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The Church Choir Glazing of Batalha, Portugal: Commission, Programme, Function, Authorship, Models, and Work Organization (1514–1531)

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Les vitraux du chœur de l'église de Batalha, au Portugal : commande, programme, fonction, auteurs, modèles et organisation du travail (1514-1531) – Résumé

L'ensemble de vitraux du presbytère de Batalha est un des produits de la réforme entreprise par le roi Manuel I^{er}, dans ce couvent de l'ordre des Prêcheurs, pendant les dernières années du XV^e siècle et les deux premières décennies du siècle suivant. La réforme spirituelle voulue par ce souverain et déterminée par le Chapitre général de l'ordre, en 1501, devait amener la communauté conventuelle de Batalha à adopter l'observance. La décision de se faire ensevelir auprès de ses illustres ancêtres de la dynastie d'Avis, prise pendant les toutes premières années de son règne, est à l'origine d'un programme artistique dont le témoignage le plus extraordinaire est le réaménagement de la chapelle funéraire commencée par son grand-père, le roi Duarte. Des changements dans la politique royale de prestige furent à la base du ralentissement des travaux, d'ailleurs jamais achevés, dans le chantier. Pourtant, la série de vitraux du chœur, derrière laquelle se trouve la chapelle funéraire, pût être menée à bien, en dépit de sa fortune

troublée par le décès, en 1518, de son premier créateur, le peintre de retables et de verre Francisco Henriques.

Cet article exploite la contribution définitive d'Henriques à l'incorporation, dans la peinture sur verre portugaise, d'acquisitions de la peinture monumentale sur panneau destinée à des autels. Le succès de cette contribution est d'ailleurs confirmé par l'œuvre des artistes qui durent finir l'ensemble du presbytère. Quoique d'une façon assez limitée, ce qu'on trouve encore sur place d'attribuable à Henriques fournit d'intéressantes informations sur l'organisation du travail en équipe sous la direction d'un seul maître peintre-verrier.

La découverte récente d'un document concernant une vaste commande de vitraux pour la chapelle du palais royal de Coimbra, en 1527, permet de défendre plus solidement le type d'organisation qu'on peut entrevoir à Batalha, aussi bien que de formuler de nouvelles hypothèses au sujet des artistes qui purent y avoir travaillé, suite à la mort de Henriques. Parmi ces artistes, on trouve Estêvão Tomás lui aussi peintre-verrier et peintre de retables.

The church choir glazing of Batalha, Portugal: commission, programme, function, authorship, models and work organization (1514–1531) – Abstract

The set of stained-glass windows in the presbytery of Batalha is one of the products of the reform undertaken by King Manuel I, in this convent of the Order of Preachers, during the last years of the 15th century and the first two decades of the following century. The spiritual reform desired by this sovereign and decreed by the General Chapter of the Order, in 1501, was to lead the conventual community of Batalha to adopt the observance. Manuel's decision to be buried with his illustrious ancestors of the Avis dynasty, taken during the very first years of his reign, is at the origin of an artistic programme whose most extraordinary testimony is the redevelopment of the funeral chapel started by his grandfather, King Duarte. Changes in royal policy were at the root of the slowing down of work on the site, which was never completed. However, the series of stained-glass windows in the choir, behind which is the funeral chapel, were finished, despite the chapel's fortune, further troubled by

the death in 1518 of its first creator, the painter of altarpieces and glass Francisco Henriques.

This article explores Henrique's definitive contribution to the incorporation into Portuguese glass painting of solutions originating in monumental panel painting intended for altars. The success of this contribution is confirmed by the work of the artists who had to finish the entire presbytery. Albeit in a rather limited way, what can still be found locally attributable to Henriques provides interesting information on the organization of teamwork under the direction of a single master glass painter.

The recent discovery of a document concerning a large order for stained-glass windows for the chapel of the royal palace of Coimbra, in 1527, makes it possible to define more firmly the type of organization that can be glimpsed in Batalha, as well as to formulate new hypotheses about the artists who may have worked there, following the death of Henriques. Among these artists is Estêvão Tomás, himself, like Henriques, a painter of glass and altarpieces.

1. King Manuel I's reform of the monastery of Batalha

Following various actions of King Manuel I (r. 1495-1521) in the most influential of Portuguese royal monastic foundations, notably the convent of Christ which had been seat of the Knights Templar, in Tomar, this monarch was committed to reform the monastery of Batalha on both spiritual and material grounds, effective in the early years of the 16th century. Such reforms were part of a late medieval and early modern strategy of the Crown to gain power and influence over religious communities, their property and territory, on the one hand, and to redesign the monarch's image at an imperial scale in symbolic, foundational places, on the other hand. Tomar stood for the foundation of the Portuguese monarchy itself and Batalha for the confirmation of independence in the Royal Battle of 1385. Such power statements were urged by the fact that Manuel I was not a direct successor of João II and had become a monarch in a rather accidental way. However, these statements were strengthened by the circumstance that he was becoming an emperor on a worldwide scale since the discovery of the sea route to India by Vasco da Gama in 1498.

The monastery of Batalha had served as a pantheon for the dynasty of Avis since 1416, when Philippa of Lancaster's remains were buried in the church. An earlier autonomous funerary chapel, commissioned by the founder of the monastery, King João I, and aligned with the west front of the church was finished in 1434. A few years later, in 1437, construction of another chapel located behind the church choir was started under the orders of King Duarte, João I's successor. One year later both the king and the architect died but the works proceeded up to around 1477, when they were suspended for approximately two decades. After ascending to the throne in 1495, one of the first concerns of King Manuel I seems to have been the completion of his grandfather's chapel, where he himself was to be buried. Therefore it is most probable that the artistic programme implemented by this monarch in Batalha, including two great stained-glass ensembles, started here. Most of the vaulting of the radiating chapels awaited building and so did the central octagonal structure which was to bear a star-shaped monumental vault, and the vaulting of the narthex that was to connect the building to the church by demolishing the rear walls of two side chapels. The work could have restarted straight away in 1495 under the direction of Master Mateus Fernandes, who had made his apprenticeship in Batalha but had been dismissed from its works between 1480 and 1490. During this period he had most probably been active in the Capilla de los Condestables, in Burgos cathedral, and possibly also in the monastery of San Juan de los Reyes, Toledo, as testified by vaulting and decorative solutions used in Batalha which were unknown in the western regions of the Iberian Peninsula until that point.⁴⁸⁰ In fact, King Manuel I seems to have been aware of the high rank and suitability of this architect for his own specific purposes. Some aspects of the funerary chapel, besides the vaults, were redesigned; the expected flying buttresses of the central body gave way to exuberant massive buttresses and a certainly already existing portal was replaced by another, very impressive one. Complying with the clauses of his father's will, King João III (r. 1521-1557) still succeeded at having the narthex vaulted, but neither the vault of the central octagonal body, nor the connection to the church were ever carried out. Manuel I was buried in the Jeronymite monastery of Belém in Lisbon.

In 1501 the General Chapter of the Order of Preachers held in Rome decreed, at the insistence of King Manuel I, that the community of Batalha should be reformed in order to join the Observant branch of the Order.⁴⁸¹ This is the most important reason why other substantial interventions started to take place in the monastery from this date onwards, especially in the ceremonial cloister whose thirty window bays were filled with exquisite tracery. The wash basin near the refectory and a new chapter house located at the east end of the former dormitory were also built during this period under the supervision of Mateus Fernandes. In fact, the former chapter house had been used as a funerary chapel for King Afonso V and his grandson nearly since its completion as no more burials were possible in João I's chapel, while the one founded by King Duarte was far from being achieved. The spiritual reform of Batalha took longer than the related architectural improvements: observance can be confirmed as being in force only until 1519.⁴⁸² In 1515 Mateus Fernandes had received significant recognition of his merits and was the first known architect of Batalha to be buried in the church.

⁴⁸⁰ Pedro REDOL, Orlando JORGE, "As Capelas Imperfeitas do Mosteiro da Batalha: arqueologia e história da sua construção", *Cadernos de estudos leirienses*, 5, 2015, pp. 301-316.

⁴⁸¹ Saul António GOMES, *Fontes Históricas e Artísticas do Mosteiro da Batalha (Séculos XIV a XVII)*, vol. III, Instituto Português do Património Arquitectónico, 2004, p. 131.

⁴⁸² Idem, p. 444.

2. The stained-glass programme

No written evidence relating directly to the windows in the church choir and chapter house of Batalha is known. These assets, dated solely by two painted windows bearing the inscription 1514, are an important part of the manueline reform. The archives only reflect the activity of a certain Master João, glass painter to the King, who is recorded as established in Batalha from 1483 until his death in 1529.⁴⁸³ Two documents mention the delivery of panels with depictions of *Palm Sunday* scenes and the *Last Supper* in a window of the south aisle of the church, in 1508, and the installation of stained-glass windows in the sacristy by this artist, in 1509.⁴⁸⁴ The painting style to be found in some tracery panels of the sacristy still *in situ* allowed us to identify a panel from the above-mentioned church window depicting Christ from the *Last Supper*. Along with another fragment, which may have belonged to a scene of the *Marriage at Cana*, these remains show that Master João definitely broke with the southern German graphic tradition of the monastery workshop and introduced a realistic painting style full of subtlety, which is to be found neither in the chapter house nor in the choir windows. We are persuaded that João could have come from the Low Countries at a rather young age considering his long career in Batalha. Obviously the commissions of the aforementioned church window and the sacristy were part of the King's ongoing artistic reform supervised by a specific officer, an especially educated member of the local religious community responsible for sanctioning the choice of subjects and the way they were to be depicted.⁴⁸⁵

The iconographic programme of the church choir has been much reworked through the centuries, but acceptable reconstructions can be put forward as the surviving evidence clearly shows that it derives from existing monumental altarpiece programmes. Stained glass in the church choir and chapter house

effectively stood in for altarpieces: in connection with the main altar and King Duarte's tomb, in the church, and serving the altar used for service in memory of King Afonso V and Prince Afonso, in the chapter house. Fig. 1 suggests a reconstruction.

At the bottom left and right extremes, as expected, stood the royal portraits, and above each of them a banner-bearing figure.

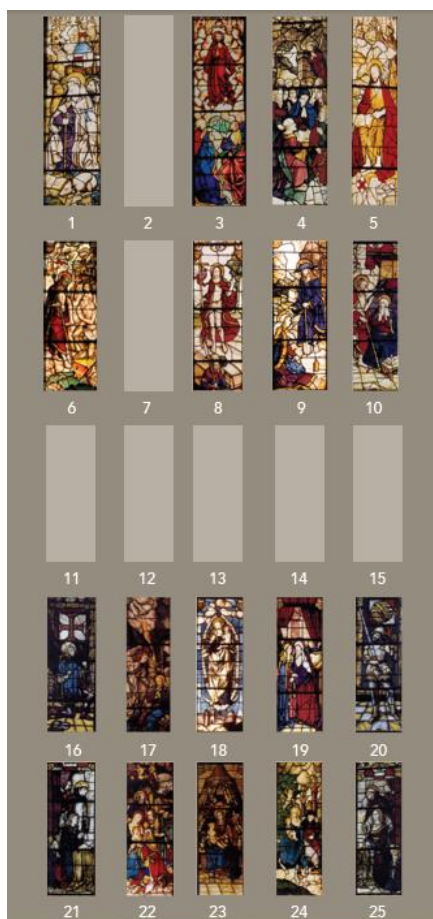


Fig. 1. Reconstruction of the church choir glazing of Batalha

- 1 – St Anthony
- 2 – Lost
- 3 – Ascension
- 4 – Pentecost
- 5 – St John the Baptist
- 6 – Descent into limbo
- 7 – Lost
- 8 – Resurrection
- 9 – *Noli me tangere*
- 10 – Apparition of Christ to the Virgin
- 11 to 15 – Lost
- 16 – Custodian angel of Portugal
- 17 – Annunciation
- 18 – Our Lady of the Rosary
- 19 – Visitation
- 20 – Banner-bearing warrior
- 21 – King Manuel I and his sons accompanied by St Dominic
- 22 – Adoration of the Magi
- 23 – Maestà
- 24 – Flight into Egypt
- 25 – Queen Maria and her daughters accompanied by St Peter Martyr

⁴⁸³ Pedro REDOL, *O Mosteiro da Batalha e o Vitral em Portugal nos Séculos XV e XVI*, Câmara Municipal da Batalha, 2003, p. 134.

⁴⁸⁴ Idem, p. 135.

⁴⁸⁵ Saul António GOMES, *O Mosteiro de Santa Maria da Vitória no Século XV*, Instituto de História da Arte da Faculdade de Letras da Universidade de Coimbra, p. 74-76.

The highest central position in the upper storey should be occupied by the *Ascension*, placed above the *Resurrection*. *St Anthony* and *St John the Baptist* were certainly already to be found in the far left and right positions of the top row. The adjacent two scenes were, in chronological biblical order as usual for altarpiece programmes, the still existing *Pentecost* to the left of the *Ascension* and a probable *Supper at Emmaus* to its right. The following row below was occupied (as presently) by four scenes of the Glorious Life of Christ; the missing fifth scene, could have been the *Incredulity of St Thomas*. The existing *Adoration of the Magi* and *Flight into Egypt* along with two devotional images of the Virgin and Child which currently appear in central positions in wooden altarpieces, often in the form of sculptures, suggest that the lower register was devoted to scenes of the life of the Virgin Mary. Bearing in mind the capital role of the Preachers in establishing the programme, an hypothesis for the whole lost bottom row of the upper register would be a series of Eucharistic scenes.

The close formal relationship between this ensemble and contemporary gilded and painted wooden altarpieces is also patently clear in both the composition and style of individual scenes. The work of at least six different painters can be established on these grounds. In the choir, *St Anthony*, whose temptation was inspired by Martin Schongauer's engraving on this subject, was carried out by the same artist that painted the chapter house glazing and the two banner-bearing figures in the choir. *Our Lady of the Rosary* and the Virgin of the *Annunciation* are more exquisitely painted than the remainder of the choir glazing and present the same facial features: ovoid shape, with high eyebrows, fine chins and sinuous mouths enhanced with grisaille. The *Adoration of the Magi* and the *Flight into Egypt*, on the other hand, exhibit a rather sketchy execution and are similar in many respects to the works of panel painters of the twenties and thirties of the 16th century, notably the Master of Paraíso, Gregório Lopes and Garcia Fernandes. The royal portraits whose style remains more difficult to attribute to individuals are close in certain aspects to the work of the Master of Lourinhã. The neatly raphaellesque figure of the virtuosically painted *Maestà* featuring a fabric canopy and *drap d'honneur* betrays the inspiration of circulating engravings most probably via a Flemish artist. Finally, the *Visitation*, *Descent into limbo*, the *Noli me tangere*, *Christ appearing to his Mother*, the *Ascension* and *Pentecost* are related to the work of Francisco Henriques for their composition and character depiction.

3. Francisco Henriques and his team

The iconography of the *Ascension* and *Pentecost* had already been used in Portugal in the major altarpiece of Viseu cathedral (1501–1506) and in a secondary one in the church of the convent of St Francis in Évora (1508–1510). The name of Francisco Henriques appears in various written documents concerning the works in Évora dated between 1508 and 1510.⁴⁸⁶ This evidence is interesting for several reasons: the direct involvement of the King in the works, in connection with his steward and the artist himself; the role of Francisco Henriques simultaneously as a panel, sculpture and glass painter; and references to stained-glass commissions addressed to Henriques for two other monasteries closely linked to the Crown (Santa Maria da Pena, in Sintra, and Santa Cruz, in Coimbra).

In Viseu, as in Batalha, no document explicitly mentions the intervention of Henriques. The style of the major altar of the cathedral is very heterogeneous and the iconographic repertoire it shares with the windows of Batalha was much too widespread for one to conclude that they are the work of the same artist. The comparisons, however, are most striking: the face pattern and the ratio of proportion between the eyes, the nose and mouth of the figures in Viseu are similar to those of the figures of Évora and Batalha. In addition, in order to distinguish characters placed side by side the same devices are used in Batalha, Évora and Viseu: the juxtaposition of variations of the same basic pattern of large, bony, loose faces with thin, slightly curved noses. Relying on these characteristics, following Cruz Teixeira,⁴⁸⁷ historians of Portuguese painting of this period have gradually agreed on the probable participation of Francisco Henriques in the works of Viseu, which were for a very long time incorrectly attributed to Vasco Fernandes.

⁴⁸⁶ Published by Gabriel PEREIRA, *Documentos históricos da cidade de Évora*, vol. III, Typographia da Casa Pia, Évora, 1891, pp. 5-13, and José PESSANHA, "Francisco Henriques", *Arte Portuguesa*, vol. I, n.º 4, 1895, p. 84-85.

⁴⁸⁷ José Carlos da Cruz TEIXEIRA, *A pintura portuguesa do Renascimento*, vol. II, Universidade Nova de Lisboa, Lisbon, 1991, pp. 459-470.

Other known aspects of the work of Henriques in Évora include the major altarpiece and six secondary ones (all the painted glass is lost), such as certain mannerisms in the attitudes of the figures or the discreet continuity of the compositional plans, described by Cruz Teixeira as "the exceptional expressive quality of the line [...] that can affix itself to structure",⁴⁸⁸ allow us to recognize the activity of Francisco Henriques in Batalha. This was certainly also what led Reynaldo dos Santos to propose, at an early stage, that the cartoons for the chapter house window might have been designed by the painter,⁴⁸⁹ even though the glass painting had been carried out by another, undoubtedly less talented artist, as already seen.

Unlike all the glass painters of the period whose records are known, Henriques is never named "mestre vidreiro" but simply "mestre" and he managed to get paid the highest known price in the history of ancient Portuguese stained glass. Francisco Henriques undoubtedly enjoyed special status, as he was integrated into a privileged social network, which included the most prominent artists of the period, and certainly contributed to the fact that he was awarded the courtly title of "passavante Santarém" by King Manuel I. In a document dated 1540 he is described by his son in law, the painter Garcia Fernandes, as the "best painter of that time".⁴⁹⁰ His skills as a master glass painter are also confirmed by the fact that glazing tasks were carried out by other workers in the documented cases of Coimbra and Évora. However Henriques was not Portuguese. In a letter dated 1510 to his steward in Évora, the King ordered that the sculpture of St Francis that should figure in the centre of the altarpiece be polychromed, "richly, in the same way that Francisco Henriques says he is going to paint the one in Lisbon and as they are painted in his homeland".⁴⁹¹ The already mentioned document dated 1540 says more: Henriques "summoned artists from Flanders to help him".⁴⁹² Why would he seek for collaborators in Flanders? Certainly because he could persuade the King that this was the best option which he would of course not propose without knowing the corresponding reality. This information has led historians to assume that Henriques was Flemish and that his name would have been rendered in Portuguese similarly to many other foreign artists. It is possible that the artist's documented journey of



Fig. 2. Monastery of Batalha, church choir, *Descent into Limbo* (attrib. Francisco Henriques), c.1514. Photograph by José Manuel.

⁴⁸⁸ Idem, p. 446.

⁴⁸⁹ Reynaldo dos SANTOS, *Guia de Portugal*, vol. II, Biblioteca Nacional de Lisboa, Lisboa, 1927, p. 683.

⁴⁹⁰ SOUSA VITERBO, *Notícia de alguns pintores portugueses e de outros que sendo estrangeiros exerceram a sua arte em Portugal*, vol. I, Academia das Ciências, Lisboa, 1903, p. 59-64.

⁴⁹¹ PESSANHA, p. 85

⁴⁹² VITERBO, pp. 59-64.

1512, during which he was to collect 1322 pounds of pepper from Casa da Índia in Lisbon, at the King's orders, and to deliver the merchandise to his foreman in Antwerp, had the final aim of recruiting painters.⁴⁹³ In 1518 Henriques was carrying out another royal commission at the spire of Limoeiro Palace in Lisbon when he was struck by an outbreak of the Black Death together with all his team.



Returning to Batalha and bearing in mind both the above listed artistic characteristics and the available indirect written evidence, it is possible to suggest that Francisco Henriques played a major role together with the local religious officer in the definition of the programme for both the chapter house and choir glazing. The former is dated 1514 but the latter, though started in the same year, was continued and finished much later as shown by the *Adoration of the Magi*, the *Flight into Egypt* and the *Maestà*, all liable to have been painted only in the twenties and early thirties of the 16th century. Henriques may have designed the cartoons for all the remaining scenes but, as already noticed, glass painting assignable to him is restricted to the five surviving depictions of the Glorious Life of Christ of which fig. 2 shows an example. As happened elsewhere, namely with the Limoeiro palace paintings in Lisbon, which could have been in progress at the same time as the ones in Batalha, there was a considerable team at work in the church choir glazing which interestingly includes the chapter house painter but apparently not Master João.

The origin of Francisco Henriques is a matter that inevitably comes to discussion. In spite of the obvious tribute to Flemish realism, no comparable painted glass is known to have been produced in Flanders. The same can be said of the artist's panel paintings. As already noted by Yvette Van den Bemden, the use of such repertoire as engravings by Martin Schongauer, namely in *The Descent into limbo* and the *Temptation of St Anthony*, similarities between the *Apparition of Christ to His Mother* in Batalha and the same subject by Van der Weyden in the Miraflores Triptych, as well as Christ's hat and a Flemish country house in the *Noli me tangere*, seem to betray the remote origin of the painter.⁴⁹⁴ It is often ignored that an artist's career is a dynamic process. Considering that Henriques had marriageable daughters in 1518 and that he himself had married one of the royal painter Jorge Afonso's sisters, it is normally assumed that he arrived in Portugal around 1500, certainly as a young, not very experienced artist, possessing nevertheless the current workshop training a painter would have received but developing his abilities and skills in Portugal.

4. Aesthetic renovation in the time of King João III

The *Adoration of the Magi* and the *Flight into Egypt* show that the works in Batalha were handed on to a painter of a younger generation, as happened in Limoeiro, where the successor was Garcia Fernandes. However, the *Maestà* (fig. 3) with its long proportions and affected attitude has no point of comparison in

Fig. 3. Monastery of Batalha, church choir, *Maestà* (attrib. Pero Picardo), c.1531. Photograph by José Manuel.

⁴⁹³ Arquivo Nacional da Torre do Tombo, Corpo Cronológico, Parte I, m. 10, doc. 95.

⁴⁹⁴ Yvette VANDEN BEMDEN, "Le vitrail des XV^e et XVI^e siècles dans les anciens Pays-Bas", in Pedro REDOL (ed.), *O vitral: história, conservação e restauro*, Instituto Português do Património Arquitectónico, Lisboa, 2000, p. 57-58, 64.

Portuguese painting before the middle of the century when the first mannerist manifestations make their appearance. The raphäelesque style of the figures and the classical throne, however, contrast with the northern, brocade canopy.

A document, recently revealed by Francisco Bilou, shows that four different glass painters were working in six huge windows of the royal palace chapel of Coimbra in 1527.⁴⁹⁵ Curiously one of them was, by then, already senior Master João who had carried out another big commission on his own for the convent of St. Francis in Lisbon six years earlier. All the rest were foreigners: Estêvão Tomás, Pero Picardo (from Picardy) and Pero Francês (French). The former at least was also a panel painter of whom three paintings from an altarpiece of the monastery of S. Bento de Cástris, in Évora, have been identified.⁴⁹⁶ They illustrate a close affinity with the work of Garcia Fernandes which allows us to formulate the hypothesis that Estêvão Tomás was the author of both the *Adoration of the Magi* and the *Flight into Egypt*. More interestingly, the draft of a contract to be signed between Pero Picardo and the illustrious reformer of the monastery of Santa Cruz in Coimbra, Friar Brás de Braga, dated 1531, explicitly refers to the fact that the artist resided in Batalha, which makes him the most probable author of the *Maestà* so far.

5. Note on the composition of 15th and 16th century stained-glass materials in Batalha

Various 15th and 16th century glass fragments from stained-glass panels in the monastery of Batalha were analyzed for the current investigation and previously by Robert Brill⁴⁹⁷ by combining various non-destructive techniques, such as Energy Dispersive X-ray fluorescence and UV-Vis spectroscopy. It was thus possible to ascertain the composition of the colourless and coloured glasses and their paint, grisaille and yellow silver stain, used in both the manufacture of late medieval/early modern stained glass and in the restorations carried out later.

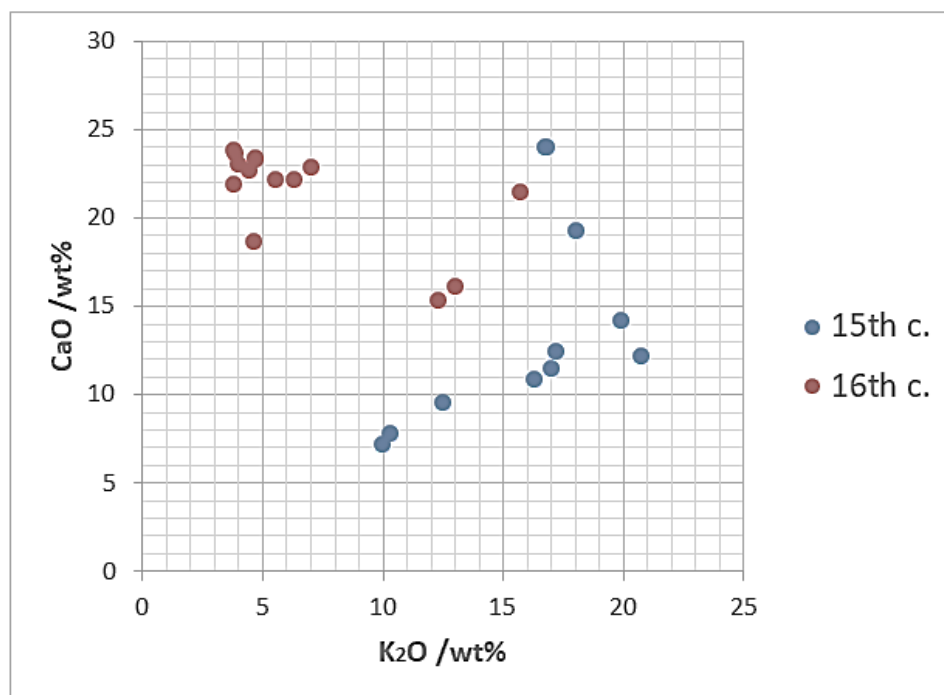


Fig. 4. K₂O vs. CaO concentration (wt.%) in glass from the north aisle (15th century), church choir and Founder's Chapel (16th century).

⁴⁹⁵ Francisco Bilou, "O pintor-vitralista Estêvão Tomás e o retábulo do mosteiro de São Bento de Cástris, em Évora", available at https://www.academia.edu/39814632/O_PINTOR-VITRALISTA_ESTEV%C3%83O_TOM%C3%81S_E_O_RET%C3%81BULO_DO_MOSTEIRO_DE_S%C3%83O_BENTO_DE_C%C3%81STRIS_EM_%C3%89VORA [accessed 20 November 2019]

⁴⁹⁶ BILOU; and Antónia Fialho CONDE and Vitor SERRÃO, "A encomenda de retábulo para o mosteiro de S. Bento de Cástris em 1534: mecenas, artistas e agentes envolvidos", *Artis – revista de história da arte e ciências do património*, n.º 3, 2015, pp. 9-15.

⁴⁹⁷ Robert H., BRILL, *Chemical Analysis of Early Glass*, vol. 2, New York, The Corning Museum of Glass, 1999, table XI AP.

Composition analysis of the different glasses and their representation in a binary composition diagram $[K_2O]$ vs. $[CaO]$ (fig. 4) allowed the establishment of distinct groupings by compositions, regardless of their location in the panels. Comparison with the dates historically assigned to different fragments revealed a clear correlation between the constituted groups and well-defined historical periods. The composition-period relation thus established becomes the guide for the attribution of an element's date or historical period, according to its composition: original calco-potassic glasses with low silica were produced in the 15th and 16th centuries. Samples with the highest content of K_2O were recognized as dating from the 15th century, including all samples from the north aisle. Samples dating from the 16th century, namely in the church choir and Founder's Chapel, present a lower potassium oxide content with the introduction of higher contents of sodium oxide, and a more homogenous composition. Nevertheless, three samples historically dated from the 16th century present a composition that shares the same characteristics of 15th century glass, which maybe due to the use of already available glass. Changes in composition in the turn of the century were accompanied by changes in glass manufacture – from crown to cylinder – and find a parallel in the composition of archaeological vessel glass of the period which suggests that the analyzed glass was not imported.

The analysis by UV-Vis absorption spectroscopy allowed the identification of mechanisms responsible for glass colour: in general, this is a consequence of the existence of metal ions in oxidation states and well-defined coordination schemes. This is the case of the purple, turquoise, blue and green glasses analyzed, coloured with manganese copper and cobalt, respectively.

Grisaille is produced by mixing ground glass with oxides or other compounds of iron, copper, and lead in very different proportions and may have different shades of brown to black. In the samples studied, the main variation found to this rule was the content of zinc, *circa* 5 wt.% for the 15th century samples, that disappears in the 16th century.

Yellow silver-stain painting consists of the use of silver, sometimes with the presence of copper (suggesting the use of Cu-Ag alloys), which is applied in suspension to the surface of the glass and, after firing, takes on a shade of pale yellow to strong orange. From the characterization of the composition of Batalha stained glass, it can be concluded that mixtures of silver and copper were used in the production of 16th century silver-stainyellow.

6. Closing remarks

The research shows that Estêvão Tomás shared with Francisco Henriques the status not only of an altarpiece painter but also of a glass painter, a skill for which the prices documented for Henriques' work attest to the artist's superior qualification. Relationships between altarpiece painting and stained glass during the 15th and 16th century are well illustrated throughout Western Europe, but the coincidence of the related skills in the same person is not often documented. It becomes clearer now that until António Taca (I), stepson of Master João and his successor in Batalha, from 1529 onwards, the known glaziers and glass painters were all foreigners. The fact that a master attached to the royal works of Batalha occasionally designed and carried out stained glass commissions for other buildings remained unchanged with António Taca (I), even though at much lower prices. Besides this circumstance, his role in Batalha came to be mostly the repair of previously existing windows. However, during two generations, first with Francisco Henriques and then with Estêvão Tomás, overlapping the rule of Manuel I and João III, huge stained-glass windows, nearly all lost, except for Batalha, were planned, contracted, certainly designed in the form of cartoons and directed by altarpiece painters who led their own workshops, bringing together a number of qualified artists, older or their own contemporaries. This seems to have been the most creative period for stained-glass production in Portugal before the 20th century.

