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Interpreting Medieval Scottish Church Stained Glass Windows: Decoration and Colour in Relation to Liturgy and Worship

Craig J. Kennedy ^{1,*} and Michael Penman ²¹ School of Energy, Geoscience, Infrastructure and Society, Heriot-Watt University, Edinburgh EH14 4AS, UK² Division of History, Heritage and Politics, University of Stirling, Stirling FK9 4LA, UK

* Correspondence: craig.kennedy@hw.ac.uk; Tel.: +44-131-451-4629

Abstract: During the Protestant Reformation of 1560, most of Scotland's Catholic churches faced widespread destruction. Items considered idolatrous were targeted and destroyed. Significantly, stained glass windows were smashed and buried on site, or otherwise left to decay, and were replaced by austere, plain glass. In recent decades, archaeological excavations have recovered shards of this glass from several ecclesiastical sites across Scotland, allowing scholars the opportunity to better understand medieval liturgy and worship. Scientific analyses have been conducted to determine the ingredients used in manufacturing this glass, and to infer a place and timeframe of origin. These studies have proven invaluable in gaining an understanding of medieval trade links between Scotland and Europe, as well as of building and decorative phases for individual churches. Here, we consider the glass as an integral part of daily worship. Decorative patterns and colours of surviving fragments of glass, approximately dated, are considered in the wider and evolving context of medieval worship, and the prevailing religious Orders that were in Scotland at the time that many of these churches were founded. Two case-study sites are discussed in depth: Elgin Cathedral in Moray, which has yielded a significant number of glass shards through archaeological excavations; and Dunfermline Abbey in Fife, Scotland's royal mausoleum. This inter-disciplinary study is the first to consider Scottish stained glass in terms of both its physical and chemical properties, as well as its wider religious meaning. This methodology will form the basis of future research to—for the first time—catalogue, scientifically analyse and liturgically contextualise all identifiable assemblages of Scottish medieval church glass.

Keywords: stained glass; medieval; church; liturgy; heritage science; Scotland; worship



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1. Introduction

Amongst the remaining fragments of the cartulary archive of the medieval bishopric of Moray's cathedral at Elgin in northern Scotland, erected from c.1224, is a remarkable charter. It records a grant in 1237 of a valuable mill to the cathedral by its founder, Bishop Andrew Murray, an act sealed and witnessed by the earls of Atholl and Sutherland, local clerical officials and a 'Richard, glazier' (*Moray Registrum*, no. 121 [1]). The latter's presence amongst such exalted company hints immediately at the importance of stained and painted glass to the key patrons of this new high-status religious building as they worked together to shape its magnificent fabric and liturgy of worship. Sometime between c.1298xc.1310, we also find a record of the sale of a house within the canonry properties of the same cathedral which had belonged to the heirs of a 'William, glazier' (*ibid*, no. 132 [1]). Clearly, there was a sustained presence at Elgin throughout the 13th century, and presumably beyond, of the craft skills necessary for the installation of high-quality decorative and narrative church glass. This is noteworthy, as not only are such traces of specific artisanal practice in the historical record few and far between for medieval Scotland before the later 15th century, but this was a realm which had no indigenous glass production facilities before the 17th century. Moreover, in the present day, church window glass remains surely the single most

under-represented element in historical and heritage efforts to re-envisage and understand Scottish medieval church interiors and, thus, Catholic faith.

The complexity of reasons that explain this lacuna for Scotland are perhaps unique. Across Europe stand many great medieval churches, adorned with decorative stained and painted glass programmes, from as early as the 11th and 12th centuries, which were intended to enhance the worship experience of the people within. Many of these great windows survive today, at iconic sites such as Canterbury, Chartres, Sainte-Chapelle and elsewhere. Yet, in Scotland, there are none.

Scotland's Catholic cathedrals, abbeys, parish churches and chapels saw their stained and painted glass windows figuratively and literally smashed during the Protestant Reformation (1560-), to be replaced with more austere, plain glass or otherwise left to decay. This reflected, in part, a process driven in the northern kingdom by a far-more fundamentalist Calvinist theology, often rousing iconoclastic destruction from the grass roots up, whereas in neighbouring England to the south the reformist cleansing c.1538 had been more carefully controlled top-down by a Tudor regime keen to asset strip the church of its lands and portable wealth. As a result, many English secular churches have retained their magnificent medieval windows.

By contrast, today, Scotland's surviving great medieval churches are decorated with modern stained glass which reflects current attitudes and trends, but these have no connection to the more ancient glass that originally was on display during the Middle Ages. Scottish medieval church glass, thus, only survives as broken shards buried and left underground for centuries, until recovered during antiquarian investigations or conserved and recorded during archaeological excavations in the 20th and 21st centuries. The very accident of their survival and recovery (and varied conservation stories) may begin to help explain some of the at-first seeming contradictions observable in comparing these assemblages.

Some of this recovered stained and painted glass has been subject to scientific analysis [2–4]. This analysis has focused on determining the elemental composition of the glass shards using techniques such as X-ray fluorescence (XRF), scanning electron microscopy with energy dispersive X-ray analysis (SEM-EDX), and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS).

This information has proven extremely useful in several ways. Glass was not manufactured from raw materials on an industrial or commercial scale in Scotland until a patent for a (kelp-based) glassworks in Wester Ross was issued in 1610 and staffed by Italian workers [5]. This means that all stained glass components in Scottish churches during the Middle Ages were imported, even if then shaped, installed and decorated by Scottish or Scotland-based artisan 'glaziers' and 'painters'. Spencer et al. [6] were able to use the elemental composition of glass recovered from Elgin cathedral to indicate that the glass installed there was likely manufactured at medieval workshops in specific regions of eastern France and northern Germany. By determining the location where the stained glass was manufactured, information regarding building phases and medieval trade routes between Scotland and Europe can, thus, be gleaned.

Glass has now been scientifically analysed from 24 medieval Scottish church sites where archaeological excavations have yielded a useable amount of glass shards [4]. This represents a relatively small fraction of the scale of the Catholic church in Scotland during this period, which included c.100 monastic churches and c.12 great cathedrals (some attached to monastic communities), but also several large urban and many more smaller parish churches, c.1000 in total, as well as private chapels and c.30 noble collegiate churches [7,8].

Whereas some sites, like Elgin, have yielded significant quantities of glass, others have yielded only a few shards. Most of this excavated glass is 'white' (colourless barring impurities) with some coloured pot-metal glass. A minority is painted with 'grisaille' decoration comprising foliate patterns, geometric borders, and cross-hatching. Pamela Graves' pioneering 1985 thesis and survey of 18 Scottish church sites [2] noted that Coldingham's Benedictine Priory, in Berwickshire on the Anglo-Scottish border, is the only Scottish site

that has yet yielded a glass fragment with evidence of a painted human figure. Excavation not far over that border at the Blackfriars in Newcastle-upon-Tyne shows similarities with Scottish church glass shards, a combination of grisaille, foliation and cross-hatching, but also prominent are rose and sun-in-splendour motifs, rinceaux patterns and diapering, forms, as yet, not found in Scottish assemblages [9].

As more glass is located, recovered and catalogued from Scottish archaeological sites, scientific analysis is progressing. This work can help to determine the ingredients used in the manufacture of the glass, indicate potential sources of origin [10,11] and generalised dates of manufacture, as well as determine conservation approaches [12].

This heritage-science approach has been used in recent years to learn more about historic glass, but this does not tell the whole story for Scotland. To better understand the stained and painted glass of the medieval period in Scotland, and to discern its place in wider society, a consideration of the religious trends, written records and liturgical sources of that time must be considered. Here, we will consider selected examples of recovered Scottish glass and discuss the physical characteristics as discerned by combining heritage-science studies with liturgical analysis. It is hoped that this inter-disciplinary methodology will provide the basis of a future collaborative project to, for the first time, catalogue all extant glass assemblages from Scottish medieval church sites, scientifically analyse their properties, and integrate these findings with surviving medieval liturgical texts, administrative records and material culture.

2. Materials and Methods

Glass recovered from archaeological sites was analysed using pXRF, SEM-EDX and LA-ICP-MS [2–4]. A physical description of the shards as well as elemental information from these studies is presented. Matched to this is liturgical analysis.

The destruction of the 1560 Reformation and the passage of time might be perceived to have had a similarly damaging effect upon the survival of Scottish medieval-church records and liturgical manuscripts, as well as upon liturgical artefacts and interior church fittings [13]. Mere periodic fragments of the full cartulary archives of major Scottish churches are extant, often from later 15th or 16th century compilations. Nor do we have any of the kind of detailed hand-written church fabric accounts of patronage and expenditure on craft commission and production, or records of subsequent congregational or visitor gifts to maintain chapels, altars and attendant clergy, which have been preserved for several English pilgrimage shrine churches, and even some smaller parish churches [14].

For example, only one fragmentary fourteenth-century sacristan's account for fabric maintenance, which does include repeated window repairs, survives from a monastic church on Scottish soil. This comes, once again, from the Benedictine priory of Coldingham, just this side of the Scottish border, patronised by 12th-century Scottish royals but dedicated to the Virgin and St Cuthbert (as well as the local female cult of a St Aebbe) and actually overseen by Durham Cathedral priory in northern England, home to Cuthbert's body shrine [15]. Similarly, less than two hundred medieval liturgical manuscripts or printed texts, or substantial portions or palimpsests thereof (such as calendars and saints' litanies), can be shown to evidence Scottish provenance or, more typically, Scottish ownership/modification of a text that was originally a continental production [16]. Such texts are, to a large extent, luxury items, particularly when illuminated. Yet even vernacular wall paintings, the allied liturgical media surely most common and affordable across all types of Scottish medieval church in a pre-literate age (produced by artisan 'painters' who could also have decorated glass), have left barely a handful of faded or fragmentary examples, such as at Inchcolm in the Forth, Dunfermline in Fife, Aberdeen, and Fowlis Easter in Angus [17].

Nevertheless, some meaningful liturgical investigation remains possible. There are often sufficient traces and linkages to be found within the extant medieval archival and material evidence as to extrapolate some of the context, iconography and meaning for lost painted and stained church glass [17]. This allows us to begin to make cautious (if, at times,

speculative) liturgical sense of the shards and assemblages recovered by archaeology from Scottish church sites and to recover some of their central importance to worship.

Single charters can reveal details of patrons, their spiritual preoccupations, craft commissions and altar or chapel saint dedications—and, thus, the likely focus of church and/or internal-chapel iconography [18,19]. Further patronal, trade-link and cultural influences can often be extrapolated from the wider burghal, ecclesiastical and noble record: burgh council minutes, late 15th–16th century court proceedings and guild records, notarial protocol books recording contracts, noble family papers, papal letters and supplications requesting indulgences for church fabric gifts and feast-day pilgrimages, post-Reformation property audits, and even medieval chronicle narratives by scribes attached to particular churches, all of these can often reveal aspects of cult dedications and physical/material settings in which the glass shards left to us (typed and approximately dated) can be contextualised.

In addition, images and narrative descriptions from surviving liturgical manuscripts (often confirmed by ‘red letter’ days of worship recorded in calendars), church sculpture, church seals, pilgrim badges, and hagiographic saints’ lives and miracle stories (*vitae*, such as the collection which survives for Aebbe at Coldingham) can also hint at the specifics of architectural settings and iconographic depictions to which windows may have contributed as part of an integrated synaesthetic whole of officiant and worshipper interaction. Such programmatic links between texts, prayers, music, sculpture, wall paintings and glass imagery can be evidenced by allegorical comparison of Scottish churches—often of a particular Order or type—with extant English or continental examples where interdisciplinary research has taken advantage of a greater survival of both record and material evidence [20–25]. This is especially effective where there is a firm patronal/liturgical link between a foreign and a Scottish church such as a mother–daughter monastic relationship or clerical and perhaps artisanal (stone masons, glaziers, painters) personnel transfers.

Moreover, architectural and archaeological evidence can further enhance such liturgical analysis. In a Scottish-church context, antiquarian observations and images c.1560–c.1900 can often be invaluable in bridging the gulf over time between pre-Reformation churches and fittings, their post-iconoclasm decline, and their current fragmentary state. Indeed, this evidence can often provide clues as to structures and objects now lost and, thus, their meaning in worship. Modern archaeological techniques can take this data recovery further. Surveying and excavation can uncover, enhance or correct ground plans, key phases of building and patronage, the form and function of both structures and interior fittings. This can help identify key liturgical settings such as aisles, altars and tombs/burials. This, in turn, can reveal much about laity–clergy interaction, processional routes, performative liturgical space, etc., and, not least, about elements of the orientation and form of fenestration and, thus, of the effects of changing interior light and colour (alongside sounds and smells) upon daily or special feast worship [24,26]. This material evidence can, in turn, be cross-pollinated with the written record.

3. Results and Discussion

3.1. Overview of the Recovered Glass

Table 1 gives a general overview of the glass recovered from medieval church sites in Scotland. It should be noted, however, that as these samples were recovered archaeologically, it is extremely unlikely that all glass from the listed sites has been recovered.

In some cases, the amount of glass recovered also limits our analysis. Here, we will discuss two case studies, Elgin Cathedral in Moray and Dunfermline Abbey in Fife; whilst several hundred shards were recovered from Elgin during various excavations, only a dozen or so were recovered from Dunfermline.

Spencer [4] found that the majority of this ‘white’ glass was manufactured in workshops in Europe. Thirteenth-century glass was mainly a potassium-rich type manufactured in Normandy, France, whilst later glasses from the 14th century onwards were of a high-lime low-alkali (HLLA) type [27], likely to have been manufactured in north-west Germany/Rhineland or in the Lorraine/Argonne region of France. Later monastic sites

used this cheaper HLLA glass into the late-14th and 15th centuries. Spencer speculated that this glass was most likely imported into major market centres such as Leith, Dundee/Perth and Aberdeen from Bruges and Antwerp.

Table 1. Overview of medieval church glass recovered archaeologically and scientifically examined by Spencer [4]. The estimated source of glass is given as 1 = central/eastern France, 2 = north-west France, 3 = Rhineland/north-east Germany. An asterisk denotes doubt of the origin of a sample.

Religious Order or Movement	Sites	Dates of Construction	Colours of Glass Recovered and Analysed	Number of Shards Excavated	Number of Shards Analysed (Spencer)	Estimated Source of Glass (Spencer)
Augustinian	Inchmahome Priory	13th Century	White	Unknown	6	Unknown
	St Andrews Cathedral	1158–1279	White, Green, Pink, Amber, Red, Brown, Blue	Unknown	48	1,2
Benedictine	Coldingham Priory	1098–	White, Red, Blue	83	16	1
	Dunfermline Abbey	1128–	White, Red, Blue	16	3	2 *
	Iona Abbey	1203–	White	Unknown	5	1
	Lindores Abbey	1191–	White	Unknown	4	Unknown
Cistercian	Glenluce Abbey	13th Century	White, Green	45	2	3
	Elcho Nunnery	1241–	White, Blue	256	24	1,2,3
Carmelite	Linlithgow Carmelite Friary	13th Century	White, Green, Yellow, Red, Blue	>500	21	1,3
	Perth 'Whitefriars' Carmelite Friary	1262–	White	104	9	1
Dominican	Perth 'Blackfriars' Dominican Friary	1231–	White	55	18	3
Burgh/Regional Church	Elgin Cathedral	1224–, 1270–, 1390–	White, Green, Red, Brown, Blue	>1300	31	1,2
	Aberdeen St Nicholas	12th Century	White	>700	14	1,2,3

* denotes doubt of the origin of a sample.

The coloured glass analysed by Spencer [4] was resolved into a number of compositional families. Blue glasses, for example, had the greatest level of variations in colour from turquoise to a deep Prussian blue and were clustered into 8 chemical groups. Three of these, identified as originating in north-west France, were found at St Andrews Cathedral. Two groups identified as originating from the Lorraine region of France were found at Elgin, St Andrews, Lindores and Coldingham. Most coloured glasses were likely to have been manufactured in north-west France, though blue glasses, in particular, were made at several other sites across northern Europe [4,6].

3.2. Decorative Patterns

The predominant presence of colourless glass may be indicative of the influence of the Cistercians in Scotland. This order is responsible for building many of Scotland's great medieval church complexes including the abbeys of Melrose, Sweetheart and Newbattle [28]. The Cistercian reform was austere in many respects; forbade colour, figures and images; and often sought to exclude popular pilgrimage shrines and lay burials from its inner choirs, so as to eliminate anything that interfered with the eye's perception of pure sunlight, the 'Light that is God' [29,30]. Indeed, of the glass recovered and shown in Table 1, from Glenluce Abbey, Wigtownshire, only two green shards were recovered from a total of 45; and from Elcho Nunnery, West Lothian, only six shards were coloured, out of a total of two hundred and fifty-six. All the rest of the glass recovered was white. Nonetheless, the presence of some coloured glass at these Cistercian sites may hint at the order's concession of commemorative burial space and votive altars with allied iconography for prestigious lay patrons in their church naves and chapter houses (e.g., as at Melrose Abbey in Roxburghshire, where King Alexander II was interred in the chapter house in 1249).

However, as well as the likelihood of even broken coloured glass being saved and perhaps reused (for multiple purposes) after 1560, one possible explanation for the prevalence of grisaille and border pieces in archaeological excavations in Scotland as opposed to coloured glass and/or figures may be because the central parts of windows, showing

narrative scenes from scripture or saintly figures, are more likely to have been the subject of glass destruction (or even systematic removal and sale) during the Reformation and its aftermath: thus, smaller border pieces survived in the window frames for longer. Indeed, where iconoclasm could be controlled/quelled by local authorities and guild patrons, it may be possible that central figurative panels were more cleanly replaced with simple clear/white or white-washed and, thus, 'de-Catholicised' grisaille decorated panels. Such censorship or reuse of iconographic glass could, however, occur even before the Reformation. An interesting find amongst these glass shards comes from the Carmelite Friary in Linlithgow, West Lothian, and its main E window: glass fragments showing geometric patterns had been whitewashed on one side. Stones et al. [31] speculated that these may be glass shards from an earlier original medieval chapel in this burgh dedicated to the Virgin (and recorded as gifted to the Carmelites by a local nobleman in 1421): the whitewash may have been applied because the content of these windows may not have been suitable for the nave of a medieval friary church (and not because the friary was repurposed and cleansed in 1560—in fact it was then razed to the ground by Calvinist reformers). The cross-hatching style of grisaille decoration of glass is also associated with the earlier tradition of stiff-stick work dating to the 13th and early 14th centuries. Natural leaf decorations are associated with later timescales indicating that, for example, these were later window additions to the Perth Whitefriars Carmelite Friary.

Cistercian grisaille patterns fell in to two main forms, geometric patterns and stylised flowers and vegetation, both of which are found in Scottish glass [32]. By contrast, other monastic Orders and associated cathedrals and appropriated parish churches are believed to have employed glass very differently, using a choreographed interplay of colourless/plain and intensely coloured/figurative or narrative glass to highlight a focal point for worship and liturgy around the high altar and/or a saint's shrine at a choir's east end, or for a side-chapel altar dedicated to another saint or cult.

For example, at Benedictine Canterbury Christ Church, Kent (mother house to Scotland's royal mausoleum at Dunfermline Abbey, Fife), St Thomas Becket's new shrine with its Trinity and Corona chapels of 1220 used ambulatory aisle and chapel walls of narrative glass depicting Thomas's many recorded miracles (written by clerics at or associated with his church or Order) in conjunction with carefully regulated donor artificial 'lights', i.e., candles or lamps, so as to intensify worshipers' veneration of the martyr's cult at multiple stations. Recent research has explored how these elements of light and colour, together with their highly polished architectural settings (using marble,) interacted with liturgical emphasis on Becket's symbolism as a 'lamp' of faith, celebrated in hagiographical *vitae* and ritual customaries [22,23,33]. Clerics, pilgrims and parishioners at Canterbury also experienced varying light and colours and their profound spiritual effects across different seasons and times of the day, often coincident with major feasts and anniversaries [24]. This evidence fits within an emerging understanding of stained glass with direct links to the wider material iconography of medieval saints' cults, with images in glass echoing similar images in illuminated manuscripts, wall painting, sculpture and even portable pilgrim badges [20,21,34]. Much of this kind of material evidence was also, of course, destroyed during Scotland's Reformation but many traces do remain [17,18,35,36]. There may indeed be sufficient evidence for individual Scottish churches to permit such iconographic links to be recreated, such as at Dunfermline Abbey [37,38].

Given the huge influence of Becket's model shrine and translation of 1220 to Canterbury upon cult churches across the British Isles—encouraging the development of multiple stations and processional routes—similar conscious architectural and liturgical deployments of space, shrine/tomb, glass, colour and light may be detectable in the Scottish evidence [37]. This may especially be the case at Scottish churches dedicated to the Becket cult, cf. Premonstratensian (later Benedictine) Arbroath Abbey in Angus, and Tongland Abbey in Kirkcudbrightshire. Recent English and European scholarship has also suggested that between the 1220s and 1260s many great Gothic churches began to limit use of intensely colourful (and expensive) figurative glass to east ends, high altars and relic shrines, or to

elite donor windows in individual side chapels [22,39–41]. This shift thus favoured white or grisaille glass in nave and ambulatory aisles, admitting more direct sunlight and contrast into these western-central spaces. Does this trend also begin to explain the seemingly evident pattern in extant Scottish-church glass assemblages, of a clear predominance of white or clear glass, even at the churches of more open, lay-accommodating Orders such as the Benedictines at Dunfermline or (by the 15th century) Arbroath?

Might the Scottish evidence indeed follow this pattern, or did Scottish churches in fact invest in coloured and figurative glass throughout both nave and choir, perhaps in particular periods or (urban) contexts, as at York Minster from the 13th century? Or was it more broadly the case that most churches in the poorer, smaller and more rural kingdom of Scotland (population c.1 million on the eve of the Black Death of c.1349) could only rarely afford to import coloured and figurative glass, at least before c.1400? Hence the suggestive evidence of extant Scottish charters (thus including religious gifts) gathered by the *People of Medieval Scotland* database [1], which records only four references to ‘windows’ and ‘glass’, and just three each to both ‘glaziers’ and ‘painters’ in extant charters c.1093–c.1371? Was coloured glass in medieval Scotland, at least before the 15th century, limited to elite and wealthier monastic, cathedral, collegiate and larger urban churches, cf. the Stewart family’s Cluniac foundation of Paisley Abbey, Lanarkshire, for which the royal *Exchequer Rolls* contain the earliest reference to a programme of new glass paid for by Robert III in 1390 [7]?

Linkages between Scottish and English windows can be seen in a small number of examples. Leaf motifs resembling foliage found at St. Andrews (Augustinian) Cathedral Priory, Fife, echoes glass at Canterbury and York, dating to the late 12th century. Likewise, the geometric border pieces at St Andrews resemble border pieces dated to the later 12th century in Canterbury and York Minster [2,42].

Attempts to recreate Scotland’s cathedrals and monastic houses rely upon existing scholarship exploring medieval religious buildings, liturgical manuscripts and cult generally. Such work contextualises the reconstructions utilising surviving architecture on site and analogous surviving features on other sites, from England and elsewhere, integrated with the Scottish historical record and antiquarian (c.1560–c.1900) finds and observations [3,38]. However, even with this wealth of potential knowledge, the iconography expressed by the window glass is unknown and only loosely integrated into any understanding of patronage, liturgy and the actual lived experience of worship. The shape of the windows is considered in terms of Romanesque or Gothic architectural styles, but the glass itself remains a mystery.

To reconstruct what spiritual affect Scottish stained glass may have intended or achieved, or what images were perhaps shown, we may also need to consider indirect comparisons. It may not be as straightforward as finding Scottish fragments of glass and comparing these with complete pieces seen elsewhere for, as Hodgson [28] notes, religious orders often assimilated local cults in order to ingratiate the order with the local population during their establishment in a geographical area. As such, an Augustinian or Cistercian abbey established in Scotland may have had windows which are largely similar, but by no means identical, to similar abbeys in other European countries.

3.3. Case Study: Elgin Cathedral, Moray

Spencer’s ground-breaking thesis sampled 36 glass shards from this cathedral (Figure 1) (now in the custody of Historic Environment Scotland). These were broadly datable to the 13th century and as originating from most likely northern-French, or perhaps German, workshops. This coincides broadly with the refoundation and erection of this new bishop’s church in Moray from 1224 (relocated from nearby Spyny) or, at the latest, Elgin’s rebuilding after destruction caused by a major fire in 1270 [6,43]. A second rebuilding and repairs after a later fire and violent damage inflicted on the church in 1390, as well as developing patronal tastes/wealth, saw the cathedral greatly expanded and embellished, including the mid-15th-century installation of a larger, intricate east-end rose window: site custodians

HES have recreated part of that choir feature window's complex abstract tracery from surviving architectural fragments [44].

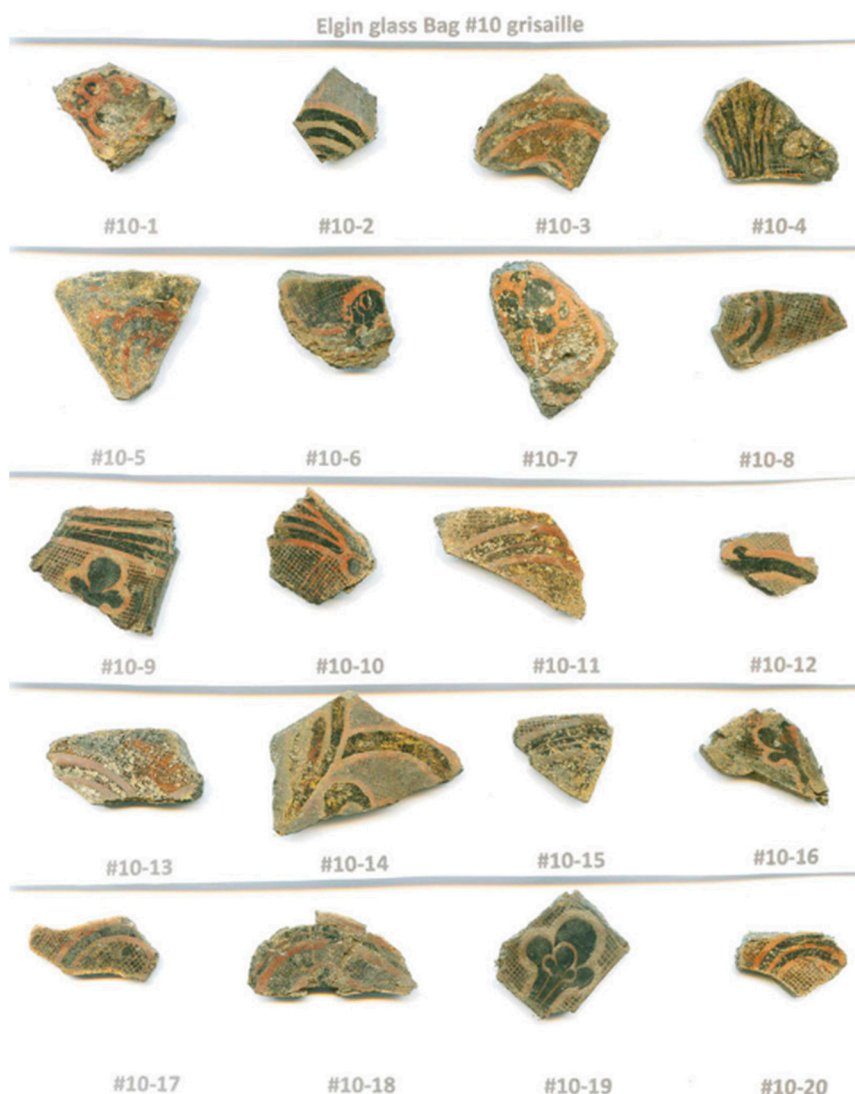


Figure 1. Glass fragments found at Elgin Cathedral (Spencer, [6]).

However, it might be speculated that this signature glass may have replaced an earlier, smaller/simpler rose window, perhaps one of two at east and west ends and which crucially reflected the liturgical influence of Moray bishops appointed to this Scottish diocese in the 12th and 13th centuries from Lincoln Cathedral in England. This had meant that Elgin thus followed a Lincoln liturgical 'use' at the core of its daily worship and calendar, where most Scottish churches were influenced by Salisbury Cathedral and its 'Sarum' use. Lincoln's two rose windows—the south transept 'Dean's Eye' and north-transept 'Bishop's Eye'—provided striking iconographic and full-colour focus for its main Virgin cult dedication [45–47]. Did this, in turn, provide a model for Elgin's depiction of that key Christocentric saint within a church otherwise dedicated to the Trinity?

The sustained importance of high-quality coloured figurative glass to Elgin's evolving liturgy and iconography is revealed by the 1237 cathedral charter recording the valued presence and input of a 'Richard, glazier', as well as the later record of another glazier, 'William' inheriting his family's cathedral precinct property (*Moray Registrum*, nos 121, 132 [1]). The former's English name, moreover, further suggests the importance of Lincoln's influence. It is likely that these artisans were resident to install quality glass produced in and imported from France (or Germany), possibly adding their own painted designs or

shaping figurative designs from cartoons and maquettes drawn up to the specifications of the bishop and other elite patrons.

That as early as the 13th century these elite Elgin patrons included burghal/mercantile figures is suggested by burgess Hugh Herock's charter of 8 September 1286—significantly, the feast of the Nativity of the Virgin, a red-letter day just coming into popularity in the British Isles—which founded a chaplainry of St Nicholas in the cathedral (*ibid*, no. 221 [1]). Again, surviving tracery fragments in HES's collection and recreation by both the National Art Survey of Scotland c.1925 and HES architectural historian Richard Fawcett, suggest the construction from the later 13th century of new chapels on the south side of the aisled cathedral nave, including impressive lancet windows of four lights each and with complex/abstract upper tracery. As many of Elgin's extant glass shards bear painted grisaille decoration, but also a small number of pieces of red, green and blue layered flash-glass, might these chapels have logically seen grisaille borders and abstract top lights framing dedicative saintly window figure panels? If so, via their size, colour and visual impact (especially later in the day), as well as perhaps the narratives they told, these south-facing window figures had a clear role to play in emphasising the dedication of each chapel, what it represented and to who.

Elgin cartulary and burgh records provide us with evidence of further nave and transept chapels/chaplainries founded in this cathedral and to be supported by prayers, lights, vestments and clergy: these venerated the Virgin, Thomas Becket (a cult marked by further regional dedications in north-east Scotland), John the Baptist, the Holy Rude, St Peter(/Paul?), St Martin, St Columba of Iona, St Duthac of Tain, St Katherine and St Giles. As well as hinting at Elgin's evolving calendar of key observances and guild dedications around the universal feasts of Catholic worship (such as Easter), this may speak to some of its programme of figurative glass. By the immediate pre-Reformation period, these windows and the cathedral's many painted/gilded noble and high clergy tombs with effigies and other sculptural elements (also recently recreated by Historic Environment Scotland using projected colours based on polychrome traces) surely spoke to the richness of Elgin's evolving interior [24,43].

3.4. Case Study: Dunfermline Abbey, Fife

Spencer's thesis analysis of just three glass fragments recovered in the 19th and early 20th centuries from Dunfermline Abbey's ruined and overbuilt Benedictine choir indicated material of late 13th- or early 14th-century date produced in north-west France (Figure 2) [4]. This coincides with the likely addition to the choir at Dunfermline of a northern extended Lady Chapel dedicated to the Virgin. This space would become a mausoleum for elite tombs of the Wars of Independence period (c.1296–c.1357). This later building phase is thus to be favoured for this extant glass rather than dating to the earlier 13th-century extension of the choir's far east end as a pilgrimage shrine for Queen/St Margaret of Scotland (d.1093). She was canonised by the papacy in 1249 and her remains translated to her new shrine in 1250–1251, in a period when glass-finishing craftsmanship was nevertheless surely important to Dunfermline abbey: hence, the recorded residency of a 'William, painter' in 1225 × 35 (Dunfermline Registrum no. 171 [1,48]).

Whilst bright blue glass is most often associated with Virgin images (especially from the Chartres region in France), Lorraine is celebrated as a medieval glass-making region particularly noted for its range of greens [49]. Some blue but no green shards do feature in the small extant Dunfermline glass assemblage. Nonetheless, might these glass fragments reflect the spiritual and/or economic connections to France of a key Dunfermline patron or an abbot such as Robert de Crail (1314–1328) as work progressed on the new Lady Chapel? In the same way, key royal tombs of the period at Dunfermline, including those of Robert I (1306–1329) and Guardian Thomas Randolph, Earl of Moray (d.1332), were imported from workshops around the Benedictine abbey of St Denis near Paris [38].



Figure 2. Glass fragments recovered from Dunfermline Abbey, gifted to the Society of Antiquaries of Scotland from c.1818 and now in the National Museum of Scotland, Edinburgh [Cat. H.KJ 3].

Antiquarian drawings of the late 18th century indicate this northern-choir Lady Chapel had five bays of Gothic windows with four tall panel lights each (gabled by a matching window to the east and west) and peaked with a tier of six window roundels [38]. These may have depicted the miracles and life story of the Virgin, focussed around her six major feasts, or perhaps even the genealogy of the abbey's royal patrons. But they might also have incorporated images of further saints, particularly females, with cartulary and burgh record evidence for altars to the Virgin, Anne, St Margaret of Scotland's head shrine, Katherine of Sienna, Katherine of Alexandria, Margaret of Antioch, Mary Magdalene, Ursula and Aebbe of Coldingham founded over time [7].

Further chapels and altars in choirs and naves dedicated to cults also venerated by the Bruce and Stewart royals of the 14th century and their subjects, including the burgesses and guilds of Dunfermline, can be shown to include: SS Cuthbert of Durham; Columba of Iona; Duthac of Tain; Ninian of Whithorn; Serf of nearby Culross; and perhaps Thomas Becket of Canterbury, Dunfermline's mother house. The focus of Dunfermline's liturgical calendar upon these saints' feasts and the Christocentric cults of the Trinity, True Cross, Virgin and John the Baptist can thus be recreated and, in part, confirmed by the surviving calendar of an illuminated Psalter owned by Abbot Richard Bothwell (1444–1468) of Dunfermline (and now in the Librarie Municipal, Boulogne), which also contains sung litanies for these and other Fife saints such as Monan [16].

Any Dunfermline Lady Chapel glass images would, though, have had an indivisible spiritual link with the cult narratives, and, thus, any further windows, of the main east-end shrine of St Margaret of c.1250–1251. A 15th-century manuscript (now in L'Escorial, Spain) recording over 40 miracles of Margaret c.1093–c.1263 and part of the abbey's successful campaign for her papal canonisation, testifies to the powers of her person and such relics as her 'birthing serk' (worn by successive Scottish queens in giving birth at Dunfermline), fragments of Christ's Holy Rude, and her gold- and jewel-encrusted pocket Gospel Book of the Evangelists [48,50]. This book is still extant in the Bodleian collection (Oxford) and could clearly have provided key iconographic inspiration to 12th-century painting, sculpture and glass within the early Dunfermline church following its full foundation as

an abbey by her saintly son, David I, in 1128 [45]. The recent discovery in Cambridgeshire of two possible St Margaret pilgrim badges from 13th-century Dunfermline depicting the queen clutching her book underlines its importance as a visual touchstone of her cult [47].

Furthermore, recent ground-penetrating radar surveys of the overbuilt choir of Dunfermline, combined with archival investigation of antiquarian observations of its ruins c.1560–c.1818, have also highlighted the importance of Trinitarian liturgy for this abbey and its imagery. This is a motif echoed in Margaret’s miracle-story repetitions (three nights’ vigil, three weeks’ journey, the queen as a vision accompanied by three knights etc [51]). This interdisciplinary liturgical research has also identified a matching southern transept choir chapel at Dunfermline dedicated to St John the Baptist. This allows us to re-envision a great cruciform Benedictine abbey choir with royal mausoleum, cult centre and full pilgrimage ambulatory, with its high altar dedicated to the Trinity (just like Westminster and St Denis as the English and French royal cult mausolea, respectively) but hosting three major chapels (the Virgin, Margaret, John), three royal saints (Margaret, her husband Malcolm III and their son, David I) and topped by three towers. Even the rectangular St Margaret feretory shrine walls would have provided three narrative window spaces (echoed by the three window walls of the Lady and Baptist chapels). The abbey’s seal, moreover, presented the saintly queen, book in hand, beneath the middle of three arches under a three-towered roof (surely echoed in her own shrine’s structure), with an abbot-at-altar to the left, a layman-with-votive to the right. High-quality narrative glass, thus, surely had a central but collaborative role to play in realising and raising Dunfermline’s spiritual and political iconography and messages to a powerful pitch [38].

4. Conclusions

Research into Scottish medieval stained glass windows is relatively limited. The extent of the destruction wrought by the 1560 Reformation means that there are very few examples of these glasses for modern scholars to study. Here, we presented a study into Scottish stained glass that goes beyond the scientific examinations of previous works (e.g., [6]), and illustrates approaches to the seemingly broken, degraded and unrecoverable evidence for Scottish glass which have the potential to reveal the spiritual influences and attitudes which led to the decorative patterns and colours observable in surviving assemblages of fragments.

As more glass is recovered from archaeological excavations, and scientific processes become more precise, it may be possible at some future stage to recreate a medieval Scottish church window by understanding the materials used to manufacture the glass, and the colours, forms and the deeper liturgical meaning. In the meantime, however, interdisciplinary collaboration between heritage scientists and liturgical historians can begin to combine the systematic cataloguing of all Scottish-medieval-church glass assemblages in museum, heritage agency, church and private custody; the scientific analysis of the component properties of suitable samples to determine material composition and provenance; then the connection of these glass shards to what can be known of the medieval liturgical contexts over time of Scottish pre-Reformation churches. This is the ambition of an emerging project bringing together scholars at the universities of Heriot Watt and Stirling. In such a manner might conservators and scholars, as well as church custodians and visitors, arrive at a means to better understand this vital if seemingly lost material heritage from Scotland’s Middle Ages.

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