COLOR

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Defining Medieval Color

During the late nineteenth and twentieth centuries, academic disciplines within the social sciences and humanities appropriated many of the terms that are considered within this volume. The definition of color, however, underwent its most fundamental change several centuries earlier as the result of investigations in the hard sciences. Whereas twentieth-century literary critics and anthropologists published theories that layered, adapted, and added to already extant definitions or created new academic terminologies, the discoveries by scientists such as Newton were "facts" that provided a revolutionary and essential definition of color that quickly eradicated alternative conceptions. By the time art history developed as a discipline, Newtonian color was so fully integrated into social parlance as to become transparent and unquestioned. His definition still dominates modern paradigms of color, as evident in the *Oxford English Dictionary,* which defines color as "the quality or attribute in virtue of which objects present different appearances to the eye, when considered with regard only to the kind of light reflected from their surfaces" (*OED*, s.v. "color" I.1), or, alternatively, "a particular hue or tint, being one of the constituents into which white or 'colorless' light can be decomposed, the series of which constitutes the *spectrum*; also any mixture of these" (II.2.a).

It was only in the 1970s and 1980s that the art historians John Gage and Michel Pastoureau began to fundamentally question how this Newtonian perspective might impede investigations into historical color.[1] Previous studies in language, literature, and anthropology had demonstrated that various cultures described and classified color in remarkably different ways.[2] Linguists, for example, noted that writers in ancient Greece rarely mentioned blue, and when they did the vocabulary used seemed indeterminate and might refer to gray, blue, yellow, or brown. In the nineteenth century this finding led to the remarkable suggestion that the ancient Greeks were unable to see the color blue. Unsurprisingly, most subsequent studies have rejected this conclusion. As is frequently observed, we are able to see millions of colors, yet most English-speaking peoples employ only ten to twenty color terms in day-to-day activities.[3] Additionally, it is worth

considering that having no or limited color vocabulary is a very different thing from having an extensive one that indicates and describes specific perceptions, conceptualizations, and interests in a manner that differs significantly from our own. While rejecting the suggestion of color-blind Greeks, many recent investigations into the historical conceptualizations of color—including the works of Gage, Pastoureau, and more recently Liz James and Herbert Kessler—depend heavily upon literary descriptions and color terms.[4] Art historical investigations, however, have the advantage of incorporating the production of visual culture as well as written descriptions.

Investigations of color by medieval art historians as well as by scholars in related disciplines have independently arrived at a number of similar conclusions. It appears that, like the ancient Greeks, early medieval writers described and classified colors primarily according to their intensity and value. Literature and vocabulary frequently emphasize a color's tactile, light-reflecting (or light-absorbing) qualities, specifying whether it is fully saturated, dappled, glittering, or shiny. Significantly, such perceptions of color can embrace performance and experience.[5] Whereas in modern English, as indicated in the *OED* definition above, color is defined by hue, in many medieval cultures hue was of secondary consideration. For this reason, individual color terms such as the Latin *glaucus* or Anglo-Saxon *wann* might refer to any number of hues because their defining characteristic was their brightness or value.[6] It is equally important to keep in mind that while hue is less important in a number of medieval cultures, it is neither unimportant nor nonexistent.

Finally, when attempting to understand medieval conceptualizations of color, it is important to recognize that color has become increasingly codified and dematerialized in the modern era. Medieval colors were connected to the natural world where hue is typically neither constant nor consistent. Exegetical tracts that refer to color are usually bound to biblical descriptions of precious gems and metals and so describe color in terms of brightness, hardness, purity, dappled effects, and intensity. Unsurprisingly, in scientific texts, such as Pliny's *Natural History* and Isidore of Seville's *Etymologies*, color is also discussed in relation to material objects such as gemstones, metals, and medicinal plants. Recipes for color, which are dated to the ninth and tenth centuries but draw upon earlier sources such as the *Compositiones variae*, *Mappae Clavicula*, and Heraclius's *De coloribus et artibus Romanorum*, demonstrate the visceral materiality of medieval color as does the better known, twelfth-century *De Diversis Artibus* by Theophilus. Illustrative of the materialistic conceptualization of color, the word scarlet had three meanings: a color, a textile produced by a specific process, and a type of dye.[7] Further, the materials of medieval art are diverse and were often considered the sole component of a color.[8] Blank vellum and areas of unpainted ivory, for instance, may

represent flesh, whiteness, or teeth, while gold might portray a king's crown or the sun.[9] Because of the absence of a transformative layer of pigment, in such cases the border between illusion and reality is permeable and porous. The gold leaf that represents the gold of a king's crown *is* gold and has true economic value. The blank vellum that portrays Christ's flesh *is* skin, albeit that of an animal.[10]

Symbolism, Significance, and Social Identity

Rightly, John Gage begins his discussion of "color meaning" with the warning that medieval symbolism is "fluid" and that "theorists from Augustine to Dante emphasize ambiguity[:] . . . the lion because of its ferocity was sometimes compared to the devil but since it was fearless it could also be compared to Christ. . . . [And the] regal purple of Christ's robe may be the same as the scarlet of sin."[11] When navigating the tricky waters of medieval color symbolism, context is everything—both anchor and compass. The meaning of a color changes according to period, place, economic status, technology, purpose, patron, artist, audience, and object—to name but a few variables. When color becomes the central subject, however, context frequently moves to the periphery. Worryingly, a few recent publications have applied the findings of Pastoureau, whose writings primarily deal with the High and Late Middle Ages, to the entire medieval period. Relatively little has been written on the use of color in art from the eighth through the eleventh centuries, and while Pastoureau's publications on the later medieval period have been invaluable, the few comments he makes on the earlier period need to be taken with a grain of salt. He writes, for example, that "up until the eleventh centuries, many miniatures did not contain even a hint of blue, especially those produced in the British Isles."[12] While a group of British and Irish manuscripts do not contain blue, most do.[13] Indeed, Christ and his apostles are frequently shown in blue garments. It is hoped that future scholarship will focus more on the early Middle Ages to address this lacuna in the field of color studies.[14]

Because the meaning of color is fluid and needs so much contextualization, only a few general trends can be identified in such a short essay. Unsurprisingly, given what is stated above, the nobility, real and imagined, tended to favor bright, clear, fully-saturated colors, which required expensive dyeing processes.[15] In terms of dress, varied, strong, and contrasting colors were preferred—by vain Anglo-Saxon nuns, imagined Arthurian knights, and wealthy Gothic princes.[16] In the later Middle Ages, especially under sumptuary laws, certain hues enforced the intricate social hierarchy, demarcating prostitutes, princes, kings, lepers, Jews, Muslims, and the bourgeoisie.[17] Equally, certain colors might delineate age or gender.[18] More typically, however, it was intensity rather than hue that separated the poor from the rich.[19] As in modern times, true white was difficult to create and maintain and

so was the perfect symbol of aspiration to an unobtainable ideal of perfect purity and innocence.[20] The clergy dithered and differed in their attitude towards color in general but debated it largely in terms of light.[21] Developments in trade, technologies, and techniques equally created new tastes and perceptions.[22] Most surveys of medieval color suggest that symbolism "stabilizes" in the Romanesque and Gothic periods as heraldry, guilds, sumptuary laws, naturalism, and more centralized governments—both religious and secular—necessitated greater regulation.

Color Lost, Color Regained

Very little medieval art, even if in situ, fully maintains its original, physical attributes, especially in terms of color. In textiles and manuscripts, colors fade and even radically transform over time. By the modern period the polychromy of Gothic portals, Byzantine ivories, and Insular sculpture diminished to the point that it was unnoticed and in some cases entirely forgotten and even denied. New buildings and pollution significantly alter even the brilliant colors and lighting effects of stained glass.[23] Additionally, as a number of art historians have pointed out, due to publication costs and the traditional preference for black-and-white slides, art historians tend to study and discuss art using black-and-white reproductions: at this moment, you are reading an essay on color in a journal without a single color illustration. Alternatively, the colors of a single object may vary considerably between various publications. As many notable medieval works are not accessible due to conservation issues, art historians are often left in the untenable position of choosing between two or more significantly different reproductions without any other point of reference available.

In the past five to ten years, however, a range of technological developments have enabled a barrage of new initiatives to identify, restore, display, and reconstruct color with varying levels of success in a wide range of media.[24] Equally, Andreas Petzold has rightly pointed out that digital photography and related resources are making color reproductions more readily available.[25] It is an exciting time, and the dust has not quite settled as the information filters down from analysts, to conservators, to art historians, and finally to students and the public though a series of conversations, symposia, exhibitions, and lectures. As a result, we are now constantly bombarded with a new set of dichotomies, akin to "before-and-after" snapshots: colorless/colorful sculpture; dull textiles/bright textiles; metalwork in black-and-white/metalwork in color. Consequently, we are thinking in new ways about color and color's absence. Much of the data is still available only in unpublished scientific reports, and each day new scans are run. But in the meanwhile, we are thinking in and about color.

Case Study

While a great deal has been learned concerning the conceptualization of historical color, many existing studies tend to cover wide swathes of history and civilizations with a rather broad brush.[26] It is hoped that the brief and preliminary investigation that follows of color within the *Lindisfarne Gospels* will demonstrate the challenges but also the possible advances that color studies, especially when used in tandem with new technologies, might bring to even well-studied material. In 2000 the British Library and University College London initiated a Raman microscopy project, which produced detailed reports from a number of pages in the *Lindisfarne Gospels*.[27] The manuscript has a relatively well-established provenance and was most likely produced by a single figure, possibly the abbot and bishop Eadfrith.[28] Like the *Book of Kells*, the *Lindisfarne Gospels* has an incredible range of color; and yet, unlike the *Book of Kells*, the pigment is stable and less subject to flaking. The images discussed below can be viewed at the British Library's Turning Pages online gallery.[29] Some of the colors as reproduced online are slightly distorted, especially those within the red-violet range, but any significant deviations will be indicated in the footnotes below.[30] The recent facsimile and Michelle Brown's monograph provide the most accurate color reproductions of these images.[31]

If we allow that such intricate color—created by the same scribe who executed such exquisite designs and complex iconography—is not casually done but rather carries meaning and purpose, it seems possible that the palette of the evangelist portraits might express the unity and diversity of the four gospels. As can be seen in Augustine's *Harmony of the Four Gospels*, the agreement of the evangelists was a central concern in the late Christian and early medieval periods. Commentators carefully delineated how each of the evangelists represented a unique aspect of Christ and yet were unified through Christ.[32] Scholars have frequently noted that the design and iconography of Insular canon tables, evangelist symbol pages, and evangelist portraits express this aspect of the gospels. In the *Lindisfarne Gospels* the four evangelists are exquisitely dressed in an array of brightly colored garments. The colors for each evangelist are unique, yet repeat with variation the common elements, thus creating a complex harmony that visually echoes the frequent assertion that the four gospel accounts offer different but singular witness to the life of Christ.[33]

Exegetes frequently explained that Matthew and Luke represented Christ's human characteristics while Mark and John conveyed his divinity.[34] Michelle Brown has demonstrated that the variety of poses, gestures, hair color, and facial hair espoused by the evangelists in the *Lindisfarne Gospels* are not merely incidents of style but rather conscious references to the evangelists as aspects of Christ:

the beardless and youthful-looking Mark and John representing the divinity of Christ; the bearded Matthew and Luke portraying his humanity.[35] Unsurprisingly, the color palettes of each gospel opening convey a similar conceptualization of the evangelists' relationship to Christ's human and divine natures.

While each of the portrait pages in the *Lindisfarne Gospels* typically contains the manuscript's entire range of colors, the Gospels of Mark and John—the evangelists that Insular exegetes linked to Christ's divine aspect as well as to water and air—are particularly associated with blue and green.[36] Blue and green were both seen as celestial colors symbolizing heaven and the gospels.[37] Tobit 13:15 describes the walls of New Jerusalem as shining with sapphires and emeralds, and a number of late Roman and early medieval church mosaics portray these stones framing images of paradise. While Bede is somewhat vague as to the hues of a number of precious stones, he is quite definite that sapphires are the colors of the sky on a clear day and that "the emerald is of so exceedingly deep a green as to surpass all the green herbs, leaves, and gems, and it colors green the air reflected round."[38]

Blue, occasionally with orange-red accents, is present in key parts of the first three pages of the Gospel of Mark. This color combination appears on Mark's tunic, at the corners of the frame that surrounds the evangelist portrait and delineates the cross on the carpet page and the INI monogram of the incipit page. Mark wears a blue tunic, sits on a blue cushion, and his outer robe has blue accents. Whereas the rest of the evangelists are enclosed by brown frames, a matching blue frame surrounds the Mark portrait. Insular commentators primarily associated Mark with the resurrected and glorified Christ.[39] The noticeable use of sapphire blue is therefore unsurprising, for as Bede wrote, paraphrasing Ezekiel 10:4, "The glory of the Lord consists of this color [blue], which bears the image of the super-celestial."[40]

The opening of John also contains a notable amount of blue and green placed in significant or prominent locations.[41] John's frontality makes his green tunic especially noticeable as does the manner in which he gestures to his chest.[42] In the later Middle Ages green robes become a fixed part of John's iconography and the color is typically interpreted as a sign of faith in this context.[43] The *Lindisfarne Gospels* may contain one of the earliest examples of this tradition. Patristic and early medieval writers associated John with the emerald. Citing the commonly-held belief that emeralds emit oil, Bede writes, "Since such exalted faith is made known throughout the whole world through the gospel, and that there are four books of the gospel, the emerald is placed in fourth place."[44] Perhaps, then, it is not coincidental that some Insular exegetes also connected John with oil.[45] The clearest indication that the Lindisfarne colorist may have had emeralds in mind can be seen in the double-beast, interlaced projections that occur at the four cardinal points of the John carpet page. Uniquely, the top and bottom projections resemble metalwork sockets containing a single green stone, presumably representing emeralds.

One of the most notable characteristics of the *Lindisfarne Gospels* is the manner in which folds of clothing are delineated with colors, specifically orange-red, leek-green, and blue. These lines are typically described as shading, but it seems possible that they represent light and brilliance. As we have seen, blue was perceived of as a "celestial" color. Equally, the *Book of Kells* frequently uses orange-red to convey light—as can be seen in the John incipit, where the Logos sits surrounded by orange and red flame delineated by fine lines of red lead. In Byzantine and early Christian art, mandorlas and haloes are frequently outlined in green echoing the intense light-emitting quality of emeralds. In the *Lindisfarne Gospels* the bright green of the evangelists' robes appears to be copper based. Emeralds were compared to copper, and we should perhaps give thought to the manner in which the verdigris and red-lead permeate vellum, leaving a ghostly glow of green and orange outlines on the reverse of the page. Additionally, in a number of cases, the color that delineates folds and the color of the rest of the garment are of roughly equal value and come from opposite sides of the color wheel. When placed adjacent to one another, these colors create simultaneous contrast, intensifying their appearance and—especially in the case of red lead and leek-green—gives the illusion of three-dimensionality and flickering movement.[46] As a result of these illusionistic color effects, the evangelist robes appear dynamic, living, and light filled, reflecting the attributes of the evangelists as living witnesses whose bodies are filled with the light of God.

Of the sumptuous tunics and mantles on display, only Matthew's tunic lacks these highlights. It seems likely that the dark red-violet of his tunic represents *purpura*, a precious color produced by the union of sunlight with the "blood" of the sea whelk.[47] Unlike emeralds, sapphires, and firelight, which emit and reflect light, *purpura*-dyed materials absorb color and sunlight; their most prized characteristic was their colorfast nature. All of these aspects of *purpura* made it the perfect metaphor for Christ's incarnation and royal genealogy, which is delineated in Matthew's gospel. Similarly, as Michelle Brown has noted, of the four carpet-page crosses, Matthew's is unique—a Latin cross filled with living creatures that are reminiscent of vinescrolls and transform the cross into a "living organism."[48] Catherine Karkov has argued that the chalice-shaped extensions of the cross may refer to the Eucharistic chalice,[49] and the *purpura*-colored contour heightens this association.[50] Whereas the Luke and John crosses resemble metalwork due to their thin interlace and jewel-like colors and Mark's cross is surrounded by an orange-red contour line that makes it seem to shimmer with light, Matthew's is much more closely allied to the cross of the crucifixion.[51]

Although a deviation from the iconographic tradition of Christ's five wounds, the presence of a sixth boss in the cross on Matthew's carpet page could refer to the wounds on Christ's head from the crown of thorns. The circles would then mark

the piercing of Christ's head, breast, feet, and hands.[52] The white circles are formed by blank vellum. While Brown suggests that the illuminator may have originally intended to add color or gilding, it seems equally possible that the blank vellum is an intentional reference to the incarnation, the central message of Matthew's gospel. Herbert Kessler provides several examples where vellum similarly denotes the incarnation.[53] If we accept that the white circles refer to Christ's wounds, the naked vellum conveys Christ's vulnerability and carnal humanity. Visually, the blank vellum is particularly striking and seems to pierce or punctuate the intricate weave of detail, variation, and colors of the carpet page, metaphorically tearing the veil and heightening the sense of revelation that is present within the portrait page, which shows a curtain pulled to the side so as to reveal a mysterious figure who has been variously identified as God, Moses, and a number of prophets. As Brown has noted the central medallion of the cross on the Matthew carpet page contains an eight-petaled marigold, traditionally associated with resurrection.[54] Its position at the center of the cross and the color of the dark red-violet and green petals may refer to the saving blood and water that pours from Christ's side.

With so much color on these pages, a case could perhaps be made that any color, and therefore any symbolism, could be found. By way of conclusion, we might consider the relatively stark minor initials in the *Lindisfarne Gospels*. As has frequently been noted, a remarkably rational system is at work: the minor initials (*litterae notabiliores*) in this manuscript are reserved for Euesubian sections and *capitula* are given yellow and green infill with a red-dot outline. When the Eusebian sections and *capitula* coincide, the letter has an additional contour line. In Matthew, however, there is a single exception—the Eusebian section that begins Matthew 1:17–18, which summarizes the generations from Abraham to David and from David to Christ. This initial contains the same color as found in Matthew's tunic and the outline of the cross—the *purpura* that delineates Christ's royal, human bloodline. The small trace of color suggests that perhaps God—or his incarnation—is in the details.

NOTES

1. John Gage, "Colour in History: Relative or Absolute," *Art History* 1 (1978): 104–30. For a more general and up-to-date bibliography and overview of various art historical approaches to color both in and beyond the Middle Ages, see John Gage, *Colour and Meaning: Art, Science and Symbolism* (London: Thames and Hudson, 2000); John Gage, *Colour and Culture: Practice and Meaning from Antiquity to Abstraction* (London: Thames and Hudson, 1993); Liz James, *Light and Colour in Byzantine Art*, Clarendon Studies in the History of Art (Oxford: Clarendon Press, 1996); Herbert L Kessler, *Seeing Medieval Art*, Rethinking the Middle Ages, vol. 1 (Peterborough, ON: Broadview Press, 2004), 19–43; Michel Pastoureau, *Blue: The History of a Color* (Princeton: Princeton University Press, 2001); Michel Pastoureau, *Black: The History of a Color* (Princeton: Princeton University Press, 2009); Michel Pastoureau, *The Devil's Cloth: A History of Stripes and Striped Fabric*, trans. Jody Gladding, European Perspectives (New York: Columbia University Press, 2001).

2. The findings of Berlin and Kay captured the attention of scholars from outside their discipline and continue to serve as a focal point for much of the debate concerning linguistic relativity; see Brent Berlin and Paul Kay, *Basic Color Terms: Their Universality and Evolution* (Berkeley: University of California Press, 1969). For recent perspectives on theories of linguistic relativity in relation to color terms, see *Progress in Colour Studies*, vol. 1, *Language and Culture*, ed. Carole P. Biggam and Christian Kay (Philadelphia: John Benjamins, 2006).

3. A number of anthropological studies have since highlighted the frequent disjuncture between color vocabulary and color perception. In other words, a number of societies have a highly complex and nuanced perception of color but an extremely limited number of color terms. For an overview of this and related issues, see Diana Young, "The Colours of Things," in *Handbook of Material Culture*, ed. Christopher Tilley et al. (London: Sage, 2006), 173–86.

4. James, *Light and Colour*, 19–43; Kessler, *Seeing Medieval Art.*

5. For a discussion of color in relation to performance, see Bissera Pentcheva, "The Performing Icon," *Art Bulletin* 88 (2006): 631–55.

6. For a discussion of color terms, see Nigel Barley, "Old English Colour Classification: Where Do Matters Stand?" *Anglo-Saxon England* 3 (1974): 15–28, at 16; Carole Biggam, *Blue in Old English: An Interdisciplinary Semantic Study*, Costerus, n. s., 110 (Amsterdam: Rodopi, 1997); Peter Dronke, "Tradition and Innovation in Medieval Western Colour-Imagery," in *The Realms of Colour*, Eranos-Jahrbuch 41 (Leiden: Brill, 1974), 51–107; Jacques André, *Étude sur les termes de couleur dans la langue latine*, Études et commentaires 7 (Paris: Librairie C. Klincksieck, 1949). See Pastoureau (*Blue*, 209) for a short bibliography on the subject. Ironically, many medieval color studies take hue as their starting point and title, for example, Michel Pastoureau's *Blue: The History of a Color* and Carole Biggam's *Blue in Old English*, indicating the grips hue has on the modern psyche.

7. John H. Munro "The Medieval Scarlet and the Economics of Sartorial Splendour," in *Cloth and Clothing in Medieval Europe: Essays in Memory of Professor E. M. Carus-Wilson*, ed. N. B. Harte and K. G. Ponting, Pasold Studies in Textile History 2 (London: Heinemann Educational Books, 1983), 13–70.

8. For an overview of the materials and recipes used in constructing color throughout the Middle Ages, see Spike Bucklow, *The Alchemy of Paint: Art, Science and Secrets from the Middle Ages* (London and New York: Marion Boyars, 2009).

9. See "Matter" in Kessler, *Seeing Medieval Art*, 19–43.

10. Ibid.

11. Gage, *Colour and Culture*, 82.

12. Pastoureau, *Blue*, 40–41.

13. Manuscripts made in the British Isles before the year 900 that contain blue include: The *Book of Kells*, the *Book of Cerne*, the *Lindisfarne Gospels*, the *Trier Gospels*, the *Leningrad Bede*, the *Stockholm Codex Aureus*, Durham Cathedral A.II.10, and the *Leningrad Gospels*. In the *Book of Kells* one of Christ's distinctive, consistent features is his bright blue eyes and intense blue and red garments.

14. This essay focuses upon the Latin West. Islamic art had similarly been largely overlooked until the 2009 conference, "'And Diverse Are Their Hues': Color in Islamic Art and Culture," the proceedings of which are published in Jonathan M. Bloom and Sheila S. Blair, eds., *And Diverse Are Their Hues: Color in Islamic Art and Culture* (New Haven, CT: Yale University Press, 2011). Byzantine art historians have been leading investigations into medieval color for the past decade or so.

15. Sarah-Grace Heller, *Fashion in Medieval France*, Gallica 3 (Cambridge and Rochester, NY: D. S. Brewer, 2007), 2–3, 63, 70–71; Françoise Piponnier and Perrine Mane, *Dress in the Middle Ages*, trans. Caroline Beamish (New Haven and London: Yale University Press, 1997), 71. The volume of Anne Hagopian Van Buren (*Illuminating Fashion: Dress in the Art of Medieval France and the Netherlands, 1325–1515* [New York: Morgan Museum and Library, 2011]) appeared too late to be accounted for in this essay.

16. Heller, *Fashion in Medieval France*; and Carole Biggam, "Knowledge of Whelk Dyes and Pigments in Anglo-Saxon England," *Anglo-Saxon England* 35 (2006): 50.

17. There are also some instances in the earlier period as well where laws specified colors of clothing according to class. See, for example, Margaret McEnchroe Williams, "Dressing the Part: Depictions of Noble Costume in Irish High Crosses," in *Encountering Medieval Textiles and Dress: Objects, Texts, Images*, ed. Desiree G. Koslin and Janet E. Snyder, New Middle Ages (New York and Houndmills, UK: Palgrave Macmillan, 2002), 45–63, at 48.

18. Black fur was preferred by the Northern aristocracy for quite a long period; however, aristocratic women almost without exception eschewed black in favor of white. Piponnier and Mane, *Dress*, 79.

19. For much of the medieval period, colored textiles could be produced in most hues, but only the wealthy could afford colorfast textiles that maintained their intensity over time.

20. For an exploration of modern perceptions of white and whiteness, see David Batchelor, *Chromophobia* (London: Reaktion, 2000).

21. See the summary in Pastoureau, *Blue*, 42–47.

22. See, for example, T. A. Heslop, "Late Twelfth-Century Writings About Art" in *Medieval Art: Recent Perspectives; A Memorial Tribute to C. R. Dodwell*, ed. Gale R. Owen-Crocker and Timothy Graham (Manchester, UK, and New York: Manchester University Press, 1998), 129–41.

23. Madeline H. Caviness in her article "Stained Glass Windows in Gothic Chapels, and the Feast of the Saints" notes that the recent cleaning of the stained glass in the Benedictine Abbey Church of Saint-Denis has greatly changed the experience of viewing glass. The article offers a fascinating exploration of the interaction between the liturgy, the office, and the transformation of color as light moves across glass during the course of the day and year, and can be found in *Kunst und Liturgie im Mittelalter: Akten des internationalen Kongresses der Bibliotheca Hertziana und des Nederlands Instituut Te Rome, Rom, 28.–30. September 1997*, ed. Nicolas Bock et al. (Munich: Hirmer, 2000), 135–49.

24. The number of recent monographs, groups, exhibitions, and conference proceedings devoted to this subject are too numerous to list. See, for example, Carolyn L. Connor, *The Color of Ivory: Polychromy on Byzantine Ivories* (Princeton: Princeton University Press, 1998); Sandra Hindman, ed., *Colorful! Color in Medieval and Renaissance Manuscript Illumination* [*Haut en Couleur! La Couleur dans L'enluminure du Moyen Age et de La Renaissance*], Catalogue 12 (Chicago: Les Enluminures, 2005); Denis Verret and Delphine Steyaert, eds., *La Couleur et la pierre: Polychromie des Portails Gothiques; Actes du colloque, Amiens, 12–14 octobre 2000* (Amiens: Agence régionale du patrimoine de Picardie, 2002); Roberta Panzanelli, ed., *The Color of Life: Polychromy in Sculpture from Antiquity to the Present* (Los Angeles: J. Paul Getty Museum, The Getty Research Institute, 2008); Francesca Dell'Acqua and Romano Silva, eds., *Il colore nel Medioevo: Arte, simbolo, tecnica: La vetrata in Occidente dal IV all'XI secolo; atti delle giornate di studi, Lucca, 23–24–25 settembre 1999*, Collana di studi sul colore 3 (Lucca: Istituto storico lucchese, 2001); and most recently, an AVISTA session at ICMA, abstracts of which are published in the *AVISTA Forum Journal* 20 (Fall 2010): 74–76; and the "virtual" restoration of the tapestries of Henry VIII at Hampton Court, which involved the projection of colored light onto two million separate sections of the tapestries: "Henry VIII's Tapestries on Show," BBC News, accessed January 15, 2011, http://news.bbc.co.uk/1/hi/england/london/7992153.stm.

25. Andreas Petzold, "'Of the Significance of Colours': The Iconography of Colour in Romanesque and Early Gothic Book Illumination," in *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. Colum Hourihane, Index of Christian Art Occasional Papers 3 (Princeton: Princeton Index of Christian Art, Department of Art and Archaeology, Princeton University in Association with Princeton University Press, 1999), 125–26. Petzold's bibliography—like that of Gage, Pastoureau, and James—offers a thorough survey of literature on color usage in the Middle Ages.

26. There are a number of exceptions to this trend such as Liz James's work, which focuses on a single medium in Byzantine culture. For an even more specific study, see Elizabeth S. Bolman, "*De coloribus*: The Meanings of Color in Beatus Manuscripts," *Gesta* 38 (1999): 22–34.

27. Robin Clark, "Raman Microscopy: Application to the Identification of Pigments on Medieval Manuscripts," *Chemical Society Reviews* 1 (1999): 2559–64. See also appendix 1 in Michelle Brown, *The Lindisfarne Gospels: Society, Spirituality and the Scribe*, The British Library Studies in Medieval Culture (Toronto: University of Toronto Press, 2003), 435–51.

28. Brown, *Lindisfarne Gospels*, 40–41.

29. Two websites are available; the first requires a plug-in that can be downloaded from the web page. "Online Gallery: Turning the Pages," The British Library, both accessed October 12, 2010, http://www.bl.uk/onlinegallery/ttp/ttpbooks.html or http://www.bl.uk/onlinegallery/ttp/accessiblettp.html.

30. The British Library online images tend to lean towards the red end of the spectrum: Matthew's tunic, for example, seems far too red and subsequently the violet tones present in the facsimile are overwhelmed. Similarly, John's outer garment, which in the facsimile is violet, appears in the online image to hover between red-violet and red. In most works published before 2002, this tendency is greatly exaggerated to the point that violet hues appear red-orange.

31. This conclusion is based upon personal communication with Michelle Brown, who undertook a page-by-page comparison between the original manuscript and the facsimile during its production, as well as my own limited comparison between various color plates and the Matthew carpet page when this opening of the *Lindisfarne Gospels* was on display at the British Library.

32. For an overview of this conceptualization of the evangelists, see Jennifer O'Reilly, "Patristic and Insular Traditions of the Evangelists: Exegesis and Iconography," in *Le isole britanniche e Roma in età romanobarbarica*, ed. A. M. Luisellie Fadda and Éamonn Ó Carragáin, Biblioteca di cultura romanobarbarica 1 (Rome: Herder, 1998), 49–94; Robert McNally, "The Evangelists in the Hiberno-Latin Tradition," in *Festschrift Bernhard Bischoff zu seinem 65. Geburtstag*, ed. Johanne Autenrieth and Franz Brunhölzl (Stuttgart: A. Hiersemann, 1971), 111–22.

33. For a more detailed discussion of this aspect of the evangelist portraits, see Heather Pulliam, "Eyes of Light: Colour and Meaning in the Lindisfarne Gospel," British Archaeological Association 2010 Conference Proceedings, forthcoming.

34. See note 32.

35. Brown, *Lindisfarne Gospels*, 346–70.

36. See discussion of color deviation in note 23.

37. For greater discussion of this and the relevant sources, see Heather Pulliam, "Looking to Byzantium: Light, Color, and Cloth in Insular Art," in *Insular and Anglo-Saxon Thought in the Early Medieval Period*, ed. Colum Hourihane (Philadelphia: Pennsylvania State University Press, 2011), 59–78; and Pulliam, "Eyes of Light," forthcoming.

38. *The Explanation of the Apocalypse by the Venerable Beda*, trans. Edward Marshall (Oxford and London: J. Parker, 1878), book 3, accessed May 15, 2010, http://www.apocalyptic-theories.com/theories/bede/bede.html. "Smaragdus nimiae viriditatis est, adeo ut herbas virentes, frondesque et gemmas superet omnes, inficiens circa se viriditate repercussum aerem," *Explanatio Apocalypsis* 3, *PL* 93:198C.

39. See note 32.

40. *Explanation of the Apocalypse*, book 3; Bede, *Explanatio*, *PL* 83:198A, "Gloria Domini in hoc colore consistat, qui portat imaginem supercoelestis."

41. The purple of John's outer tunic is considerably more blue in tone in the recent facsimile, appearing as blue-violet or what today might be described as royal purple.

42. For further discussion of the importance of this gesture and the significance of the chest as a site of knowledge, see Heather Pulliam, "Gilding the Lily: Decorating Christ on the Cross" in *Envisioning Christ on the Cross in the Early Medieval West (ca. 500–1200)*, ed. Juliet Mullins, Jenifer Ní Ghrádaigh, and Richard Hawtree (Turnhout: Brepols, forthcoming); and Pulliam, "Eyes of Light."

43. Petzold, "Iconography," 130–31.

44. *Explanation of the Apocalypse*, book 3. "Quia tanta fidei sublimitas per Evangelium mundo innotuit, apte, propter quatuor Evangelii libros, quarto loco smaragdus ponitur," Bede, *Explanatio*, *PL* 93:199B.

45. I am grateful to Professor George Henderson for suggesting this connection between exegesis and the image. For discussion of the Insular exegesis on oil in relation to John, see note 32.

46. The effect is more noticeable when viewing the facsimile than in other reproductions.

47. For a discussion of *purpura*, see George Henderson, *Vision and Image in Early Christian England* (Cambridge and New York: Cambridge University Press, 1999), 122–35.

48. Brown, *Lindisfarne Gospels*, 327.

49. Catherine Karkov, "The Chalice and Cross in Insular Art," in *The Age of Migrating Ideas: Early Medieval Art in Northern Britain and Ireland; Proceedings of the Second International Conference on Insular Art held in the National Museums of Scotland in Edinburgh, 3–6 January 1991,* ed. R. Michael Spearman and John Higgitt (Edinburgh: National Museums of Scotland; Dover, NH: Alan Sutton, 1993), 237–44.

50. There is some disagreement as to whether this contour was originally the dark red-violet color it appears to be today or whether it is composed of red lead that has oxidized. The color seems too consistent, unlike other examples of oxidization, for it to be oxidized. Because of this and a number of other reasons, I believe it to be a stable, organic red-violet.

51. The shimmering effect is the result of simultaneous contrast, and possibly chromostereopsis; see discussion above.

52. Brown suggests, alternatively, that the six circles might be understood as marking Christ's five wounds and the inscription placed above Christ's head. Brown, *Lindisfarne Gospels*, 326.

53. Kessler, *Seeing Medieval Art*, 33.

54. Brown, *Lindisfarne Gospels*, 326.