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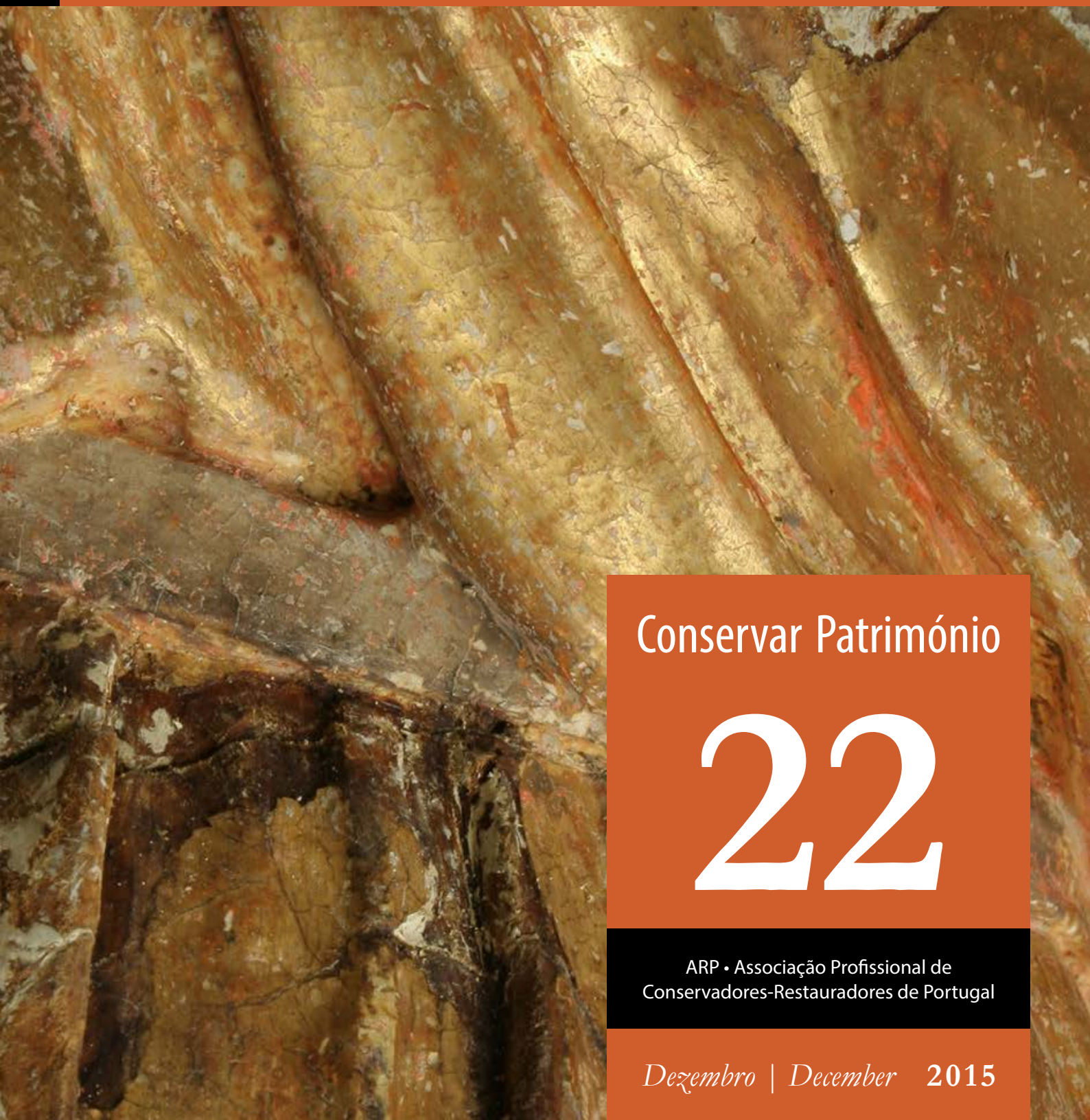
GILT-EnArt 2015

Gilding Materials and Techniques in European Art

Évora



Conservar Património

22

ARP • Associação Profissional de Conservadores-Restauradores de Portugal

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Typical conservation problems of polychrome wooden sculptures in Slovenia, pp. 17-27

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Apresentação

OS materiais e as técnicas de douramento foram os principais temas da conferência internacional GILT-EnArt2015, *que decorreu na Universidade de Évora de 25 a 27 de Maio de 2015, organizada com o apoio financeiro da Fundação para a Ciência e Tecnologia (FCT-MCTES). As seis sessões temáticas incluíram comunicações orais e em painel cobrindo as principais componentes do projecto de investigação* GILT-Teller *que patrocinou este evento. Assim, investigações histórico-documentais, intervenções de conservação e restauro e análises científicas relativas a artefactos de diferentes tipologias foram discutidas numa plataforma interdisciplinar que contou com 100 participantes oriundos de dezoito países.*

Este número da Conservar Património *inclui sete artigos resultantes de comunicações orais e sob a forma de painel, apresentadas durante a conferência, incidindo sobre diferentes épocas históricas (do período medieval à época barroca) e áreas geográficas. O uso da folha de ouro e das suas imitações é assim apresentado e discutido numa perspectiva holística e interdisciplinar, envolvendo o conhecimento de historiadores de arte, conservadores-restauradores e cientistas.*

Um artigo apresenta as tradições de douramento desde a época medieval e compara-as com as técnicas mais modernas que substituem a folha de ouro por imitações. O papel e a polivalência dos douradores da época barroca no território português são discutidos em três artigos. Comparações entre diferentes materiais e técnicas de douramento em objectos de

Foreword

GILDING materials and techniques were the main topic of the first international conference GILT-EnArt2015, *held at the University of Évora between 25th and 27th of May 2015 and organized with the support of the Portuguese Foundation for Science and Technology (FCT-MCTES). The six sessions of the conference comprised oral and poster communications which spanned over the three main components of the* GILT-Teller *research project under the patronage of which this conference was organized. Thus, historical-documental researches, conservation-restoration interventions and scientific analyses on different typologies of gilded artefacts were discussed in an interdisciplinary platform, attended by 100 participants from eighteen countries.*

This number of Conservar Património *gathers seven papers from oral and poster communications of the conference, covering different historical epochs (from the Medieval period to the Baroque times) and geographical spaces. The use of gold leaf and its imitation are discussed from a holistic and interdisciplinary perspective, involving the expertise of art historians, conservator-restorers and scientists.*

One paper presents the gilding traditions since Medieval times and compares them with more modern techniques where substitutes of gold leaf are used. The role and polyvalence of gilders in Baroque epoch in the Portuguese territory is presented in three papers. Comparisons between the gilding materials and techniques in different typologies of artefacts,

diferentes tipologias, como as esculturas e os retábulos, são feitas através de casos de estudo do património português (dois artigos). Problemas de conservação típicos, incluindo a avaliação do estado de conservação de estruturas douradas, são também considerados e debatidos num artigo focado nas esculturas em madeira policromada da Eslovénia.

Irina Sandu
Organizadora e Presidente da Conferência

such as sculptures and altarpieces, are done with particular regard to the heritage present on Portuguese territory (two papers). Typical conservation issues, including the assessment of conservation state of gilded composites, are also taken into consideration in one paper, dealing with Slovenian polychrome wooden sculptures.

Irina Sandu
Organizer and Chair of the Conference

Artigo / Article

Dourar e pintar: a polivalência artística dos mestres douradores de Lisboa na época barroca

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Resumo

A versatilidade artística dos pintores douradores do período barroco em Lisboa está cabalmente documentada nos contratos de obra e nos livros de contas das várias irmandades, ordens religiosas e outros encomendadores. Tal como acontecia com entalhadores, pedreiros ou pintores de azulejo, os pintores douradores eram escolhidos pelos comitentes de obra a fim de elaborarem programas artísticos consentâneos com a noção barroca de *bel composto*. As encomendas, por vezes, não se referiam apenas ao douramento dos altares, mas incluíam o encarnar de figuras e o estofar de vestes das mesmas, bem como de pássaros e flores. De igual forma, a pintura de tectos e de colunas e a pintura imitando outros materiais, tais como o mármore, eram pedidos constantes. A polivalência artística da época, no que à pintura concerne, afere-se ainda pela constatação que muitos destes artistas executaram, também, pintura de cavalete, nomeadamente, para as capelas-mores, naves e sacristias.

Palavras-chave

Dourar
Pintar
Talha
Lisboa
Barroco

Gilding and painting: the artistic polyvalence of the gilders masters in Lisbon during the age of the baroque

Abstract

The artistic versatility of the gilding masters of the baroque period in Lisbon is fully documented on the work contracts and accounting books of the many brotherhoods, religious orders and other commissioners. As professionals like woodcarvers, masons and tile makers, the gilding masters were elected by the contractors to compose artistic programs that had to deal with the baroque notion of *bel composto*. Sometimes commissions reported to the gilding of the woodcarved altarpieces, the painting of areas of the altar that were meant to imitate other materials, like stone and painting ceilings and other areas. In addition to the gilding of the woodcarved altars, these professionals were often asked to *encarnar* and *estofar* the major images of the Virgin, Christ, saints, angels and *putti* and some of them also executed oil paintings for the main altars and other places of the churches, like the naves or vestries of the temples.

Keywords

Gilt
Painting
Woodcarving
Lisbon
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Introdução

Os pintores douradores do período barroco português (c. 1670-1750) eram contratados, não só para dourar as obras retabulares e as complementares, mas também para encarnar e estofar as de talha e escultura e para delinear programas decorativos que incluíam pinturas de tectos, colunas, cimalhas, vãos de portas e janelas, nichos e outros espaços dos templos, recorrendo maioritariamente à decoração de brutesco, à *chinoiserie*, e à imitação de outros materiais como a pedra, frequentemente, o mármore [1].

Estes artistas estavam, assim, incumbidos de levar a cabo todo o trabalho que se relacionasse com a aplicação de cor ao espaço intervencionado. Desde o dourado genérico da talha, até ao estofado das asas de pássaros, anjos e da roupagem das imagens de santos, passando pela encarnação das mãos e rostos e demais pele das figuras e culminando na execução pictórica de brutescos em tectos e colunas, na pintura de imitação de pedra, como são os embutidos fingidos ou o marmoreado, a sua acção ainda hoje se pode observar em várias igrejas portuguesas de norte a sul do país. O que esta versatilidade artística documenta é principalmente, como veremos adiante, a adaptação dos artistas da área da pintura a uma necessidade explícita do mercado de arte da época.

A obra de talha do período barroco assumia-se como uma das etapas de um processo mais complexo e totalizante, que passava habitualmente pela completa decoração do espaço envolvente. É comum assumir-se o douramento como a etapa finalizadora de uma obra de talha, já que o trabalho de entalhe era sempre a fase inicial e fundadora de qualquer projecto de guarnição de uma capela, que recorria a este expediente decorativo.

Actualmente, e em relação às obras que sabemos terem sido realizadas, são poucos os conjuntos decorativos remanescentes, que testemunham o gosto do barroco português, nos quais a azulejaria azul e branca, a talha dourada, a pintura de brutesco, a de cavalete e a pintura de imitação de outros materiais subsistem íntegros. Esta escassez, contudo, não se reporta à excepção de um gosto, mas antes a factores diversos responsáveis pela perda deste património. É notório o caso das perdas patrimoniais verificadas na sequência do terramoto de 1 de Novembro de 1755, mas igualmente aquelas resultantes da desamortização dos bens das ordens religiosas, segundo a lei liberal de 1834, as mudanças de gosto e ainda os restauros desadequados, pois a regra decorativa dos templos, *grosso modo,* entre os reinados de D. João IV e D. João V, foi a de guarnecer os interiores sacros com recurso aos expedientes decorativos acima mencionados.

A talha ocupava o seu lugar próprio num grande cenário montado por diversos artistas e artes, que confluíam para o sucesso da mensagem doutrinária. Esta passava, em primeiro lugar, pelo crivo imediato dos sentidos, deslumbrando e envolvendo os crentes com a sua prodigiosa riqueza, inventividade e, corolário dos anteriores, harmonia [2]. Do primeiro impacto à adesão incondicional, o menor espaço de tempo atestava o sucesso da missão.

Para melhor compreendermos os ambientes criados por estas artes no período cronológico a que nos reportamos, teremos necessariamente de nos socorrer de diversas fontes, para além dos testemunhos visuais ainda remanescentes, nomeadamente das descrições destes espaços elaboradas à época, dos documentos de inventário das irmandades e ordens religiosas, dos pagamentos por materiais e mão-de-obra a diversos artistas, registados em livros de termos e contabilísticos, aquando, por exemplo, da renovação de um determinado espaço sacro, entre outros suportes documentais. Boas fontes para o conhecimento dos interiores barrocos de Lisboa são algumas crónicas de ordens religiosas, bem como os relatos pós-terramoto produzidos pelos religiosos e outros responsáveis pelo património sacro que, ocupando-se em descrever o que foi perdido no grande sismo, oferecem-nos uma panorâmica dos interiores sacros da capital da época em estudo [3-7].

Uma capela barroca, quer fosse a principal do templo, quer fosse colateral, de nave, de sacristia ou de claustro, apresentava, regra geral, para além do altar e das suas imagens, o tecto pintado, uma tela na boca da tribuna e demais pinturas nas ilhargas, embutidos de mármore (um gosto que se implementou mais a sul do país), azulejaria, ourivesaria, têxteis e, em dias festivos, uma miríade de componentes adicionais que concorriam para o seu embelezamento e magnificência, como as velas, os arranjos de flores de papel e/ou de cera, as esculturas de vulto ou de roca, e ainda os panejamentos de diversos tecidos nobres como sedas e damascos que *vestiam* os altares, pela acção dos armadores [8].

A talha realizada durante este período cronológico não se limitou a guarnecer capelas, expandindo-se e desdobrando-se nos púlpitos, sanefas, órgãos, cadeirais, enquanto o azulejo invadia paredes e nichos, aplicando-se às mais variadas superfícies, às quais pode emprestar o seu cunho decorativo e didáctico. A pintura de brutesco estendeu-se dos tectos das capelas para os das naves, das sacristias, dos coros altos ou baixos e para as colunas, enquanto a de cavalete decorou os registos superiores das naves, por vezes os tectos, inserida em caixotões, os coros, os cadeirais, as sacristias, deixando os outros espaços restantes para a pintura decorativa imitando mármores simples ou polícromos.

É todo um conjunto que se articula e que dialoga, e que dialoga porque fala a mesma língua. A representação acântica que pontua na talha é parente próxima daquela que o azulejo, o embutido marmóreo e as composições de pintura de brutesco acolhem, os meninos atrevidos e buliçosos da talha enviam convites de olhares travessos aos seus congéneres do azulejo e da pintura de brutesco, estes reenviam o apelo àqueles que nas predelas e frontais de altar de mármores polícromos animam o espaço, com as posturas descontraídas da infância. As múltiplas flores e folhagens crescem com o mesmo viço e abundância no azulejo, na pintura e na talha, revelando assim que

um mesmo campo as viu florir e só a matéria em que se revelam, artificiosamente as separa.

Já se comprovou, por estudos recentes, as denominadas *contaminações* entre as artes que mencionamos, quer por via dos tratados de arquitectura e ornamentação e pela circulação de gravuras, quer pelo contacto com outras obras semelhantes e ainda pela convivência de artes e artistas nos mesmos espaços [9].

Actualmente, já não é possível o estudo desintegrado de uma arte, pela falácia que inevitavelmente incorre quem pretende ver nela um objecto passível de ser abordado isoladamente. Os aportes de outras visões, potenciados pelo enfoque específico em estudos como os de arquitectura, de ornamentação, dos materiais, dos artistas e sua clientela e das relações sociais colocam-nos mais perto da verdadeira história e essência dos objectos que abordamos.

O pintor dourador ou pintor de têmpera

O nosso contacto com a documentação produzida no âmbito da encomenda de obras de douramento de altares e mais pintura iniciou-se com a abordagem que fizemos às obras de talha da escola de Lisboa do período barroco [10]. Apesar do enfoque da investigação que desenvolvemos ter sido, até muito recentemente, colocado na produção da obra de talha existente e desaparecida e, correlativamente, dos seus profissionais, oficinas, relações de trabalho, sociais e familiares, que consubstanciou uma primeira etapa desbravadora deste universo ainda mal conhecido, considerámos sempre as obras de douramento e de pintura como um dos capítulos que mereceria um destaque próprio e mais alargado, que até agora nos tinha sido impossível realizar.

Continuam ainda hoje a ser incontornáveis os estudos nesta matéria desenvolvidos por Natália Ferreira-Alves na sua dissertação de doutoramento, na qual analisou, pela primeira vez, sistemática e criticamente, os contratos de douramento e de pintura aplicáveis a obras de talha. Historiando a sua crescente relevância, apontando artistas e clientelas e esclarecendo as diversas técnicas usadas, Ferreira-Alves, para além de clarificar todos os processos técnicos inerentes à arte do douramento e da pintura de altares, abriu novos horizontes para a compreensão da obra de talha como processo integral de entalhe, douramento e pintura [11, pp. 183-223]. Neste campo é igualmente de destacar o contributo de Vítor Serrão, que vem escrevendo ao longo de vários anos e tantos outros livros e artigos sobre esta matéria, colocando o enfoque na arte da pintura de brutesco, mas apontando sempre a sua correlação com campanhas mais vastas de douramento e pintura de altares [12].

Os estudos dedicados exclusivamente a pintores douradores de Lisboa, da época barroca, são escassos. No entanto, recentemente foi dado à estampa um artigo da autoria de Jorge Ferreira Paulo, que vem ajudar a colmatar esta lacuna. Neste ensaio, o autor traça a biografia pessoal e profissional do pintor-dourador Bernardo da Costa Barradas, inserindo a sua actividade no contexto mais vasto do ambiente sociocultural da época [13].

Neste âmbito é igualmente crucial que se destaquem as teses de doutoramento produzidas no contexto da disciplina de conservação e restauro, pela descrição dos materiais, das *receitas* e das técnicas e seu impacto no melhor ou pior estado de conservação de obras douradas e correlativa intervenção dos profissionais da área [14].

De agora em diante, contamos também com o contínuo acesso às informações produzidas pela equipa do projecto *Gilt-Teller*, que nos presenteará com os resultados de uma investigação, que cobriu vários campos de saber ligados à arte do douramento entre os anos de 1500 a 1850. Tomando como ponto de partida uma cronologia definida, com um contexto histórico-artístico preciso, a história da retabulística e da arte de dourar em Portugal foram alvo de investigação e estudo, permitindo o avanço para as análises laboratoriais e consequentes ilações tiradas no âmbito dos objectivos *a priori* definidos pelo projecto em causa [15].

Quanto aos pintores de têmpera da Lisboa barroca, e atentando nos regimentos da sua profissão, à guarda do arquivo da Câmara Municipal de Lisboa, constatamos que estes profissionais obedeciam às mesmas regras que os pintores de óleo. Note-se que o regimento dos douradores não enquadrava os profissionais que douravam a madeira, mas sim aqueles que douravam sobre metais. A distinção entre estes regimentos e, consequentemente entre os profissionais que executavam estas técnicas, levou a que alguns autores assumissem que os douradores a que o regimento aludia eram os mesmos que executavam o douramento e pintura decorativa em obra de talha e em tectos, colunas e outros espaços dos templos barrocos [11, p. 74; 16].

A prova da distinção entre estes artistas encontra-se precisamente na letra e no espírito do regimento dos pintores. Este, ao estipular, logo na introdução, que "no mes de Janeiro de Cada hum anno os offiçiaes do offiçio dos pintores ASsi de oleo como de tempera se aJuntarão em hũa casa que elles para Jsso ordenarem", permite-nos imediatamente reconhecer quais os profissionais abrangidos pelo mesmo regimento. No entanto, é mais adiante no texto, no ponto 5, concretamente sobre o exame do ofício que cada profissional teria de fazer para lhe ser passada a carta de examinado, a qual lhe permitiria o exercício pleno da sua profissão, que se compreende cabalmente quais os profissionais abrangidos por estas regras:

> E o que de tempera ou fresco quiser usar faraa em parede a fresco. E em panno ou tauoa a tempera figura ou lauor romano ou grotesco querendo vsar de tudo. E fazendo o Sobredito ficara examinado de todas as cousas da dita pintura de tempera ou fresco Jmferiores.

E acrescenta no ponto 6:

> E o que de dourado ou estofado Somente quiSer vsar por mais não poder alcançar faraa hũa peça de ouro bornido e mate em a qual haueraa algum plano ou tauoa per si de dous palmos em que faça alem do dito dourado dous palmos de rapado e faraa mais hum pao de branco bornido E encarnaraa hum rostro de vulto de hũa virgem, de encarnação polida [17].

Ou seja, um pintor dourador poderia ser examinado apenas nas competências de dourador, as quais abrangiam o estofado de figuras e a encarnação das mesmas. Neste caso estariam aqueles mestres, que não se achando competentes para a arte da pintura decorativa de figuras e ornamentos, apenas se examinavam no que se referia às técnicas do dourado, estofado e encarnação. No entanto, estariam ainda, tal como todos os outros, sujeitos ao regimento dos pintores e não ao dos douradores.

Para compreendermos cabalmente a diferença entre o regimento dos pintores e o dos douradores, basta-nos a leitura de alguns itens deste último, nomeadamente, os pontos 5 e 6:

> E Todo o offiçial que Se examinar quiser Sabera muj bem cortar qualquer peça de ferro que lhe for dada para hauer de Ser dourada Sobre o dito ferro e Saber lhe a muj bem aSsentar o ouro a proveito das partes.
>
> Jtem Sabera dourar huns estribos Sobre ferro Tunecijs e huns ferros de Cabresto de destro tambem Sobre ferro, e aSsi mesmo Sabera dourar hũas estribeiras tuneçijs de cobre de ouro moido e folha em cima do moido, e assi prateara outras estribeiras de cobre que fiquem em prata branca e aSsi dourara de ferro Sobreprata [18].

Continuando a análise ao regimento dos mestres pintores, outros pontos do documento são igualmente elucidativos, como por exemplo, o n.º 13**:**

> quando algum official do dito offiçio Se poSer a examinar Senão Souber fazer o que Se contem em seu exame, os ditos examinadores o não examinarão E lhe mandarão que vaa aprender. E do dia que Se poSer aa tal examinação a Seis meSes o não tornarão a examinar E paSsados os ditos Seis meSes emtão Se poderaa poer outra uez a examinação, E Sendo apto lhe paSsarão Sua carta, e não o Sendo o tornarão outra uez a mandar aprender outros Seis meSes, e assi o farão tantas vezes quantas acharem que não Sabe fazer como o conteudo em Seu exame.

E acrescenta no ponto 18:

> E os Juizes do dito offiçio terão cargo de trinta en trinta dias visitar as tendas dos offiçiaes E fazer correição com o esCriuão E aSsi todas as maes vezes que neceSsario lhes pareçer. E as obras que acharem que não São feitas como deuem tomarão E leuarão aa Camara para Se fazer nisso o que for justiça E Se dar o castigo ao oficial conforme aa Culpa que lhe for achada.

Estas disposições visavam, afinal, assegurar que a profissão se mantinha dentro de uma escala de alta qualidade e de prestígio, abrangendo cada profissional isoladamente, mas também, e essencialmente, a classe a que pertenciam, pois a exigência de um trabalho bem feito e a vigilância eram constantes, chegando a configurar sanções exemplares para aqueles que pusessem em causa estes parâmetros de qualidade definidos pelo regimento.

Sobre as várias modalidades de pintura e seus artífices discorre o pintor e tratadista Felix da Costa Meesen, no seu ensaio *Antiguidade da Arte da Pintura,* datado de cerca de 1696 [19]. Nesta obra, Meesen defende hierarquias no seio da profissão, consoante o treino, aptidão e prática do pintor. Assim, o denominado *pintor científico* era aquele que possuía conhecimentos de Geometria, Arquitectura, Anatomia, Simetria, Perspectiva, para além do conhecimento daquilo que o autor denominava de *Histórias Divinas e Humanas*, sendo necessário ainda, para integrar esta categoria, ser dotado de imaginação. O pintor que apenas copiava por modelos, como as gravuras, sem lhes acrescentar nada de seu, era intitulado de *pintor de segundo grau*. Quanto ao último grau definido por Meesen, o terceiro, os pintores que nele se enquadravam eram desta forma definidos, segundo as suas aptidões:

> Os do terceiro gráo são os que pintam ou estofão as Imagens de escultura, fingindo e imitando sobre ouro brunhido, brocado brodado, tella, e primauera; e se chamão estofadores e o obrado estofado; dirivado este nome da palaura estofe, que em a lingoa Francesa inclue toda a sorte de seda dourada e listrada, juntamente alguma de lam.

Apesar de considerar esta uma modalidade de terceiro grau, como afirma, reconhece que:

> Em estas Pintura não requere tanta Arte como em a do primeiro gráo; mas contudo aquelle que tiuer mais noticia, e for debuxante imitará as cousas mais ajustadas ao natural e à Arte, fazendo com mais acerto os brocados, tellas, primaveras, grutescos, encarnações e colorido das roupas; semelhando tudo com propriedade ao natural, por causa do conhecimento as sciencias e Artes que tenho relatado, deuem saber os do primeiro gráo. E o que não tiuer esta noticia obrará sem acerto, e sem consideração; sendo nelle *só hum uso e não regra da Arte: Este não pode ser chamado Pintor* scientifico, porem somente Pintor Pratico por lhe faltarem as regras e preceitos para ser Pratico regular, ficando em graó de pouco mais que dourador.

Exclui, no entanto, da arte da pintura aqueles que somente sabem dourar, sem possuir mais competências no âmbito dessa modalidade:

> Há outros a que o vulgo chama Pintores sem o serem, os quais se deuem somente intitular Douradores. Porque o dourar não consiste mais que em huma regra geral, e hum uso sem discurso do entendimento em que o obrão. Sendo o mesmo o fazer qualquer obra limitada que huma de grande fabrica; por que não chegão a discursar nem se fundão em regras scientes, mais que seguindo somente hum exercício quotidiano (…). Estes douradores usão só de huma mecanica, e não de Arte;

> tendo usurpado o nome de Pintores que só se deue dar aos que tiuerem a Arte do Debuxo fundamento da Pintura, sendo o seu de Douradores, ou seja de brunhido, ou de mate sobre mordente a olio.

Para este tratadista, o título de pintor deveria ser usado apenas por aqueles que dominassem a arte do debuxo, pois esta era a ferramenta essencial e fundadora de qualquer obra de pintura, quer fosse de cavalete, quer fosse decorativa. De acordo com este entendimento, reconhecemos como membros da irmandade de S. Lucas vários artistas que não se inseriam no ofício da pintura, como por exemplo os escultores Manuel Machado, Belchior da Fonseca [10, vol. II, pp. 488-489, 545-547], Manuel dos Reis e Manuel Dias, que participavam activamente na vida da mesma instituição [20, pp. 74, 82].

A tónica que Felix da Costa Meesen coloca no conhecimento e na boa prática do debuxo como ferramenta essencial para os pintores, desde os que ele qualifica como de primeiro grau até aos de terceiro, revela bem da relevância desta aptidão no julgamento da qualidade das obras produzidas por aqueles mestres. Um profissional sem conhecimentos sólidos da arte do desenho e, consequentemente da capacidade para a sua prática, nunca passaria de um oficial mecânico.

A realidade que se constata nos múltiplos documentos de obra, na pertença de vários mestres pintores de têmpera à Irmandade de S. Lucas ou na inclusão destes profissionais no regimento dos demais pintores, confirmada pela apreciação feita por Felix da Costa Meesen, coloca estes artistas num patamar de qualidade potenciado e exigido pelos cânones estéticos da época. Entre os últimos anos da centúria de Seiscentos e os primeiros da de Setecentos, os interiores sacros portugueses conheceram transformações assinaláveis. Foi uma época de grandes empreendimentos construtivos, em que a arquitectura, a pintura e as artes decorativas foram chamadas a desempenhar um papel que dificilmente se repetiria na história da arte portuguesa.

De facto, o que os contratos de obra de douramento e pintura decorativa, da época barroca em Lisboa, entre outra documentação coeva, nos revelam é a primazia total dos pintores de têmpera na arrematação das empreitadas. A frequente complexidade das obras encomendadas não se compaginava com a sua entrega a artífices menos credenciados na arte, por tal, um simples dourador, que mais não dominasse que a arte mecânica do douramento, não tinha possibilidade de concorrer profissionalmente com o pintor de têmpera, que para além de dominar a técnica do douramento, base de qualquer formação na área, espraiava as suas aptidões nas restantes valências da pintura decorativa.

A polivalência artística

Um dos temas que actualmente vem ocupando com mais premência os historiadores das artes decorativas do barroco é a questão da polivalência artística. Se, no que concerne à arte da talha, Natália Ferreira-Alves, entre outros, já concordaram e provaram que tal prática era frequente, no que respeita à pintura e aos pintores, o tema torna-se mais sensível pelas implicações que o conceito comporta.

A pintura, considerada durante décadas pela historiografia da arte internacional e, consequentemente, pela portuguesa, como uma das belas-artes, a par da arquitectura e da escultura, inseria-se no grupo que se convencionou denominar de *artes maiores*. Os praticantes desta modalidade eram considerados artistas, enquanto os outros, os que se dedicavam às denominadas *artes menores* ou decorativas eram rotulados de artesãos. O tema da polivalência artística, mormente a dos pintores, foi durante algum tempo um tabu, pois não era expectável que, um artista que se dedicava à pintura de cavalete, uma actividade considerada *nobre* pudesse também fazer incursões na pintura de azulejo ou de tectos a têmpera, entrando assim naquela modalidade que se convencionou denominar *pintura decorativa*. No entanto, as pesquisas recentes apontam exactamente nesse sentido. Como já se comprovou, o pintor de azulejos António Pereira é, afinal, António Pereira Ravasco, conhecido como pintor a óleo [21] tal como Gabriel da Silva Paz que executou pintura a óleo e de brutesco [22]. Como José Meco demonstrou, Gabriel del Barco começou por ser pintor de tectos em brutesco, antes de ser pintor de azulejos [23], Raimundo do Couto, pintor de azulejos, pintou a óleo, António de Oliveira Bernardes pintou a óleo, em azulejos e em brutesco, bem como o conhecido pintor de azulejos Valentim de Almeida, que igualmente pintava a óleo [24-25].

Marcos da Cruz pintava a óleo, o que não o impediu de formar no seu atelier mestres de têmpera e de azulejo, como foram António de Oliveira Bernardes, Gabriel del Barco e António Pereira Ravasco. Para além disso, o mestre executou também pintura decorativa destinada à igreja do Loreto, bem como desenhos para o revestimento azulejar do lavabo da sacristia daquele templo [26].

Também Jerónimo da Silva, documentado pintor de óleo, não se coibiu de dourar o retábulo-mor da igreja das Comendadeiras de Avis do convento da Encarnação, pela quantia de 1 conto de réis [27].

Ao compulsarmos os assentos notariais de obra de douramento de talha das oficinas de Lisboa somos, invariavelmente, confrontados com a informação que o artista contratado é pintor de têmpera. Os casos sucedem-se ao longo dos reinados de D. Pedro II e D. João V.

Os textos dos contratos de obra elucidam claramente esta questão: Manuel Nunes, referido como pintor de óleo, é contratado para executar obra de douramento, estofo e encarnação de figuras do retábulo de Santa Ana e São Joaquim do convento do Carmo de Lisboa. Decorria o mês de Setembro de 1715, quando aos 28 dias, a irmandade de Santa Ana e São Joaquim, com assento no convento de Nossa Senhora do Carmo, de Lisboa contrata "Manoel Nunes Pintor de olio morador na dita Rua Noua" a fim de ele "hauer de dourar E

encarnar todas as figuras da dita cappela e estofar as Roupas das ditas figuras E tudo mais que for necessario para benefficio da obra por preso de tresentos e sincoenta mil reis" [28].

A 8 de Maio de 1677, a irmandade do Santíssimo Sacramento da igreja de N.ª S.ª do Socorro contrata João da Mota, pintor de têmpera, para dourar toda a obra de talha da sua capela-mor e estofar e encarnar quatro anjos do mesmo altar. Sabemos que João da Mota foi Mordomo da Irmandade de S. Lucas em 1678 e 1679, confirmando uma vez mais a participação destes mestres na mesa da dita instituição [29].

O texto contratual da obra da igreja do Socorro refere que:

> E da outra João da Mota Pintor de tempera morador nesta dita Cidade na Rua dos Ouriues do Ouro (…) para efeito de auer de dourar a Tribuna retabolo sacrario E toda a obra de talha que esta na dita cappela mor de nossa Senhora do Socorro E asj mais de por e retocar as faltas de ouro do resto da dita cappela mor E outro sj sara elle mestre pintor obrigado de estofar E encarnar os quatro Anjos que estão na dita Tribuna E isto em preso e quantia de setecentos E sincoenta mil reis [30].

A 5 de Junho de 1679, os mestres pintores António Rodrigues e José de Matos são contratados para dourar o altar de N.ª S.ª do Desamparo da igreja de São Francisco de Xabregas. Sobre a ligação destes artistas à Irmandade de S. Lucas, sabe-se que António Rodrigues foi Procurador da Irmandade entre os anos de 1671-2 e José de Matos foi Mordomo em 1670 e 1671 [29]. Uma informação relevante para a biografia profissional deste último artista, revela-o a viver em casa do pintor de óleo Marcos da Cruz, na qualidade de seu aprendiz [31].

O contrato de douramento do altar de N.ª S.ª do Desamparo revela que

> e da outra Antonio Rodrigues morador nesta cidade a Sam Christovão e Jozeph de Matos nella morador ao Boj Fermozo ambos pintores De tempera por elles partes em seus nomes e nos que representa foi dito a mj tabaliam perante as testemunhas ao diante nomeadas que estam contratados em elles Antonio Rodrigues e Jozeph de Matos hauerem de dourar a tribuna da capela da dita Senhora do Dezamparo (…) que elles mestres Dourarão a tribuna da capela do milhor ouro que for posiuel com obrigacam de estofarem maninos e sarafins e pasaros tudo de cada cor que pedir e milhor for e brilhar e assim maes Daram as portas da dita tribuna hum vernis e que as armas que estam por cima da dita capela as rasparão e porão as da dita Irmandade e serão as tintas as mais finas que ouuer; e o ouro o maes subido e corado [32].

A 8 de Julho de 1707, uma procuração passada pelo mestre pintor José Ferreira de Araújo, a seu cunhado António de Oliveira Bernardes, a fim de este cobrar da irmandade do Santíssimo Sacramento da igreja de S. João Baptista do Lumiar o que lhe estavam devendo pela obra de dourar o retábulo-mor e pintar o tecto da capela-mor, elucida-nos uma vez mais acerca da polivalência artística destes mestres:

> Como procurador que sou de meo cunhado Jozeph Ferreira de Arauio em uertude da procurasão asima resebi do senhor padre João Moreira Velho da menza do Santissimo da freguesia do Lumiar a quantia de quatrosentos mil reis em dinheiro de contado ao faser deste por conta do que se lhe deue prosedido do doirado e pintura da sua capela mor da dita Jgreia de que lhe dou esta procurasão digo quitasão para se lhe dar em conta quando se aiustar de todo o resto [33].

José Ferreira de Araújo teve igualmente funções de destaque no seio da Irmandade de S. Lucas, tendo sido Mordomo em 1687 e 1705 e Juiz em 1700-1701 e em 1712 [29, fls. 149v.º, 186v.º e 205]. As intervenções constantes de pintores de têmpera, conhecidos pela sua participação em múltiplos contratos de douramento, pintura de tectos, estofado e encarnação de imagens, nos assuntos da Irmandade de S. Lucas comprovam o seu envolvimento na vida da instituição. Exemplos de artistas que tiveram assento na Mesa da Irmandade e que reconhecemos como autores de várias obras de pintura destinadas às igrejas de Lisboa são frequentes: Amaro Pinheiro, autor da obra de douramento da igreja de S. Miguel de Alfama, cerca de 1699, foi Mordomo da Irmandade de S. Lucas em 1673, 1682-3, 1698 e em 1711 [29, fls. s.n., s.n., 187 e 209]. Em 1673 é referido por Garcês Teixeira, autor da edição referente à Irmandade de S. Lucas, Francisco Ferreira de Araújo, que foi pintor de brutesco [20, p. 70], em 1674, Manuel da Paz e Silva, retratista, pintor de óleo e de brutesco, que foi autor, entre muitas outras obras, do douramento e estofado da caixilharia do tecto da igreja de Nossa Senhora do Loreto e do douramento do altar-mor da igreja de Nossa Senhora dos Remédios, em Alfama [20, p. 70]. Raimundo do Couto, pintor de azulejos e a óleo, foi Mordomo da Irmandade em 1684 e 1685, em 1693 e em 1705-6, tendo sido Escrivão da mesma em 1702-3 [29, fls.142v.º-3,165, 205, 194v-195]. Em 1703 assinala-se o seu óbito [20, p. 76]. Em 1703-04 e em 1706-07 é mencionado Lourenço da Silva Paz (irmão de Manuel da Paz e Silva) como Juiz da Irmandade, tendo sido Procurador da mesma em 1711 [29, fls. 196, 203, 209]. Em 1711, Jerónimo da Silva, pintor de óleo, reconhecido pelas telas que pintou para a capela-mor da igreja de Nossa Senhora da Pena de Lisboa, tendo igualmente dourado o altar-mor da igreja da Encarnação das Comendadeiras de Avis, é referido como membro da Mesa da Irmandade [20, p. 79]. Em 1713, Francisco Paulo Abril (responsável pelo douramento da capela de Santo António da igreja de S. Roque) é mencionado como Mordomo da Irmandade [29, fl. 215]. A 5 de Agosto de 1715 refere-se António Pimenta Rolim, que entre outras obras foi o autor da pintura do tecto da capela-mor da igreja do convento do Santíssimo Sacramento dos padres Paulistas de Lisboa [20, p. 83]. Em 1717, Valentim de Almeida (pintor de óleo e de azulejos) é apontado como 2.º Assistente do Prefeito da Irmandade [20, p. 84]. Sobre

a actividade artística destes mestres pintores escreveu largamente Vítor Serrão [34].

Consideramos que a polivalência artística está intimamente ligada com a natureza das encomendas. O gosto da época impunha interiores profusamente decorados, naquilo que se convencionou denominar de *horror vacui*. Quando as restrições orçamentais não permitiam a execução de obras recorrendo a materiais nobres, a engenhosa solução encontrada passava pelo fingimento dos mesmos. É assim que, recorrentemente, em contratos de obra se menciona a encomenda de trabalhos de fingimento de pedraria ou têxteis. A magnificência dos interiores, à maneira da Roma papal, era desejada e cultivada, quer por ordens religiosas, quer por particulares e irmandades. Apesar de esta moda ser mais acentuada no reinado de D. João V, sabemos que nos anos anteriores, nomeadamente nos reinados de seu pai D. Pedro e seu tio D. Afonso VI, a insinuação do modo à romana já tinha colhido bons frutos no delineamento da estética dos interiores sacros. Assim, de um gosto nasce uma demanda e dessa demanda a adequação dos pintores de têmpera às suas exigências. O pintor de têmpera torna-se o *faz tudo* da arte da pintura decorativa: doura, estofa, encarna e pinta, arrematando empreitadas totais. A polivalência artística servia os interesses do encomendador, que centrava num só artista ou, ao limite, numa sociedade de pintores, que usualmente não iria além de três indivíduos, a obra que desejava pronta pelo melhor preço e com a maior perfeição. Para além disso, limitava o número de oficiais e aprendizes intervenientes na obra. Como era usual, na organização interna destes ofícios, cada mestre trabalhava habitualmente com determinado número de oficiais e aprendizes seus, que chamavam a si as tarefas que não impunham a presença do mestre na execução da obra. Certamente que a redução do número de artistas, composto por mestres, oficiais e aprendizes a trabalhar no mesmo espaço seria interessante a nível financeiro, para além de que facilitaria também a gestão da obra. Quanto mais limitado fosse o número de intervenientes, menos probabilidade haveria de ocorrerem situações de conflito, quer entre os artistas, quer entre estes e o encomendador. A economia de tempo e de recursos era seguramente uma das questões fulcrais da gestão de uma obra *total*.

Para o artista, a polivalência significava a possibilidade de arrematação de uma obra mais alargada e duradoura no tempo. Acumular as obras de douramento, estofo, encarnação, pintura decorativa e de superfícies lisas, proporcionava-lhe trabalho e possibilidade de mostrar as suas diversas valências ao encomendador e ao público que frequentava o espaço. De igual forma, a compra de múltiplos materiais, recorrendo a intermediários, desdobrava-lhe as oportunidades de lucro em cada aquisição, nos casos em que fosse encarregado dessa missão. Outra das vantagens da polivalência artística dos pintores douradores radicava na aproximação ao estatuto social e profissional dos seus colegas que pintavam a óleo.

O prestígio desta arte foi, ao longo dos séculos XVI, XVII e XVIII, mantido e confirmado com a criação do cargo de "pintor de têmpera de sua Majestade" [35-36].

A relação entalhe-douramento

Uma obra de talha produzida no período barroco em Portugal destinava-se sempre a ser dourada. Os casos em que tal situação não ocorreu apresentam-se como excepções no panorama geral da sua produção, sendo usualmente causados pela falta de condições económicas dos comitentes da obra. O elevado custo que a execução da talha comportava, obrigava, bastas vezes, ao adiar do seu douramento. Regra geral, uma capela de menores dimensões, de nave ou colateral, comissionada a um entalhador de renome, rondaria os 300 mil réis, enquanto uma capela-mor de grandes proporções poderia chegar facilmente a atingir os 1500. Estes valores referem-se apenas a obra de entalhe e excluem toda a produção relacionada com obra de pedraria de preparação do espaço para o assentamento da talha e mesmo aquela de carácter ornamental, como os embutidos de mármore, que em muito oneravam o total do custo do primeiro arranque da obra [37]. A etapa seguinte, que consistia no douramento, estofado das vestes das imagens e alguns elementos decorativos da talha, encarnação de rostos e demais pele das mesmas esculturas consubstanciava um novo investimento colossal para os encomendadores. Por tal, o espaço de tempo que mediava o finalizar de uma obra de talha e o arranque do respectivo douramento e demais pintura necessária à conclusão da intervenção artística no espaço intervencionado era frequentemente dilatado (Tabela 1).

Quanto maior tinha sido o investimento financeiro em obra de talha, quer pela dimensão e/ou complexidade do conjunto, mormente pela adição de obra de escultura, maior seria, logicamente, o dispêndio com a obra de douramento e demais revestimento pictórico. Os contratos de obra e os livros contabilísticos dos encomendadores da época elucidam-nos acerca desta matéria, testemunhando a dilação de tempo e os esforços envidados no sentido da completude das obras de talha comissionadas para os seus templos. Os empréstimos de dinheiro a juros eram frequentes, sendo as irmandades quem mais se empenhava neste processo. O acervo documental notarial de Lisboa dos séculos XVII e XVIII, hoje maioritariamente à guarda do Arquivo Nacional da Torre do Tombo, é profícuo em contratos de *obrigação* de empréstimos de dinheiro, nos quais as irmandades, mas também alguns particulares, se empenhavam dando por garantia os seus bens "havidos e por haver". Este esforço, quer fosse comunitário, quer fosse individual encontra plena justificação no entendimento do sagrado à época.

Neste panorama de relevante extensão de tempo entre entalhe e douramento, um exemplo apresenta-se como excepção à regra: a capela-mor da igreja do antigo convento do Santíssimo Sacramento dos religiosos

Tabela 1
Obra de entalhe e douramento

Edifício	Localidade	Obra	Entalhe		Douramento	
			Preço	Data	Preço	Data
Igreja de Sto. Estêvão	Lisboa	Altar-mor	480	17/1/1672	950	17/5/1676
Igreja do convento de S. Bernardo	Cós	Altar-mor	880	9/3/1676	800	22/1/1684
Igreja do mosteiro de Santa Maria de Belém	Lisboa	Altar do Sr. dos Passos	320	20/5/1695	292.500	15/9/1704
Igreja dos Stos. Reis Magos	Lisboa	Altar-mor	30*	10/4/1698	350	22/5/1701
Igreja de S. João Baptista	Lumiar	Altar-mor	600	19/8/1699	1.000	10/6/1706
Ermida de N.ª S.ª da Assunção	Lisboa	Altar-mor	180	9/1/1705	400	12/9/1713
Convento de N.ª S.ª do Carmo	Lisboa	Capela de Santa Ana e S. Joaquim	?	16/12/1711†	350	28/9/1715
Igreja de N.ª S.ª da Pena	Lisboa	Capela-mor	1.900	1714-1721[a]	5.906	1740-1743[b]
Igreja de N.ª S.ª da Pena	Lisboa	Púlpitos	254	1745	405	1745[c]
Igreja do mosteiro da Encarnação	Lisboa	Altar-mor	1.800	14/7/1719	1.000	12/10/1727
Igreja de S. Miguel de Alfama	Lisboa	Capela-mor	1.913	1723/1728	1.336	1729[d]
Igreja do Santíssimo Sacramento (Paulistas)	Lisboa	Altar-mor	2.900	29/12/1727[e]	1.747.750	10/05/1730[f]

Fontes citadas em [10, vol. II, p. 619], excepto: [1]C. Guimarães, *Tribuna da Capela-mor da Igreja da Pena. Documentos para a sua História*, Edições Documenta – Igreja da Pena, Lisboa (1968) 7-73; [2]Arquivo da Igreja Paroquial de Nossa Senhora da Pena de Lisboa, Irmandade do Santíssimo Sacramento, Livro da Despesa, n.º 32, fls. 6-22; [3]AIPNSP, Irmandade do Santíssimo Sacramento, Livro da Despesa, n.º 32 fls. 33- 33v.º, 44; [4]Arquivo Histórico do Patriarcado de Lisboa, Irmandade do Santíssimo Sacramento da Igreja de São Miguel de Alfama, Livro de Despesa da Irmandade, L.º 529, fls-146-148, 157 v.º; [5]Arquivo Nacional da Torre do Tombo, Cartório Notarial de Lisboa, n.º 3 (antigo n.º 11), Caixa 107, L.º461, fls. 83-84; [6]Arquivo Nacional da Torre do Tombo, C.N.L., n.º 3 (antigo n.º 11), Caixa 114, L.º 494, fls. 52v.º-53.

*Preço para finalizar a obra. Todos os preços em mil reis. Informação retirada de contratos de obra.

†Segundo contrato de obra no qual o mestre se compromete a cumprir com os prazos aos quais faltou no ajuste anterior.

paulistas da Serra de Ossa, actual paroquial de Santa Catarina de Monte Sinai, em Lisboa. Esta obra foi totalmente custeada por um frade da ordem, Pedro da Soledade Caldas, herdeiro de uma fortuna considerável deixada por seu pai, Pedro Caldas, rico homem de negócios da confiança de D. Pedro II. A encomenda iniciou-se em 1726 com a adjudicação das obras de pedraria, continuou por 1727 com a empreitada de talha e terminou cerca de 1730 com a encomenda do douramento e do tecto pintado por António Pimenta Rolim [38]. Sendo uma capela-mor de grandes dimensões, o investimento feito nas obras de pedraria, talha, douramento e pintura, levadas a cabo pelos mais conceituados artistas do seu tempo, causa impacto pela soma colossal despendida num curto espaço de tempo.

Nota final

A polivalência artística dos pintores de têmpera em Portugal, no período barroco, é um facto comprovado pela documentação coeva. Sabemos hoje que a sua actividade profissional era regulamentada pelos mesmos regimentos que abrangiam os pintores de óleo, sendo contudo a sua actividade distinta daqueles, o que não impedia um pintor de acumular valências e poder examinar-se e exercer como pintor de óleo e de têmpera.

Similarmente, a constituição da Irmandade de S. Lucas aponta no mesmo sentido, ao acolher pintores de óleo e de têmpera e genericamente todos os que fossem debuxadores de obra.

Assumir a polivalência artística foi a resposta natural que a classe de pintores deu face às exigências da clientela. Os interiores sacros desejavam-se espelho de riqueza e magnificência, mas também de harmonia entre as artes. Criaram-se, assim, ambientes cenário, conseguidos também graças à acção dos pintores de têmpera que cuidavam da decoração dos grandes espaços que a talha ou o azulejo não preenchiam, tais como tectos, colunas, paredes, vãos de janelas, entre outros. Estes artistas foram uma criação do barroco português, que ao aceitaram o desafio da experiência da totalidade decorativa, cumpriram cabalmente o seu papel na criação da arte portuguesa do seu tempo.

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Article / Artigo

Typical conservation problems of polychrome wooden sculptures in Slovenia

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Abstract
The Slovene ethnic territory lies at the contact of Italian and German cultural influences, which can also be traced in gilded works of art. The majority of wooden Gothic art heritage has been lost for good, but a great number of wooden "golden altars" from the 17th century and large 18th century baroque altarpieces with outstanding sculptures survive. Conservators-restorers face great problems resulting from repeated restoration interventions of a great deal of these works of art. The paper describes a recent treatment undertaken at the National Gallery of Slovenia of an 18th century water gilded sculpture from no more existing altar, which was subsequently and typically overpainted several times. The case study is used to illustrate the problems encountered in overpaint removal from gilded areas.

Keywords
Conservation
Wooden sculpture
Gilding
Overpainting removal

Problemas de conservação de esculturas em madeira policromada na Eslovénia

Resumo
O território esloveno está directamente exposto às influências culturais italianas e alemãs, que também podem ser detectadas nas obras de arte douradas. A maior parte do património artístico gótico em madeira perdeu-se irremediavelmente, mas muitos altares barrocos dourados, dos séculos XVII e XVIII, sobreviveram com esculturas notáveis. Os conservadores-restauradores enfrentam grandes problemas devido às repetidas intervenções de restauro em muitas dessas obras. Este artigo descreve o tratamento recente, efectuado na Galeria Nacional da Eslovénia, de uma escultura do século XVIII, dourada a água, de um altar que já não existe, que, como é habitual, foi repintada diversas vezes. Este caso ilustra os problemas colocados pela remoção de repintes de motivos dourados.

Palavras-chave
Conservação
Escultura em madeira
Douramento
Remoção de repintes

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A glance at the history of wooden sculpture in Slovenia

The Slovenian ethnic territory lies at the contact of Italian and German cultural influences, which can also be observed in the works of art. Wood as a material for making sculptures and altarpieces is, in fact, self-evident, as more than a half of Slovenian territory is covered with forests. When we speak of gilded wooden sculpture we have especially sacred or religious art in mind, because only a few gilded secular objects have been preserved.

Wooden works of art dating back to the Romanesque period are extremely rare. Unfortunately, also the majority of Gothic wooden sculptures and wing altars are lost forever – some of them because the period of the Reformation was opposed to decorating religious places, and others because of later changes in the liturgy rules and instructions of the Council of Trent. Individual sculptures are now incorporated in new ensembles or are kept in museums.

Hundreds of "golden altars" which replaced the narrative role of Gothic frescoes in the 17th century are the result of a planned revival of the Catholic Church after the era of Ottoman incursions and the Reformation period. The name "golden altar" originates in the popular naming because of its extensive gilding (Figure 1). Art historian Milan Železnik identified four major groups of altarpieces that were developed in the course of the 17th century; they differ in the structure of the retables, in the ground plan, and especially in the type of carved decoration and the colour impression of the whole altarpiece [1]. The altar architectural structures/retables were made of spruce (*Picea abies*) or fir (*Abies alba*), most often in the form of a monstrance which completely stands on the altar mensa. Due to a poor financial situation in some parishes, bare wooden altarpieces were mounted in churches waiting for long years to be painted and gilded [2]. Sculptures and ornamental elements were carved almost always from linden wood (*Tilia cordata, Tilia platyphyllos*) which is very suitable for carving because of its compact structure. The artistic quality of sculptures varies from awkward folk shapes to masterpieces. The surface of draperies and applied carved ornaments were water gilded; silver gilding was regularly covered with red and green, rarely blue, glazes. Silver leaves are often oxidised. Ornaments are sometimes made of unusual materials, such as gilded paper stars, coloured coatings sprinkled with crushed glass or even metal particles. Originally, the architectural structures of altarpieces were painted from uniformly black to naive imaginary marble patterns in bright colours. The niches were painted blue, usually with smalt.

Large baroque altarpieces of the following 18th century differ in construction and especially in size. The architectural structures of the retables, made of spruce or fir, were firmly clamped between the walls of the presbytery and they are true masterpieces of carpentry

Figure 1. Interior of Parish Church of St. John the Evangelist, Suha pri Škofji Loki, with "golden altars": main altar in form of a monstrance (1672) and older collateral altarpieces (1643 and 1652), polychromed and gilded wood. Photo: Miladi Makuc Semion.

with purpose-built platforms which enable climbing and walking on these structures (Figure 2). Restoration is only possible *in situ*. The architectural parts of the retables were originally painted with an imitation of marble but were later overpainted several times. In proportion to the overall structure, the 18th century sculptures are big and often over life-size. They are made of linden wood from a single tree trunk and only the protruding parts, such as arms and billowing draperies, have been added. The sculptures are worked only to two-thirds at the front, whereas their back sides are hollowed out. Original materials and gilding techniques are similar to those identified in other countries: burnished water gilding on the outer surfaces of clothing and matt on the inner surfaces, silvering with coloured glazes, engraving, punching, *sgraffito*, etc. Preparation layers are rather thick especially on gilded areas. Bole is applied in two layers – yellow first and then red. For the red bole it was common to use egg white as a binder.

The production of woodcarving workshops in the second half of the19th century was so extensive that it exceeded the needs and demand. This resulted in unnecessary replacing of church furnishings, and the newly made structures often included sculptures from baroque altarpieces [3]. In the 19th century, various neo-styles came into fashion, all of which were not really fond of gilding. Due to the new lifestyles and aesthetics, carving and gilding died out in the 20th century, so that we are now witnessing the disappearance of such vocations – hence the disappearance of knowledge and skills.

Conservation-restoration issues

Today, conservator-restorers are faced with objects that have been countless times reworked and modified and have also been severely damaged due to different factors. Modern conservation and restoration principles oblige us to preserve the original materials and intervene as little as possible, but numerous owners want their sculptures to be "just" re-painted or re-gilded. They have no interest for a thorough investigation and documentation. It is often difficult to persuade people that the original painting and gilding are an integral part of the sculpture and should be retained, although no longer shiny and in bright colours.

The reason why a sculpture's polychromy are often ignored even by some conservator-restorers and art historians lies primarily in the very nature of the sculpture – if you take the colour off the sculpture, the shape still remains. Hence, we often find sculptures cleaned to the bare wood. On the other hand, some damaged sculptures were disfigured by new thick layers of different filling material and preparation. Preservation and reconstruction of polychromy require an in-depth knowledge of technology, skills and understanding of art.

Wood is an anisotropic material and the changes in relative humidity make it behave quite differently from the paint layers. The result is that an entire layer, which can be more than a millimetre thick, starts flaking and falls off. Hence we do not have to deal only with a damaged colour appearance, but also with a spoilt shape. Additional changes of shape are the result of wood insects' attacks. Linden wood is very susceptible to attacks by wood-boring beetles, which can destroy the inside of the sculptures and turn it into dust while the shell of gilding gives the appearance of a solid sculpture. But very little is needed for such a sculpture to collapse. In such cases, the preservation of gilding and polychromy is a real challenge.

The original gilding was also very often unreasonably coated with bronze powder paint or re-gilded with real gold or its imitation – usually on oil mordant although the original was water-gilded. Also the overpainting of gilded sculptures was common throughout history. Quite well-preserved gilding is often hidden underneath paint layers, and it has been preserved – ironically – just because of the repaint. At the end of the 18th century gilding became a sign of waste, and in 1784 Emperor Joseph II issued a decree that allowed gilding only the edges of the garments of new figures, and consequently also existent figures that had been originally gilded were now painted white [3].

So we see that the problem of polychrome wooden sculpture is multi-faceted. Ignorance and indifference of the owners and the self-proclaimed "restorers"- people who don't have the necessary knowledge and training, promoted by the general climate tending towards entrepreneurship, too often lead to grotesque results, even fatal for the artworks. A conservator-restorer always finds satisfaction in the unveiling of the original layers of gilding and polychromy, since this contributes a missing particle to the studies on technical art history.

Case study: removal of overpainting from gilded areas of a wooden sculpture

Introduction

The presented case study is an example of a recently treated 18th century sculpture of Saint John the Evangelist from the National Gallery of Slovenia. The sculpture was separated from its original retable in the past and later became a part of a museum collection. The progressive changing of surfaces in the past has resulted in the alteration of original colours. The sculpture, originally water gilded, was subsequently overpainted several times. In conservation terms, the structure of the sculpture was good, but the surface was adulterated (Figure 3).

Conservation-restoration treatment began in September 2012 with the goal of displaying the sculpture in an Extended Permanent Collection which was scheduled to open in 2015 after the renovation of the old palace of the National Gallery. The key goals of the treatment were to achieve the appearance of the surface that would reflect the sculpture's original look and to preserve the original material to the greatest possible extent.

Figure 2. Main altarpiece (1758) in the Parish church of St. Peter, Komenda, made by Janez Gabric according to the design by Franc Jelovšek, polychromed and gilded wood. Photo: Archive IPCHS RC.

The treatment involved examination, documentation and the procedures followed the removal of numerous layers of overpainting; this was the first step in which the main effort was concentrated. The work was done using different cleaning systems – by mechanical and chemical means under magnification. Besides the procedures followed in overpainting removal, the results of cross section analyses are also described.

History

The polychrome wooden sculpture with the dimensions 160 × 102 × 46 cm, once owned by St. Peter's Parish Church in Ljubljana and now belonging to the holdings of the National Gallery of Slovenia (inv. no.: NG P 199), dates from the 1770s. It is attributed to the sculptor Heinrich Michael Löhr (1700-1761) who lived in Ljubljana where he ran his own workshop. Judging from other items in the oeuvre of the same artist, it has been assumed that the garments of the Saint were originally gilded.

Preliminary examination

During the first examination most of the damage was detected on the wooden support and paint layer of the bottom part of the figure and the pedestal, so it was concluded that the sculpture had been exposed to standing and/or flowing water. It was most probably moved from the retable in the church interior to an

Figure 3. Saint John the Evangelist, attributed to Heinrich Michael Löhr, 18th century. Polychromed and gilded wood; h. 160 cm; National Gallery of Slovenia NG P 199. The sculpture is composed of several constituent elements; the main part of the figure was carved from a single block of wood and its back side is hollowed out. In the past sculpture was painted in greyish white. Before treatment. Photo: Vuga Martina, National Gallery of Slovenia.

Figure 4. Details of the Saint John the Evangelist. Condition of the ground and paint layers before treatment. Overpaintings delaminated, fallen off in some isolated smaller areas, and coloured layers were visible underneath e.g. above the upper lip and the nose, carnation on the foot. Photo: Vuga Martina, National Gallery of Slovenia.

outside position, maybe a niche on the facade. The most recent greyish white colour, possibly as an imitation of marble stone had presumably been put on the sculpture before moving it outside (Figure 3). These overpaintings delaminated, fell off in some isolated smaller areas, and coloured layers were visible underneath, e.g. just above the upper lip, on the neck, the nod of a cloak and on the hair (Figure 4).

Description of the sculpture's construction

The sculpture is composed of at least sixteen pieces of wood. The main part of the figure was carved from a single block of wood and its back side is hollowed out (Figure 3).

Several removable/separate parts were added. Some of these are bigger, e.g. the head, the Saint's right arm with a part of the book, the left arm with a part of the garment, the right and left hands, and the left foot, whereas some parts are smaller, such as fingers or finger tips, etc. (Figure 5).

The constituent parts were originally glued and held together probably only by wooden dowels. Nails were used for fixing elements during previous interventions. A complete disassembly prior and also during the treatment was not possible because of a great number of deeply hammered nails.

Condition

Wooden support

Wood species were not identified. The wooden support of the body was generally in good condition. Some of the constituent removable elements had been detached but were preserved, but some (important) pieces, e.g. fingers on the left hand, parts of the folds of the garment, part of the book and of the pedestal, were missing/lost. Some of the joints of the removable parts were loose and apart and some elements were completely separated from the main piece. Some damage from insect activity was present, but just a few inactive exit holes of wood-boring insects were found on the back of the sculpture, most of them on the upper part. The structure of the wood was not affected, so there was no need for consolidation.

There were some radial cracks filled with wooden wedges and fixed with nails in earlier interventions.

Ground layers

The condition of the ground layer on the major part of the surface was acceptable as could be assumed from the generally acceptable condition of the paint layer. However, some extensive losses of the ground layer, together with the paint layer, had occurred. Most of the damage of the ground layer was found on the areas exposed to water: the forehead, the upper side of the book, the bottom part of the cloak behind the Saint's legs, the Saint's feet and the upper side of the pedestal. Additionally, there were some scattered losses, a couple of square centimetres large, on the cheeks, nose, upper lip and chin. Some cracking and lifting of gesso layer occurred especially above the loose joints (Figure 4).

Paint layers

There was a network of cracks on the major area of the paint layer, but there were also parts with no cracks (right arm with a cloak). The paint layer was greatly damaged on the parts exposed to standing water. The surface was covered with a heavy layer of grime that had accumulated over time (Figure 4).

Probing with a scalpel through the overpainted layers at different areas showed several subsequently added layers. This method suggested that the sculpture was originally not white but coloured and the garments were gilded. But apart from white layers, no original polychromy, gilding or ground layer could be found on the upper part of the body, on the outer part of the cloak just under the Saint's right arm and on the Saint's left thigh.

Scientific examination

Analytical methods

In order to identify clearly the layer structure, binders and pigments, originally and subsequently used, and to help us finding a safe way of removing all the added layers, cross-section samples were collected from several points of the sculpture.

Different analytical techniques were used. Optical microscopy was used in reflection mode using visible and ultraviolet radiation (Olympus BX60). For Fourier transformed infrared spectroscopy (FTIR), Spectrum 100 (Perkin Elmer) was used in attenuated total reflectance mode with a germanium crystal. All spectra were recorded with MTC detector within a range of 4000 and 600 cm^{-1} with a 4 cm^{-1} resolution. For a single spectrum 32 scans were obtained, using a diamond anvil compression cell. Raman spectra were collected with Horiba Jobin-Yvon LabRAM HR800 spectrometer coupled to an Olympus BXFM. Excitation laser with the wavelength of 784.5 nm was used. Spectrum was obtained with CCD detector with spectral resolution of 1 cm^{-1}. Calibration was carried out with silicon crystal. Spectra were obtained in the range 50 cm^{-1} to 3200 cm^{-1}.

Analyses were performed by the Natural Science Department of the Restoration Centre of the Institute for the Protection of the Cultural Heritage of Slovenia (IPCHS RC) where the samples and documentation on filters and times used are kept.

Results [4]

The wooden figure with its originally gilded garment was overpainted at least ten times. Analyses suggested

Figure 5. Details of the Saint John the Evangelist. Constituent elements of the sculpture: *a)* the Saint's right arm with a part of the book; *b)* hand with smaller separate elements of fingers and finger tips. Photo: Vuga Martina, National Gallery of Slovenia.

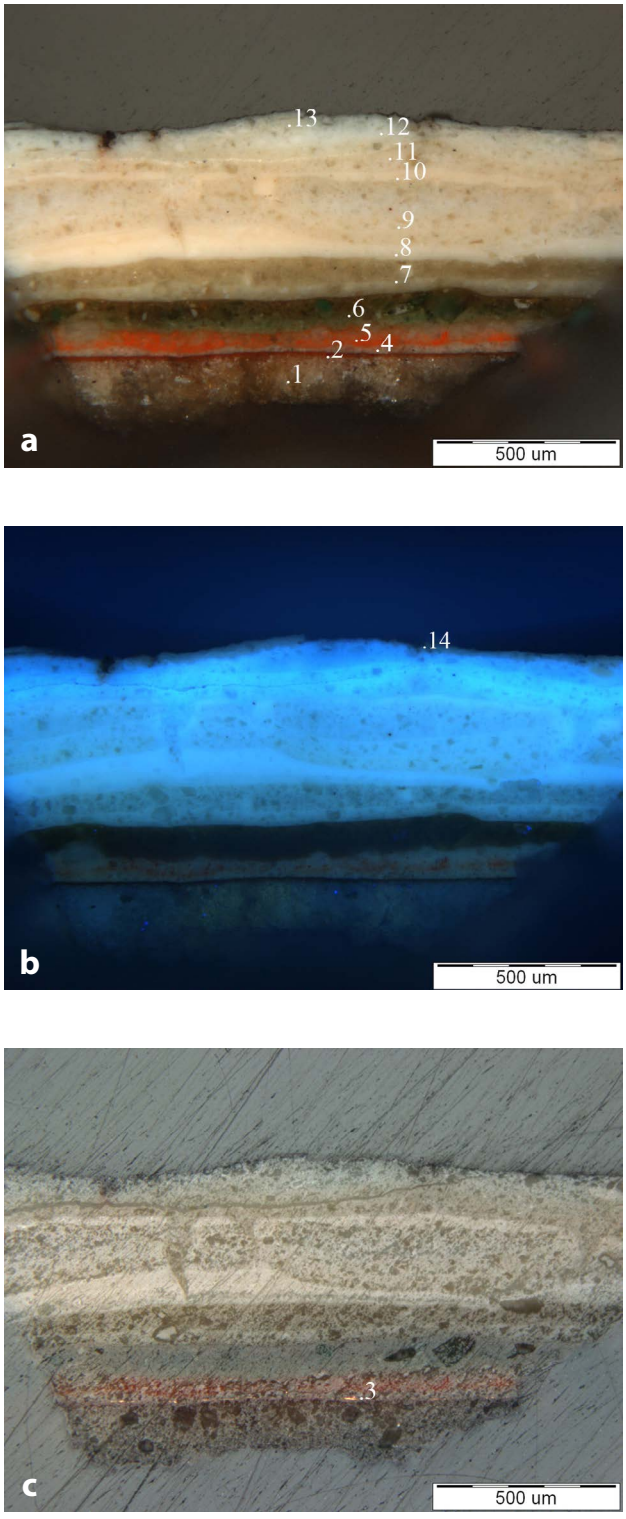

Figure 6. Cross section of paint stratigraphy from the lower part of the Saint's garment. Microphotograph at 10× magnification: *a)* visible light; *b)* ultraviolet radiation; *c)* polarized visible light. Photo: Kavkler Katja, IPCHS RC.

Cross section sample JEK 3: 1) Ground layer (calcium sulfate); 2) bole (red ochre); 3) gilding; 4) white (lead white, barium sulfate); 5) red (minium, lead white); 6) green, two layers (emerald green, lead white, barium sulfate, calcium carbonate, cinnabar); 7) translucent white; 8) white; 9) translucent white; 10) white-thin layer; 11) translucent white; 12) white; 13) white; 14) varnish, remains.

at least ten layers of overpainting of which six to seven are uniformly greyish white and four are coloured. Two samples taken from the Saint's garment suggested water soluble ground layers composed of calcium sulphate and red bole used for the original water gilding (Figure 6).

Two samples taken from the outer part of the cloak showed a very similar structure to the one described above – a ground layer composed of calcium sulphate and the same number of overpaintings (four coloured and seven white).

A sample taken from the inner side of the cloak suggested that the green paint layer did not belong to the original because it was found inside the cracks of a silver layer which is a subsequent occurrence. Silver was laid on a red bole layer.

FTIR spectroscopic analyses detected oil as a binder in the original paint layers and protein probably making part of the original ground layer. Oil and wax were suggested as binders in most of the overpaint layers. There were some remains of a colophony varnish on the surface of some samples.

Raman spectroscopy suggested the presence of lead carboxylates. These are formed when a heavy metal, such as lead, reacts with free fatty acids present in the oil binder, and organic salts called soaps result. Lead pigments were used not only in all white overpainted layers, but also in coloured overpaintings and in the original colours (reds, greens). Repeatedly applied thick layers of white lead in oil binder formed an exceedingly hard crust.

Treatment proposal and treatment

The National Gallery's curators and conservators agreed to restore the surface of the sculpture to its original 18th century state. Overpaintings significantly changed the sculpture's appearance, so the key goals of the treatment were to achieve the appearance of the surface that would reflect the sculpture's original look and to preserve the original material to the greatest possible extent. Accordingly, the surface was to be cleaned selectively, and of all the cleaning procedures the removal of at least ten overpainted layers without damaging the gilded surface was the most demanding task.

Results gained from optical microscopy of cross section samples, FTIR and Raman microspectroscopy indicated the working directions to be followed in the treatment of the surfaces. The development of a cleaning system was based on the experimental work developed by Richard Wolbers and Paolo Cremonesi [5-8].

The testing of different methods, materials (detergents, solvents and gels in specific combination) and times of their application revealed that the white layers were not soluble in common neutral solvents either in free or gelled form, which could be explained by the formation of lead soaps. Developing a cleaning system was an ongoing process with the aim of understanding the working properties and chemical nature of the materials to be removed.

Among the cleaning systems eventually employed were a buffer solution for surface cleaning, a gelled solvent system for swelling the white layers of overpainting and a solvent/detergent system for softening the coloured overpaintings.

Surface cleaning

Loose dust and dirt were brushed and vacuumed off the surface. Superficial grime was additionally removed from the painted surface by means of using a buffer solution pH 5.5 prepared with ethylenediaminetetraacetic acid (EDTA).

Overpaint removal

Overpaint removal was done in two steps. The first step was the removal of white overpaint layers. It was possible to achieve the best results by mechanical means. A very limited swelling of white layers was reached after long-term applications of gelled ethanol. Six to seven white layers were relatively safely removed as they more or less easily delaminated from the last coloured layers of overpaint (Figures 7-8).

This step was very long-lasting, due to very thick and hard layers, highly varied modelling of the surface and various conservation condition of underneath layers.

Figure 7. Detail from Saint John the Evangelist's garments after removal of white layers of overpainting. Photo: Vuga Martina, National Gallery of Slovenia.

Figure 8. Saint John the Evangelist: *a)* before treatment; *b)* after removal of white overpaintings; *c)* after removal of coloured overpaintings. Gilded garment and gilded and silvered cloak. Photo: Vuga Martina, National Gallery of Slovenia.

Because the main action was still mechanical, in spite of the very careful work using Optivisor or a microscope, the procedure using a scalpel inevitably caused some damage in the parts where condition of the underneath layers was softer due to weakened damaged structure.

The complete removal of white layers revealed the extent of the damage (most probably) caused to the original ground and paint layers by water flow even before the sculpture was painted white. Those parts that had been safe(r) from flowing and/or standing water thanks to their position, e.g. under the folds of the garment, were well preserved, whereas the parts that had been exposed to water flow were destroyed: the ground and paint layers detached and were missing, e.g. the upper sides of the cloak. Even greater was the damage caused to the bottom part of the sculpture which is part of the pedestal where water probably stayed, e.g. behind the legs on the inner side of the cloak.

This intermediate phase presented the condition of the sculpture before it was overpainted white for the first time (Figure 8b). White overpaintings layers were applied also over the damaged parts, without a ground layer, directly on the wood.

Testing the removability of the remaining overpaints was repeated in the next step in order to find the safest way to reveal the gilded areas. Different solvent/detergent systems were chosen to soften the surface of the overpaints. The greyish and red overpainted layers on water gilded garment were softened with a polar solvent surfactant gel made of benzyl alcohol, Ethomeen C25, Carbopol and a small quantity of water. Red and green overpaints on the outer part of the cloak were removed by using a non-polar solvent surfactant gel made of a mixture of solvents (Petrol T_b 100-140 °C, Shellsol A and Benzyl alcohol in ratio 4:1:0.8), Ethomeen C12, Carbopol and a few drops of water.

Applications of gel for 3 to 4 hours and covered with Melinex polyester film were repeated several times. The remains of overpaint were removed with using a scalpel and a solvent solution (Figure 9).

Conclusion

Based upon examination and tests locally made on the baroque sculpture in the National Gallery of Slovenia

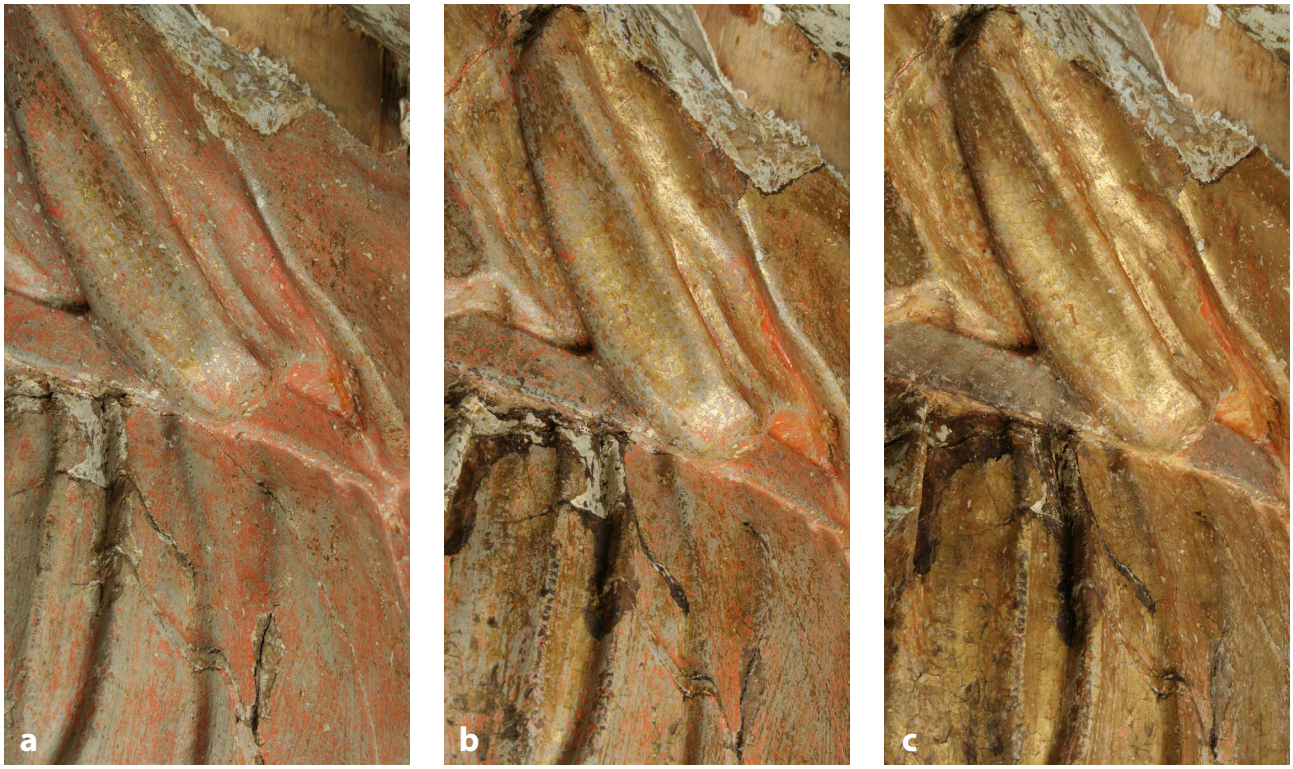

Figure 9. Detail from the Saint John the Evangelist's garment: gradual thinning and removal of coloured overpaintings revealed water gilded garment with silver belt. Photo: Vuga Martina, National Gallery of Slovenia.

before treatment the conservation condition of the most recent "marble" look was bad compare to the state of the underneath original layers which were rated acceptable. The most recent appearance was also so dramatically different from original that despite having in mind respect to the artwork history the option- restoring the sculpture to its original look seemed nearly the only option. By removing thick layers of overpaintings also the sculptor's fine modelling was revealed.

The goal of restoring the artwork to its original look is always a challenge in the case of multiple overpaintings. But cleaning and overpaint removal as its part have undergone considerable changes during the past decade. In this case following the most recent knowledge which allows more selectivity and gradual work, the task seemed accessible.

The first step was removing multiple white layers which formed extremely rigid and almost insoluble crust. As the main action of the removal using a scalpel was still mechanical it caused some unwanted damage to the original underneath layers on the parts of which conservation state was not so good.

In the next step, after removal of coloured overpaintings we have managed to get to the original gilding preserved on a large area (Figure 8c).

Extensive photographic documentation and material evidence in the form of stratigraphic samples is preserved for possible further study and to understand better this and related wooden sculptures.

Conservators-restorers in Slovenia deal with similar problems very often. Compare to the ones on the paintings the problems in the field of overpainting removal from gilded wooden sculptures are different and specific and this case has again revealed the need for further development and improvement of the systematic methodology.

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Article / Artigo

All that glitters is not gold: silver leaf gilding, another means to an end

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Abstract
Complementing carved wood altarpieces and sculptures, the use of metallic leaves became paradigmatic of Portuguese religious ambiences during the 17th and 18th centuries. Although gold has always been favoured, alternative techniques to attain the desired golden lustre were developed simultaneously, mainly with the use of white metallic leaves covered with coloured glazes. Written historic references, present in various technical art texts, indicate that these imitation gildings have been a long time practice. Seldom mentioned, the silvering part of the process is generically described as identical to gilding, while much more attention is given to the golden glazes to be applied over the silvered surface, allowing for their material and technical evolution to be followed. Based on a survey of these historical references, an outline on these developments and the associated terminology is made, keeping in mind that the silver leaf's white glitter also shone on its own right.

Keywords
Silvering
Gilding
Silver leaf
Gold varnish
Douradura

Nem tudo o que brilha é ouro: douramento com folha de prata, outro meio para um fim

Resumo
Complementando e enriquecendo retábulos e imagens, o uso de folhas metálicas tornou-se paradigmático dos interiores religiosos portugueses nos séculos XVII e XVIII. Apesar do ouro ter sido sempre favorecido desenvolveram-se, simultaneamente, técnicas alternativas para atingir o desejado lustre dourado, com recurso a folhas metálicas brancas cobertas com velaturas coloridas. Referências históricas, presentes em numerosos textos de técnicas artísticas, indiciam que estas técnicas de contrafação são praticadas desde há muito. Pouco mencionado, o processo de prateamento é genericamente descrito como idêntico ao de douramento, sendo dada muito mais atenção aos vernizes dourados a ser aplicados sobre a superfície prateada, o que permite que a sua evolução material e técnica seja seguida. Baseado num inquérito a estas referências, é feito um enquadramento destes desenvolvimentos e da terminologia associada, tendo presente que o fulgor alvo das folhas de prata também brilhou por direito próprio.

Palavras-chave
Prateamento
Douramento
Folha de prata
Verniz dourado
Douradura

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Introduction

This article presents preliminary information on the study of silver leaf gilding techniques, developed within the scope of the first author's ongoing PhD research, devoted to the use of silver leaf on Portuguese sculptures and altarpieces from the 17th and 18th centuries. Following on the oral communication presented at GILT-EnArt 2015 International Conference, new data is presented and discussed.

In order to outline and contextualize the use of this alternative gilding technique, a survey on European written sources was made with special focus on the timeframe between the 16th and 18th centuries. Nonetheless, it was deemed useful to trace back some of the earlier records on these practices, which could help further understand the material and technical evolution on these non-gold gilding techniques. The documentary records on yellow coloured glazes applied on to silvered surfaces – *douradura* – are the main focus of this study. References on the production and use of silver leaf are also presented, making an effort to clarify some of the ambiguous terminology usually associated with this technique, while shedding some light on the craftsmen involved.

Leaf gilding techniques

The use of metal leaves to cover and decorate surfaces has been practiced since antiquity, with the documented production and widely usage of gold leaf in Egyptian art [1, p. 76]. However, in Europe and over wooden sculptures, the documented use of leaf gilding is scarce, being only used in relatively small areas before the 12th century [2]. During this time, Myriam Serck-Dewaide hypothesised that silver leaf gilded areas might have been favoured over gold leaf gilding, which was reserved to smaller areas [2, p. 65]. Even if it is possible that this hypothesis is based on misleading results, as the author suggests, it shows that although a golden appearance was highly valued, alternative techniques were developed simultaneously to attain the desired golden lustre with less costly materials.

The gilding techniques in Europe were improved during the following centuries, and gilded areas became more monumental [2]. In Portugal, during the course of the 17th and 18th centuries, gilded surfaces became ubiquitous in the religious ambiences, covering wood carved altarpieces and sculptures and further adding to their spirituality and sumptuousness [3, p. I-183]. The use of gold and silver, coordinated with polychromy, conveyed symbolic connotations with the divine to the sculptural work, that are usually associated with these metals by their value and ability to reflect light [3; 4, p. 82]. During this period, silvered areas are reduced and usually serve well defined purposes such as the representation of metallic and ethereal elements (e.g. armours, swords and clouds).

At this time, Portuguese painters-gilders' technical repertoire should have also included the alternative gilding method of glazing silver leaf, since both materials and technical knowledge were at their disposal, as will

Figure 1. Detail of *Nossa Senhora dos Mares* altarpiece, Igreja Santa Cruz, S. Domingos Monastery, Viana do Castelo. Comissioned in 1622, silver leaf gilded wood. Photo: Tiago Dias.

be shown in the following sections. We believe that most silver leaf gilded Portuguese objects remain nowadays unnoticed and therefore not properly documented, given that when a successful imitation is achieved the surfaces become very similar to "true gilding", hindering the technique's identification by the observer [5, p. 34]. Despite this, it is possible to identify several cases that resort to these silver leaf gilding techniques, both on altarpieces (Figure 1) and sculpture (Figure 2).

Silver's lower cost in comparison with gold was certainly a motivation for the use of this surrogate gilding technique. Francisco Pacheco confirms this when he writes that silver leaf gilding "is made in many parts of Castile, either to save gold, or for its lack"[1] [6, p. 419]. The analysis of expense records that account for the purchase of both kinds of metal provides information on their price difference. For instance in Oporto, in 1542, the value of silver leaf was only a quarter of gold [7, p. I-69]. But, while the practice of gilding with silver leaves was recognized as an inexpensive alternative, its frailty given the silver's proneness to tarnish was also known, eventually leading to its banishment in Spanish contracts during the 17th century, for being "false work" that would quickly perish [8, p. 10].

Terminology and disambiguation

The ambiguity of the terminology associated with this alternative gilding technique is especially evident in the Portuguese language, leading to several misconceptions. Nowadays, the most commonly used expression to describe this technique is *prata dourada* that roughly translates to gilded silver, and often leads to confusion with the metalworking technique of covering silver objects with gold.

Expressions such as *douramento com folha de prata* and *dourado com folha de prata* are proposed to be used to describe, in Portuguese, the silver leaf gilding technique and the silver leaf gilded objects respectively. In these expressions the words *dourado* or *douramento* relate to the techniques' objective, to achieve a golden colour, while *folha de prata* (silver leaf) describes the material used to attain the metallic appearance.

Coloured glazes are usually named as *varnish* or *lacquer* in the historical sources [9, p. 65], and in several languages the nomenclature of the yellow coloured glaze used to give a golden appearance to silvered surfaces is different from other coloured glazes, revealing the composition's main purpose, which was to imitate gold [10, pp. 26–31; 11, pp. 34–35].

The Portuguese word for this golden coloured glaze used to imitate gold is *douradura*, defined in Raphael Bluteau's 1712 *Vocabulário Português e Latino* as a composition that "applied over any silvering [...] makes it properly look like gold, and over burnished silver is

Figure 2. *Saint Athanasius*. Mafra National Palace, inv n. PNM 4. Silver leaf gilded wooden sculpture. Photo: Tiago Dias.

1 Translated from the Spanish: "I esto se haze en muchas partes de Castilla, ô por ahorrar oro, ó por falta dèl".

best"[2] [12, pp. 298–299]. It is also possible to find other Portuguese words that sometimes refer to *douradura*, both in material expense records where *douradilha* is mentioned [13, p. 523], and in technical art treatises translations where the term *coradura* is sometimes used [14, p. 29].

It should be noted that, although the term *barniz Martin* has been appointed by some authors as the Portuguese name for this glaze [10, p. 30; 11, p. 35], no references to support this could be found. *Vernis Martin* usually refers to a French varnish formulation, developed and patented by the family Martin in 1730 that imitated oriental lacquer work and knew great fame during the 18th century [15, p. 4].

On the use of silver leaves

Portuguese artists and craftsmen

Documentary sources on the activity of painter-gilders that clearly relate to the use of silver leaf are scarce. The known 1572 regulations for Lisbon's craftsmen offer little information concerning the painters' regiment, where painters-gilders were included, revealing only the examination requirements for those who wanted to gild and make *estofado* [16, pp. 104–105]. However, in other craft's regulations it is possible to find evidence on the production and use of silver leaf to imitate gold.

The goldbeaters' production of silver leaf is clearly documented on these regulations as part of the professional examination, where it is stated that to be approved as a goldbeater, one had to produce, among others, five hundred "thin" silver leaves "for painters" [16, pp. 25–26]. This indication reveals the differentiation of "thin" silver (and gold) leaves to be used by painter-gilders and "thick" leaves in use by (metal) gilders.

This document also points to the use of silver for the production of *ouro meão,* bimetallic leaves of gold and silver known as *zwishgold* or *oro di metà* [17]. The production and commercialization of this substandard leaves was prohibited and heavily punished, on the count of its deceitfulness and low quality [16, p. 26].

References to the practice of glazing silver leaf to achieve a gold tone are found on the *guadamecileiros* regulations (leather workers and gilders) [16, pp. 94–98]. *Guadameci* is most often silver leaf gilded, rarely resorting to gold [18, p. 5], so part of the examination of the craftsman consisted on silvering, burnishing and glazing the worked leather, implying that the examinee had to make his own *douradura* [16, p. 94]. While the nature of the *douradura* is not disclosed in this document, other sources provide information on the materials used, and this will be addressed on a following section.

On the context of this craft, silver leaf gilding was the more appropriate technique to be used, and other metallic leaves were banned. This is clearly stated on the regulations that forbade the use of tin leaves by the craftsman and denounced the entrance of *guadameci* "from beyond the realm with gilding of tin and not of silver as it should be, which is forgery"[3] [16, p. 97].

Laying the silver leaves

Silver leaves can be applied with the purpose of giving a silvered look on to a surface, where the silvering (*prateamento)* is an end in itself. However, on the context of counterfeit gilding the silvered surface becomes part of the gilding process – a means to an end – providing the metallic appearance to be covered with a glaze of a golden yellow colour (*douradura*) [5, p. 34].

Although the *douradura* can be applied on water or oil silvering, the water silvering method is usually preferred, since it allows the surface to be burnished, "and over burnished silver is best" [12, p. 299; 19, p. 281]. On the count of being similar to the laying of gold leaf, the silvering process is seldom individualized on the documentary sources, which instruct on how to proceed with both metals simultaneously ("if you want to apply Gold or silver leaves" [19, p. 280]) or direct to proceed with silver as with gold ("regarding oil and water silvering, it is practised precisely as gilding: so everything that is said about one can equally be applied to the other" [20, p. 349]).

Water-gilding requires the wooden surface to be coated with a multi-layered preparatory structure, involving several procedures which include: sizing with animal glue, multiple ground layer application of *gesso grosso* followed by *gesso mate* and, finally, application of the bole [21, pp. 67–68]. The number and nature of the applied layers of each material may vary greatly, being a total of 15 layers considered ideal [22, p. 20].

Documentary sources advise on the use of bole with different colours if one is gilding or silvering: under the gold leaf warmer hues are recommended, from yellow to deep red, to contribute to the overall colour of the gilding; for silvering the sources from this period recommend white bole, or other white grounds such as lead white glue tempera, "grind [...] very fine lead white with water, and distemper it in weak glue […] it will serve as bole"[4] [23, pp. 165–166].

Given the thinness of the metallic leaves, the bole's colour has a strong impact on the final visual perception

2 Translated from the Portuguese: "Douradura. He uma composição […] [que] sobre qualquer prateado de tempera, ou óleo se aplica & o faz parecer propriamente ouro, & sobre prata burnida, melhor".

3 Translated from the Portuguese: "vem guadamecijs de fora do reno cujo dourado he de estanho e não de prata como há de ser, o que he falsidade".

4 Translated from the French: "Broyez ensuite du blanc de plomb très-fin à l'eau, & détrempez-le avec la colle plus foible ; donnez-en deux couches sur les parties que vous voulez brunir, ce qui servira d'assiette".

of the gilding [5, p. 33], so the use of white bole would increase the silvered surface's lightness and whiteness, while helping to conceal any small tears on the leaf. But if the intention is to create silver leaf gilding by glazing the silvered surface, a white bole would make it harder to achieve the warm gold colour, while making any small leaf tears much more visible – which has been observed during the reproduction of silvered mockups glazed with douradura. So, it would seem sensible that when the final intention is to achieve a gold colour, the silver leaf should have been applied over warm coloured boles similar to those used for gold.

After laying the silver leaves and with the selected areas burnished, the silvered surface would be ready to receive its coating. Silver's high reactivity and proneness to tarnish was recognized and the need to cover it was strongly advised, even when its colour was to be maintained, "silvering is susceptible to the bad air; if we want to preserve its silver colour, you must use a varnish of wine spirits"[5] [23, p. 166].

Douradura, gilding with silver

Historical background

References on documentary sources about the glazing of white metallic surfaces to achieve a golden appearance are more frequent and seem to start at an earlier date than those references detailing the silvering process. To better understand how these coatings' formulations change through time, a brief overview on the earliest known related writings is made from a few selected European documentary sources up to the 15th century.

One of the earliest references can be found on the Leyden papyrus X (c. 4th century) where among several chrysography references, a gilding solution is mentioned (recipe 75) that could also be applied on copper and silver objects [24, p. 34]. Although it is not yet a clear *douradura* but a type of *oro musivo* its use shows the practice of altering the colour of metallic surfaces using, among other ingredients, realgar and orpiment bound in gum tracaganth and diluted in goat bile. Some of the false chrysography recipes also reveal the use of natural dyes bound in egg or diluted in gal, to mimic a golden appearance (e.g. recipes 39 and 74) [24, pp. 28, 74–75]. These compositions will continue to be mentioned in latter documents, especially with the purpose of parchment gilding.

The oldest known reference to a yellow oil medium glaze to apply over tin leaves, giving them a golden colour, is found on the *Compositiones ad tingenda musiva* also referred to as *Lucca Ms* or *Codex Lucensis 490* (c. 8-9th centuries) [25, p. 495]. It is composed of a resin mixed with linseed oil and water, and coloured by saffron and orpiment [26, pp. 67–68, 129]. A very similar recipe is given in *Mappae Clavicula* under the name *Tinctio stagnee petale* (Phillips-Corning MS, c. 8th-12th centuries) [27, p. 47], and Mary Merrifield points out that it is also present on both Eraclius' *De Coloribus et Artibus* (13th century) and Peter of St Audemar's *De Coloribus Faciendes* (13th to 14th centuries) under the name *auripetrum*, "a varnish to which a golden colour was imparted by saffron, and which, when spread over tinfoil, was employed to imitate gold", further implying that the several copies of the recipe are "proof of the extent to which it was used" [28, p. I-114]. Although one of the *auripetrum* formulas given by Peter of St Audemar corresponds to a similar composition, saffron distempered in liquid varnish [28, Vol. I, p.158], on Eraclius' work the recipe calls for different materials such as myrrh, aloes and blackthorn bark [28, Vol. I, p. 240].

The *De Coloribus Faciendes* presents four other variations for tin coating to give it a gold colour that always involve the dipping of the foil in a solution, be it for dying with saffron, aloes or black plum bark in water, or to be varnished in linseed oil with resin and *vernix* (sandarac) dyed with black plum bark [28, Vol. I, pp. 160–165]. Noteworthy is the reference to the use of silver alongside tin on "the manner of beating out tin-plates, so as to appear gilt, to use in painting, on account of the price of gold" [28, p. I-160].

The use of aloes as dye seems to be common in oil based glazes from this time forth. On the *Livro de Como se Fazem as Cores* (c.14th to 15th century), it is possible to find one of the earliest Portuguese references to a glaze made with *grassa*[6] and linseed oil, using aloes in powder to make "the colour of gold" [29, p. 222]. *Grassa* has been pointed out by several authors to be a common name for sandarac, and Andrés de Lagunas underlines this on his translation of Dioscorides' *De Materia Medica,* explaining that *grassa* is the juniper's gum also called *vernix* or *sandarax* and is used to make varnish with linseed oil [30, p. 62]

This recipe from the *Livro de Como se Fazem as Cores* names the yellow glaze as *doiradura* and speaks of its use over tin and silver leaves, allowing to relate this formulation with the *douradura* referred to on the *guadamecileiros* regiment exam [16, p. 94; 18, p. 5], and the varnish described by Filipe Nunes to be used by craftsmen of *guadamexins* (on this case, without aloes) [21, p. 72].

The written sources from the 16th to the 18th centuries

During the 16th to the 18th centuries the number and variety of formulas to make glazes of golden yellow colour increased enormously. The ongoing survey of the numerous documentary sources is therefore approached

5 Translated from the French: "L'argenture est susceptible du mauvais air ; si on veut conserver sa couleur d'argent, il faut y passer un vernis à l'esprit-de-vin".

6 From the transliteration "garas^{a}h de nobra" or "gras^{a}h", that can be understood as "grassa".

on a more systematic manner. Information is being collected from technical art treatises and manuals mainly published in the south European Countries during this time span, given the close similarity of gilding materials and techniques described with those expected to have been available and used in Portugal [31]. The publishing language of the treatises and the translated editions also played an important role on their use and understanding, with some languages being more accessible to the Portuguese readers, namely Spanish, French and Italian [32, p. 22]. Although English copies are not usually found in Portuguese libraries of this period [32, p. 23], three English sources were taken into account, given their seemingly important contribution on the diffusion of *lacquer* formulations to be used as *douradura*.

Out of the numerous publications consulted so far, 21 presented guidelines on the making of gold coloured varnishes. It is interesting to notice that while some treatises offer instructions on how to use the glazes, they make no references on the *douradura*'s formulation, as in Francisco Pacheco's *Arte de la Pintura* [6]. All the recipes used to convey a golden colour on metallic surfaces were considered, since we believe that most of the glazes used over metallic objects could have also been employed on these surrogate gilding techniques, provided that the object's submersion was not required.

Using these guidelines, 89 recipes were found, in a time span reaching from 1557's French edition of Alessio Piamontese's *Les Secrets*, to the 1794's anonymous *Segredos Necessários para os Oficios, Artes e Manufacturas*. A list of these sources is presented in the Appendix. Although this data still needs further interpretation and study, several considerations can already be made on the production of *douradura*.

Recipes of the above mentioned oil glazes will continue to be presented until the end of the 18th century (Figures 3a and 4a) and are sometimes associated with the *guadameci* technique on their description "varnish with which leather is dyed with gold colour"[7] [33, pp. 66–67]. Up to 1750, their composition usually involves only few materials: sandarac and/or pine resin (to which Greek pitch and mastic can be added) are boiled with linseed oil and the glaze is coloured most often with only aloes, to which some recipes add saffron and turmeric [34, p. 103; 35, pp. 282–283].

On the second half of the 18th century the most often referred combination to be used with linseed oil is amber and shellac, seemingly by French influence of the works of Delormois and Watin and their formulas for *vernis gras à l'or* [23, pp. 238–239; 36, p. 142; 37, pp. 84–86]. As for dyeing, although references to the single use of aloes are still made, the gold colour is also achieved by the combination of annatto, dragon's blood, gamboge and saffron (Figure 4a) [23, pp. 238–239].

Alcohol or spirit based glazes would slowly become dominant, in great part due to the crescent interest in oriental lacquers and the attempts to replicate them in Europe [38, pp. 272–275]. Among the references studied, the earliest indication of an alcoholic or spirit based varnish is in Alessio Piemontese's *Les Secrets,* where benzoin resin is dissolved in spirit and coloured with saffron "to make beautiful varnish, to varnish the said gold"[8] [34, pp. 86–87]. If before the 1700's spirit based glazes only represented around a third of the references (and the majority of these came from Stalker and Parker's work), during the 18th century spirit based glazes become half of the total references.

Shellac was clearly favoured to make this spirit glazes and its use became predominant over time, often being used on its own [39, p. 878]. Benzoin and sandarac were also used on their own, while mastic and amber were employed in combinations with the above mentioned materials (Figure 3b) [33, p. 30].

On the 16th and 17th centuries references, four dyes are mentioned for spirits glazes; saffron, turmeric, gamboge and dragon's blood to which we must add the colour named *ornator* mentioned by Stalker & Parker and Salmon [39, p. 879; 40, p. 63]. In the 18th century aloes and annatto are also mentioned in several combinations (Figure 4b).

The use of essential oils on glaze production is also mentioned throughout this timeframe. Turpentine and spike lavender oil are referred as solvents in several recipes, although in much smaller number than the previously mentioned oil and spirits [19, pp. 281–282; 41, p. 51]. Amber, benzoin, mastic, pine resin, sandarac and sugar are mixed in different combinations (figure 1c) and it is noteworthy that – among the recipes collected – the first reference to shellac appears in Domenico Auda's *Breve Compedio de Marivigliosi Secreti,* where it is dissolved in turpentine along with sugar and dyed with aloes [42, p. 143].

The majority of these essential oil glazes are coloured with only aloes (Figure 4c), although one recipe calls for turmeric [42, pp. 142–143], and another for a combination of dragon's blood and gamboge [19, pp. 281–2].

On the colouring of all the kinds of glazes it is interesting to notice that just over half the recipes (45 out of 89) call for the combination of at least two dyes to achieve the golden hue. While the most often referred is saffron, in 45 recipes, is it mentioned as the single dying material only six times. Aloes was most referred to be used on its own, 24 times in a total of 38 of references.

The dying method seems to have also suffered some changes. If on the earlier recipes all the ingredients were putted together in one vessel, on the later references the dye was previously extracted with a solvent (usually ethanol or spirits), and later the coloured solution was

7 Translated from the Italian: "Vernice, com cui si tingono le pelli di colore d'oro".

8 Translated from the French: "Pour faire tre-beau vernis, pour vernir le-dit or".

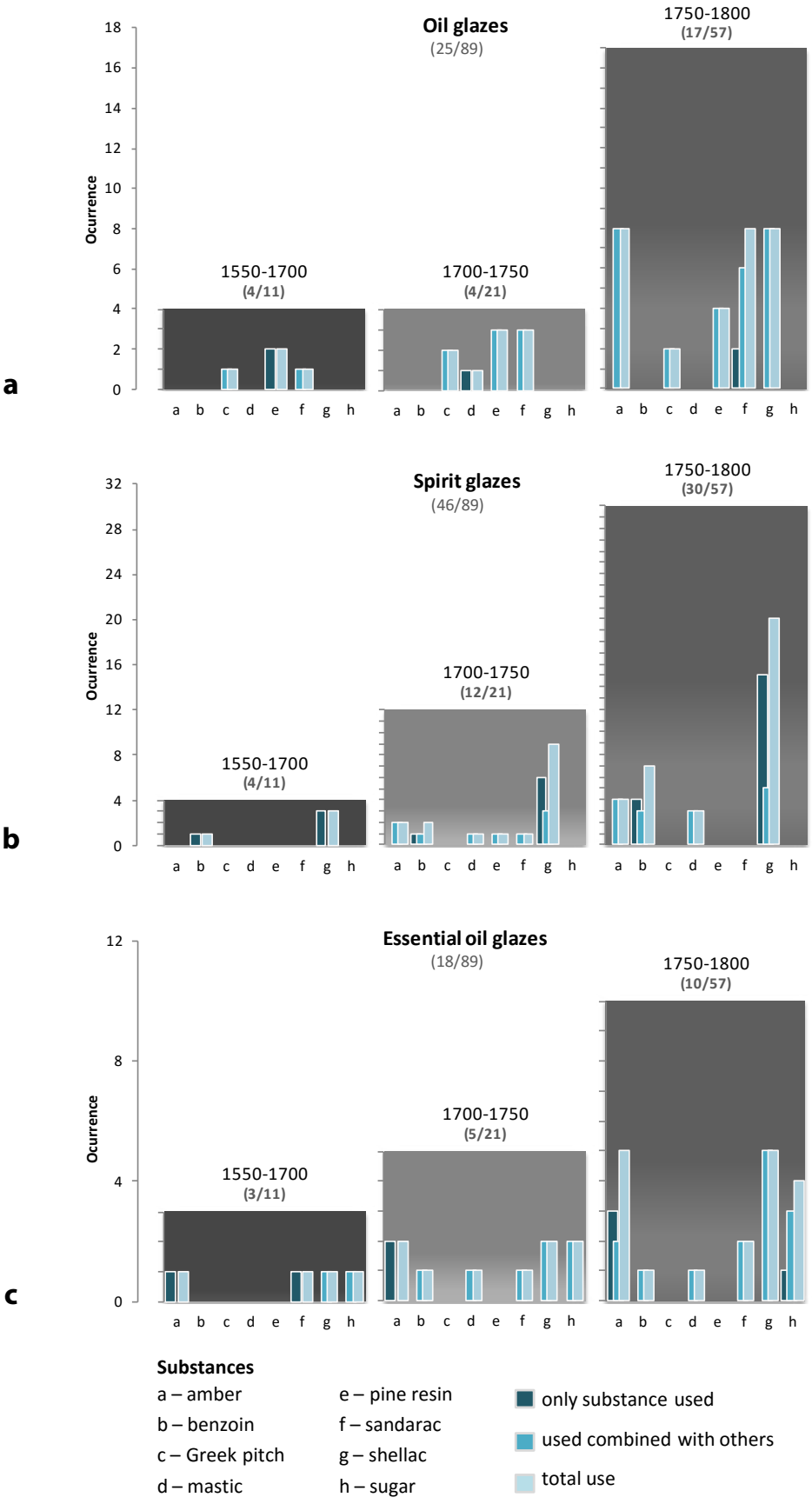

Figure 3. Main medium materials occurrence on the consulted documentary sources, sorted by time period and type of use in the three main kinds of glaze: *a)* oil glazes, *b)* spirit glazes and *c)* essential oil glazes. Numbers in brackets indicate the number of references to a given type of glaze per total references in a given time period.

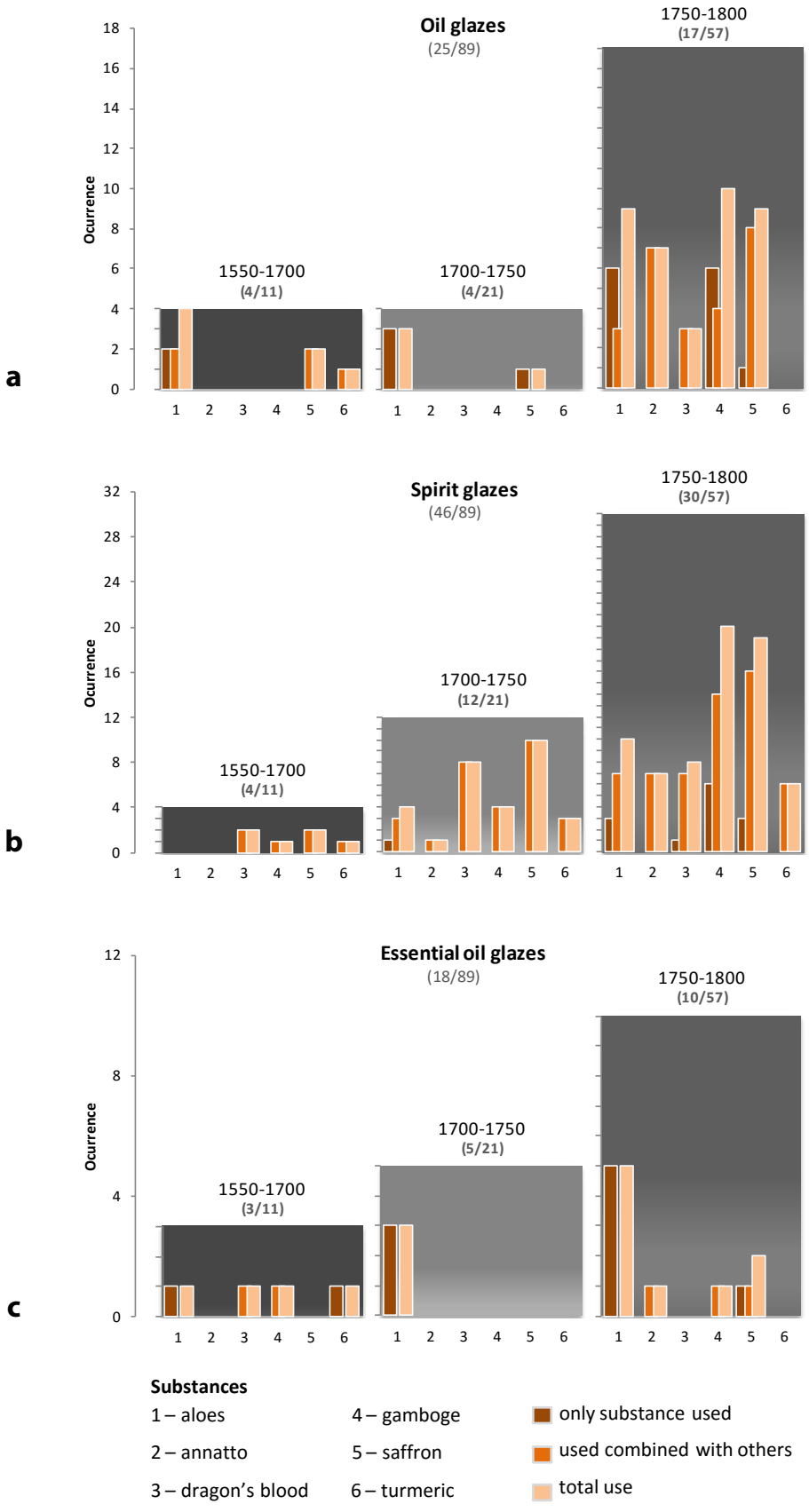

Figure 4. Main dye materials occurrence on the consulted documentary sources, sorted by time period and type of use in the three main kinds of glaze: *a)* oil glazes, *b)* spirit glazes and *c)* essential oil glazes. Numbers in brackets indicate the number of references to a given type of glaze per total references in a given time period.

mixed with the other glaze ingredients, allowing for a better control on dying [43, pp. 54-55].

Final remarks

The practice of silver leaf gilding, as a surrogate technique for gilding, has been often overlooked and misinterpreted. Scarce information on terminology, materials and processes obstructs the correct interpretation of documents and objects and, when the technique's objective is achieved – to simulate gold gilding – it becomes dissimulated, hindering identification. However, even when recognized silver leaf gilding is often deemed of lesser importance, as a forgery technique for true gilding.

Documentary sources point out to the antiquity of these techniques, allowing to trace their development and infer on their importance. These historic references also reveal that great care was placed on achieving a gold coloured glaze with good properties, and it is important to remember that the *douradura* is an intrinsic part of the technique and therefore of the object itself, and conservation treatments should respect this often fragile layer.

While providing essential information for the identification and interpretation of silver leaf gilding techniques, through the ongoing documentary survey alone it is not possible to establish with certainty when and how the referenced recipes have been executed. Within the scope of the firstly mentioned study on the use of silver leaf in Portuguese objects from the 17th and 18th centuries, further studies on silvered and silver leaf gilded sculptures and altarpieces are in progress with the objective of revaluating the occurrence and importance of these techniques in the Portuguese artistic production.

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Appendix

Sources from the 16th to the 18th centuries in chronological order of the source's first edition, with reference to the consulted edition or translation, noted with the number of *douradura* recipes found and respective page numbers:

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Artigo / Article

Gilding materials and techniques: comparison between altarpieces and their sculptures – a case study

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Abstract
We aim to present an analytical study of the materials used in two 17th-18th centuries sculptures – Santa Bárbara and Santa Rita de Cássia – and in the altarpiece where they once stood. All the pieces belong to the Church of Nossa Senhora das Mercês in Évora, although today the two sculptures are in the Museum of Évora. The main purpose is to compare the materials and the techniques used in the execution of the gilding and polychrome processes in the three objects. The study is focused on ground layers, gold leaf and polychrome layers. The stratigraphic analyses were performed using optical microscopy on cross-sections and the materials characterization of the different strata resorted to scanning electron microscopy coupled with energy dispersive X-ray spectrometry and to micro-Raman spectroscopy. The results show that the materials and techniques used in the three works of art are very similar and are consistent with the epoch's treatises suggestions.

Keywords
Baroque
Carved and gilded wood
Polychrome sculpture
Materials characterization

Materiais e técnicas de douramento: comparação entre altares e as suas esculturas – um caso de estudo

Resumo
Apresenta-se um estudo analítico dos materiais utilizados em duas esculturas dos séculos XVII-XVIII – Santa Bárbara e Santa Rita de Cássia – e no altar onde ambas figuraram. O altar pertence à Igreja de Nossa Senhora das Mercês, em Évora, e as esculturas encontram-se presentemente no Museu de Évora. O principal objectivo é comparar, entre as três obras, os materiais e as técnicas utilizadas no douramento e na policromia. O estudo foca-se nos estratos preparatórios, na folha de ouro e na camada polícroma. A análise estratigráfica foi realizada por microscopia óptica e a caracterização material dos diferentes estratos recorreu a microscopia electrónica de varrimento acoplada a espectrometria de energia dispersiva de raios X e a espectroscopia de micro-Raman. Os resultados demonstram que os materiais e as técnicas utilizadas nas três obras são muito semelhantes e são consistentes com as recomendações dos tratados da época.

Palavras-chave
Barroco
Talha dourada
Escultura policromada
Caracterização material

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Introduction

In Portuguese churches, the quantity of altarpieces often integrating polychrome sculptures testifies to the importance of this type of sacred art, known as *talha dourada* (gilded carved wood).

The altarpiece and the sculptures presented in this study belong to the church of an extinct convent – Nossa Senhora das Mercês (Our Lady of Mercy) that is nowadays the property of the Museum of Évora (ME). The convent was founded in "the first Sunday of July in 1670, where after construction works a new church was erected in February 17th of 1698" [1, p. 37], "but in 1758 [it] still had many incomplete rooms" [2]. The church has richly decorated *talha dourada* in the main altarpiece, in the two lateral altarpieces and in the arches of the crossing, made by a local carver (Jorge Guerreiro) during a post-earthquake campaign from 1760 [3]. In the transept there are two other altarpieces older but unfortunately no document is known about them or about the sculptures that filled their niches.

The altarpiece, on the side of the gospel in the transept, one of the objects of this study, shown in Figure 1, has a concave perspective, one single body and three vertical registers, separated by columns of seven spirals decorated by grapes and phoenixes. The ornamentation, which covers the whole surface, has a naturalist thematic based in flowers and leaves. These are all characteristics typical the Baroque period [4, pp. 95-97]. According to the disposition, the altarpiece was dedicated to a main saint, whose sculpture was placed at the center, and to four other saints, with sculptures in lateral niches, two in each side. Considering the relatively small dimensions of these niches, we deduced that there are only two polychrome sculptures in the ME collection, that belonged to the altarpiece. One of these sculptures, studied in this paper, is a reliquary bust representing Santa Bárbara (Figure 2). The oldest photograph known about this altarpiece was published in a regional inventory from 1966 (Figure 3) and shows a sculpture of Santa Rita de Cássia (Figure 4) standing in the central position. Nevertheless, this does not allow saying for certain that was its original placement. Santa Bárbara and Santa Rita are the two sculptures presented in this study.

Figure 1. Left altarpiece from the transept of the Church of Nossa Senhora das Mercês.

Both sculptures have sgraffito as the main decorative technique for the garments, complemented in Santa Rita with punch work. The monochromatic garment and mantle of Santa Rita is associated to her iconography, the simplicity of the nun's habits, reduced to black and some notes of white on the hood and inside the sleeves. The thematic of the *estofado* work features a flower as the central element, complemented by a range of winding vegetal elements ending in a stylized flower of four petals. The shape of the punch is a propeller with a 1.3 mm diameter.

In turn, Santa Bárbara's garments have a vaster palette consisting of red, blue, and white. The *estofado* work seems to be a free-hand sgraffito drawing in opposition to the one projected for Santa Rita, perceived on the symmetrical composition.

This study aims to identify the materials and techniques used in the execution of the gilding and polychrome processes and also compare the results between the sculptures and the altarpiece. Overall, the broader objective is to contribute to a better understanding of this category of art (of which the study is just recently increasing) [5, p.41] and to start grouping dispersed polychrome sculptures in the regional context.

Material characterization

Experimental

Microsamples from all different colours present in the altarpiece and in both sculptures were collected and impregnated in epoxy resin – three from the altarpiece (red, green and blue), three from the Santa Bárbara (red, blue and white) and three from Santa Rita (white, black and punch work area), in a total of nine. For a better understanding of the strata, the polished cross

Figure 2. Santa Bárbara sculpture.

Figure 3. Old photograph showing both sculptures – Santa Rita de Cássia and Santa Bárbara – standing in the altarpiece.

sections of the samples were observed with a stereozoom microscope Leica Model DM 2500 M, with a Leica DFC290HD camera for image acquisition, with 20× and 50× magnification lenses. The characterization of the materials from the different strata, including ground layers, golf leaf and polychromy, were performed in a SEM HITACHI S-3700N variable pressure scanning electron microscope coupled with a Bruker Xflash 5010 SDD energy dispersive X-ray spectrometer. Micro-Raman spectrometry was also performed on all samples using a Horiba Xplora Raman microscope, with a capacity increased to 100×, and a charge coupled device (CCD) detector. Laser wavelengths of 632.8 nm and 785 nm were used. Wavenumber calibration was performed with the Raman peak of a silicon crystal at 520 cm^{-1}. The laser beam was focused on the grains of pigment with 50× or 100× objective lenses. The laser power at the surface of the sample was held to <1.1 mW (632.8 nm) and <6.5

Figure 4. Santa Rita de Cássia sculpture.

mW (785 nm). Raman spectra were obtained in scanning mode, after five scans, with acquisition times of 10-20 s.

Results and discussion

Ground layers

The ground layer, in both sculptures and in the altarpiece, has a white appearance and covers the whole surface. Although the treatises recommend the use of several layers of two different materials, these were not distinguishable by OM observation and the maximum thickness registered was around 400 µm. The analyses made by SEM-EDS, as shown in Figure 5, allow distinguishing two different layers and demonstrate that the first layer, closer to the support, has larger particles comparatively to the second layer; both layers are composed of calcium and sulphur, suggesting calcium sulphate, and these results were consistent for all the analysed samples. In Santa Rita's samples, the second layer showed dolomite inclusions (association of Ca and Mg), as shown in Figure 6. The dolomite inclusions in the second layer of Santa Rita can be, for example: (1) purposely added, if the material used in this layer was an hydrate version of the material used in the first ground, or (2) a natural component, as this material might be from a different origin than the one used in the first layer. In all the samples from the three objects we have also identified dispersed particles of celestite (strontium sulfate), that naturally occurs in gypsum outcrops [5, p. 82].

The micro-Raman analyses showed the presence of anhydrite ($CaSO_4$), shown on Figure 7a, and gypsum ($CaSO_4 \cdot 2H_2O$), shown on figure 7b. Both spectra shown in Figure 7 were obtained in a sample from the altarpiece. The anhydrite layer is the first one above the wood and the gypsum is above the anhydrite layer. The data confirms once more that, in Portugal, in the South [6, p. 75], in the Center [7] and in the North [8, p. 22], these two materials were generally used [9, p. 131] and the recommendations of the paint treatises, such as the one by Filipe Nunes [10, p. 126], were followed in the production of the sculptures. The utilization of two different materials presumes two different goals. The first layer was applied to attenuate the defects of the wooden support [11, p. 239] and the second one creates an ideal surface for the burnished gold leaf [11, p. 241] and for the punch work. A micro-sample collected from a punch work area of Santa Rita's garment analysed by SEM-EDS shows how the gypsum particles got compressed (Figure 8).

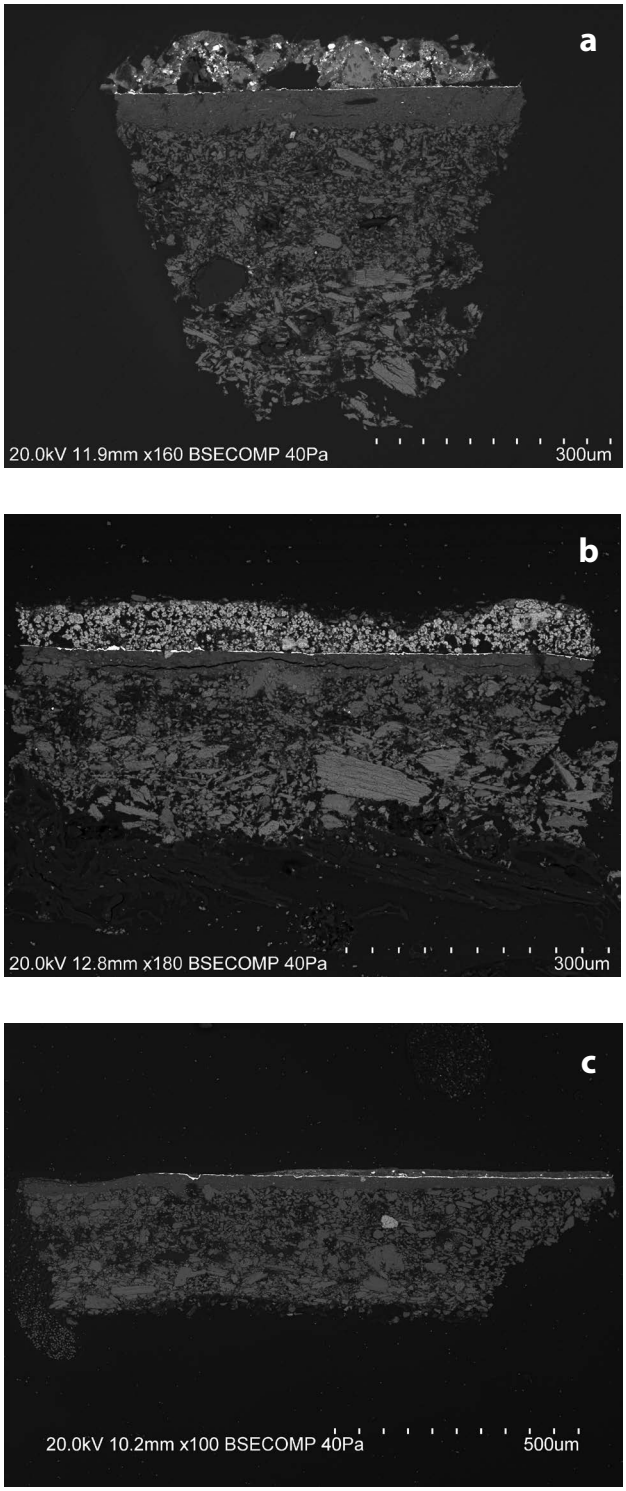


Figure 5. Double structure of the ground layer by backscattering electrons in SEM: *a)* sample 1 from the Altarpiece collected from a blue area; *b)* sample 3 from Santa Bárbara's sculpture collected from a blue area; *c)* sample 3 from Santa Rita de Cássia's sculpture collected from the black area.

Bole layer

This layer, identical in both sculptures and in the altarpiece, has an orange colour and is applied in all the extension of the gilded areas and with a maximum registered thickness of 40 µm. The observation of the cross-sections by OM allowed the identification of two different layers, as shown in Figure 9, through a 20× magnification of a sample taken from a blue area of the altarpiece. The first one is a very homogeneous orange layer, and the second one is mostly orange but with dark particles. With SEM-EDS analysis it was perceptible that

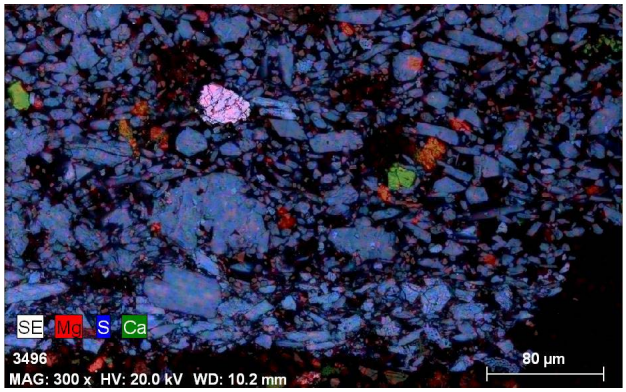


Figure 6. SEM-EDS image of sample 3 from Santa Rita de Cássia showing the magnesium enriched particles (Mg) and celestite (bright particle) inclusions in the *gesso mate* layer.

this layer is composed mainly by iron (Fe), aluminium (Al) and silicon (Si); a few particles of titanium dioxide (TiO_2) were also traceable, typical of an aluminosilicate containing iron (clay mineral). The dark particles were identified by SEM-EDS analysis as being composed by carbon (C). According to an anonymous recipe from the 17th century, the bole must be mixed with gypsum and *lead pencil* to obtain a glossy gilding [12, p. 20]. *Plombagina* (or graphite) is added to the bole due to its unctuous characteristics which facilitate the friction in the burnishing [13, p. 58]. Francisco Pacheco, a Spanish treatise author from the 17th century, explains that graphite, mixed with the bole makes it softer and satiny, which facilitates the burnish of the gold leaf [14, p. 429]. Even Filipe Nunes, in its 17th century treatise [10, p.

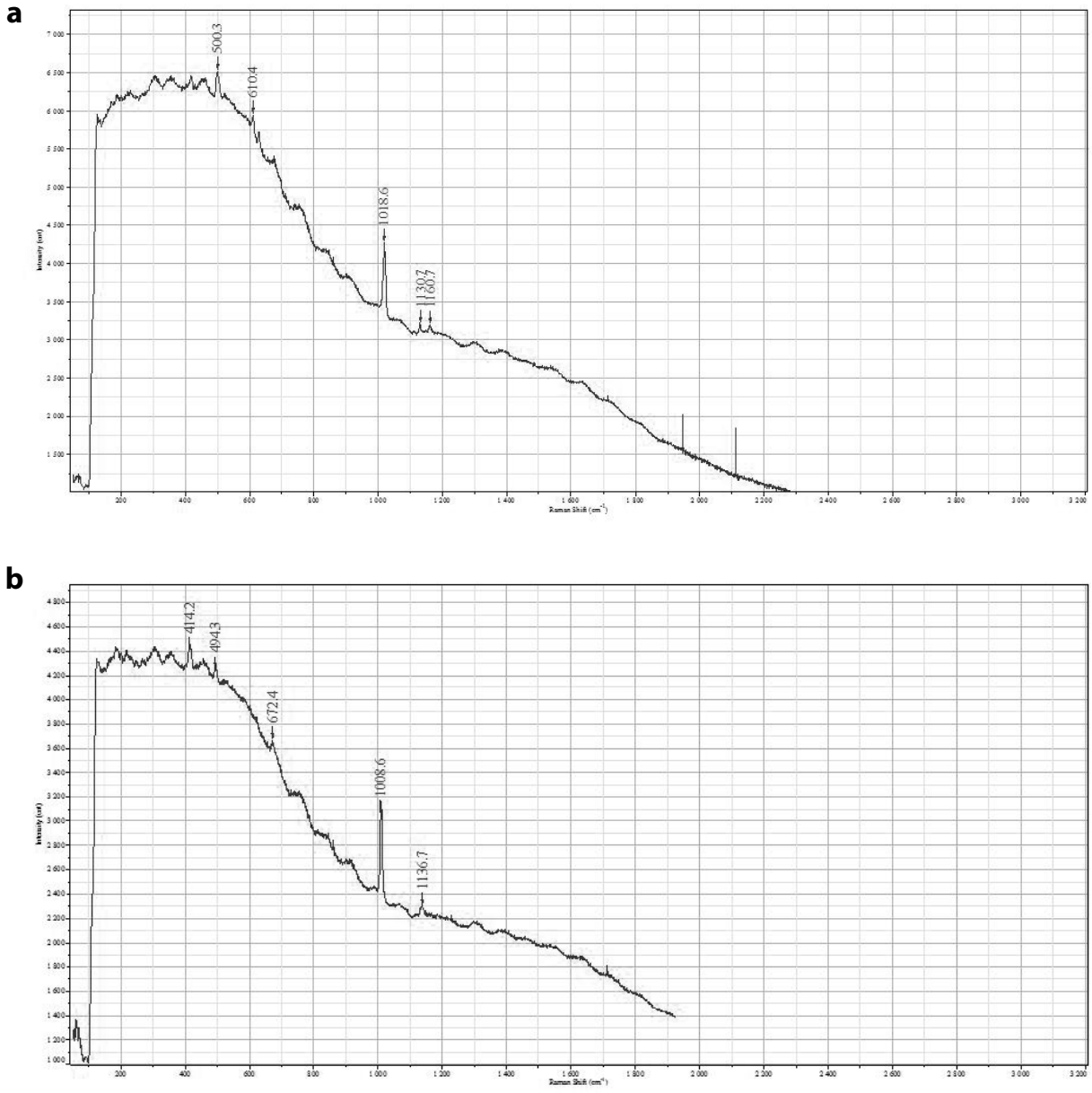


Figure 7. Micro-Raman spectra (785 nm, 6.5 mW, 10 s) from sample 1 of the altarpiece: *a)* anhydrite in the first layer (500m, 610m, 1018vs, 1160w); *b)* gypsum in the second layer (414m, 493m, 670m, 1008vs, 1136m).

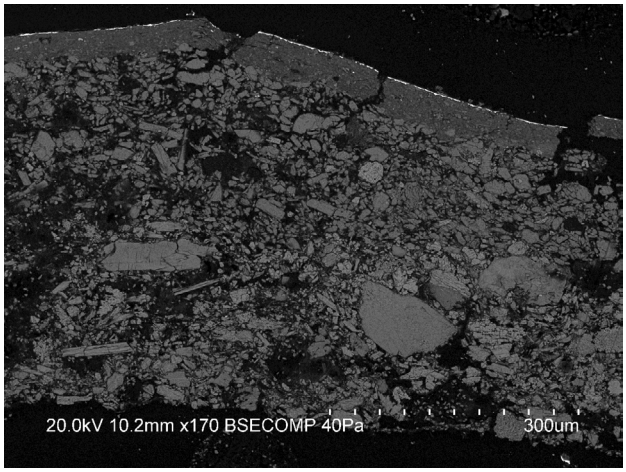


Figure 8. Backscattering electrons image of sample 4 from punch work area of the Santa Rita de Cássia garments, showing the compressed gypsum particles.

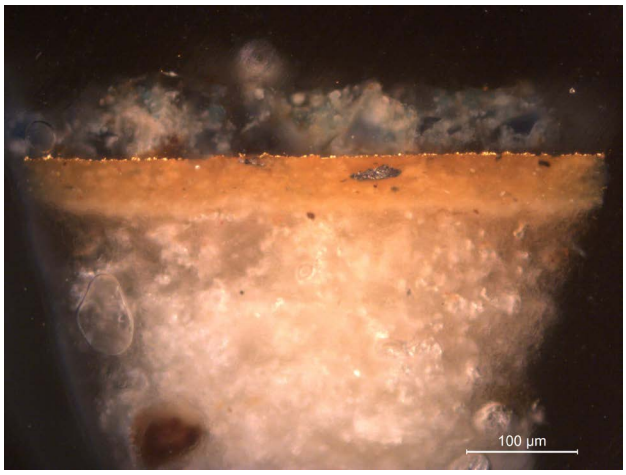


Figure 9. OM 20× image of sample 1 collected from a blue area of the altarpiece showing the bole layer, where it is possible to differentiate a first homogeneous strata and a second one with the graphite particles.

126], advises the usage of two different boles – a common one first and a refined one afterwards [15, p. 14]. Micro-Raman analysis of these dark-grey particles has proven them to be made of graphite (Figure 10). Therefore, we concluded that graphite was intentionally added to the upper layer of the bole, while the first layer remained unadulterated.

Gold-leaf layer

The gold leaf was applied over the bole layer in the all the garments of Santa Rita, even in the back, in the front garments of Santa Bárbara and in the whole surface of the altarpiece. The alloy identified, by SEM-EDS, shows the presence of gold (Au), silver (Ag) and copper (Cu). The semi-quantitative analysis by EDS in different localizations reveals a proportion, on average, of 96 % gold, 3 % silver and 1 % copper. This average demonstrates the utilization of a very high purity gold leaf, of about 23 carats.

Polychrome layer

As stated before, the polychrome layer covers up all the gold leaf applied in the garments of both sculptures and the decorative drawings are made by removing the paint layer, revealing the subjacent burnished gold leaf (sgraffito technique). In the altarpiece, the sgraffito was used in the flowers and in the body of the phoenixes. Regarding the technique, it is probable that a single stratum of polychromy was applied, which varies from 16 to 30 µm. It is visible, through OM and SEM-EDS, that all the colours are composed of a mixture of pigments, as opposed to a single pigment, except for the red – composed of vermilion – and the blue of Santa Bárbara.

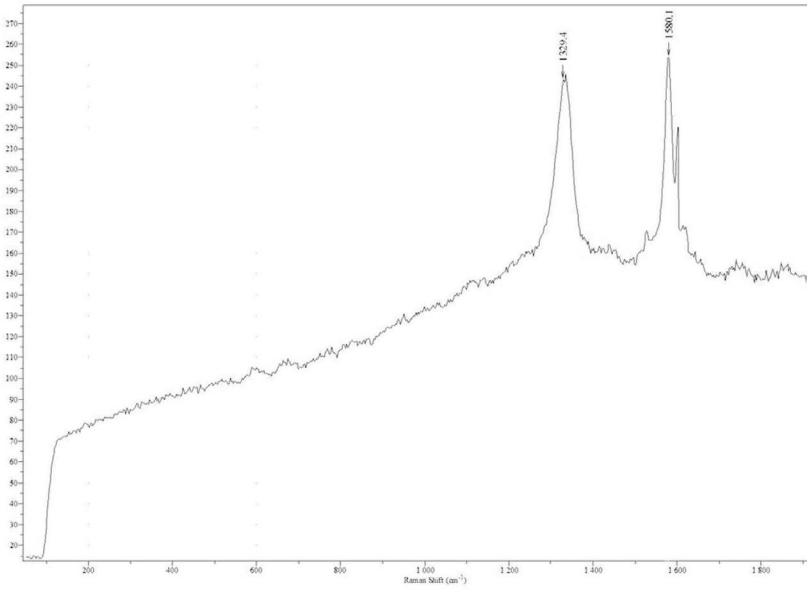


Figure 10. Micro-Raman spectra (638 nm, 1.1 mW, 5s) of sample 3 from Santa Rita de Cássia identifying graphite (1326s, 1582vs).

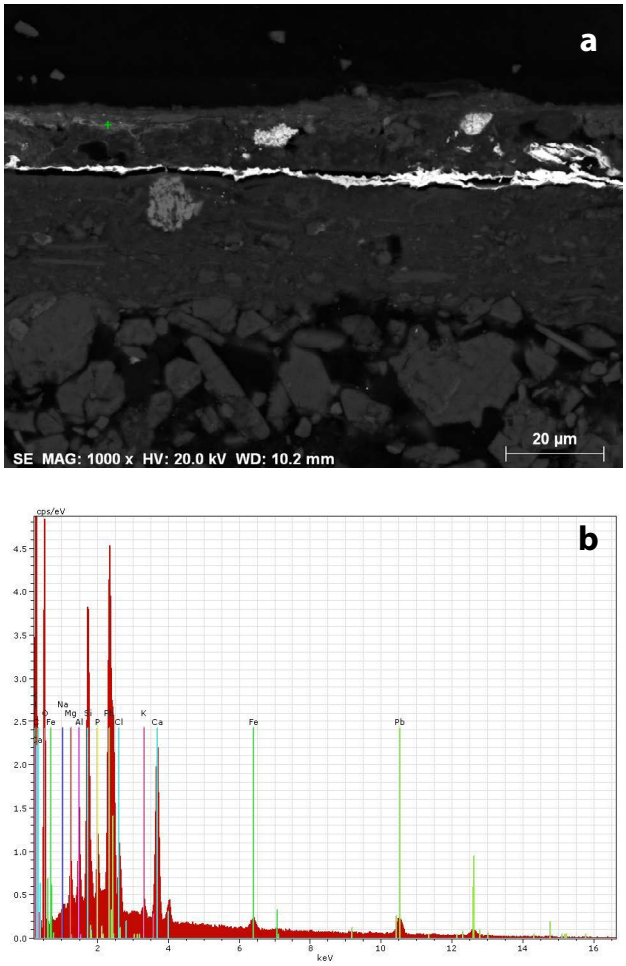


Figure 11. *a)* Backscattering electrons image of sample 3 from Santa Rita de Cássia black garments; *b)* EDS spectrum of point analysis showing calcium phosphate.

Santa Rita has just two different colours – black and some white details. The black layer is composed of a mixture of elements such as calcium, iron and lead; the spot analyses made by EDS show calcium phosphate as the main colour, as shown on Figure 11. The white layer is a mixture of white lead and calcium carbonate.

In turn, Santa Bárbara has three different colours in the garments – red, white and blue. For the red colour, mercury was detected, confirming the use of vermilion (mercury sulphide), as shown in Figure 12a; for the white, a mixture of lead white and calcium carbonate was found, as shown in Figure 12b. Copper was detected in the blue layers, confirming the use of azurite (copper basic carbonate), as shown in Figure 12c.

For the altarpiece, mercury was detected in the red, confirming the use of vermilion. The blue layers were obtained by mixing smalt (angular irregular particles composed of Si, K, Co, As), azurite (Cu detected), lead white and calcium carbonate, as shown in Figure 13.

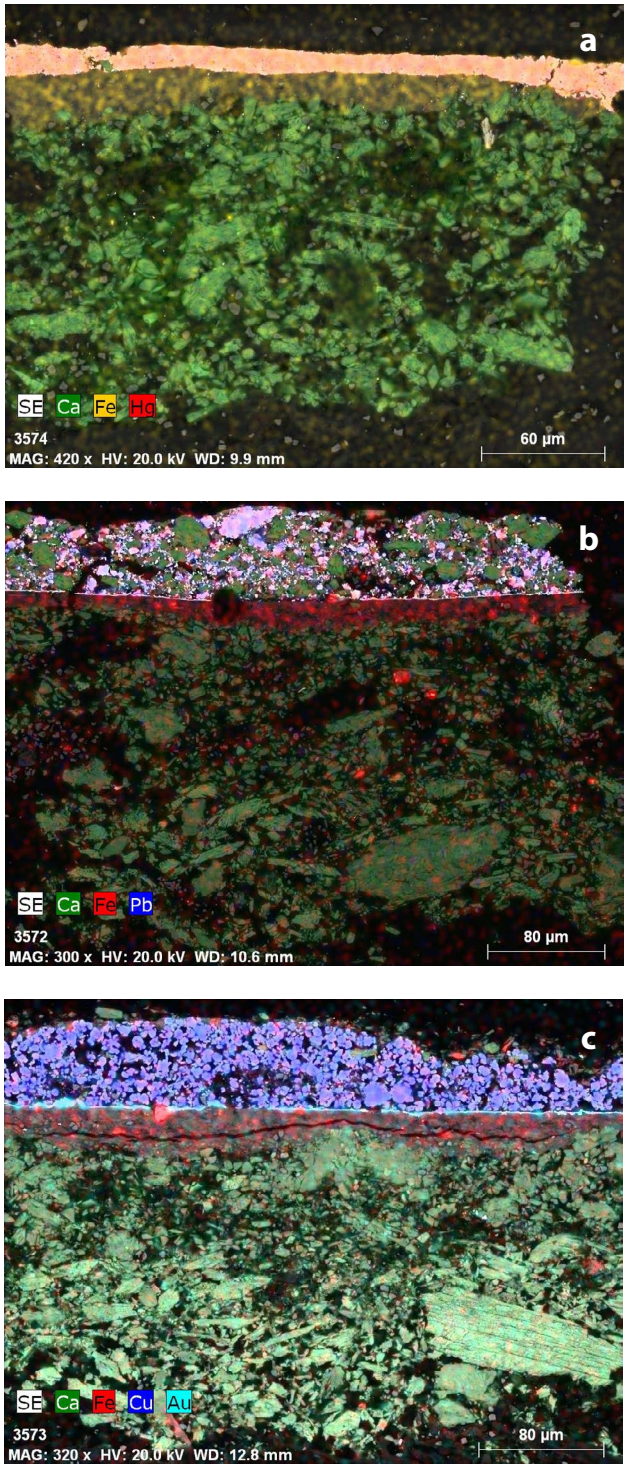
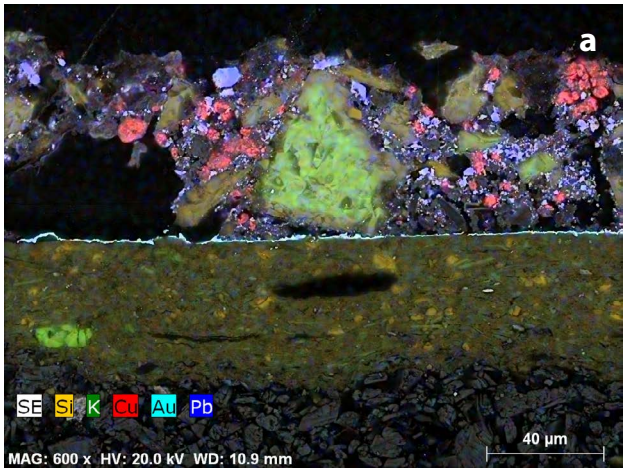


Figure 12. SEM-EDS images of samples 1 (red), 2 (white) and 3 (blue) collected from the Santa Bárbara garments: *a)* vermilion identified by Hg; *b)* calcium carbonate and lead white mixed for the white color; *c)* azurite identified by Cu for the blue color.

Copper was also identified in the green layers, but the results for the copper-based pigment were not conclusive by micro-Raman.



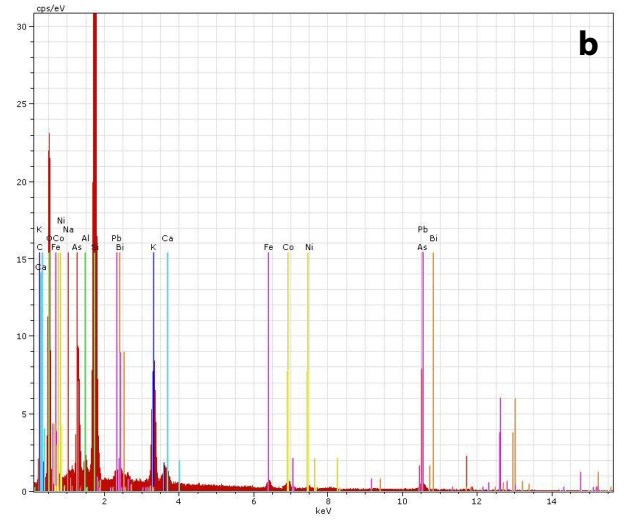


Figure 13. *a)* SEM-EDS image of sample 1 collected from a blue area of the altarpiece; *b)* EDS spectrum of point analysis showing smalt identified by K, Si, Co.

Conclusion

The present case study revealed that the materials and techniques identified are, generally, in correspondence with the epoch's recommendations and the published studies about Portuguese polychrome sculpture and altarpieces in *talha dourada*. The results showed that both sculptures and the altarpiece are very similar regarding major components used in the different strata of the gilding work. The materials identified in all the layers for the three objects are in consonance with each other: anhydrite in the *gesso grosso* layer; gypsum in the *gesso mate* layer; aluminosilicate containing iron in the bole layer, with addition of graphite; the high purity of the gold leaf; and the single layer of colour paint to define the main colour, mainly with combined pigments, except for the reds and one of the blues. In the case of the Santa Rita de Cássia, a slight difference is observed in the composition of the ground layer, namely given the dolomite inclusions of the *gesso mate* layer.

More research will be undertaken in order to identify all the materials used in the gilding and polychrome processes, like the binders of the layers and the remaining pigments. We also expect to extend this study to other altarpieces and polychrome sculptures from the region of Alentejo in order to obtain more systematized results.

Acknowledgements

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Article / Artigo

Gold and not so real gold in Medieval treatises

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Abstract
The aim of this study is to evidence diverse materials and processes used by artisans (and alchemists) required to synthesize a visually viable replacement for gold. The emphasis of the research is upon the production of mosaic gold or porporina, a pigment that has survived into modern times, which was used as ink and as paint. Base metals, mostly tin, but also alloys were used both into foils coated with glazes and varnishes and as pigment. The research focuses upon recipes documented in treatises dating from Antiquity to the late Medieval period (ca. 1500) and an attempt is made to answer two questions. In the first place, why was there a need for a surrogate? Secondly, why are there so few tangible examples detected on surviving artifacts? In conclusion, an argument is offered pointing out that, although much can be learned by scientific examination of artifacts, textual analysis is equally important and necessary to unravel mysteries of ancient technologies.

Keywords
Mosaic gold
Glaze
Porporina
Chrysography
Amalgam
Medieval treatises

Ouro e imitações de ouro nos tratados medievais

Resumo
O objectivo deste estudo é mostrar os diversos materiais e processos usados pelos artesãos (e alquimistas) na procura de um adequado substituto do ouro. A pesquisa é direccionada especialmente para a produção de ouro-músico ou purpurina, um pigmento que se manteve até à actualidade e que foi usado sobretudo como tinta e como pigmento. Metais comuns, particularmente estanho, assim como ligas, foram usados quer como folhas sobre as quais eram aplicadas velaturas e vernizes, quer como pigmento. A pesquisa incide sobre as receitas registadas nos tratados da Antiguidade até ao período medieval (ca. 1500) e é feita uma tentativa de responder a duas questões. Em primeiro lugar, a que se deveu a necessidade de uma imitação do ouro? Depois, por que é que sobreviveram tão poucos exemplos? Em conclusão, é referido que, ainda que muito se possa aprender através da análise científica das obras, a análise documental é igualmente importante e necessária para se esclarecer os mistérios das antigas tecnologias.

Palavras-chave
Ouro-músico
Velatura
Purpurina
Crisografia
Amálgama
Tratados medievais

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Introduction

Base metals such as tin, copper even iron and alloys like brass and bronze, are recurrently mentioned in various treatises as a replacement for gold, or as its surrogate. Most recipes claim that with appropriate manipulation the substitute would seem to the observer just like *real gold* ("ut littere videantur de auro") [1] and that even "artisans would not be able to detect the difference" [2].

There are two basic ways to doctor pure gold. One is to *extend* it; another is to make an alloy with base metals which take aspects of gold but do not contain any portion of the noble material. An entirely different technique involves *shiny/reflective* metals such as tin or silver to be altered by the application of diverse yellow varnishes and glazes. Combined, the reflective quality of these metals and the proper color of surface finish make them appear as a genuine gold leaf.

Several reasons can be singled out and each most likely contributed to the apparent need for a gold substitute: scarcity, economics, or even deceit.

By the Middle Ages, European deposits of gold were dwindling or were exhausted [3]. Most of the European gold was obtained by exploiting alluvial deposits, limited mining, trade, and war lootings or by re-melting existing objects. Alluvial deposits are already mentioned by Diodorus Siculus (ca. 60-30 BC) who described Gaul's rivers as "full of gold dust" [4] and later on by Theophilus [5], under the heading: "De auro arenario", regarding gold that was found on the banks of the river Rhine. The authorship, date and purpose of *Schedula* of Theophilus are still contentious, but the early 12th century is a generally accepted date [5]. The few gold mines that existed were often abandoned because of rising waters which were at that time difficult to control [6, 7]. The most famous mine surviving into modern times was situated near the Kremnica mountains (in today's Slovakia). The town of Kremnica was also known during the Middle Ages for minting the famous *ducat* coin. The demand for gold was augmented by imports from Arabia, Egypt (i.e. Nubia) and from as far away as India [8].

One of the plausible requirements to replace gold with a reasonable facsimile was certainly economics. Both Theophilus [5] and Audemar (*De Coloribus Faciendis*, ca. 13th-14th centuries) [1] preface one of their recipes with: "if you have neither of gold nor silver" ("si neutrum habeas scilicetnec aurum nec argentums") and recommend tin as a satisfactory substitute ("stanum purissimum"). In recipe no. 205 Audemar is even more explicit, suggesting the choice of tin "on account of the price of gold" [1]. Merrifield indicates that when the parties were unable or unwilling to pay for gold, "tin foil yellowed with varnish was especially effective for murals where it would be seen at some distance". Cennini shares the same opinion [1, 9]. Documents regarding the decoration of the church of S. Jacopo in Pistoia (late 13th century) mention some 37 pieces of tin, rather than gold leaf, used to conjure the same gleaming effect, but at a much reduced expense [1]. Tin as well as silver were especially suitable because of their high reflective quality. Audemar notices that the satisfactory appearance of tin in lieu of gold is due to its *great brilliance* [1]. Gold and costly pigments such as lapis lazuli invariably formed a separate part of a given contract, specifying where they were to be applied and in what quantity in order to safeguard patrons from substitutions of lesser value [10].

A number of treatises also address the *quality control* of gold and instructions are given on how to test its purity. The author(s) of the Leyden papyrus, of late 3rd century suggest that, if gold is heated and becomes white, it contains silver and, if it becomes rougher and harder, it contains copper and tin, but should it blacken, the admixture is lead [2]. In the Tagernsee ms. (ca. 11th century), recipe no.148, among others, gives instructions for testing gold ("Eine goldprobe") and no.149 for testing silver ("Probacio argenti si sit purum") [11]. Test for gold's purity was even mentioned in the Bible, Zachariah (13:19): "And I will put this third into the fire, and refine them as one refines silver, and test them as gold is tested". The *test for purity* was likewise necessary to monitor an alloy's composition as a prerequisite for a successful chemical fusion, while at the same time discouraging forgery. But embezzlement is as old as mankind and ancient artisans were no exception. Pliny mentions that very high-priced cinnabar was *corrupted* with goat's blood or with crushed service-berries [12] and Eraclius (*De Coloribus et Artibus Romanorum*, LI.241), "on trying azure", gives instructions on how to determine that it is not adulterated [1]. Several recipes in the Leyden ms. and in the 600 AD *Mappae Clavicula* [13] deal with how to *double* the weight of gold, so there is nothing to prevent us from believing that some *true* gilding was of a lesser purity or contained no gold at all.

State of research regarding gold substitutes

Scholarship on gilding sporadically considers the existence of base metals as a replacement for gold, often only *in passim*. Daniel V. Thompson, an authority on medieval painting techniques, in his seminal textbook laments: "I have only once in my life been quite sure that I was looking at mosaic gold in a medieval work" [14]. He cites ms. Palatina 951, dating from the 14th century (Biblioteca Nazionale, Florence), as having some of its capital letters executed in faux gold and its folio 125v gives instructions on how to prepare it. Listing examples of *fake* gold that have been identified up to now needs to be the subject of further research. Just to corroborate the use of the so-called mosaic gold, or surrogate gold, it was for example identified on a polychrome stone statue of Santa Ana dating to the 13th century in Santa Maria de la Real (Sasamon, Spain). A yellow-reddish pigment on the hem of the Saint's cape was a tin (IV) sulfide identified by Raman spectroscopy and confirmed by SEM [15]. The

mosaic gold was admixed with red lead and therefore its detection was not obvious without the use of sophisticated analytical tools. It is important to note for future reference that detecting or overlooking the presence of mosaic gold could be caused by the material's visual *camouflage*. This is especially plausible when it is added to other pigments.

The lack of scholarship regarding gold substitutes can also be attributed to the very nature of artisanal treatises. Until relatively recently they were considered as simple *workshop* instructions/notations or alchemical nonsense of a limited scientific, literary or art historical significance and therefore of doubtful research value [16]. Their credibility was not helped by such instructions as "always stirring it with dog's foot that has its hair and wool" [17]. Was this a preposterous suggestion? Once tested, these and other implements/processes were proven to have a very sound application and cannot any longer be dismissed as nonsensical. It was experimentally demonstrated that "the fuzzy dog's foot" is essential to combine two very immiscible materials such as *liquid* mercury and powdered sulfur, two main ingredients in making mosaic gold [17]. There are recipes where, for example, dragon's blood is properly identified as a resin, a product of the plant draco (*Dracaena draco*), while others repeat the proverbial battle between a dragon and the elephant already recorded by Pliny [12]. Similarly, instructions listed in the *Schedula,* mostly based on Theophilus' solid understanding of metals and metallurgy, contain a rather atypical recipe for *Spanish gold,* requiring basilisk powder and human blood [5]. Hawthorne & Smith rightly rehabilitate Theophilus, pointing out that this odd recipe received far more attention than it deserved. Theophilus was possibly transcribing symbolic language of alchemy without great understanding or even interest. Most likely his so-called *Spanish gold* refers to brass or to a cementing process which enabled a deposit of gold onto an auriferous copper [18]. Alcherius' *vermes auri* (*Experimenta de Coloribus*, 14th century) after a lengthy burial would be found in aged bull's brains (*cerebrum tauri*), were considered precious, and needed to be "carefully preserved"; falls within the same category [1]. There are similarly implausible ingredients mentioned in *Mappae Clavicula,* but this manuscript is of a much earlier date and therefore closer to alchemical tradition [13]. Clarke dismisses such relatively rare, odd recipes as *Gednakeneexperimente* [17]. In other words, they might have been added by a craftsman as a note to try it later, *just in case*, there might have been some merit to it, or added much later by a *general reader* who made the notation without any intent to put it to test.

Alongside a chemically sound and fanciful recipes for obtaining surrogate gold there are as many that contain instructions for executing proper gilding (water or mordant), how to purify gold, how to make gold leaves and extolling the beauty of gilded objects.

Explaining the scarcity of examples is probably the most difficult task and any arguments should be seen as pure speculation for now. Gold's allure is as strong today as it was in ancient times. Its monetary, but also its spiritual value made it suitable to be applied to a wide range of objects, but specifically to those with otherworldly or mystical significance [3]. Gold's association with heavenly powers is found in both pre-Christian and in Christian religions and was deemed an appropriate material to address the gods or to *represent* the divine [19]. Replacing it with an inferior material could be seen as sacrilegious or even heretical. It therefore stands to reason to speculate that a humbler mosaic gold could be used for *objets d'art* of lesser significance. Such artifacts, over a period of time, had lower survival chances due to neglect or disregard. It is also possible that artisans far from important centers controlled by royal or ecclesiastical authority were more inclined to use a surrogate metal without facing penalties for ignoring rules either of their respective guilds or of those in power.

Artisanal manuscripts

Medieval manuscripts such as Theophilus' *Schedula*, Le Begue's compilation, Cennini's *Il Libro dell'Arte* and above all the Montpellier *Liber Diversarum Arcium* (ca. 1430) are but a few pertinent examples of manuals that describe in detail the working methods of medieval artists, a tradition upon which later instruction books relied rather heavily [1, 5, 17]. These manuscripts differ significantly from the early writings by Pliny or Dioscorides [20] as they are clearly based on the authors' direct practical experience and technique. Most of those recipes are more complete regarding ingredients and instructions, now easier to follow. Notations are either directed as manuals to apprentices (*indocti*) or are *recetari* for knowledgeable practitioners. In this sense, these compilations should be considered "as the theory of artistic practice, a set of technical rules and standards codified into recipes so art could be taught, learned and exercised" [21]. In turn, their subject matter relied heavily on ancient sources such as the two Leyden and Stockholm papyri, followed by the Lucca codex 490 [22, 23] and *Mappae Clavicula* of Greco-Byzantine origin (but recopied somewhere North of the Alps) [13] and a number of others recently published [17]. Although of a later date and often neglected but still steeped in the Medieval tradition and equally prominent as a manual, the *Illuminierbuch* (1549), by Boltz von Ruffach [24], also from Northern Europe, must be added to the list.

Gilding of tin leaves and other base metals

Gilding with base metal foils is very similar to the genuine gilding process. Instead of gold leaves, tin foil (brass, copper etc.) is laid down on a prepared ground. Different mordants are suggested (size, glair, gums, resins, even oil) followed by an application of a yellow

colored surface coating to impart a gold aspect to the metal leaf. The most frequently mentioned colorants were extracts of plants such as saffron, celedonia, hepatic aloe, the inner bark of pomegranate or verwain mallow. The other organic substance frequently mentioned was gall or bile of various animals: oxen, goat, fish or turtle. Among inorganic colorants, orpiment was used most often, although in rare cases ochre was also added. Ochre, due to its opacity, was possibly an adulterator or extender rather than a color enhancer. A number of recipes call for a mixture of both organic and inorganic ingredients.

In some recipes, this transparent coating is identified as *auripetrum* or *auripigmentum* as in recipe no. 202 by Audemar, which calls for Spanish saffron to be distempered in glue or liquid varnish and applied over polished tin [1]. Eraclius (no. XLIV, "De auro petro") lists a whole gamut of ingredients: *vesprum* ("well dried bark and boiled", but of still of unknown origin), or *incaustum*, or bark of blackthorn, myrrh, aloe, *vernix* (sandarac) and "if this is not available", then *glassa* (amber) [1]. Lucca ms. (no. 80, "Scripto similis auri") [22, 23], likewise lists several ingredients, adding also bile of a river turtle: "Take three drachma of the following: celandine, crushed resin, golden colored gum (*gumen auri colores*), pure orpiment bile of a turtle (*fel testudinis*), 5 drachme of Cilician (Turkish) saffron. Good for writing on parchment or paper, or glass, or marble". This recipe is very similar to recipes no. 63 in the Leyden papyrus except that *cnecos* (safflower) is suggested and a "very bitter bile of a calf". The Montpellier ms. adds to the list the juice of ivy and the blood of a goat (N. 4.37.1C). Another recipe from the same manuscript (2.8.2) introduces several more ingredients: pine resin, genuine hepatic aloe ("if that is not found, horse-aloe"), and dragon's blood, all to be boiled with linseed oil [17]. The term *doratura*, or *vermeil* is related to surface coatings but requires some clarification as it can apply to a different processes altogether. Generally it is considered as some type of transparent yellow glaze. However, as Thompson rightly points out, Eraclius' recipe ("De deauratura petulea stagni", no. XIII), is not related to what is generally considered as *vermeil* [1]. The only way the recipe is relevant to the topic of glazing is the necessity to dip the amalgam/tin plate into a mixture of soot and beer to take on a golden color. On the other hand, Cennini's doratura ("Come si fa stagno dorato") [9] relies likewise on plant material for surface modification. This doratura is akin to a recipe found in the Montpellier ms. which is practically contemporary with *Il Libro*. In "De confectione dorature" (Montpellier), hepatic aloe, linseed oil and saffron are boiled together and then applied "by hand three times" [17].

Mosaic gold and porporina

The surrogate gold pigment became known in Europe by the 13th century [7]. Chemically, mosaic gold is a tin disulfide (SnS_2), or tin (IV) sulfide, which is of a golden-yellow color. Unlike gold, it can be easily ground and thus readily tempered with an assortment of glues, gums, glair and even oil. [1, 2, 9, 14, 17]. To alter gold from a solid metal into a fluid ink to use it for chrysography required milling it into a powder that can be tempered with appropriate medium. Because of its malleability gold could be beaten to leaves of only 50-100 nm thickness but for the very same reason turning it into a fine powder was an arduous task requiring a special mill as described by Theophilus [5, 25]. Le Begue, on the other hand, suggests apothecary mill rather than grinding on porphyry, or to add other substances such as salt or honey to prevent gold particles from re-adhering [1]. A less taxing grinding process was suggested by alchemists where gold is combined with mercury rendering it hard and brittle thus easier to mill [1, 26].

Cennino's *porporina*, also mentioned in the Bolognese ms. (Bib. Universitaria 2861, 15th century) [1] and Brussels ms. (Pierre Le Brun, no. 15,552, dated 1635), is better known in alchemical literature as *oro musivo* or mosaic gold. Regarding this pigment Thompson cites a number of different names as recorded in various treatises: *aurum musaicum* or *aurum musicum* (lat.), *oro musaico*, *oro musivo* (it.), or *musiff* (fr.) and *oro de musico* (sp. & portuguese) and Spanish gold [9]. To this list one can add *aurum musitum* from the Strasburg ms. [27]. The term *oro de musico* is disputed as it is considered an idiom pertaining to music rather than to illumination and should actually be given as *ouro musivo* when referring to its use in Spanish and Portuguese texts [28, 29]. Thompson further suggests that the very name, *mosaic gold,* is contentious and that more study should be conducted regarding its manufacture, use and nomenclature. Considering the date of Thompson's seminal book on Cennini (1933), not much has been accomplished in this field as far as is known to this writer.

Manuscripts of the so-called *Books of Secrets* group, such as are the *Mappae Clavicula* and the *Compositiones Variae,* mention the use of amalgam but neither proposes grinding the alloy to obtain a gold-like pigment. Amalgam is a term used for any compound made with mercury, but mixed with some base metals in presence of sulphur forms an alloy that can have an aspect of gold. The Leyden papyrus, the predecessor of both Lucca and *Mappae Clavicula* manuscripts, contains recipes that are predominantly concerned with a list of ingredients necessary for fabricating or synthesizing *asem*, but without instructions on how to do it or mentioning *asem*'s purpose [2]. There are five recipes for *asem*: 5, 8, 9, 11, 12, although not all of them call for mercury and therefore do not form an amalgam. Jensen identifies *asem* or *assemon* as a term referring to alloys mostly intended to imitate gold or silver [2]. It is also suggested that in general, alloys were principally an attempt to transform all base metals into gold, not only for pecuniary or aesthetic reasons but because the ultimate endeavor of alchemists was perfection; therefore all metals likewise strive to eventually achieve that state which is attained

in gold [3]. Assertion that "lead is gold inwardly [...] but lead outwardly" fittingly illustrates this desire [23].

One of the early mentions of what can be considered as a mosaic gold is in *Schedula.* The recipe no. 48 introduces another term: *auro hispanico* [5]. However, as already mentioned, this is a very unusual recipe for Theophilus since, generally, most of his writing or copying is based on personal knowledge and is therefore infused with a sound technological foundation.

Although not as precious as gold to fabricate, these surrogate pigments or coatings still required a complex and a laborious process. Bersch [26], a modern-day chemist, lists several formulae for the preparation of mosaic gold which are very similar to early recipes found in the ancient treatises: tin filings, sublimated sulfur (*sulphrum vivum*) and ammonium chloride (*sal ammoniac*, *salmiac*). For some recipes, he also indicates mercury to form an amalgam. Forming amalgams with base metals (tin was the most common, but is not the only one) had its very practical purpose as it promotes a more immediate bonding with sulfur. However mercury was also used to separate gold from its impurities, or if it was not sublimated, to render gold more brittle and therefore easier to grind if fine particles were sought [25].

All the ingredients for mosaic gold were known from Antiquity [30, 31]. KoHung describes as early as the 300 AD the making of stannic sulfide [32], which Europeans much later transformed into a yellow-gold pigment called *purpurino* or *purpurinus*. For this process to be successful, the temperature level was critical; it had to be low at first, to be gradually increased to a dark red heat and maintained for a considerable time (half a day is often suggested). The degree of heat was regulated by the presence of ammonium chloride [30, 31]. The container (*matras* or *ampulla*) was left to cool off and it was usually broken to retrieve its contents. The yellowish pigment was found as a deposit at the bottom of the flask, or as crystalline scales on the vessel's walls. Certain variations to the basic recipe are recorded. The Bolognese ms. no. 168 [1] probably gives the most thorough and well outlined process, explaining how to achieve a good amalgam, at what point to add sulfur and sal ammoniac, how long it should be exposed to heat and finally advises to temper it with gum water and to store it in a horn; "write and the letters will appear fine and shining". The Montpellier ms. devotes a number of recipes to the modification of base metals [17]. Of these, *gilding eramen* (copper or copper alloy, no. 4.1.1) is not real mosaic gold as it uses also genuine gold leaves, though this was not an unusual practice. Iron is gilded in the same way, as is outlined in recipes for silver and *auricalcum* (nos. 4.2.1, 4.3.1, 4.4.1) [17]. The recipe for *gilding* an auricalcum ring seems to be derived from *Mappae clavicula*.

A 17th century formula by Knuckel [33] mixes bismuth and tin for similar results. The Brussels ms. no.13 likewise synthesizes *purpurino* from an amalgam of brass to obtain "jaune qui imite la colueur d'or" [1]. Bolognese ms. recipes in chapter VI (no. 141, 142, 143, 144 and 145) pretty well follow the established ingredients except that no. 141 omits ammonium chloride [1]. Recipe 154 does not suggest to use any heat (was it obvious and thus omitted?); instead, tin filings are mixed with mercury "to be all well pounded with moistened gum Arabic" [1]. This recipe is similar to Eraclius no. XIII [1], "Of gilding tin foil", which possibly provides a better clue as from where the golden color is obtained: tin plate is dipped into a mixture of beer combined with soot and "it will look like gold". Merrifield suggests that soot was most likely made from birch wood, usually the main ingredient in making warm golden colored bistre ink [1]. And, finally, recipe no.146 hardly makes any sense at all except when compared with a similar recipe in *Experimenta de coloribus* (no.22): from an egg, the white is removed through a small hole and replaced with mercury. The hole is lutted and the egg is placed under the hen for 30 days and a gold color is found. Alcherius enlarges upon the instructions by suggesting to remove the mercury and mix egg yolk with a crystal reduced to a fine powder [1]. This mixture is then used to make the desired design over which, when dry, gold or silver is rubbed onto. Using gritty material to create a *tooth* over which gold can be rubbed over is also mentioned by Clarke [17].

A manuscript, ms. 1793 (Biblioteca Casanatense, Rome), signed by Simone di Monte Dante de la Zazera, was discovered and transcribed by Wallert [33]. He assigned it to a "particular group of technical art treatises" specifically devoted to manuscript illumination that deal with the preparation of colors, inks and gilding, but are not related to the *Mappae Clavicula* group. Of interest are a few recipes referring to *purpurino* also named *origno* (no. 19). However, these recipes list unusual and possibly erroneous ingredients such as nitric salt instead of sal ammoniac and lead instead of tin. This mixture would hardly produce a yellow-gold color. (Leyden's recipe no.15, on the "Coloration of gold", also mentions salt [2].) Recipe no. 17, "To make purpurina", omits sulfur, an essential ingredient for the fusion. Clarke points out that reworking texts was very common and transcribing them was often divorced from workshop practices, which results in technical inaccuracy [17].

In Alcherius' *Experimenta de Coloribus* [1] two recipes that refer to *purpurina colorem*: no. 19 and no. 39 reiterate the process described by Bersch [26]. Tin filings are mixed with hot mercury to which sulfur and sal ammoniac are added. The compound is put in a luted flask with small vents provided. When fumes are no longer discharged from the flask, it is left to cool, subsequently broken and the *purpurinus* collected. The pigment obtained is then tempered with gum water or frothed egg white (glair). Recipe no. 39 posits that the color obtained is as beautiful as gold ("colorem pulcrum et aurum") and recommends its use on books and parchment ("libris et cartis").

From another *recetario* that lists a number of recipes mostly from the 15th to the 17th century, one is selected as representative of many others (Pal.916 (1455), C113r):

> Fare porporina fine: Take mercury, Roman tin in equal quantities and mix together, let cool. Choose solfo vivo or sulfur in sticks, the most yellow you can find, sal ammoniac in the same quantity, pulverize all that together and add ox dung and put it in a glass vessel (put it on a fire) and when there is no longer any smoke, stir with a stick for two Miserere and then let it cool. Use it to write in silver, tempering with gum [34].

In Medieval recipes, but already noted by Pliny, different substances often come under a same name. Likewise the Leyden papyrus (no. 59) lists *talk*, "called chalk", to act as a flux; however the substances known to us by that name, *talk*, a silicate mineral, and *chalk*, a calcium carbonate would not be able to influence in any way the temperature. Another telling example is Eraclius' no. LIV(245) – "How to make purpurino" (*purpurinus color*). It refers to the real purple obtained from whelk and not to mosaic gold at all [1]. Flint (i.e. quartz), a stone that emits fire (*ignem emittentes*), is roasted and then quenched with strong vinegar. Quartz solubility increases with higher temperatures thus it can be reduced to a very fine powder, but its purple color is obviously obtained by adding something named *oster* [1]. The recipe describes *oster* as if it were some kind of plant material: "nascitur in insola Cipri" where it grows "cum solis". However the last sentence is straight from Vitruvius [35]: "it solidifies on account of its saltiness". Vitruvius mentions a dye *ostrum*, extracted from marine shells, in other words the famous source of Tyrian purple obtained from the whelk mollusk. This is but one of a number of examples where the scribe either did not understand the *original* text, was unaware that a sea shell can render a purple color and readily assumed that in all likelihood the dye was obtained from a plant. The scribe's supposition must have been supported by a recipe immediately following, "Of lakes" (no.LV), which asserts that purple color is made from madder roots, flowers (*viola lutea*), and, as also mentioned in the subsequent recipe (no. LVI), from the so-called clothlets or *bisetum/biseth* which Merrifield identifies as Italian *pezzette*, rags dipped in juices of certain plants that later on release the dye by soaking [1].

Of the three manuscripts consulted, produced North of the Alps, Boltz von Ruffach [24], although of a later date (1549), devotes five entries to mosaic gold ("Aurum musicum zemachen"), also listing similar ingredients except that recipe no. 4 omits mercury. The procedure is almost identical to the Bolognese recipes mentioned above. In the section on Von lybfarben, mosaic gold is again introduced as *Aurum musicum*, *guldene stuck* (i.e. gulden, gold coin) and *argentum musicum*. The mosaic gold, he suggests, can be shaded with cinnober, to which a bit of soot water is added (*rousswasser*), and reddish pigment (*rösslin*), which is in keeping with the above mentioned example regarding the robe of the Santa Ana from Santa Maria de la Real. He suggests again that it is possible to write with mosaic gold and that the chrysography should be shaded with Paris red or lac [24].

The *Trier Malerbuch* (1491) [11] refers to the pigment as *aurum musicum* (or mussicum) and lists also: tin, mercury, sulfur and salmiac. The manuscript however suggests heating the mixture "eynen gantzen dach" (i.e. the whole day). The Strasburg ms. gives only one recipe for the *aurum musitum*: "The process I am describing must be kept secret. If you want to make golden writing, procure aurum musitum from the apothecary (*nim in der appotek*) and grind it with water" [27]. By this time there was a proliferation of the so-called *vendecolori* i.e. the suppliers of artists' materials [36]. "Take gum Arabic and water and add this to the aurum musitum till they are the same consistency as for rubericks (*diki als ein ruberick*) write anything you wish with it".

And, finally, one needs to mention that not everybody was enthusiastic about mosaic gold. Cennini was aware that gold has affinity to mercury so he forewarns to be careful as *of fire* in using mosaic gold "because if there was half a millet seed of quicksilver [...] and that came in contact with gold ground [...] it would be enough to ruin the whole thing" [9]. Curiously then he proceeds to give a recipe for making mosaic gold anyway.

Conclusion

This research, examining the use of surrogate gold as recorded in various manuscripts, does not pretend to be an exhaustive account regarding the application of these techniques on artifacts dating mostly from the late Mediaeval to the Early Renaissance periods. An increased interest in ancient documents has unearthed a great number of new manuscripts (sometimes just a few, but important folios) significantly contributing to our understanding of various historical materials and processes. Clarke who examined many such treatises mentions some 450-recipe books that survived, many containing workable and fully replicable instructions [17]. It is safe to assume that this number is not final and with intensified research and increased interest more will surface to be studied. Since the publication of his *The Art of All Colors,* more than 50 additional manuscripts have been identified and it is therefore safe to conclude that the evidence of mosaic gold, porporina, doratura and vermeil among other recipes will increase.

The main intent of this research was to demonstrate that there is much room left for further study on this topic. With time and the use of sophisticated analytical techniques, coupled with awareness and the examination of available textual references, it is likely that a lot more examples will be detected. One can also postulate that the two main reasons for lack of evidence of these materials on surviving artifacts is the tendency of mosaic gold to age by losing its characteristic brilliance and for glazed base metals to lose their coating either through weathering or even through unprofessional or indiscriminate cleaning.

Bearing this in mind, artifacts from the mentioned periods, and even of a later date, that do not readily appear to have been gilded might still contain evidence of various gold substitutes.

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Gilders and painters-gilders in the Golden Age of Évora

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Abstract
At the end of the 15th century, Évora was a cosmopolitan town whose importance was increasing in cultural and artistic terms. Throughout the 16th century, and until the first half of 17th century, the town experienced a golden age, welcoming many Portuguese and foreign artists, who were closely following the royal court. Among them there were painters, gilders and woodcarvers, responding to the growing demand for work. This paper provides an insight into the lives of some of these men from the 16th to the early 18th century. Through a documental survey, details of the gilded production, patrons and labor organization are presented, along with data on the personal and social daily life of these artists.

Keywords
Gilders
Painters
Painters-gilders
Évora
Golden Period
Social History

Douradores e pintores no período áureo da cidade de Évora

Resumo
Em finais do século XV, Évora era uma cidade cosmopolita com crescente importância em termos culturais e artísticos. Ao longo do século XVI e da primeira metade do século XVII, a cidade atravessou uma era dourada, acolhendo artistas portugueses e estrangeiros que procuravam estar próximos da Corte. Entre eles, constavam pintores, douradores e entalhadores, que atendiam à crescente demanda de trabalho. O presente artigo oferece uma visão das vidas destes homens que trabalharam em Évora e no seu termo, ao longo do século XVI, até ao início do século XVIII. Com base em pesquisa documental, são apresentados detalhes das comissões, dos encomendantes e da organização laboral, assim como dados referentes à vida pessoal e social destes artistas.

Palavras-chave
Douradores
Pintores
Pintores-douradores
Évora
Período áureo
História social

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Introduction

The turn of the 15th to the 16th century left deep marks in Évora's urban life. Being the second largest town in the kingdom, cosmopolitan, the seat of the royal court and a witness to the diaspora of the Age of Discovery, it found new strengths in its inland location, as well as a new status among Portuguese towns. Politics, diplomacy and urban design witnessed that liveliness, together with culture and the arts. The charter issued by King Manuel in 1501 proves the energy of trade and consumption, driven by imported products seen as luxury items (*marçaria* items, spices, dyed and refined fabrics, delicate and precious stones), which are 37% of the items mentioned in the Évora charter, against the 30% listed in the Lisbon or Santarém charters. There are also references to high-quality construction materials (e.g. in Lisbon and Santarém), like the Levante marbles.

As the kingdom's administrative seat in the Age of Discovery, Évora gave the instructions for the preparation of the *India armada*, of the *Mina armada*, of the "arrangements for the Flanders armada" and for the organization of some armadas against corsairs. As a political and administrative centre, it witnessed, for example, the establishment of the Inquisition or the appointment of diplomats to discuss the issue of the Moluccas with Castille. But it was in the period between 1520 and the 1560s-70s that Évora stood out as an artistic and cultural centre, with the creation of the University and the presence of several intellectuals and artists from different areas, together with seven printing houses and fifteen booksellers. The kings settled with the court in Évora several times, and were followed by a number of artists who were close to them, among them painters, sculptors and gilders. The court's presence in the town was more frequent during the 16th century (with King Manuel I, King John III, Cardinal D. Henrique, King Sebastian and King Phillip I). In the 17th century, only King Phillip II and King John IV stayed in the town, and in the following century only King John V spent some time there (in 1729). The Crown's presence became less and less significant, causing the increasing peripherization of the town and of its status as a political and diplomatic center and, above all, as an attractive town for artists, something that, naturally, had an impact in terms of artistic campaigns.

The present research focuses on a survey of records regarding gilders, painters-gilders and woodcarvers from the period in which the town of Évora was thriving – its so-called golden age – as a result of the aforementioned circumstances. In those days, people were passionately devoted. There were commissions for extremely precious pieces intended for temple decoration. Faith was expressed through the construction of magnificent altarpieces, paintings and jewellery. In this context, gilders and painters were highly sought after but little is known about these men and the commissions that they undertook in the town and its surroundings. Our goal was to complement the information that has already been published by obtaining new data about the artists' lives, patrons and commissions through different types of documents that remain understudied, such as notary records, parish records, wills and the so-called *de genere* inquiries.

Patrons and gilding commissions in Évora – an overview

Commissions from convents and monasteries

In the 16th century, in the Cistercian Monastery of São Bento de Cástris, the painter Diogo de Contreiras created an addendum to the initial contract concluded with the monastery's abbess and owners to "gild the white sections of the aforementioned Altarpiece" [1, 2]. Additionally, in the monastery's Visitation Book from 1790, there are plans to use a gilded coating to avoid corrosion, i.e., as a precautionary measure:

> and considering also that our obligation is to avoid any possible damages and losses, and knowing that these may occur in the two altarpieces of our Patriarch's Altars, which are still made of corrodible wood, our instructions are to gild the aforementioned Altars as soon as possible to avoid that situation [3].

There are also documents from that period that mention painting and gilding works carried out in the monastery's church and in the chapel of São João Evangelista.

On the other hand, in April 1592, the nuns of the Convent of Santa Clara hired the painter Francisco João to paint and gild the altarpiece of the church's main altar within a period of three months [4-6]. He continued to work for the Poor Clares of Évora (there were three convents of Poor Clares in the town), this time for the nuns of Calvário – who by then obeyed the first *Rule* – by painting and gilding the church's altarpiece in 1594, a work paid by Princess D. Maria [5-7]. The Convent of Salvador also obeyed the same *Rule* and, in 1626, its abbess – Sister Serafina do Salvador –, together with the nuns, hired the painters Pedro Nunes and António Vogado "to properly paint, gild and estofar the Altarpiece of the Church of Salvador". António Vogado was responsible for gilding the altarpiece while Pedro Nunes was responsible for the painting works, which should be perfectly finished using good quality paints [8-11].

The term *estofar* was (and still is) a gilding technique on which the metal foils are over painted and then carefully scratched to unveil the gilding underneath.

In the convent of São Francisco, before the Baroque and Rococo gilded woodcarving campaigns, there are references to the works carried out by Olivier de Gand (who was in Portugal between 1498 and 1512); these involved the Choir's chairs and the chancel's altarpiece, which he reassembled after gilding and painting its

various parts [12-15]. Regarding the Convent of Cartuxa, there are also records from the 16th century, specifically from 1590, that mention the payment of services to the painter Manuel de Araújo, who should "pare and gild a number of Images kept in Cartuxa" [16].

Private commissions

Another woodcarver who worked in Évora during the 16th century, namely in 1546, was Pero de Frias; he was responsible for the woodcarvings of two altarpieces, commissioned by the Count of Prado and painted by António Nogueira, for the Church of Santo Estêvão de Beringel. In addition to the description of the scenes depicted in the altarpieces, the documents reveal interesting and thorough technical details [17-19]:

> the Altarpieces' paneling shall be painted in a delicate blue, while the tops and flowers shall be gilded, as well as the moldings and pillars [...], and all the painting works shall be carried out using the finest paints, and the gilding works using fine gold, and all this shall be made and finished as mentioned above by António Nogueira until January next year, fifteen hundred forty-seven.

Woodcarvings in the Évora Cathedral

The expenditures made in 1588, when D. Teotónio de Bragança was in charge, include costs that we may consider as being related to the notion of heritage conservation of that time: "four sponges to clean and wash the Altarpieces' panels and two fox tails to brush off the golden dust of the Altarpieces" [20].

With regard to the Évora Cathedral, Archbishop D. José de Melo (1611-1633) ordered the payment of 60,000 *réis* to Diogo and António Vogado, Manuel Fernandes and Bartolomeu Sanches in 1624, so they could gild the tabernacle and the altarpiece of the Chapel of Santíssimo Sacramento [21]. Four years later, in 1629, through his representatives – the Graduate Luís de Azambuja de Moura and Father Luís Pires – the Archbishop chose a very similar team – Manuel Fernandes, Diogo Vogado, António Vogado and Pedro Nunes, "painters and gilders from this town" – to paint, gild, apply skin tones, *estofar* and adorn the grand woodcarved Sepulcher located in the Cathedral's chancel for the exceptional amount of 600,000 *réis* [10, 11, 22, 23].

Throughout the 17th century there were several interventions in the Évora Cathedral. In 1608, the Chapter ordered the altarpiece of the Chapel of Santo Sacramento [24] to be repaired and re-gilded and, in 1660, there were instructions to gild the Tabernacle's lock [25, fol.34v.] and a thurible [25, fol.39v.]; in 1681, the Chapter concluded a contract with Francisco Lopes Mendes, who should paint and gild one of the sacristy paintings [26]; in 1687, João do Touro was paid 200,000 *réis* to gild the extension of the Cathedral's Sepulcher [27] and, in the following year, the same artist gilded the frontal of the same Sepulcher [28].

At the turn of the 17th century, Archbishop D. Luis da Silva Teles (1691-1703) became responsible for the works that had begun in the Cathedral during the Vacant Seat (1698-1691), ordering the completion of the woodcarved altarpieces of the nine chapels located along the church's body, which were already underway, and instructing the woodcarver to finish the works according to the design that had been approved by the Chapter. After the woodcarvings were completed,

> he ordered the altarpieces to be gilded and their panels to be cleaned, and some of them retouched, and in this work he spent 892$000 réis; and this is how those beautiful chapels were finished, with their gilded altarpieces, their clean panels, and their painted ceilings, and now we can celebrate Mass there, something we didn't do before that [29, 30].

D. Frei Luís da Silva Teles was the 10th Archbishop of Évora, between 1691 and 1703 [31, 32]. In addition to being focused on educating the congregation (namely by promoting the printing of catechisms) and helping the poor, we should highlight his extraordinary patronage in the construction and decoration of the town's churches and altars (which implied hiring several artists), and near the city, like in Montemor-o-Novo. He also purchased vestments and implements, namely for the Church of São Pedro, the sacristy of Carmo, the Chapel of São Sebastião and the altarpiece of Santo Antão.

In 1724, João Frederico Ludovice supervised the works carried out in the chancel of the Évora Cathedral, which were aimed at giving it the look it currently has, informing that

> with regard to what was part of the building's ceiling or first vault, His Majesty was of the opinion that what was gilded in the model should be made in white marble with blue shades, like those of the Sintra blue marble, or like a kind of Montes Claros marble, without any white spots or grids [33].

In 1725, from Lisbon, Ludovice stated he had written a letter to Manuel da Cruz explaining him how he should deal with the chancel ceiling in order to "renovate the gilded ceiling using stone so it would match the building's style" [34], and also giving him technical instructions on how to anchor the stone.

In 1746, the Fabric of the Évora Cathedral's made further payments to the carpenters who were working in the Chapel of Santíssimo Sacramento so they could build the scaffold to gild it [35] and, two years later, in 1748, there was a significant amount spent with the purchase of gold to gild the Chapel of Santo Lenho, with the gilders who applied it, with the paints and with the extension of chapel's tabernacle [36].

In 1749, the Cathedral's fabric commission purchased six pounds gold from the painter Manuel Coelho Galvão to gild the credenzas in the chancel [37]. There were more expenses related to this area in the following decade, namely in 1755, which included payments to carpenters,

woodcarvers and gilders [38]; in 1760, there is a reference to the gilding of the organ in the Cathedral's chancel [39]. In the last quarter of the century, specifically in 1777, the Cathedral's fabric commission paid for expenses related to the gilding and painting of the oratory in the high choir [40].

The brotherhoods and the Misericórdias from the town and its outskirts

In 1603, with regard to the church of Vila Nova da Baronia (approximately 30 km away from Évora), the painter José de Escovar had agreed with the Almas Brotherhood that he would paint the wood panels of the altarpiece, gild the woodcarvings and *estofar* the processional image. The undertaking implied also that the chapel arch and walls should be painted with *frescoes* and in order for the works to be finished it was only necessary to gild the altarpiece's moldings and bench, as well as half the chapel; there was also an image that needed to be gilded and *estofada* [6,10, 41]. The same artist agreed, with the ombudsman and the brothers of the Misericórdia of Mora, that he would paint, gild and *estofar* the main altarpiece of the Church of Misericórdia [10, 42-44]. It must be noted that, currently, José de Escovar is mainly known as a mural painter but these documents show that he was a proficient artist in other art forms as well.

In 1610, the painter Manuel Fernandes concluded a similar contract with the Menino Jesus Brotherhood, based in the Convent of Santa Mónica in Évora, for the altarpiece of the Brotherhood's chapel [10, 45, 46]. The same painter, in the same year and with the same notary – Manuel Fernandes –, concluded yet another contract with the majordomos of the São Crispim e São Crispiniano Brotherhood (the brotherhood of Évora's shoemakers, whose altar was located in the Church of Santo Antão) to gild and *estofar* its chapel's altarpiece [10, 46, 47]. In 1617, the same painter undertook the same tasks in the altarpiece of the Chapel of Nome de Jesus, also located in the Church of Santo Antão, but owned by the silk weavers brotherhood [10, 48]. In 1621, the painters and gilders Manuel Fernandes and Bartolomeu Sanchez agreed with the majordomos of the Nossa Senhora da Conceição Brotherhood, based in the Convent of São Francisco of Évora, that they would gild and *estofar* the Brotherhood's altarpiece [10, 49].

College of the Society of Jesus – University of Évora

In 1689, a painting that depicted Our Lady was transferred from the small chapel to the large chapel of the noviciate of the Society College; at this time, a new altarpiece was made, as well as new paintings, and the ceiling was decorated [50, 51]. There are also documents that mention the construction of altarpieces commissioned by Father Bento de Lemos for the Valbom Estate, a retreat for the Company's priests:

> There were orders to begin with the holiest tasks, which are building and gilding the three altarpieces of the Valbom Estate's altars: they are new, rich, beautiful and magnificent woodcarvings [50, fls. 509, 510 v.].

Gilding and painting activities in other churches and chapels in the town and under the archbishopric

In 1570, the painter José de Escovar became again responsible for gilding and *estofar* the main altarpiece of the Mother Church of Viana do Alentejo, by order of the archbishopric; for 30,000 *réis*, he should gild the columns, the tabernacle, the woodcarvings and the moldings of the existing panels [10, 52]; in 1619, Escovar also left his mark in terms of ephemeral architecture by participating in the town's festivities with "gilded decorations that shall adorn flags hoisted on poles with His Majesty King Filipe II of Portugal's coat of arms after the birth of the crown prince" [10, 53].

In 1588, the Chapter ordered the chancel of the Church of Redondo to be adorned, providing specific instructions for it to be decorated "up to the cymatium using scraped black and gild woodcarving(?)" [54]. A few years later, in 1569, the Chapter of Évora was again involved in the payment of (one third of) the painting and gilding expenses related to the Church of Redondo's tabernacle [55].

In the town's churches, and in chronological order, we know that, in 1597 and 1598, there was a new altarpiece in the Church of São Vicente (known as São Vicente das Irmãs) that was yet to be painted and gilded [56]. In 1591, the Chapter of Évora paid the painters who gilded the altarpiece of the Church of Santo Antão [57].

In 1659, the Cathedral's Chapter suggested that the altarpiece of the Church of Monsaraz should be gilded and subject to the necessary repair works, stating also that this work should be carried out by the gilder Manuel Fernandes [58]. In 1748-79 there are records of expenses made by the Cathedral's fabric commission to pay for an altarpiece commissioned by Archbishop D. Friar Miguel de Távora for the chancel of the Mother Church of Evoramonte, which included the purchase of wood, nails, and the wages of carpenters and woodcarvers [59]. In 1763, the Évora Cathedral's fabric commission was responsible for the gilding of the altarpiece located in the chancel of the Church of São Pedro, built outside the walls of Evoramonte [60]. In 1763, the Chapter concluded a contract with the archdeacon of Lavre so that the master carpenter Garcia dos Mártires could carry out a series of works in the Mother Church of Lavre, the most important of which was the chancel's altarpiece [61].

Table 1
Gilders, painters-gilders and carpenters in Évora (16th-18th centuries)

Name	Date	Town /town/ village	Place	Occupation
Olivier de Gand	15...	Évora	Convent of S. Francisco – choir chairs and altarpiece	Painter-gilder
Diogo Contreiras	1540/50	Évora	Monastery of S. Bento de Cástris – altarpiece	Painter-gilder
Pero de Frias	1546	Beringel	Church of Santo Estêvão – 2 altarpieces	Gilder and woodcarver
António Nogueira	1546	Beringel	Church of Santo Estêvão – 2 altarpieces	Painter
José de Escovar	1570	Viana do Alentejo	Mother Church – altarpiece	Gilder and woodcarver
Manuel de Araújo	1590	Évora	Cartuxa Convent	Painter
Francisco João	1592	Évora	Convent of Santa Clara – altarpiece of the main altar	Painter-gilder
	1594	Évora	Calvário Convent – altarpiece of the main altar	Painter-gilder
José de Escovar	1603	Vila Nova de Baronia	Church of the Almas brotherhood – altarpiece	Painter-gilder
	1603	Mora	Church of Misericórdia – altarpiece	Painter-gilder
Manuel Fernandes	1610	Évora	Convent of Santa Mónica – altarpiece of the Menino Jesus brotherhood	Gilder and woodcarver
			Church of Santo Antão – altarpiece of the S. Crispim e S. Crispiano brotherhood	Gilder and woodcarver
Manuel Fernandes	1617	Évora	Church of Santo Antão – altarpiece of the chapel of Nome de Jesus, owned by the silk weavers brotherhood	Gilder and woodcarver
Manuel Fernandes and Bartolomeu Sanches	1621	Évora	Convent of S. Francisco – altarpiece of the Nossa Senhora da Conceiçao brotherhood	Painters-gilders
Diogo and António Vogado, Manuel Fernandes and Bartolomeu Sanches	1624	Évora	Cathedral – tabernacle and altarpiece of the Chapel of Santíssimo Sacramento	Gilders
Manuel Fernandes, Diogo Vogado, António Vogado and Pedro Nunes	1629	Évora	Cathedral – sepulcher in the chancel	Painters-gilders
António Vogado	1626	Évora	Convento of Salvador – altarpiece of the church	Gilder
Pedro Nunes	1626	Évora	Convent of Salvador– altarpiece of the church	Painter
Manuel Fernandes	1659	Monsaraz	Main Church – altarpiece	Gilder
Francisco Lopes Mendes	1681	Évora	Cathedral – sacristy	Painter-gilder
João do Touro	1687-88	Évora	Cathedral – extension of the sepulcher	Gilder
Manuel da Cruz (under Ludovice's supervision)	1724-25	Évora	Cathedral – main chapel	Gilder
Manuel Coelho Galvão	1749	Évora	Cathedral – main chapel's credenzas	Painter-gilder

Gilders and painters-gilders

Labor organization

Table 1 provides a summary list of gilders, painters and woodcarvers that are cited in the previous section. The joint reference to paintings and gilding techniques underlines a deep relation between the two artistic expressions and reveals that it was usually for painters to work closely with gilders or even to be referred as having both activities, the so-called *painter-gilder*. Painters were responsible for performing different types of tasks; although oil painting was seen as the most prestigious art form, most contracts included gilding and *estofado* works.

It was quite common for painters-gilders to come together for attending to the demands. Manuel Fernandes, a particularly prolific painter-gilder during the first half of the 17th century (fl.1612-1641), did it at least three times between 1621 and 1629 with colleagues such as the Spanish painter Bartolomeu Sanches and the Portuguese

painters Custódio da Costa, Bartolomeu Costa, António Vogado, Diogo Vogado and Pedro Nunes (Table1). Pedro Nunes, who became one of the most renowned Mannerist painters, was an apprentice of Manuel Fernandes, who took him in at the age of sixteen for five years of apprenticeship and married him to his daughter Mariana Varela [62]. Many of the artists were related either by blood or by marriage. On April 30th 1629, when Archbishop José de Mello commissioned the paint, gild and *estofado* of the large Sepulcher of the Évora Cathedral's Main Chapel, for the outstanding amount of 600,000 *réis,* Pedro Nunes, aged 44, undertook the commission not only with his father-in-law but apparently also with his son-in-law António Vogado and his co-father-in-law Diogo Vogado [63].

Gilding commissions were mostly of religious nature and, as such, it was very important for these artists to show that they lived according to the principles of the Catholic Church. Many craftsmen are mentioned in *de genere* inquiries regarding their relatives. These inquiries were attempts to find out if their descendants were in any way connected to the Church and, often, to establish blood lines. For example, in the *de genere* inquiry of Bartolomeu Sanches' grandson (Valério de Madureira) in 1662-1663 [10], it is said that Bartolomeu was a very good man and a respected Christian; this document served also as proof of the irreproachable purity of blood of Bartolomeu Sanches' family. The Inquisition, established in Portugal in 1536, was not to be taken lightly. Several cases of accusations are lodged in the Court of the Holy Office in Évora, sometimes even among craftsmen. In 1609, Manuel Fernandes, a painter known to have connections with the Portuguese Inquisition, accused his colleague António de Moura of being a New Christian by his mother's side and of pronouncing the Jewish word *Adonai* three times to cure toothaches and other ailments [64]. The complaint was apparently considered unfounded but it is enough to give a glimpse of the atmosphere of fear that ruled in those days and of how fragile working relationships could also have been.

Economic status of the painters-gilders

As it was shown in the previous section, a gilder's earnings were quite variable and depended greatly on the crafts he had to complete. In the consulted documents, there are very few references to painters and gilders who were manifestly destitute, like Domingos do Couto. Little is known about this painter who lived in Évora and worked in his trade from the late 16th century. His poverty is attested by the fact that he was unable to pay the usual alms of 500 réis for his soul, thus being buried in an ordinary tomb of the Santa Casa da Misericórdia on January 14th 1617 [6]. In the opposite side, stands Manuel Fernandes, who enjoyed an income of 200,000 *réis* per year, allowing him to own, and leave to his children, houses on Ancha Street, one of the most important commercial streets in the town of Évora [65].

In notary records, there are several references to transactions and litigations involving the lease of vineyards, properties and houses held by artists. The existence of a significant number of loan and debt statements proves that it was common for these traders to borrow money from other professionals or from relatives. In 1537, the gilder Atanásio Fernandes had leased a series of vineyards in Peramanca, owned by the Cathedral's Chapter [66]; two years earlier, Luís da Serra, another gilder, had also leased a vineyard in the same place from the same owner (probably the same property) [66, fl. 149 v.]. With regard to the 17th century we also have some information: in 1624 there is a reference to the lease of a tent on Selaria Street that should be paid to the Cathedral's bachelors so they could celebrate a mass for the soul of Bishop Master Parvi; the tent was owned by the gilder Manuel Gomes and, before that, it had been in the hands of another gilder, João Fernandes [67]. In 1651, the gilder Manuel João had leased a series of houses owned by the Cathedral's Chapter [66, fl. 80]. On April 6th 1691, the master stonemason Amaro Luís and the woodcarver Francisco Machado, who lived in Évora, were witnesses to the lease agreement regarding the Oliveiras Estate, in Serpa, concluded between the Carmo fathers and Bento Dias [68].

Final notes

Besides providing information on the location and extension of the carpentry, woodcarving and gilding works that were carried out, on the commissioners' demands and on the acknowledgment of several techniques as ways to protect the existing heritage, the consulted documents allow us to have an idea about the intense work undertaken by these professionals in the town and archbishopric of Évora between the 16th and the early 18th centuries. Évora's golden age was the result of intense teamwork efforts; painters, gilders and woodcarvers came together to meet the demands, mainly from the Church, in a town whose energy was driven by the presence of the court, the royal family, nobles and religious orders.

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Painting with gold: gilders in Northern Alentejo in the 17th and 18th centuries

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Abstract
This article will demonstrate that the artistic context in the North Alentejo region, very dynamic in the 16th century and enriched by the presence of both national and international artists, evolved slowly during the late 17th and 18th centuries to a reality marked mainly by the activity of local painters, most of them unknown, which became increasingly versatile, working in oil painting, fresco and also gildings. To better characterize this reality, some examples will be presented of artists who worked in various techniques as proved by documentary evidences. The materials now presented were a relevant contribution for the project "Gilt Teller: an interdisciplinary multi-scale study of gilding techniques and materials in Portugal, 1500-1800".

Keywords
Gilding
Northern Alentejo
Painters
Gilders

Pintar com ouro: douradores no Norte Alentejo nos séculos XVII e XVIII

Resumo
Este artigo irá demonstrar que o contexto artístico na região do Norte Alentejo, muito dinâmico no século XVI e enriquecido pela presença de artistas quer nacionais quer internacionais, evoluiu lentamente durante o final do século XVII e todo o século XVIII para uma realidade marcada principalmente pela atividade de pintores locais, a maioria deles desconhecidos, que se tornaram cada vez mais versáteis, trabalhando em pintura a óleo, a fresco e, também, em douramentos. Para melhor caracterizar esta realidade serão apresentados alguns exemplos de artistas que trabalharam em várias técnicas como o comprovam os testemunhos documentais. Os materiais agora apresentados configuraram um contributo relevante para o projeto Gilt Teller: um estudo interdisciplinar multi-escala das técnicas e dos materiais de douramento em Portugal, 1500-1800.

Palavras-chave
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Norte Alentejo
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Introduction

The History of Art in Northern Alentejo depends mainly on the biographies of the artists that worked in the region, on the joint activities maintained between artists, and on their working methods. This becomes even more evident knowing the importance that the gilded carved wood production had in this Portuguese region, specially in the final decades of the 17th century and throughout the whole of the 18th century [1].

To better understand this reality we need to look back to the artistic context of the 16th century. Many of the carvers and painters/gilders working on that period tended to focus their activity around the ongoing works of major importance, as was the case for the Elvas and Portalegre cathedrals. However, it was only in the 17th and especially in the 18th century that workshop gilding production flourished.

The presence of important national artists working over three centuries in this region proves the existence of a well informed clientele, eager to hire the best hand labour available. Despite this fact, what best characterized the local production during the modern period was the existence of versatile regional artists, capable of responding to an immense variety of orders. Gilding practice, for example, was something that was immensely intensified from the end of the 17th century onwards, to the same extent that contract orders from religious? brotherhoods and sisterhoods for gilded altarpieces multiplied [2]. Slowly, the painter/gilder category was emphasized, even exceeding the *fresco* painter, for centuries distinguished as a highly prestigious category amongst painters [3].

The artists that worked with carvers in the majority of altarpieces were mostly oil and tempera painters, simultaneously gilding altars, images, gratings, easel paintings and mural paintings. It is this multiplicity of skills shown by the artists that makes the artistic context in the late 17th and early 18th centuries so interesting. This reality is reflected in the contracts signed between artists and patrons, and that can now provide new data to be analysed by scientists.

Artistic context in Northern Alentejo between the 16th and 18th centuries

During our PhD research concerning mural painting in Northern Alentejo, we were able to find several documents concerning gilded altars and partnerships between artists in this region of our country. In some cases, it was possible to confront that information with the remaining gilded altars, and therefore contribute with relevant data to the team involved in the project *Gilt Teller*.

The artists who worked in the region currently under the Portalegre district are still largely unknown. During our survey of documental sources we paid much attention to work contracts included in the books of the Notary Offices. In the district's fifteen municipalities it was possible to survey a total of 804 books. The county with more information gathered was Elvas, on the eastern border. In the end it was possible to collect a total of 350 artists' names (masons, sculptors, architects, painters and gilders) working in Northern Alentejo between the late 16th and the 18th centuries. From those, 27 were painters and 8 of them were specifically identified as painters/gilders.

The survey of documental sources allowed us to understand two distinct but complementary realities: on the one hand, the existence of regional artists, with a relatively low mobility within their geographical places of origin (Elvas, Portalegre, Arronches); on the other hand, the presence of artists from larger and more distant urban centres (Lisboa, Évora, Badajoz). The transit of renowned artists into peripheral territories (Luis de Morales, Simão Rodrigues, Domingos Vieira Serrão, José de Escovar, Diogo Vogado, Bartolomeu Sánchez) is evidence of a dynamic reality, where local clients valued the presence of highly skilled hand labour.

There was, however, another dimension, more difficult to characterize, in which we can include the local artists, still unknown in the majority of cases, possessing a very diverse range of qualifications and assuming, individually or in partnerships, an eclectic set of demands.

Many of the carvers and painter/gilders that worked in the late 16th century and the first quarter of the 17th century tended to focus their activity around ongoing works of major importance, such as the Elvas and Portalegre cathedrals. During this period, there were many painters of excellence who arrived, for example, in Portalegre, coming from other parts of the country to work in what is considered, today, to be the most extensive mannerist art gallery in the country: the cathedral. Besides Luis de Morales, called *The Divine*, and his collaborators, also Simão Rodrigues and Fernão Gomes worked on the artistic campaigns of the altarpieces distributed within the building [4].

Despite all the activity related with the Portalegre cathedral, the volume of documentation for the 17th and 18th centuries shows that there was a transformation in the context of the workshop order. The first relevant fact is the importance now given to the painter/gilder. Although this category was not strange to most artists of the 16th century, its relevance intensified from the 17th to the same extent that both religious sisterhoods and brotherhoods multiplied their orders for altarpieces for chapels and churches. Slowly, the painter/gilder reached a very high distinction, coinciding with *fresco* painters slowly losing ground in the work context of artistic campaigns.

The expression *fresco painting* does not disappear from the (archival) documentation, although its meaning is not clear. The fact that many of these painters could run gildings and paintings simultaneously (on both altarpieces and ceilings), made the definition of pictorial techniques within the documentation begin to blur. From the patron's point of view, the use of the same hand labour for the

gilding of an altar, a vault, or both was more financially convenient, thus justifying the high number of orders that some painters/gilders benefited from.

Artists and partnerships in Northern Alentejo

To better explain what the artistic context in Northern Alentejo was, we will present examples of three different work situations: a large workshop led by the dominant figure of a painting master (José de Escovar); the partnerships between Simão Rodrigues and Domingos Vieira Serrão and between Diogo Vogado and Bartolomeu Sánchez, which are examples of artists working together in works of a higher quality level; local workshops of unknown painters/gilders, working individually or in partnerships with other artists.

One of the last *fresco* painters in Northern Alentejo was José de Escovar (working between 1585-1622), whose activity marked the transition between the 16th and the 17th centuries. Within his workshop it is well known that, besides *fresco*, he also executed oil painting, tempera and gildings. In 1603, he signed a contract with the Confraria de Nossa Senhora das Almas, in Vila Nova da Baronia, for the *fresco* paintings of the chapel walls and vault [5] (Figure 1). Besides that, he was supposed to oil paint the panel of the altarpiece and to gild the altarpiece itself. This is a good example of an artist responsible for a whole decorative set.

Similar examples of Escovar's versatility can be found only in documents, for many of his works no longer exist, and were replaced by modern campaigns. That's the case in the church of the Santa Clara Convent, in Elvas. The artist's connection with this town remained strong throughout the first decade of the 17th century, while he worked in large apparatus campaigns linked to the ecclesiastical clientele or the nobility. In July 1610, Escovar is in Elvas to run the pictorial coating and gilding programme of the main chapel of the Santa Clara Convent church "with *fresco* colors [and] the arch of the main chapel will be gold over mordant of oil and inks" [6]. This work was replaced, about a century later, by the work of an Elvas painter/gilder called Agostinho Mendes.

Perhaps the best testimony to the existence, in Northern Alentejo, of highly qualified hand labour involved in both mural paintings and gildings is the presence, registered several times, of the *team* Simão Rodrigues (active ca. 1583-1629) and Domingos Vieira Serrão (active ca. 1570-1632) [7]. It is known how fruitful their activity was, mainly in oil painting, as proved by multiple working contracts throughout the country from Lisbon to Coimbra, Leiria, Santarém, Évora, Portalegre and Elvas.

Simão Rodrigues was the first to arrive in Elvas (c. 1600), to paint the altarpiece of the S. Domingos Convent church. In 1615, at the request of bishop D. Rui Pires da Veiga, he returned to this city accompanied by Domingos Vieira Serrão. Their job was to carry out pictorial decorations within the Elvas cathedral, namely in the Santíssimo Sacramento chapel and in the sacristy, following pre-existent models of two Lisbon churches [8]. The ceiling of this sacristy (completely whitewashed today) followed the model of the vault of the Hospital Real de Todos-os-Santos, in Lisbon. The paintings in that vault (later destroyed in a fire) had been executed by the two painters themselves just a couple of years earlier (1613), representing one of Lisbon's most famous pictorial campaigns [9]. The initial project was a painting directly inspired in models of the Italian Mannerism with simulated oil paintings inserted in gold leafed geometrical panels.

Domingos Vieira Serrão returned to the Elvas Cathedral one last time, in 1631. The work was, once again, of high importance: the bishop Sebastião Matos de Noronha hired him "to repair, gild and plaster the whole interior of the cathedral [...] and the ceiling with golden brutesco" [10]. The work included the complete coating of the churches' three aisles, columns, the arch of the main chapel with golden *brutesco*, a decorative painting category that derived from the *grotesque* with which the painter was very familiar [11].

Two other painter/gilders working together were Diogo Vogado (active ca. 1608-†1652) and Bartolomeu Sánchez (active ca. 1612-†1641). In 1628, the artists were contracted to paint the ceiling and the altar of the Santíssimo Sacramento Chapel in the Elvas Cathedral.

Figure 1. Capela das Almas, Vila Nova da Baronia, 1603. José de Escovar (active ca. 1585-1622).

The contract established, besides the gilding of the chapel ceiling, works for the altarpiece and the saints present therein: "the altarpiece will be cleaned and washed of all the dust and pasted with very weak glue […] thereafter it will receive five coats of thick plaster the oldest possible because if it's done otherwise it will not be a good work" [12].

Despite the relevance of these painters, or of their achievements, they were not who best characterized the artistic production in this region. To understand the Art History of Northern Alentejo, it's important to analyse the artistic journey of some of the painters/gilders that never left this region, working with carvers and carpenters, gilding or painting ceilings, arches and columns. This happened with a great number of artists such as Afonso Vaz (1657-1693), António dos Santos (1674-1753), António Soeiro da Silva (1680-1692), Agostinho Mendes (1689-1740), Agostinho Correia Dinis (1692-1725), Bruno de Azevedo (1723-1729) or Manuel Pereira Gavião (1726-1753) just to mention a few. The dates presented correspond exclusively to the period when their involvement in artistic campaigns could be tracked through documental evidences. Despite that, we know that several of these artists extended their activity through the 18th century, maintaining their working methods. Two of the still unknown although best-documented artists working in Northern Alentejo in the transition from the 17th to the 18th century were Afonso Vaz and António Soeiro da Silva.

Afonso Vaz was a local painter who developed his activity in gilding, oil painting and *fresco* between Elvas, Castelo de Vide and Portalegre. One of his works that arrived to this day is the gilding of the tabernacle, saints and angels from the main altar of Nossa Senhora da Consolação, belonging to the Church of S. Lourenço in Portalegre, a work that began in 1673, and for which he received over 72.000 réis [13] (Figure 2).

About two years later, on October 17th 1679, Vaz is quoted in another contract for the gilding of the Santíssimo Sacramento altarpiece, belonging to the Castelo de Vide church. The document [14] stated that he had to paint "the ceiling and the friezes with gold [...] and oiled with the finest paint that the work required". The contract also specified that the stone friezes were to be plastered and "painted with good paint and *fresco*". It is the first time that another assignment is given to this painter besides the gilding of altarpieces, even though the nature of the program itself is not clear. The document mixes references like *fine oil paint*, *gold*, *fresco* and *plastered walls*. Like in Escovar's case, almost eight decades earlier, in this campaign it is the same artist that should perform the entire decoration works within the same space, proofing his versatility.

Another artist, António Soeiro da Silva, is mentioned in several contracts for painted and gilded altarpieces often associated with painted ceilings (the so-called *brutesco* paintings) and walls. In 1680, he signs a contract with the brotherhood of Nossa Senhora da Boa Morte, in the Castelo de Vide main church, for gilding their altarpiece, as well as for the "*fresco* painting of the main chapel" and the oil painting of its iron bars [15]. Throughout the document, Soeiro is always described as a painter/gilder. He continued his gilding activity until 1692, when he worked in the altarpiece of the Nossa Senhora dos Remédios Church, in the same town of Castelo de Vide, and that, most likely, is still the one that exists in that same building. The work contract establishes that "the altarpiece will be gild with gold of the highest value that can be found, as will be the niches [...] and the angels, their hair and wings, with a thin final polishing" [16].

To these two examples we could add many others. For example, the contract signed by the painter/gilder Agostinho Mendes in 1706 with the Santíssimo Sacramento brotherhood of the Elvas Cathedral for the complete painting of their chapel (again with *colored brutesco*) and finally the altarpiece gilding [17]. Or the well known (already mentioned) Manuel Pereira Gavião with a strongly documented activity as a gilder throughout Alentejo that worked closely with the Lisbon painter António Pimenta Rolim in oil paintings over ceilings, combining stylistic influences of Vincenzo Baccherelli with the never ending *brutesco* motives. In 1753, he signed a contract for teaching the trade of *painter and gilder* to a young pupil, António José, proving that these techniques remained together within the 18th centuries artists background [18].

Conclusions

At the end of our brief essay, there are a few notes that require our attention.

The first thing is to acknowledge that there were moments of enormous artistic dynamism in the Northern Alentejo region, with the presence of artists of national importance. The presence of renowned artists over three centuries in this region of the country proves the existence of well-informed clienteles, anxious to hire the best hand labour available.

However, in the transition from the 17th to the 18th century the painter/gilder gained more visibility. Regardless of the influences that those major artists may have left, both documents and some works that survived to our days show us a different reality, based on the versatility of local hand labour and its ability to respond to various requests. Painters are now essentially oil painters, simultaneously gilding altars, images, gratings and also painting vaults with countless *brutesco* compositions, less demanding, perhaps, in what concerned technical skills. The professional relations between artists of different trades in Northern Alentejo are still far from being completely understood. Further documental investigations, as well as an interdisciplinary approach are fundamental for the global comprehension of the gilding phenomenon in Portugal.

Figure 2 Altarpiece of S. Lourenço Church (Portalegre). Afonso Vaz (active ca. 1657-1693).

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13 'Testamento Cerrado do Reverendo Prior Manuel Nunes de Avelar, a propósito das obras a realizar na Capela-mor da Igreja de S. Lourenço de Portalegre', manuscript, Arquivo Distrital, Portalegre, TCPTG, L.º 5241 (1665-1675) 217v.--218v.

14 'Escritura de quitação dada por José Carvalho, pintor de Portalegre, à obra do douramento do retábulo do altar de Nossa Senhora do Rosário, da matriz de Castelo de Vide', manuscript, Arquivo Distrital, Portalegre, CNCVD01/001, Cx. 18, L.º 66 (1679) 13-15.

15 'Contrato de douramento do retábulo de Nossa Senhora da Boa Morte na matriz de Castelo de Vide, entre a respectiva confraria e o pintor António Soeiro da Silva bem como a "pintura a fresco do frontispício" e olear as grades da mesma capela', manuscript, Arquivo Distrital, Portalegre, CNCVD01/001, Cx. 18, L.º 67 (1680) 82v.-84v.

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Normas de colaboração e instruções para os autores

Norms for collaboration and author guidelines

Âmbito da revista

A revista *Conservar Património* é uma revista científica que pretende publicar semestralmente estudos relacionados com a conservação e restauro, nas suas várias modalidades e perspectivas, e estudos sobre as múltiplas dimensões das obras que constituem o património cultural provenientes de disciplinas como a história da arte, a arqueologia, a museologia, a química, a física, a biologia ou outras.

A revista é publicada pela Associação Profissional de Conservadores-Restauradores de Portugal (ARP), mas os autores não têm que ter qualquer ligação a esta associação. A revista agradece todas as colaborações que espontaneamente lhe sejam enviadas desde que se enquadrem nos seus interesses e estejam de acordo com os padrões de qualidade que pretende manter. Embora estas colaborações não solicitadas constituam o essencial de cada número, a direcção da revista pode dirigir convites de colaboração a autores com excepcional currículo nas áreas de interesse da revista.

About the journal

Conservar Património is a scientific journal that aims to biannually publish research papers related to conservation-restoration in its various modalities and perspectives. It is also interested in papers from other fields of knowledge, such as history of art, archaeology, museum studies, chemistry, physics and biology or others, about the multiple dimensions of cultural heritage works.

The journal is published by the Associação Profissional de Conservadores-Restauradores de Portugal (ARP), although the authors are not obliged to a relationship with ARP. The journal is glad to receive any paper submissions that reflect its editing policy and quality standards. Although spontaneously submitted papers constitute the essence of each volume, the editors may invite collaborations from authors with relevant knowledge within the universe of interest of the journal.

Princípios éticos

As colaborações submetidas para publicação devem ser inéditas e, portanto, não devem ter sido previamente publicadas ou estar a aguardar publicação ou terem sido submetidas noutro local.

Considera-se que as colaborações submetidas para publicação são efectivamente da autoria dos autores indicados, dão conta dos trabalhos desenvolvidos por

Ethics

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It is assumed that the contributions submitted for publication were actually authored by the designated authors; that they constitute accounts of the authors' work and research; and that they do not pose any falsification

estes e não colocam qualquer problema de falsificação ou de plágio — algo que a revista considera inadmissível.

Nos casos em que isso seja relevante, os autores devem declarar de forma clara eventuais conflitos de interesse. As colaborações submetidas que, directa ou indirectamente, tiveram o suporte económico de terceiros, devem claramente declarar essas fontes de financiamento.

Tipos de colaboração

A revista tem diversas secções, conforme a natureza e o fôlego das contribuições, designadamente as seguintes:

— *Artigos*, para as contribuições mais importantes, que podem dar conta de tratamentos de conservação efectuados com recurso a estudos envolvendo outras disciplinas, apresentar estudos realizados sem qualquer relação com intervenções de conservação e restauro ou constituir artigos de revisão sobre os materiais, as técnicas, a história ou as intervenções de conservação;

— *Intervenções*, onde são apresentadas intervenções de conservação realizadas sem o recurso a estudos laboratoriais ou outros;

— *Notas*, secção dedicada à divulgação de textos de temática semelhante à dos artigos e das intervenções, mas com menor dimensão;

— *Opiniões*, onde são divulgadas opiniões pessoais, devidamente justificadas, sobre os diversos aspectos envolvidos na conservação, bem como notícias ou recensões sobre outras publicações ou acontecimentos relevantes. São incluídas aqui contribuições recebidas na forma de carta, bem como comentários a outras contribuições publicadas na revista.

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Todas as colaborações não convidadas submetidas para publicação são alvo de uma primeira avaliação de natureza geral por parte da Direcção com vista à determinação do seu interesse e da sua adequação à revista. Após parecer favorável, são sujeitas a avaliação anónima por pares (*peer reviewing*). Sempre que possível, nessa avaliação participarão membros do Conselho Editorial. As colaborações convidadas não estão sujeitas a este processo. As colaborações destinadas à secção de *Opiniões* podem passar apenas pela avaliação da Direcção.

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Embora a revista privilegie a utilização da língua portuguesa, poderão igualmente ser publicadas contribuições

or plagiarism problems – something the journal deems inadmissible.

Where applicable, authors should clearly declare any conflicts of interest. Submitted contributions that, directly or indirectly, had the economic support of third parties, should clearly state these sources of funding.

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The journal has different section headings according to the content nature of the submitted papers. The available sections are listed below:

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— *Interventions*, for contributions reporting on conservation interventions without the support of laboratory studies or others;

— *Notes*, for contributions similar to those included in articles and interventions, but smaller in size;

— *Opinions*, for personal but relevant opinions on different conservation aspects and for reports on relevant occurrences or reviews of published materials. Letters and comments about published contributions are also included here.

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All the contributions submitted for publication are subject to a first general review from the Editors to ascertain whether they are within the journal scope and objectives. After passing this first stage, the papers are subjected to peer reviewing. The Editorial Board will participate as often as possible in this stage of review. Invited contributions are not subjected to this type of reviewing. Contributions to the *Opinions* section may be reviewed solely by the Editors.

Whichever the case may be, the authors' opinion does not necessarily coincide with that of ARP or of the journal's Editors or Editorial Board. The authors are solely responsible for their opinions, even when modifications to their texts are suggested in the review process.

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Although the Portuguese language is privileged, other languages may be accepted for publishing, namely English, French, Spanish or Italian. While the Editors will

noutros idiomas, designadamente, inglês, francês, espanhol ou italiano. Ainda que a Direcção da revista use a variante do português europeu anterior ao acordo ortográfico de 1990, são igualmente aceites colaborações noutras variantes do português, como a variante do acordo ortográfico ou a variante brasileira. Nestes casos, como em qualquer outro idioma em que também existam variantes, de forma coerente deverá ser usada uma só variante em todo o texto.

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Organização dos textos

Excepto os textos destinados à secção de *Opiniões*, a organização de qualquer contribuição deve obedecer à seguinte estrutura geral: título no idioma do texto, em português e em inglês, nomes dos autores e instituição, organização ou empresa a que pertencem e respectivos contactos, resumo, palavras-chave, texto, agradecimentos, referências bibliográficas, tabelas e figuras. Os textos destinados à secção de *Opiniões*, além do título no idioma do texto, deverão ter o título em português e em inglês.

Cada resumo não deve ultrapassar as 150 palavras e deve funcionar como um pequeno texto autónomo sem remeter para o texto principal. Deve haver resumos em português, em inglês e no idioma original do texto, se o mesmo for diferente daqueles. As palavras-chave, até um máximo de seis, devem ser apresentadas da mesma forma, isto é, em português, em inglês e no idioma original do texto. As palavras-chave devem ajudar a enquadrar o texto no seu contexto geral e devem complementar as palavras usadas no título, portanto, sem as repetir.

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A bibliografia referenciada deve ser apresentada no final do texto através de lista numerada de acordo com o local de citação no texto e com o formato adiante apresentado.

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The papers destined to the *Articles*, *Interventions* and *Notes* sections must contain a Portuguese and an English title and abstract and, if written in another language, must also incorporate the title and abstract in that language.

Text organization

All papers except those destined to the *Opinions* section must obey the following structure: Title written in the original language, as well as in Portuguese and English, authors' names and affiliation, respective contacts, abstract, keywords, text, acknowledgements, references, tables and figures. The texts destined to the *Opinions* section shall have the title written in the original language, as well as in Portuguese and English.

The abstracts must not surpass 150 words and must function as a separate text without referring to the main text. The abstracts should be written in Portuguese, English and in the original language if different from the former two. A maximum of six keywords should also be presented in Portuguese, English and the original language. The keywords should help to frame the text in its general context and should complement the words in the title without repetition.

In the case of foreign authors, the Portuguese versions of the title, the abstract and the keywords are optional. If necessary, the Editors will translate from the English versions.

The texts should be divided in sections and subsections in accordance with their content.

The orthographic and grammatical review should be done carefully. Footnotes should be avoided and reference marks should be numbered between straight brackets.

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Berrie, B. H. (ed.), *Artists' Pigments. A Handbook of their History and Characteristics*, vol. 4, National Gallery of Art – Archetype Publications, Washington – London (2007).

Deneffe, D.; Fransen, B.; Henderiks, V.; Mund, H., *Early Netherlandish Painting. A Bibliography. 1999-2009*, Centre d'Étude des Primitifs Flamands (2011), http://xv.kikirpa.be/fr/publication.htm#Bijdragen (acesso em 2013-06-17).

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Bomford, D.; Dunkerton, J.; Gordon, D.; Roy, A., *Art in the Making. Italian Painting Before 1400*, National Gallery, London (1989).

Douglas, J., *Building Surveys and Reports*, 4.ª ed., Wiley-Blackwell, Chichester (2011), doi:10.1002/9781444391091.

Berrie, B. H. (ed.), *Artists' Pigments. A Handbook of their History and Characteristics*, vol. 4, National Gallery of Art – Archetype Publications, Washington – London (2007).

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Chastang, Y., 'The conservation of two pietre dure and gilt-bronze-mounted cabinets made by Domenico Cucci for Louis XIV', in *The Decorative: Conservation and the Applied Arts*, ed. S. Cather, A. Nevin, J. H. Townsend, M.

Spring, J. K. Atkinson & D. Eastop, IIC, London (2012) 73-79, doi:10.1179/2047058412Y.0000000016.

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Cultrone, G.; Madkour, F., 'Evaluation of the effectiveness of treatment products in improving the quality of ceramics used in new and historical buildings', *Journal of Cultural Heritage* **14**(4) (2013) 304-310, doi:10.1016/j.culher.2012.08.001.

Le Gac, A.; Seruya, A. I.; Lefftz, M.; Alarcão, A., 'The main altarpiece of the Old Cathedral of Coimbra (Portugal): Characterization of gold alloys used for gilding from 1500 to 1900', *ArcheoSciences* **33** (2009) 423-432, http://archeosciences.revues.org/2562.

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'Folhas da obra da Igreja e o mais que ficou arruinado por cauza do terramoto que houve em dia de todos-os-santos do ano de 1755', manuscript, Arquivo Histórico da Misericórdia, Almada, Maço 6, n.º 15, L.º 25–A (1757).

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