consistency of Signac's text also exposes his account's major historiographical deficiency: its single-mindedness. Indeed, the premium that the artist places on chromatic intensity and on harmonies realised through optical mixture may impede a full appreciation of his actual attainments as a painter, such as the praise he received for his representations of a 'grand serenity [and] light in perpetual iridescence'.[9] When viewers notice light's iridescence in Signac's paintings, they are not in fact attuning themselves to the self-generating mixtures and intensifications of adjacently applied complementary colours, even if they may still be experiencing these same effects as an automatic result of their reception of the work. Rather, the iridescent quality of a painting's light refers to the perceived manifold discrete colours doubly refracted through and by any given depicted medium—in this case water and air—here provided that these objects are viewed at certain vantage points and under specific atmospheric conditions. (Think, for instance, of the simple pleasures of inspecting a shell's interior as it is tilted in one's palm.) In other words, the simultaneous contrast harnessed by Signac identifies a subjective fact about how his viewers perceive and optically mix his discrete touches

[5] Paul Signac, *D'Eugène Delacroix au néo-impressionisme (Nouvelle Édition)*, Paris, 1911, 1.
[6] Signac, *D'Eugène Delacroix*, 7.
[7] Signac, *D'Eugène Delacroix*, 43.
[8] Signac, *D'Eugène Delacroix*, 64.
[9] Félicien Fagus, 'Les Indépendants', *La Revue Blanche*, 30, 1 April 1903, 85: 'sérénité grandiose [et] une lumière en perpétuelle irisation.'

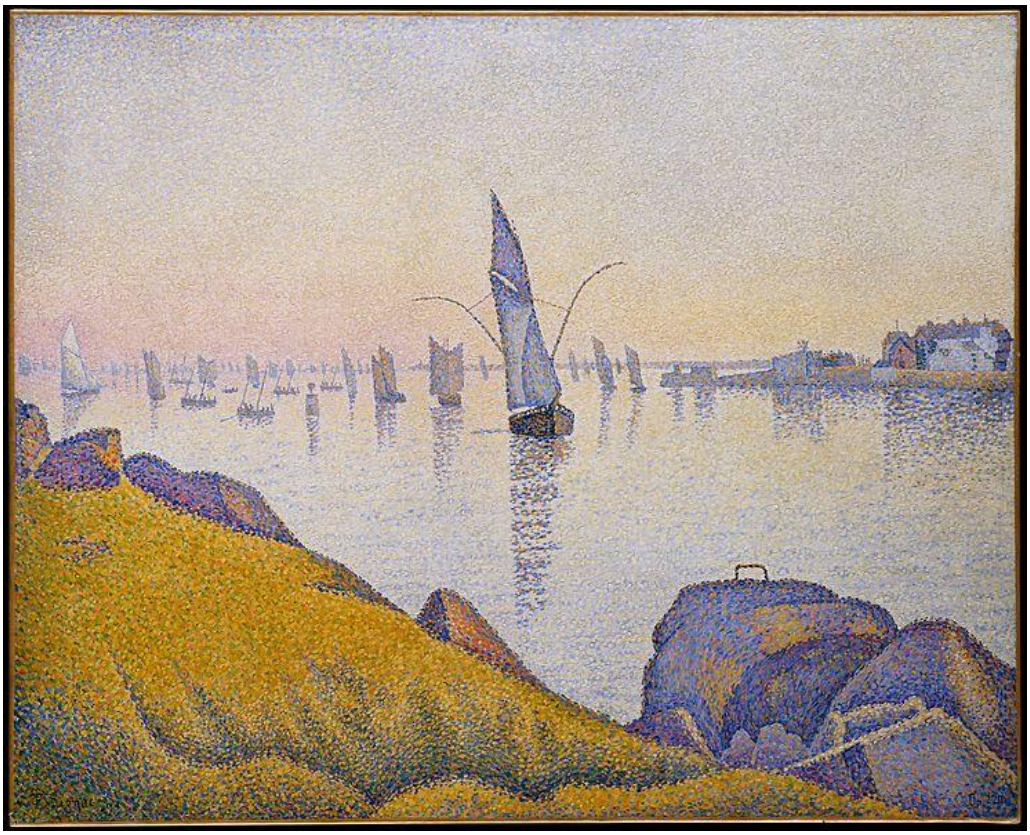

Figure 3 Paul Signac, *Even Calm, Concarneau, Opus 220 (Allegro Maestoso)*, 1891. Oil on canvas. 64.8 x 81.3 cm. The Metropolitan Museum of Art, New York City. Robert Lehman Collection. © The Metropolitan Museum of Art. Image Source: Art Resource, NY.

of paint. Iridescence, by contrast, constitutes an interpretation of the quality of the painter's represented light by these very same touches, namely as a lustrous, multi-coloured array. Therefore, it counts as a perceived quality attributable to the picture itself rather than to our own physiological response to it. This point will be especially apparent to viewers of Signac's work given the matte quality of his oils, such as those applied in his *Evening Calm, Concarneau., Opus 220 (Allegro Maestoso)* (1891, Metropolitan Museum of Art) [figure 3].[10] The nacreous shimmer of this particular seascape's horizon becomes all the more impressive once compared to the

[10] According to Franziska Schenk and Andrew Parker, it was not until the 1920s that there was any concerted effort to imbue pigmentary colours with iridescence in the form of pearl flakes. What is more, as Anthea Callen documents in 'The Colour of Modernity,' most Impressionists maintained the opacity of their materials, even when using transparent pigments, which means that there was even less of a physical likeness between their painted surfaces and actually iridescent ones. I see my analysis of iridescence as largely in line with Callen's descriptions of film colours, though we differ in terms of the weight we grant to literal surface effects in the development of pictorial meaning. See Franziska Schenk and Andrew Parker, 'Iridescent Color: From Nature to the Painter's Palette', *Leonardo*, 44: 2, January 2011, 109-115; Callen, *The Art of Impressionism*, 177-180.

evident opacity of each of its constituent touches of paint. Unlike sedimented, filmy layers of nacre, which produce pearlescent effects in natural artifacts when illuminated at different angles, an oblique scan of Signac's composition will reveal little added glare or generate any shifts in colour. The description of *Evening Calm*'s diaphanous atmosphere is therefore representational through and through.

In what follows, it is proposed that Signac's serene depiction of 'light in perpetual iridescence' opens onto an alternative history of colour in the Age of Impressionism—one that both contrast and physiological aesthetics have thus far outshined. More precisely, the Impressionist (and Neo-Impressionist) desire to represent iridescent colours describes a contrasting—and even more paradigmatically Impressionist—aesthetic rationale for the same techniques of divided touches.[11] As with simultaneous contrast, iridescence was already intuitively understood by artists well before the nineteenth century. It had also already received substantial attention from scientists. Sir Isaac Newton, for instance, documented instances of what would later be identified as interference colours, which, as will soon be seen, became a major preoccupation for nineteenth-century physicists and photographers.[12] To name one additional early modern example, the eighteenth-century naturalist Georges-Louis Buffon posited that the cause of iridescence in certain minerals was the 'impression of humid air'.[13] Later nineteenth-century studies of ancient glass would largely corroborate Buffon's explanation (see below).

Nevertheless, systematic inquiry into and widespread interest in iridescent colour only truly developed around the same time as interest in simultaneous contrast, and it appears to have peaked around 1880, at least in France.[14] Whereas

[11] Impressionism is a broad category, referring to a particular artistic aim—the representation of subjective perceptual experiences (e.g., impressions) of the external world in art; a set of painterly techniques; and, finally, a real historical group. One consequence of this capaciousness is that the works of some well-known Impressionists, such as Edgar Degas or Mary Cassatt, will not always appear all that impressionistic under certain descriptions. With the exception of Félix Bracquemond, all of the artists and paintings examined in this essay unproblematically fit the theoretical, technical, and sociological definitions of Impressionism (or Neo-Impressionism). However, the preoccupation with iridescence will only count as paradigmatically Impressionist for those painters who were genuinely interested in the pictorial status of their own sense impressions. For a useful discussion of the term's definitions, see Richard Shiff, *Cézanne and the End of Impressionism: A Study of the Theory, Techniques and Critical Evaluation of Modern Art*, Chicago: University of Chicago Press, 1984, 14-21.

[12] See Gabriel Lippman, 'Color Photography', *American Journal of Photography*, 17: 199, 1 July 1896, 303.

[13] George-Louis Buffon, *Ouevres Complètes: Suite de L'Histoire des Minéraux (vol. 3)*, Paris, 1833, 367.

[14] At least when comparing publications and announcements against a Google Ngram search for 'irisation' (French). This same correlation does not apply for either 'iridescence' (English) or *Schillerfarben* (German), the usage of which seems to have peaked at later dates. For

Chevreul began investigating colours soon after taking up his directorship at the Gobelins Tapestry Works in 1823, eventually publishing his results in 1839, David Brewster (the inventor of the kaleidoscope) began publishing and presenting a series of papers on iridescent substances beginning in 1817, and he continued to do so throughout the 1840s. These ranged from literature reviews of studies concerning the 'thin laminae' of mollusc shells to his own microscopic evaluations of the illuminated accreted surfaces of mother of pearl or the veins running through certain specimens of agate.[15] By 1871, Charles Darwin offered a quite different explanation for iridescence, at least when it came to the species of birds. He theorised that the cause of a peacock's queasy-making (at least for him) iridescent feathers was, in fact, sex, or, rather, the evolutionary history of interested judgements of beauty: sexual selection.[16]

Small wonder, then, that iridescence should have also become a major preoccupation for Impressionist painters and their earliest critics. After all, according to Stéphane Mallarmé, the group's unifying aim was to depict shifting impressions of air—and to do so beautifully.[17] It is this essay's contention that iridescence was distinctly valuable for the Impressionists because its particular chromatic effects could only ever be represented in their paintings, as opposed to the laws of colour contrast, which were valued by nineteenth-century artists because they believed that these perceptual effects could actually be induced in their work's beholders. To substantiate this claim, this essay's argument advances in three stages. First, the centrality of perceived iridescence will be recovered in some early critical writings about Impressionist painters and in a text authored by an artist closely associated with Impressionism: Félix Bracquemond. On a basic level of visual description, iridescence helps to distinguish those works of Impressionist art that seem to shimmer from those that aim to dazzle. The scholarly reluctance to study the manifest gentleness of the colours in these paintings with equal vigour to the

---

*irisation*, see https://books.google.com/ngrams/graph?content=irisation&year_start=1800&year_end=2019&corpus=30&smoothing=3

[15] See Chevreul, *De la loi du Contraste Simultané des* Couleurs, Paris, 1839; David Brewster and Humphry Davy, *On the Colours of Natural Bodies*, Edinburgh, 1833, 12-19; David Brewster, 'On the Cause of the Colours in Iridescent Agate', *Philosophical Magazine and Journal of Science*, 22: 144, March 1843, 221-223; David Brewster, 'On the Optical Properties of Mother-of-pearl', *Blackwood's Edinburgh Magazine*, 2: 7, October 1817, 33.

[16] See Richard Prum, *The Evolution of Beauty: How Darwin's Forgotten Theory of Mate Choice Shapes the Animal World – and Us*, New York, 2017, 14-18.

[17] See Stéphane Mallarmé, 'The Impressionists and Édouard Manet', trans. George T. Robinson, in *Documents Stéphane Mallarmé*, Vol. 1, ed. Carl Paul Barbier, Paris, 1968, 84.

Figure 4 Camille Pissarro, *L'île Lacroix, Rouen (Effect of Fog)*, 1888. Oil on canvas. 46.7 x 55.9 cm. Philadelphia Museum of Art © Philadelphia Museum of Art

attentions that have been paid to the pure pigmentary colours applied straight from the tube may stem from later twentieth-century critical prejudices, which have come to associate gentle aesthetics with kitsch.[18] Nevertheless, art histories of modern coloristic painting will remain incomplete if they continue to overlook the critical praise garnered by more delicate palettes of artists such as Berthe Morisot, or those seemingly colourless colours of fog found in Camille Pissarro's pictorial essay in both Neo-Impressionism and in pearlescence, *L'Île Lacroix, Rouen* (1888, Philadelphia Museum of Art) [figure 4].

Following this brief survey of iridescence's significance in period art criticism, a series of iridescent cultural techniques will be examined, all of which developed beyond the realm of the fine arts during the final three decades of the nineteenth century. Unlike Impressionist painters, French glass makers, fashion designers, photographers and scientists from various disciplines truly did manufacture or temporarily generate iridescent colours rather than merely imitating their effects in pictures. It is only within these adjacent fields that art historians can examine more substantive realisations of the distinction between spectral and pigmentary colours, which was a difference continually stressed in nineteenth-century colour theories; this distinction was also repeatedly misapplied by art critics and painters to describe the Impressionist and Post-Impressionist palette, at least if read literally. In addition, although this essay focuses primarily on gentler, nacreous

[18] I am grateful to Noam Elcott for proposing this explanation.

chromatic effects, it should be noted that iridescent colours could appear just as dazzling as pigmentary ones, though even this value has a more specific description—that of lustre. Therefore, iridescence was just as much a feature of the nineteenth-century experience of *bariolage*, yet it was irreducible to it. What ultimately differentiated these popular researches into iridescence from contemporaneous design applications of laws of colour contrast was their object orientation. Iridescence was manufactured in objects; simultaneous contrast was induced in subjects.

In this latter regard, one might consider how the influential colour theorist Ogden Rood describes the iridescence of excavated specimens of ancient glass in *Modern Chromatics*:

> [In antique glass], owing to successive reflections on many layers, the light which reaches the eye is quite bright, and the colours intense. Crimson, azure, and gold are found in combination ; blue melts into purple or flashes into red ; ruby tints contrast with emerald hues ; each change of the position of the eye or of the direction of the light gives rise to a new and startling effect. In other cases, broad fields of colour, with much gentle gradation and mingling of tender pearly hues, replace the gorgeous prismatic tints, and fascinate the beholder with their soft brilliancy.[19]

Rood's reference to the 'changes in the position of the eye or the direction of the light' expresses some of the central concerns of the essay's final section, in which the argument shifts from a historical mode of analysis to a more art critical one to tease out the theoretical stakes of Impressionist iridescence. More precisely, critical praise will be offered for the iridescent colours found in a few signal works by Berthe Morisot.

In brief, the current essay proposes that the Impressionist interest in representing iridescent colours obtained in a fundamentally different theory of aesthetic value and pictorial harmony than that of simultaneous contrast, the latter of which Todd Cronan has identified with the emergence of 'affective formalism'.[20] Simultaneous contrast achieved the compositional objectification of subjective vision and could be generated in any number of cultural fields, including, of course, in the art of oil painting; conversely, the perceived appearance of iridescence in any given Impressionist composition followed from an artist's subjectification of the real, if also latent, qualities of external objects when viewed under certain conditions: a matter of 'the position of the eye and the direction of light'. This is not to say that iridescence was invariably an extension of aesthetic naturalism—a desire to depict actually iridescent things—because it could just as easily manifest an artist's interest

[19] Ogden Rood, *Modern Chromatics, with Applications to Art and Industry*, New York, 1879, 52.
[20] See Cronan, *Against Affective Formalism*, 25: 'The idea that the formal qualities of a work directly affect the viewer's physical, psychological, or emotional state'.

in the faculty of imagination or their interest in making their explicitly subjective pictures shareable. (As will soon be shown, this is precisely what Stéphane Mallarmé finds the most praiseworthy about Morisot's colours.) Thus, iridescence in painting moves in the opposite direction of simultaneous contrast, which continually privatises the aesthetic value of colour by idealising it as a reflexive subject effect. Iridescence, by contrast, values colour for its meaningfulness within paintings, or for its potential pictoriality—its aboutness. Thus, already in the Age of Impressionism, one can isolate the emergence of an aesthetic antinomy between representation/intentionality and inducement/affect that would go on to shape later debates between twentieth-century modernist and avant-gardist painters and, of course, their critical champions.

## 2. *From Boucher to Bracquemond*

In the preface to his 1885 manual, *Du dessin et de la couleur*, Félix Bracquemond—who was not exactly an Impressionist but who certainly exhibited with the Impressionists and was also married to one—bemoans the extent to which simultaneous contrast had come to overdetermine French discourse about colour:

> For the word *value*, The French Academy has included the artistic usage for the first time in its seventh edition (1878), but it has confused the meaning in the first part of its definition, which treats it exclusively in terms of colour contrast, and does so even as the second part of the definition provides the term with its ordinary meaning. In Littré, the error is complete, since the term is exclusively defined in terms of simultaneous contrast of colours. In no dictionary do we find the simultaneity of qualities *hot* and *cold* that colour possesses in addition to its chromatic quality.[21]

When Bracquemond speaks of the ordinary usage (*acception régulière*) of value, he is referring to the brightness or darkness of an individual colour, which is distinct from and not secondary to the relations of contrast that exist between two neighbouring hues because these relations augment intensity, not value. In other words, later nineteenth-century French dictionaries had blurred the nuance between brightness and vibrancy. This may sound nit-picky, but it turns out to be

[21] Félix Bracquemond, *Du dessin et de la couleur*, Paris, 1885, XIII & IX: 'Ainsi, au mot *valeur*, L'Académie, qui, pour la première fois, en enregistre l'emploi par les arts dans sa septième édition (1878), en confond le sens dans la première partie de sa définition, où elle lui donne une acception qui ne touche que le contraste des couleurs entre elles, tout en lui rendant, dans sa seconde partie, son acception régulière. Chez Littré, l'erreur est complète, et sa définition doit être intégralement reportée au contraste simultané des couleurs. Dans aucun dictionnaire, nulle indication de la simultanéité des qualités c*haude* et *froide* que la couleur possède en outre de la qualité colorante'.

aesthetically significant. Diaphanous colours, for instance, may be bright, but they are generally not vibrant. Bracquemond is simply insisting on a distinction that many readers still regularly encounter when using digital image editing software. Instagram, for instance, allows for its users to adjust a photograph's brightness, contrast, warmth, and saturation, each of which would change the coloration of a picture in different ways.

Out of all of Bracquemond's claims on behalf of an expanded vocabulary for colour, few are quite as compelling as his brief analysis of the eighteenth-century painter François Boucher because it is here that the printmaker expounds on an aspect of chromatic experience that is perceived 'in absence of coloration'. Bracquemond approaches Boucher's art indirectly via the Goncourt brothers' description of the Rococo master's studio: 'In this marvellous museum display of colours taken from the earth, there are also shells with their thousand delicate nuances, their prisms, their changing reflections, their glimmers of a rainbow, their gentle pink as pale as a drowned rose, their green as soft as the shadow of a wave, their white caressed with a moonbeam'.[22] In addition to these shells, Boucher had also purportedly surrounded himself with iridescent crystals and peacock feathers. Even still, the extended attention that the Goncourts pay to shell-generated polychromy is ultimately most significant for Bracquemond's subsequent analysis of Boucher's colourism:

> This passage was a revelation with respect to Boucher's colours, which are so varied, so daringly foreign in the illuminated parts of his paintings. Indeed, it is assuredly in these objects that he must have sought out and discovered the secret of all of the iridescences with which he colours his paintings, his intuition of colour contrast not so clearly taken from nature. That he always had right in front of him the immobilized glimmer of these gems and shells, which he could every now and again catch glimpse of and recover once more. But we can also suppose that it is here—all of these sparkling models, which provided him with well-defined nuances, but only in their illuminated aspects—where Boucher finds the source for that attenuation, uniformity, one might even go so far as to say the absence of coloration, of strong values in his paintings.[23]

[22] Bracquemond, *Du dessin et de la couleur*, 170: 'Dans ce merveilleux musée des couleurs étalées de la terre, venaient les coquilles avec leurs mille nuances délicates, leurs prismes, leurs reflets changeants, leurs chatoiements d'arc-en-ciel, leur rose tendre pale comme une rose noyée, leur vert doux comme l'ombre d'une vague, leur blanc caressé d'un rayon de lune'.

[23] Bracquemond, *Du dessin et de la couleur*, 170 & 171: 'Ce passage a été pour nous une révélation de la couleur de Boucher, si variée, si audacieusement étranger dans les parties lumineuses de ses tableaux. En effet, c'est assurément dans ces objets qu'il a dû chercher et prendre le secret de toutes les irisations dont il colore sa peinture, son intuition du contraste

Bracquemond provides us with a compelling rationale for the participation of several Impressionists, such as Morisot and Renoir, in the so-called Rococo Revival. Although Boucher arrived at his distinct approach to coloration from within his own studio, Bracquemond interprets these same transforming effects of light and colour as emblematic of an artist's ordinary—if also aesthetically most interesting—visual experiences.

More importantly, one finds in Boucher an artist who already understood the distinction between brightness and vibrancy—which Bracquemond foregrounds in his book's preface—and also a painter whose intuitive approach to colour contrast emerged from his attunement to the experience of coloured surfaces perceived in 'the absence of coloration'.[24] The colour of a shell is, as the Goncourts conclude, 'white caressed with moonlight', but its physical structure occasions the polychrome series that precedes this final designation. Put differently, Boucher's nacreous palette is, for Bracquemond, essentially an Impressionist one, a matter of colourful, transitory luminous effects, not of the colours of things in themselves. To be sure, Bracquemond's text is equally as partial and retrospectively biased in relationship to Impressionism as Signac's. Nevertheless, two of the group's sharpest, earliest interpreters—Philippe Burty and Louis-Émile-Édmond Duranty—had already perceived a similar preoccupation with iridescence by the late 1870s.[25] Additionally, these and other nineteenth-century critics, including J. K. Huysmans, tended to apply the term *irisation* to identify either the quality of a work's represented light or its softer forms of harmony, such as in Pissarro's frosts, Morisot's gauzy basinets and curtains, the cloudy atmospherics of Monet's Gare Saint Lazare, the veiled haze through which Renoir presented views of Naples and Normandy and, finally, that 'grand serenity' achieved by Signac in his vaporous seascape horizons.[26]

Duranty's analysis of iridescence in *La Nouvelle Peinture* may be the most informative. In a frequently cited passage, the critic states that the Impressionists had 'attempted to depict […] the shivering of water and the vibration of air

---

des couleurs ne rencontrant pas nettement dans la nature, qu'il avait cependant toujours sous les yeux, les lueurs que par moments il y avait entrevu et qu'il retrouvait en exemples constant et immobilisés dans ces pierreries et ces coquilles. Mais on peut supposer que c'est aussi de là que proviennent l'atténuation, l'uniformité, on pourrait dire l'absence de coloration, des valeurs fortes de sa peinture, tous ces étincelants modèles n'ayant et ne lui fournissant de nuances bien définies que dans les valeurs claires'.

[24] Bracquemond's reference to seeming colourlessness is hardly unique for descriptions of iridescence. See Note 44.

[25] See Phillippe Burty, 'Chronique du jour', *La République*, 1 April 1876; Louis-Émile-Édmond Duranty, *La Nouvelle Peinture, à propos du groupe d'artistes qui expose dans les Galeries Durand-Ruel (Nouvelle Édition)*, Paris, 1946.

[26] For examples of both usages, see J. K. Huysmans, *L'Art moderne*, Paris, 1903, 102-103; 208.

inundated with light, as if next to the iridescences of solar rays'.[27] However, the critic's strongest defence of the new painting and his own interest in its depictions of iridescence ultimately turn on his refusal to conflate Impressionist art with mere visual attractions. He explains that Monet and Pissarro first presented the public with what resembled:

> A series of studies on iridescence, on the ranges of violet, blue, yellow, pink, where the public felt that they had been taken in [*ne pouvait voir que du feu*], since they could not discern anything but a display of eccentricity or maybe even a joke at their expense. We have since freed ourselves from the unknown, when it felt as if we were in the middle of a laboratory experiment. Today, the exhibition of Monet and Pissarro, with its calm, prove that they have gotten rid of anything unnecessary, abandoned all that could not be of real service to their art, and that they have always been perfectly sincere.[28]

Therefore, Duranty could reasonably claim that the public had misunderstood Monet and Pissarro's seeming essays in iridescence by treating them as no more than flamboyant pranks because he witnessed in their ongoing project a concerted effort to eliminate gratuitous effects to achieve greater subtlety (Monet) and delicacy (Pissarro).

The perceptible calm in these later (but by no means late) Impressionist works made apparent the critical distinction between Impressionist iridescence and a painted demonstration of lustre for lustre's sake. Just compare Duranty's appreciation of Monet and Pissarro with Honoré Daumier's biting caption in his depiction of a crowd watching a fireworks display: 'On n'y voit que du feu, et c'est ce qui en fait le charme'.[29] [Figure 5] Whereas for Duranty, Impressionism's earliest viewers were wrong to feel that they had been taken for fools—there was, after all, a there there in Impressionism—Daumier aimed to represent the more ambivalent satisfactions of genuine beguilement.

[27] See Duranty, *La Nouvelle Peinture*, 47: '[…] essayé de rendre … le frissonnement de l'eau et la vibration de l'air inondé de lumière, comme à côté des irisations des rayons solaires'.
[28] Duranty, *La Nouvelle Peinture*, 58: 'des séries d'études sur l'irisation, sur les gammes de violette, bleue, jaune, rosée, où le public ne pouvait voir que du feu, et où il ne croyait discerner qu'un parti pris d'excentricité et presque de plaisanterie. On se dégageait alors de l'inconnu, on était en plein laboratoire. Aujourd'hui l'exposition de MM. Monet et Pissarro, par son calme, prouve qu'ils ont élagué l'inutile, abandonné ce qui ne pouvait rendre de réels services et qu'ils ont toujours été parfaitement sincères'.
[29] Cited in Kalba, *Color in the Age of Impressionism*, 131.

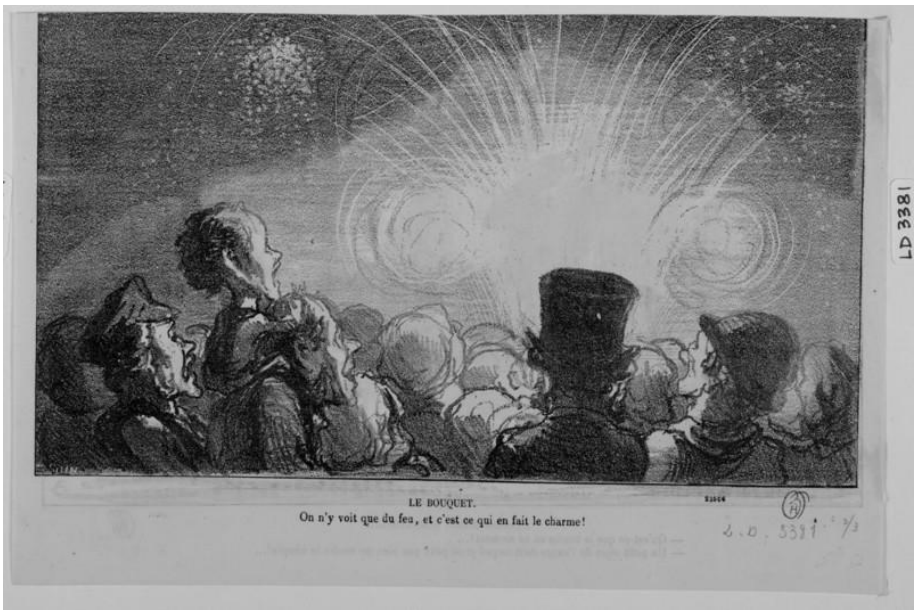


Figure 5 Honoré Daumier, *Le Bouquet. On n'y voit que du feu, et c'est ce qui en fait le charme!*, Published in *Le Journal Amusant*, September 16, 1865. Lithograph. 17 x 26 cm. Brandeis University Archives and Special Collections. © Brandeis University

The critic's aesthetic preference for more moderate effects is largely consistent with Laura Anne Kalba's occasional interpretations of gentler palettes during the Age of Impressionism, which she tends to characterise as evidence of a critical response to or reaction against the dominant, fully saturated values of modern colour chemistry. Thus, Renoir's delayed use of pastel tints indicates his wariness towards industrial manufacture in favour of more enduring artisanal technique; additionally, Degas's preoccupation with desaturated textiles in his laundry pictures may express his timely reflections on the difficulties of fixing more vibrant hues.[30] Although these interpretations are perfectly plausible on a case-by-case basis, they should not be presupposed by any general account of the values of modern colour. For although the Age of Impressionism did witness the explosion of new catalogues of brilliant, synthetic pigments, it also saw the proliferation of many new techniques for the manufacture of iridescent colours.

What this means is that there was nothing necessarily reactionary about a painter's desaturation of his or her palette; these shades also did not necessarily need to look back to a more vibrant chromatic referent to be modern or to be about modern colour. Moreover, although iridescence may seem to belong to the distinct domains of physics and optics, hence having little to do with what Kalba treats as the age's 'chemical aesthetic', many of the period's experiments involving iridescent colours made use of the same substances as did manufacturers of synthetic pigments. To take one clear-cut example, fuchsine—one of the most dazzling of all nineteenth-century colours—only attained its vibrant reddish hue when it was

[30] Kalba, *Color in the Age of Impressionism*, 89-101 & 106.

dissolved in certain solutions. In its solid state, fuchsine was identifiable by its 'bright-greenish iridescent crystals'.[31] Furthermore, nineteenth-century chemists were also interested in iridescence because it furnished examples of sparkling colours generated by the interference of light upon apparently colourless substances. Finally, as Noam Elcott has pointed out, saturated panes of coloured glass were relied upon by photographers to achieve the 'chemical darkness' necessary to see their exposures as they developed without corrupting them.[32] At the level of material culture, therefore, glass regularly functioned as an intermediary between pigmentary and spectral colours and, consequently, between chemical and physical modes of inquiry.

## 3. Manufactured pearls and other iridescent bubbles

By the end of the 1870s, iridescence emerged as a major preoccupation for glassmakers. On January 23rd, 1877, at the Académie des Sciences—three months before the opening of the third Impressionist Exhibition, which was also the first public instance in which the group adopted the name 'Impressionist' as its own—the French chemist Edmond Frémy and civil engineer Louis Clémandot announced their successful experiments in producing artificial iridescence on specimens of glass. A month later, the scientific journal *La Nature* publicised their findings:

> Everyone knows that glass, after being left outside for a long time in humid air, loses little by little its transparency, and acquires a pearlescent shine and iridescence on its surface […] M. Frémy has been researching the cause of this iridescence, and the celebrated chemist has proposed a way to imitate it artificially. In order to make his findings useful for industry, he partnered up with M. Clémendot [sic.], and it is in collaboration with him that Frémy has undertaken the work presented today at the Academy.[33]

[31] See Hobart Amory Hare et al., *The National Standard Dispensatory*, New York and Philadelphia, 1909, 185. There were even proposals to use the dye to give flowers artificial iridescent tints. See *The Chemist and Druggist*, 15 March 1878, 126.
[32] See Noam Elcott, *Artificial Darkness: An Obscure History of Modern Art and Media*, Chicago, 2016, 36 & 37.
[33] Stanislas Meunier, 'Irisation du verre 23 Janvier 1877', in *La Nature (Cinquième Année)*, Paris, 1877, 159: 'Tout le monde sait que le verre, abandonné longtemps à l'air humide, perd peu à peu sa transparence, acquiert un éclat perlé et s'irise à sa surface […] M. Frémy s'est préoccupé de recherche la cause de cette irisation, et le célèbre chimiste s'est proposé de l'imiter artificiellement. Pour ajouter aux ressources de la science les moyens puissants de l'industrie, il s'est adjoint M. Clémendot [sic.], et c'est en collaboration avec lui qu'il a exécuté le travail lu aujourd'hui devant l'Académie'.

Before examining Frémy and Clémandot's procedure in detail, it is worth pausing to highlight the manner in which the topic of iridescent glass was first introduced in *La Nature*: through a signal to the reader's common sense.

For collectors of ancient glassware, it certainly would have been self-evident that glass acquires iridescent qualities over time. Auction and sales catalogues for *objets d'art* continually referred to the pearlescence and opalescence of glass vessels, frequently with an approving qualification, such as a vase's *belles irisations*.[34] Inasmuch as these qualities were known to be accidental and unintended effects developed over time, these catalogue descriptions of glass's iridescence blur the distinctions between the objectivity of a condition report and subjectivity of a judgement of taste. For historians of the fine arts, this should stand out as a bit peculiar. Paper connoisseurs, for instance, do not tend to treat foxing as a positive feature in their valuation of a drawing or print's quality. In fact, the unanticipated effects of iridescence on the surface of inks might actually lead to a decline in the value of these pictorial mediums. Nevertheless, in the context of glass, these alterations were prized quite differently. Hence, an accident of history precipitated a modern taste for ancient things, which contemporary glass manufactures shrewdly sought to satisfy.

To achieve artificial iridescence, Frémy and Clémandot submerged pieces of glass into a solution of water and hydrochloric acid maintained at one hundred and twenty degrees Celsius under precise amounts of pressure for a duration of six or seven hours. Consequently, the specimens attained 'a very aggregable pearlescent shine, which will, without a doubt, offer up new industrial applications'.[35] More direct applications were quickly discovered in the decorative arts, which would experience a decades-long vogue for iridescence. However, Frémy and Clémandot also discovered that 'the best for ordinary uses are those which present this alteration with the greatest difficulty'.[36] As a result, the author of the article in *La Nature* recommended that the same chemistry of artificial iridescence should be applied as a kind of experimental control for manufacturers of plate glass windows or glass bottles, in which case long-lasting transparency was essential.

By the time of the 1878 Universal Exposition, the Jury for the Crystal, Glassware, and Windows Section (cochaired by Clémandot) listed iridescent glass as one of the fair's notable trends. The published report, however, treats Frémy's method quite differently, as if it were still a work in progress: 'We have been pleased to see that the results of these studies, undertaken by M. Frémy and

[34] See, for instance, *Collection importante de verres antiques, bijoux, terres cuites, fouilles faites dans l'ile de Chypre par M. Piéridés*, Paris, 1873, 1: 'Comment décrire ces vases si légers qu'à peine on les sent au bout des doigts, ces fioles, ces coupes plissées comme une dentelle, auxquelles le temps a mis la dernière main en les couvrant d'irisations splendides. Et ces couleurs, quel nom leur donner! C'est l'éclat mat de la perle marié aux lueurs mystérieuses de l'opale. Rien ne saurait suppléer la vue, car le pinceau ici lui-même serait impuissant'.

[35] Meunier, 'Irisation du verre 23 Janvier 1877', 159

[36] Meunier, 'Irisation du verre 23 Janvier 1877', 159.

ourselves, on the alteration of glass, have attracted the attention of visitors, who have understood the goal of this research, still underway'.[37] This description of the French process is much more modest than the one published the year before, which likely because of the humbling appearance at the fair of competing iridescent methods presented by British and Austrian exhibitors. Both countries displayed 'glasses impregnated with colours derived from brilliant vapours in which they were submerged while still hot, which is to say over the course of their fabrication'.[38] It remained uncertain as to the aesthetic quality of these foreign works: 'It was perhaps a mistake to exhibit so many of these objects all at once, since it makes one wonder whether their production was not too easy and perhaps even cheap'.[39] It is difficult to determine whether these reservations were just or simply motivated by bruised national pride. Regardless, both methods achieved common effects, albeit through different artificial means. The French process created an iridescent film on the surface of the glass, analogous to those that formed over time on ancient vases. The British and Austrian procedures, by contrast, led to a regular transformation in the physical structure of the glass itself, such that it became semitransparent, interfered with light and generated effects resembling those of pearls or shells.[40]

[37] Louis Clémandot and Édouard Amédée Didron, *Rapport sur Les Cristaux, La Verreries, et Les Vitraux*, Paris, 1878, 26: 'Nous avons été heureux de voir que les résultats de ces études, entreprises par M. Frémy et nous, sur l'altération des verres avaient attiré l'attention des visiteurs, qui ont compris le but de cette étude encore inachevée'.

[38] Clémandot and Didron, *Rapport*, 26: 'verres imprégnés de couleurs provenant des vapeurs rutilantes dans lesquelles ils ont été plongés à chaud, c'est-à-dire dans le cours de leur fabrication'.

[39] Clémandot and Didron, *Rapport*, 26: 'On a peut-être eu le tort d'exposer ces objets en trop grande quantité, ce qui a fait supposer que leur production était très facile et presque sans valeur'.

[40] This competitive commercialization of an accidental aesthetic form lends support to Walter Benjamin's description of World's Fairs as "places of pilgrimage to the commodity fetish." Readers may have already noticed that the particular aesthetic qualities discussed in this essay also appear in critical analyses of commodity fetishism, including in Karl Marx's descriptions of the mercantile appetite for gold, as well as in his account of the modern money-form. While this discursive overlap may be promising for future research, it has not been pursued here for the simple reason that no particular aesthetic quality—iridescence or otherwise—will prove substantively relevant for an understanding of commodity fetishism or art's relationship to it, since aesthetic experience is neither its necessary, nor distinguishing feature. Here is Marx explaining the concept: "The relation of the producers to the sum total of their own labour is presented to them as a social relation, existing not between themselves, but between the products of their labour." Modern consumers thus fetishize commodities, be they dazzling or dull, by reifying their relative and/or equivalent values. The feeling of beguilement induced by glimmering goods at a World's Fair or by a quantity of specie or even by a beautiful painterly illusion is ultimately incidental to a Marxian analysis of the commodity form, since, as the theorist explains, even after "substituting [gold and silver] for less dazzling commodities [the bourgeois economist will still have failed to appreciate that] the most simple expression of value, such as 20 yds of = 1

By the 1890s, these same techniques for producing iridescent glass had reached new levels of aesthetic refinement—think of the art glass of Gallé or Tiffany—but the medium had lost some of its cultural lustre. Here, an 1891 article published in *Scientific American* titled 'Iridescent Glass' is instructive. The author uses a similar setup to those already seen in Rood's *Modern Chromatics* and in the article published in *La Nature* but now aiming to disparage the Frémy method or those like it:

> A visitor at the Metropolitan Museum of Art in this city cannot fail to notice in his tour of the galleries the exquisite ancient Cyprian glass ware, with its gorgeous iridescence surpassing in brilliancy of color anything by artificial means […]Glass having a similar appearance, but without the same brilliancy of color, has been found elsewhere, and a certain degree of iridescence has been imparted to glass of modern manufacture by flashing it during the annealing process with stannous chloride, thus depositing on the glass an exceedingly thin film, which decomposes the light and thus yields a pleasing color effect. Glassware of this kind is beautiful, and was at one time much in demand, but at present it can hardly be found.[41]

Though written in an American context, the article is still informative for two reasons. First, its author indicates that the beauty of Frémy's iridescent glass was derived from its less brilliant coloration relative to ancient examples; thus, the perceived appearance of modern glass was disconnected from the appearance of the synthetic vibrancy of its hues. Second, and more importantly, *Scientific American* also reproduced two illustrations of iridescent film viewed under magnification, both of which present regularly particulate surfaces not so different from those found in Neo-Impressionist paintings [Figures 6 and 7]. To be clear, this is only an apparent similarity, an example of pseudo-morphism. The scientific figures represent truly

---

coat, already propounds the riddle of the equivalent form for our solution." Not all methods of demystification are therefore equally demystifying. That being said, the modernist notion of autonomous colour, with its roots in laws of simultaneous contrast, could plausibly be characterized as one instance of modern fetishism within the history of art, in the sense that it advances a theory of chromatic value, which first abstracts applied colours from their real social relations (in the forms of artistic intention, critical interpretation, and industrial manufacture) and then naturalizes this abstraction as law-bound. See Walter Benjamin, *The Arcades Project*, Howard Eiland and Kevin McGlaughlin, trans., Cambridge and London: Belknap Press of Harvard University Press, 2002, 7; and Karl Marx, *Capital*: *A Critique of Political Economy*, Samuel Moore, Edward Aveling, and Frederikc Engels, eds., Chicago: C.H Kerr & Company, 1906, 66-67 & 89.

[41] Geo. M. Hopkins, 'Iridescent Glass', *Scientific American*, 64: 21, 23 May 1891, 329.

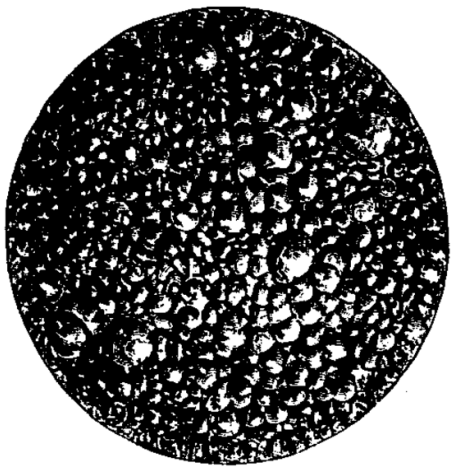

Fig. 1.—IRIDESCENT FILM—MAGNIFIED.

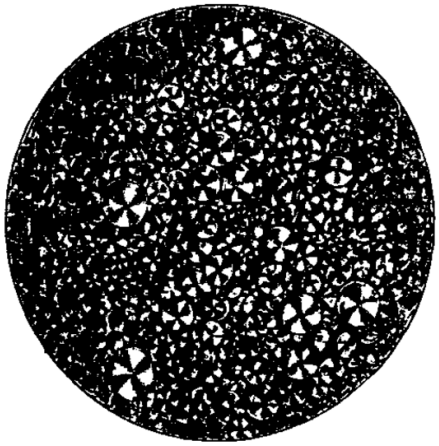

Fig. 2.—IRIDESCENT FILM—BY POLARIZED LIGHT.

Figures 6 & 7 "Fig. 1.—Iridescent Film—Magnified" and "Fig.2.—Iridescent Film—By Polarized Light." Published in *Scientific American*, May, 23, 1895. Wood engraving. 28.2 x 40.1 cm (Sheet).

iridescent surfaces that lose their iridescence in their reproduced form. Neo-Impressionism's broken brushwork, by contrast, recreates the likenesses of iridescent surfaces as a result of its reproductive procedures. Whereas Frémy's glass depreciated in value as soon as it fell out of the spotlight, Signac's paintings may look better once seen for more than their radiant coloration.

Glass represented only one field in which iridescence had been artificially manufactured.[42] Fashion houses, to cite another, began creating artificial pearls or

[42] Even still, glass stands out as the most important of all decorative mediums against which to evaluate the significance of Impressionist colours, iridescent or otherwise. See Gustave Kahn, 'De l'Ésthéthique du Verre Polychrome,' *La Vogue*, 2, May 1886, 65: 'Quelque puissant que soit l'art des maîtres impressionnistes, arrivent-ils à la réalité vivace. Après la lutte

mother-of-pearl-esque buttons; they were able to do so based on earlier scientific examinations of these substances in the fields of pure science, such as the work of physicist David Brewster.[43] Though Parisian firms began successfully exporting these accessories made of glass, gelatine and aniline colourants in the late 1870s, similar methods were already known and practiced by manufacturers elsewhere in the 1850s. Similarly, lacemakers could imbue their products with a delicate glimmer by incorporating thin metallic threads into their designs, which also employed related scientific findings about iridescent metals. More precisely, in June 1878, a Paris-based chemist named Alfred Hélouis announced an innovative method for 'giving […] delicate threads and bands uniform tints throughout their whole length, and in producing at will any colour that he desires. With these irisated wires he ornaments laces, tissues, fringes, etc., which have a very beautiful effect, and the lace making industry is now making extensive use of them'.[44] Hélouis achieved these consistent effects by adapting techniques of electro-chemistry, which was first developed by Henri Becquerel, one of the early pioneers of colour photography. Beyond the field of the decorative arts and design, there were also major advancements in the understanding of interference colours—such as the iridescences perceived along the surfaces of soap bubbles—though these occurred primarily during the 1880s and 1890s. For example, in 1894 (the year when Claude Monet completed his Rouen Cathedral series), the British physicist John William Strutt illustrated his lecture on 'knotty theories of wave interference' by projecting magic lantern light through differently coloured films and soap bubbles.[45] Two decades later, the narrator of Marcel Proust's *Swann's Way* would recall how this same medium of projection had 'substituted for the opaqueness of [his] walls impalpable iridescences [in the manner of the master-builders and glass-painters of gothic days], supernatural phenomena of many colours, in which legends were depicted, as on a shifting and transitory window'.[46] Knowledge of these same interference colours ultimately formed the basis for Paris-based physicist Gabriel Lippmann's Nobel Prize–winning experiments in colour photography.[47]

---

acharnée du peintre contre la lumière, et le moment triomphal du dernier coup de pinceau, commencent les vicissitudes de la toile […] La peinture sur verre aurait, à des instants, une quotidienne actualité'.

[43] See 'Imitations of Tortoise-Shell and Mother-of-Pearl', *Scientific American*, 38: 8, 23 February 1878, 117.

[44] See 'Iridescent Lace Work,' *Scientific American*, 39: 9, 31 August 1878, 134; John Brockelsby, 'Note on Iridescent Silver', *American Journal of Pharmacy*, 12: 1, April 1846, 50.

[45] 'Lord Rayleigh on Iridescence', *The British Journal of Photography*, 41: 1767, 16 March 1894, 168.

[46] Marcel Proust, *Swann's Way*, trans. C. K. Scott Moncrieff, New York, 2002, 22. See also J. Theodore Johnson Jr., 'La Lanterne magique': Proust's Metaphorical Toy', *L'Esprit Créateur*, 11: 1, Spring 1971, 17-31; Emily Setina, 'Proust's Darkroom', *MLN*, 131: 4, September 2016, 1080-1112.

[47] In *Color in the Age of Impressionism*, Lippman's process is mentioned only in passing as a commercial failure. Instead, Kalba opts to conclude her study by comparing Neo-

Lippmann's process was made possible by his acquaintance with a seemingly incidental aspect of photochemistry, namely his recognition of albumin's latent iridescence. His format of colour photography was derived from the colourful surface effects of colourless substances.

Finally, at the same time when Lippman was applying his knowledge of iridescence to innovate within the field of photography, Charles Henry, whose psychophysical theories of simultaneous contrast and dynamogeny directly influenced Seurat and Signac's own views about colour composition, was using materials typically found in a photographer's studio to conduct his own experiments in iridescence. After marvelling at the lustrous colours produced by petroleum floating atop the surface of the sea, Henry endeavoured to create a procedure that would permanently fix these fugitive tints. His findings were published soon thereafter, including in the evocatively titled article 'Coloring without Coloring Matter':

> [Henry] takes a rectangular tank, to which are affixed a number of small faucets near the bottom. On the bottom of the tank he places either a piece of impervious paper, of ground glass, wood, or stone, upon which the coloring is to be deposited, though care must be taken not to have the stone porous. He fills a tank with water and covers the surface of the water through a pipette with a solution of some resin tar or bitumen, which is acted on by light in a volatile solvent. This solution spreads out in a thin layer under a superficial tension on the surface of the liquid. As soon as a pellicle is formed on the surface, a whistle is sounded immediately above the liquid, the depth of the tone determining the number of vibrations, and these in turn determining the colors formed in the pellicle. The pellicle gradually hardens, and the water is drawn off from below, allowing the pellicle to subside to the bottom of the tank, where it is deposited on the glass, paper or metal, left there for the purpose, and when dried, produces a most attractive and a remarkably rich moiré effect.[48]

---

Impressionist paintings with the Lumière Brothers's more viable and vibrantly coloured format: the autochrome.[47] However, it is precisely based on one of Lippman's alleged failures—that the colours of his exposures did not necessarily correspond with their photographed referents—that his invention may contribute to our understanding of how late-nineteenth-century spectators came to adjust to contemporaneous uses of nonlocal colours in the fine arts. See, in particular, the criticisms presented in Thomas Bolas, 'Photography in Colors by Iridescence: The Work of Gabriel Lippmann', *The Photographic Times,* 1 August 1897, 272.

[48] Charles Henry, 'Color Without Coloring Matter', *American Druggist and Pharmaceutical Record*, 31: 2, 10 December 1897, 343.

This article is worth quoting at length for several reasons. First, Henry's *dispositif* was not only materially but also procedurally photographic, or rather, phonographic, inasmuch as his prints registered sound in the form of abstract patterns of shimmering colour.[49] Second, when the author speaks of Henry using impervious pieces of paper, he is referring to the scientist's treatment of sheets with collodion, a technique adopted from photography and applied in other nonphotographic or, in this case, paraphotographic contexts, such as in the fabrication of *papiers de fantaisie*.[50] Finally, as with Henry's theories of colour contrast and visual form, his studies of iridescence established a mode of aesthetic practice that was both law bound (the recognition that certain colours will index certain acoustical tones) *and* rule bound (conventions regularising an imaging technique left otherwise up to chance).

## 4. Impressions and affections

With Henry's fixed iridescences in view, the broader critical and historiographical stakes of this history of iridescent colours may now be considered. Henry's experiments undoubtedly constitute a minor episode in the development of abstract art, specifically that of the nonpictorial variety. His works were aesthetically pleasing but formally insignificant, insofar as there was nothing to interpret in them. Put differently, Henry was able to manufacture moiré patterns but not pictorial meanings.[51] Herein lies the importance of all those iridescences that critics repeatedly perceived in Impressionist paintings. If these artists wished to create iridescent surfaces, then they failed and did so for the same reason that Signac failed to use oil pigments to actually generate radiance. If, however, Impressionist painters wished to represent iridescent or pearlescent effects in pictorial form, then—at least judging by the praise of their contemporary critics—they most certainly succeeded.

It may sound as though this argument relies too heavily upon the history of Impressionism's critical reception. However, *any* analysis of perceived iridescence in Impressionist painting must necessarily turn to the question of the role that spectatorial receptivity should play in the determination of a work of art's aesthetic

[49] Though beyond the purview of the current essay, it should also be indicated that iridescence is common to the reception of Impressionist music, in which auditors also perceived colour from colorless media. See, for instance, Paul Roberts, *Images: The Piano Music of Claude Debussy*, Portland, 1996, 294: 'And even the instruction *comme une buée irisée* (like an iridescent mist) in "Cloches" is relevant to the prelude, where the opening figuration should suggest, if not mist, certainly iridescence'.

[50] See, for instance, Robert Hunt, 'De La Rue's Iridescent Paper', *Art Journal,* October 1853, 251.

[51] At the very least, Henry's prints bring into play an evaluative distinction between art and nonart, which will recur throughout the history of abstraction. See, for instance, Whitney Davis, 'Binding and Unbinding the Mondrian Stimulus', *The British Journal of Aesthetics*, 58: 8, October 2018, 449-467.

value. In the case of simultaneous contrast, for instance, artists and critics found a seemingly 'sure-fire' solution to fix the problem of reception.[52] The painter conceived of his or her composition with a normative spectator in mind and then calibrated his or her forms to achieve certain effects which, following Henry, would not only be perceptual (vibrancy), but also emotive: joy producing. This was, therefore, a normative aesthetics but not a universal one. For viewers with protanopia, for instance, the intended effects of a red–green colour contrast might never be felt, even though they may certainly be known in theory.[53]

By contrast, if a critic were to praise Berthe Morisot's *Harbour at Lorient* (1869, National Gallery of Art, Washington D.C.) [figure 8] for its iridescent light, she would be describing a different order of experience entirely, one that is tied to her interpretation of Morisot's work's meaning. The painter has clearly represented a world in brilliant sunshine, a notion first suggested by the young woman's use of a parasol and then confirmed by the degree to which her shadowed face contrasts with its illuminated surroundings. This might imply that the artist has intended to key up the brilliancy of the beholder's point of view, as if she, unlike the woman seated in the painting, were viewing the sunshine without any cover. However, this is not exactly true of Morisot's picture—or at least it is not true of how it feels to look at the work. The light of Morisot's depicted world is undeniably bright, yet it is also simultaneously diaphanous. The water is calm and smooth, but the reflections come across as stain-like emanations, with each discrete colour shifting into the next, such that the solid world of Lorient is not so much mirrored by Morisot's water as it appears to have been steeped within it. Moreover, the artist buttresses two-thirds of the bottom framing edge of her work with that architectonic and tonally coloured ledge. Therefore, the beholder views the harbour's fluid formlessness as she might the body of an oyster before swallowing it whole: across the mottled lip of its shell. Finally, in the painting's sky, particularly in the upper left quadrant, Morisot has applied faint overlays of yellow onto interpenetrating

[52] The notion of the 'surefire' was first developed by Yve-Alain Bois, and I am following Todd Cronan's criticism. In particular, see Cronan's response to his reviewers in 'The Tank: *Against Affective Formalism*,' *nonsite.org*, 16, 22 June 2015: 'The issue for me is that Bois's account of intent, insofar as he has one, is centrally concerned with what he calls 'surefire' effects. Above all, I consider Bois's account of visual oscillation, which is said to occur when viewing certain works by Matisse (the exact same holds for his account of Newman after 1950, Mondrian's late work, and a range of other artists). The surefire is designed to displace intentionality on two levels: to displace the artist's intent onto the lines and colors that *produce effects independently of the artist's desire to do so*, and the beholder's intent insofar as the viewer is a passive receiver of the work'.

[53] Later forms of affective formalism similarly exclude certain viewers from the work's intended experience and do so necessarily, which is why galleries presenting Op-Art now tend to come with seizure warnings. Critics and historians that continue to speak of the radical politics implicit in certain avant-gardist aesthetics of shock, particularly in works that purport to erode the autonomy of the subject by bypassing cognition, ought to consider this transformation of gallery space into one of potential abuse.

passages of blue, white and lavender, four colours thus transforming into an apparent manifold, which is to say—to steal a French verb without an English equivalent—*elles s'irisent*.

Figure 8 Berthe Morisot, *The Harbor at Lorient*, 1869. Oil on canvas. 43.5 x 73 cm. National Gallery of Art, Washington D.C. Open access image.

Morisot's version of Impressionism does not, therefore, turn on any Monet-like myth of originary vision or the recovery of sunlight's unfiltered scintillations as they might be received by an infant's retinal blank slate. Instead, the painter appears to have preferred to capture the ever-changing array of colours that are only perceptible once viewers have been allowed to adjust their eyes. When, for instance, Blanche—Morisot's niece and the sleeping baby depicted in *The Cradle* (1872, Musée d'Orsay, Paris) [figure 9], the painter's once overlooked knockout from the first Impressionist Exhibition—awakens, she will see the light of the room as it filters through the same translucent veil through which the beholder sees her. This means that Blanche will encounter a world, at least in part, as it was first framed and presented to her by her mother's designs; similarly, viewers encounter both mother and daughter in this painting, at least in part, as it was first framed and presented to them by Morisot herself.


Figure 9 Berthe Morisot, *The Cradle*, 1872. Oil on canvas. 56 x 42 cm. Musée d'Orsay, Paris
© RMN-Grand Palais (Musée d'Orsay) / DR. Image Source: Art Resource, NY.

Needless to say, spectators are always free to attune themselves to their own subjective contributions to the experience of looking at Morisot's painting. They could even stare at the complementary harmonies of the pale blue and orange-tinged yellow found in the window curtains until the one intensifies the other and the two appear to mix together. They could then close their eyes and perhaps come to find that the painting's original relations of colour are now reversed as afterimages impressed upon our eyes by the artist's subtle use of simultaneous contrast. However, all of this would require that the viewer transforms the evident gauziness of Morisot's tints; that she overlook the contrasting accents of pink the artist has placed on Blanche's cradle, which are surely intended to keep the entire composition in view by coordinating the full extent of pictorial space; and, finally, that the beholder closes herself off to the significance of the painting itself.

As with all interpretations, the reader may not agree with this account of Morisot's iridescences or the suggestion that her art thematised views of the world already framed by depicted parasols and veils and her own sheer artistry.[54] Yet the possibility for critical disagreement is, in fact, why iridescence is aesthetically

[54] Here, I am building upon insights first proposed in Marni Reva Kessler, *Sheer Presence*: *The Veil in Manet's Paris*, Minneapolis: The University of Minnesota Press, 2006.

valuable. There is nothing meaningful to quarrel over when a critic or historian identifies a work's use of simultaneous contrast because it necessarily abstracts the viewer away from the content of pictures (and this is true even if the pictorial content is similarly abstract). However, once a claim is made about a painting's iridescence, an interpretation is already on offer. For instance, in 1877, Georges Rivière stated that 'Madame Morisot is a student of M. Manet, which is to say that she views nature by touch [*la tâche*] and not by the iridescence of tones, as is the manner of M. Renoir'.[55] For this author, at least, Rivière's account of Morisot is unsatisfactory, since, if taken metaphorically, the critic's statement hardly distinguishes Morisot's vision or practice from Renoir's; and, if taken literally, then his notion that an artist could really view the world through particulate touches of sense data ought to be rejected as nonsensical, an early instance of one of post-Impressionist art history's most enduring 'Myths of the Given'.[56]

Instead, this essay's account of Morisot's artistic achievements finds its historical footing in the criticism of Stéphane Mallarmé. On the occasion of the artist's 1896 retrospective exhibition, the writer introduced her work as follows: 'So many light, iridescent paintings, here, exact, spontaneous, they can wait with the future smile, will assent to the title of the booklet which classifies them, a Name, before resolving themselves to their quality, pronounced all on its own or with the extraordinary charm with which it was carried out, evokes a figure of extreme distinction, in life and in personal elegance'.[57] This is no ordinary preface, hence the sentence's undulating convolutions of syntax. Mallarmé honours Morisot's *oeuvre* by engaging with it as a poet as much as a critic.

Pages later, he suggests that 'like [his memory]' the artist's paintings 'faint [*s'évanouissent*], dispersing a radiant, idyllic, fine, powdery, and multi-coloured

[55] Georges Rivière, 'Les Intransigeants et les Impressionistes', *L'Artiste*, 1 November 1877, 298-302: 'Mme Morisot est élève de M. Manet, c'est dire qu'elle voit la nature par la tâche et non par l'irisation des tons, à la manière de M. Renoir'.

[56] See Wilfrid Sellars, 'The Logic of Private Episodes: Impressions', in *Empiricism and the Philosophy of Mind*, ed. Robert Brandom and Richard Rorty, Cambridge, 1997, 107-117.

[57] Stéphane Mallarmé, 'Preface', in *Berthe Morisot (Madame Eugène Manet): exposition de son oeuvre (2nd edition)*, Paris, 1896, 5: 'Tant de clairs tableaux irisés, ici, exacts, primesautiers, eux peuvent attendre avec le sourire future, consentiront que comme titre au livret qui les classe, un Nom, avant de se résoudre en leur qualité, pour lui-même prononcé ou le charme extraordinaire avec lequel il fut porté, évoque une figure de race, dans la vie et de personnelle élégance extrêmes'.

Figure 10 Berthe Morisot, *On the Veranda*, 1884. Oil on canvas. 81.2 x 100.2 cm. Private Collection. © Christie's Images/ Bridgeman Images

caress'.[58] Here, the language is much closer to Proust's 'impalpable iridescences', in which a bedroom wall perceived in the present could transform by lamp light into the look of stained glass from the medieval past. Consider, for instance, how Mallarmé describes Morisot's painting, *On the Veranda* (1884, Private Collection) [figure 10]:

> Silence, except for a spectacle of modern enchantment. Far or from the crossing that prepares for the outside and that maintains, in a green expectation of the Hesperides with simple oranges and amongst the pink brick of El Dorado, suddenly the irruption of some carafe, dazzling with the day while multi-coloured, it spreads in Persian and on delighted rugs, the genius, distiller of the Crisis, where the chimerical sparkle on furniture ceases, is, first and foremost, a painter.[59]

[58] Mallarmé, 'Preface', 13: 'Ici, que s'évanouissent, dispersant une caresse radieuse, idyllique, fine, poudroyante, diaprée, comme en ma mémoire, les tableaux…'.
[59] Mallarmé, 'Preface', 13 & 14: 'Silence, excepté que paraît un spectacle d'enchantement moderne. Loin ou dès la croisée qui prépare à l'extérieur et maintient, dans une attente verte d'Hespérides aux simples oranges et parmi la brique rose d'Eldorados, tout-à-coup l'irruption à quelque carafe, éblouissament du jour tandis que multicolore il se propage en

No other art critic or historian has yet captured the dreaminess of Morisot's forms quite so strikingly. As the literary scholar James Kearns notes, the poet 'attends to [Morisot's] calculated geometry, to the relationship of planes and to the diffusion of reflected light [through a] strong internal armature of [his] syntax'.[60] One might add that Mallarmé has also attuned himself to the particularity of the work's iridescent effects, which are achieved by Morisot's use of colour. Take the 'green expectation of the Hesperides' and the 'pink brick of El Dorado'. In both cases, Morisot's real colours—those she actually applied, representing ordinary objects—have been transposed into a mythic register. More precisely, Mallarmé recasts the painter's pinks and greens in a mythological light because both the Hesperides and El Dorado refer to the golden glow of westward suns. Between these two complementary tints, the readers finds 'simple oranges', which only strengthens their golden undertones, both visibly and lexically.[61]

Thus, Mallarmé's writings foreground the imaginative dimension of Morisot's Impressionist palette. In the case of iridescence, by depicting an effect that oil paint could not in itself reproduce, artists such as Morisot continually called on their viewers' imaginations rather than merely their sensibilities. According to Martin Heidegger, Immanuel Kant's philosophy of mind endowed imagination with a 'remarkably iridescent character', locating the faculty somewhere between the receptivity of sensibility and the spontaneity of understanding. 'As a faculty which is not dependent upon the presence of the intuitable, [imagination] fulfils itself, i.e., it creates and forms the image. This 'formative power' is simultaneously a "forming" which takes things in stride (is receptive) and one which creates (is spontaneous). In this "simultaneously" lies the proper essence of its structure'.[62] Heidegger's description of Kant comes very close to how this essay has characterised the appearance of iridescent colour in Impressionist paintings. Unlike simultaneous contrast—where the beholder is, indeed, beholden to the presence of the intuitable—painted iridescence always exists independently of its object. Even still, the spectator feels its effects through an identical act of reception, of experiencing the gentle radiance of Morisot's pinks and greens as golds; but she only comes to know these effects as such through her own spontaneous acts of

---

perse et en tapis réjouis, la génie, distillateur de la Crise, où cesse l'étincelle des chimères au mobilier, est, d'abord, d'un peintre. Poétiser, part art plastique, moyen de prestiges directs, semble, sans intervention, le fait de l'ambiance éveillant aux surfaces leur lumineux secret : ou la riche analyse, chastement pour restaurer, de la vie, selon une alchimie – mobilité et illusion'.

[60] James Kearns, 'Mallarmé and Morisot in 1896', *Australian Journal of French Studies*, 31: 1, January 1994, 76.

[61] The French word for gold is *or*.

[62] Martin Heidegger, *Kant and the Problem of Metaphysics*, trans. Richard Taft, Bloomington, 1973, 91.

understanding and by offering interpretations. This is the lesson of Mallarmé's 1896 preface. Morisot's *Veranda* did not need to glimmer to shine.

**Alex Weintraub** is a Core Lecturer of Art Humanities at Columbia University, where he earned his PhD in 2019. Forthcoming essays include an analysis of Stendhal's enigmatic definition of beauty (*Romanic Review*), and a study of Vincent van Gogh's uses of the international post (*Modernism/modernity*). He is currently at work on law school applications.

agw2114@columbia.edu