I. Project objectives and background

The ‘After the Black Death’ project (ABD) was launched in 2010 and funded from mid-2014 to the end of 2018. Funding allowed an international multi-disciplinary network to focus on late-medieval folding altarpieces, shrines and sculptures from Norwegian churches. Research efforts concentrated especially on circa 25 objects that have been categorised as imports from northern Germany to Norway in the period after the first wave of Bubonic Plague (1349) until the early years of the Reformation in Denmark-Norway (from 1536).

Initial aims were two-fold: to investigate the ways in which late-medieval liturgical objects were made in advance of being installed in Norwegian churches, and to examine how they have changed, some profoundly, over time. Physical changes, changes in status as Catholic objects in Protestant church rooms, as well as categorisation as Hanseatic objects in Norwegian museums have determined past and contemporary attitudes to them. The point of departure was the problematic category of ‘import’ and the theory first aired 1878 that too few craftsmen survived after the Black Death to meet demand for religious objects. According to this theory, traders from northern Germany and the Netherlands filled the void, delivering objects for churches to the detriment and exclusion of local sources. In the era of national-Romanticism, allusions to loss were furthermore conflated with negative ideas about Hanseatic traders. The objects under investigation during the ABD project have therefore been more closely associated with Norway’s 400-årsnatten (the ‘400-year night’) than national narratives, despite their importance to Norwegian cultural heritage (Streeton 2014; Streeton 2016/17; Ebert 2019). The ABD network redirected interpretations of this category of object, charting the circumstances under which late-medieval objects in Oslo and Bergen were produced, which formed foundations for decoding damages and tracing transformations over time.
II. Results with respect to objectives

Investigations focused first on original structural components, paint and gilding, which yielded results with respect to how individual elements and surfaces were produced (Daly and Streeton 2017; Streeton 2016/17; Ebert 2017; Streeton et al. 2018). Dendrochronology indicated dates for oak boards, as well as sources for the wood, while imaging and chemical characterisation offered essential data for assessing composition and degradation (Platania et al. 2018; Platania et al. Forthcoming(a); and (b)).

This work established firstly that the category of ‘import’ is far too simple, primarily because it appears that numerous workshops were responsible for producing various parts over many decades, and probably in multiple locations (Streeton 2016/17; 2018; Daly and Streeton 2017; Streeton et al. 2018; Streeton et al. Forthcoming). While workshops in northern Germany undoubtedly were responsible for some elements in multi-component altarpieces and epitaphs, it is likely the many individual components were shipped separately, mainly to Bergen, then assembled and finished on arrival. For this reason, labels like ‘north German’, or ‘Norwegian’ are unhelpful, as locations for production were complicated and multi-national (Streeton et al. 2018; Streeton 2018).

Materials research furthermore clarified the mechanisms by which copper-green and lead-based paints have degraded, e.g., in sea-side churches (Platania et al. 2018). Among the findings, it is now evident that metal soaps can re-mineralise within oil paints, which complicate the interpretation of original components more than previously acknowledged (Platania et al. Forthcoming(a)). Diverse investigations into the nature of support structures, repairs and overpaints have furthermore redrawn the lines of previous art-historical narratives (Ebert 2019).

Beyond this, the aforementioned studies of original materials, fragmentation and degradation have led to new questions, which in turn have opened paths for enquiries into how parishioners over hundreds of years experienced these objects in their churches and in their daily lives. For example, physical evidence of repetitive touching, likely to activate a saint sculpture, or deliberate damage to test, deactivate and/or shame it, can now be ‘read’ alongside historical and legal sources. Specific evidence for nasal mutilation, coupled with specific punishments found in Norwegian civil law, which supports broader enquiries into the ways that hybrid liturgical practices were halted during the protracted Reformation, long after 1536 (Streeton 2017; Bjerregaard ed. 2018; Streeton Forthcoming). A transition from Catholicism was not achieved within three generations, as is so often stated.

III. R&D tasks and research collaboration

Addressing topics that span cultural heritage, history, material culture and analytical chemistry required a diverse network and collaboration between conservators, historians, chemists and museum professionals. The ABD network at University of Oslo (UiO) spanned three faculties: the Humanities (Conservation Studies, History and History of Art), Mathematics and Natural Sciences (Department of Chemistry and SINTEF), and the Museum of Cultural History (KHM). Those within Conservation Studies and Chemistry worked closely with scientists and conservators at KHM and the laboratory at Saving Oseberg. UiO staff also worked closely with scientists at the Centre for Art Technological Studies and Conservation (CATS) in Copenhagen; with the conservation section at University Museum of Bergen; and with art historians in Norway, Sweden and northern Germany, among others.

This project drew on vast existing research networks that were developed over many years in advance of the project, which smoothed the way for fieldwork across Norway, in Sweden, Denmark and northern Germany. Post-Doc and PhD fellows benefited immensely from these established and diverse networks, which were represented during the project kick-off ‘Archaeology of the Object’ held over three days in October 2014. Subsequent network meetings were held in Bergen (September 2015) and Oslo (October 2016), while smaller author meetings in Oslo and Copenhagen were held more frequently. As the project progressed, an exhibitions group was assembled by Peter Bjerregaard (KHM) to prepare coordinate and mount the exhibition, Forvandling/Transformation, which opened in January 2019 (see VI. Dissemination and use of results).

IV. Project implementation and use of resources

The project was implemented largely in accordance with the original plan outlined in the project proposal. Resources were allocated to University of Oslo, Department of Archaeology, Conservation and History (IAKH) for salary for PhD fellow (Bettina Ebert); for limited ‘buy-outs’ for the Project Manager (Tine Frøysaker) and PI (Noëlle Streeton); as well as for a 20% position for administrative support. Salary for a Post-Doctoral fellow (Elena Platania) was paid to the Department of Chemistry at
the start of the project, along with overheads for scientific instrumentation. Both the PhD and Post-Doc were delayed due to illness and maternity leave, respectively.

Funds paid to CATS (partner) early in the project period covered research time, scientific instrumentation and laboratory overheads. These funds also met costs for dendrochronological investigations (CT scanning) at Norges Geotechnical Institute in Oslo. KHM was also a partner, and while funding for a KHM researcher was included in the original budget, these funds were diverted to R&D for the Forvandling/Transformation exhibition. The research budget also covered meetings (Oslo, Bergen, Copenhagen), costs related to fieldwork, travel to international conferences and data entry/database development.

V. Anticipated significance and benefits of the results
Collaborative research between conservators, heritage scientists and historians drew on methodologies in the humanities and physical sciences to expose hidden histories, mainly within profoundly damaged objects that have been held in storage for many years. Bringing such objects back into the public sphere required combinations of state-of-the-art techniques for imaging and surface characterization, in-depth materials research, archival studies and outreach to recover information about how they were made and how they have changed over time. In this way, the project group has re-invested a small number of late-medieval church objects with meaning in the present.

This kind of multidisciplinary collaboration has advanced heritage research on many levels, and has fostered two-way knowledge transfer between cultural heritage communities in Oslo, Bergen and Copenhagen. These communities were essential for the success of Elena Platania’s Post-Doc research, as they were for Bettina Ebert, who successfully completed her PhD research and defended her thesis in June 2019. The project furthermore developed research frameworks and models for ongoing transatlantic collaborations devoted to similar objects, which will be essential for ongoing historical re-interpretation, conservation treatments, and long-term preservation.

VI. Dissemination and use of results
In total the ABD network reports the following publications that are directly related to NFR-funded work (see VIII. Appendix – Publications):

- 1 PhD thesis
- 1 monograph
- 11 journal articles published in peer-reviewed journals or edited books (incl. 4 from the PhD)
- 1 gallery guide, with 7 short contributions (2–6 pp.)
- 1 museum exhibition (permanent, from January 2019)
- numerous articles under review or in progress

The Appendix is divided into seven sections to aid in the evaluation of the project’s research landscape. Publications related to project preparation are excluded from the tally above (Appendix, i). Publications in the Appendix are followed by a full list of invited lectures and conference papers delivered by the ABD network throughout the funding period and into 2019.

ABD research was disseminated in other ways too. The kick-off symposium was open to the public, and research themes have been featured in published interviews and short ‘popular science’ pieces. For example, Bård Amundsen’s article for Forskning.no, ‘Middelalderkunsten som ble gjemt’, was based on an interview with Tine Frøysaker and Noëlle Streeton at the moment that funded research commenced (https://forskning.no/middelalderkunsten-som-ble-gjemt/544308, 4 September 2014). Thereafter, Bjarne Rosjo’s article ‘Kaster nytt laserlys over senmiddelalders kirkekunst’ appeared in Titan.uio.no (https://titan.uio.no/node/1975, 28 October 2016) and as ‘Hvem malte kunsten i kirkene?’ on the Forskning.no pages (https://forskning.no/partner-kunst-og-litteratur-kunsthistorie/hvem-malte-kunsten-i-kirkene/385379, 10 November 2016).

The KHM exhibition Forvandling / Transformation, which opened in January 2019,1 is itself a notable result that will ensure continued use of project data and publications. KHM agreed to create the exhibition as an organ to communicate results together with those from another NFR-funded project, ‘Religion and Money’ led by Svein Gullbekk. During planning and execution of the galleries and gallery guide (Bjerregaard ed. 2018), the curatorial team drew on rich experience of historical

modes of display for medieval church objects (Liepe 2018) while also confronting display challenges posed by profoundly damaged religious instruments. The gallery guide and gallery texts highlight issues of making, continued use, partial destruction and constant re-interpretation after the Reformation and up to today. In addition, and to coincide with the exhibition opening, Yngve Vogt interviewed Svein Gullbekk and Noëlle Streeton for Apollon. The article was published under the title ‘Reformasjoner tok flere hundre år’ (https://www.apollon.uio.no/artikler/2019/khm_reformasjoner.html, 29 April 2019). Vogt’s article featured on the Forskning.no pages ending 30 April–4 May 2019 (https://forskning.no/historie-kulturhistorie-middelalderen/reformasjoner-tok-flere-hundre-ar/1330886, 2 May 2019). With ongoing support from KHM, the exhibition will remain part of the permanent spaces of the museum, where gallery talks and organised events will continue to feature the work of ABD researchers for the foreseeable future.

VII. Results to be finalized after project completion

Many of the research results have already been published or will be shortly, but those that remain under review or in progress include two led by Elena Platania; one led by Anna Vila, formerly at CATS; one led by Tine Frøysaker and three led by Noëlle Streeton. These are labelled ‘Forthcoming’ in the references below. Of these, several are being developed for a collaborative book that is provisionally entitled Medieval Church Art and Its Afterlife in Scandinavia: Tracing Material and Cultural Transformations. The book will be edited by Streeton, Bjerregaard and Frøysaker, who have agreed to publish with Brill in 2022, pending a positive review of the manuscript. Finally, raw data generated during the project and data that remains unpublished will be accessible after the project period. Data relevant to KHM objects is available via the museum database, while data relevant to objects from other museums has been shared with these institutions. Long-term data preservation is assured via UiO IT, and with sharing possibilities pending a database designed for Conservation Studies (IT, UiO). To KHM alone, over 16 400 files in 840 folders were uploaded to a KHM database between Spring 2018 and Spring 2019, a total of 54.6 GB of data (58 647 872 042 bytes).

N.L.W. Streeton, 11 June 2019 / revised 20 November 2019

References


2 These figures do not include data from Bettina Ebert’s PhD project, which were uploaded separately.


VIII. Appendix – Publications and public lectures related to project 231592

Many of the research results are already published, or are cleared for publication (post-peer review). Others are currently under review or in progress. Publications are divided into seven categories as a way to visualise the project’s research landscape (as opposed to simply listing publications by date). Categories include:

i. Project preparation (2012–2016)

ii. Research background

iii. Post-doctoral research in Conservation Science (UiO & CATS, Copenhagen)

iv. PhD dissertation (UiO)

v. CATS collaborations, Technical Art History

vi. Exhibition, Museum of Cultural History (KHM, UiO)

vii. Added value: extra publications that contribute to the ABD research portfolio

Key: Orange = preparation, pre-project publications or added value; Green = ‘deliverables’; Blue = added value.

NB: Works-in-progress are highlighted in yellow.

A full list of invited lectures and conference papers follows the list of publications. These have been delivered by members of the research network throughout the funding period.

<table>
<thead>
<tr>
<th>Publications associated with the ABD project (project-preparation–2018)</th>
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<tbody>
<tr>
<td><strong>i. Project preparation (2012–2016)</strong></td>
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<tr>
<td><strong>Theme</strong></td>
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| **ii. Research background** |
### iii. Post-doctoral research in Conservation Science (UiO & CATS)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Authors</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verdigris &amp; damage</td>
<td>Platania, E., Streeton, N.L.W., Kutzke, H., Karlsson, A., Uggerud, E. &amp; Andersen, N.H. 2018. Infrared, Raman and Computational study of a crystalline mononuclear copper complex found in the pigment verdigris, <em>Journal of Vibrational Spectroscopy.</em> <a href="https://doi.org/10.1016/j.vibspect.2018.05.004">https://doi.org/10.1016/j.vibspect.2018.05.004</a></td>
<td>Published 2018</td>
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</table>

### iv. PhD dissertation (UiO)

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<th>Topic</th>
<th>Author</th>
<th>Status</th>
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### v. CATS collaborations, Technical art history

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<tr>
<th>Topic</th>
<th>Author</th>
<th>Status</th>
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NB: Collaborative articles with Platania et al. are listed with category iii.
<table>
<thead>
<tr>
<th>Exhibition</th>
<th>‘Forvandling’, Kulturhistorisk museum, UiO (from 31 January 2019)</th>
<th>Status</th>
</tr>
</thead>
</table>
  b. Ebert, B. En biskop / A bishop (C2913), pp. 14–16.  
  d. Ebert, B. Mens far hjelper til / While father helps (Enthroned Virgin with Nativity, C 2686), pp. 22–25.  
  e. Ebert, B. Anna selv tredje / Virgin and Child with St Anne (C2912), pp. 26–29.  
  f. Streeton, N.L.W., Platania, E., Daly, A., Vila, A. & Buti, D., Tapte relasjoner? / Long-Lost Relations? (Shrine from Bygland, C6113; Altarpiece from Skjervvå, C3000; Shrine doors from Roldal C5067), pp. 30–43 (listed also with group v. CATS publications).  
  g. Streeton, N.L.W. & Liepe, L. En pilegrimsreise / A Pilgrimage (Relief from Borre Church, C6131), pp. 48–51. | Published 2018 |
| **vi. Added value: extra publications** | Status |
| **Case study** | Streeton, N.L.W., Frøysaker, T., Caruso, F. and Kjesrud, K. Forthcoming. Desecrating and reanimating Anne selv tredje (KHM, C23312). In *Medieval Church Art and Its Afterlife in Scandinavia* (as above). | In progress |
Public lectures delivered by members of the ABD network (2014-2019)


Streeton, N.L.W. 2017. ‘New light on lost lustre. Results from the project ”After the Black Death: Painting and Polychrome Sculpture in Norway”’, presented 21 November 2017 to the IAKH research seminar, University of Oslo.

Streeton, N.L.W. 2017. ‘Decoding damages to late-medieval cult sculpture from Norwegian churches’ (Part II), presented 5 September 2017, ICOM-CC Triennial Conference, Copenhagen.


Streeton, N.L.W. 2016. ‘Decoding damages to late-medieval cult sculpture from Norwegian churches’ (Part I), presented 13 October 2016 during the symposium The Cult of Saints in the Archdiocese of Niðaróss in its European Context, University of Oslo.

ABD network meeting, Museum of Cultural History, University of Oslo (14 Oct 2016):

- Streeton. ‘ABD in progress, 2015–2016’
- Platania, E. ‘Materials analyses and CATS collaboration’
- Ebert, B. ‘PhD project: Current work’
- Bjerregaard, P. & Lindoe, E. ‘KHM exhibition, progress and planning’


Streeton, N.L.W. 2016. ‘XRF mapping of the altarpiece from Kumla (Historiska museet, Stockholm)’, presented 3 May 2016, Kumla Altar Seminar, University of Gothenburg (Sweden).


Streeton, N.L.W. 2015. 'The making and transformations of the Bygland shrine: a test case for a theoretical framework', presented 4 December 2015 during the research seminar, Matter and Materiality in the Study of Medieval Art, organised by Lena Liepe and Kaja Kollandsrud, Department of Philosophy, Classics, History of Art and Ideas, University of Oslo.


ABD network meeting, Bergen (24–25 Sept 2015):

- Streeton. ‘Re-shaping ideas about late-medieval church art in Norway’
- Bonsdorff, J.V. ‘The dissemination and organisation of specialist artisans in the medieval Baltic Sea area’
- Wadum, J. ‘The making of altars 1350-1550: Cologne, Lübeck, Antwerp, and Utrecht’
- Platania, E. ‘Case study: objects from Skjervøy Bygland and Røldal’
- Daly, A. ‘Dendrochronology: early results’
- Bjerregaard, P. ‘The renewal of the first floor at Historical Museum, Oslo’
- Karlsson, A. ‘Advanced Material Characterisation and Modelling at SINTEF Materials and Chemistry’

Daly, A. 2015. ‘Beyond chronology a tale of tall trees’, presented 15 September 2015, Laboratory of Tree-Ring Research, University of Arizona, Tucson (USA).


Streeton, N.L.W. 2015. 'Conservators and the "After the Black Death" project', presented 7 July 2015, Department of Conservation, The Art Institute of Chicago (USA).


Streeton, N.L.W. 2015. The "After the Black Death" project: early results and Hanseatic enquiries', presented 8 March 2015 during the Hansische Identitäten Conference, 4-7 March, Ernst-Moritz-Arndt-Universität, Greifswald (Germany).


ABD kick-off symposium (15–17 October 2014): Archaeology of the Object: Conservation, Material Culture and the Creation of Historical Knowledge for Pre-Reformation Church Inventories, organized by Noelle Streeton and Tine Frøysaker, Conservation Studies, University of Oslo:

- Frøysaker, T. ‘Interpreting the surface in light of re-painting, treatments and repair’
- Wadum, J. ‘Wood, paint and their art-historical contexts: boxmakers, painters and technical art history’
- Daly, A. ‘Non-invasive dendrochronology: an experimental method for the analysis of Baltic oak in late-medieval multi-component altarpieces’
- Kutzke, H. ‘Alteration of copper pigments’
- Sigurdsson, J.V. ‘Understanding the cult of saints in the century before the Reformation’
- Bo, R. ‘What about devotion? Devotional and liturgical practices in late medieval Norwegian churches’
- Fredriksen, P.D. ‘What counts as heritage? Archaeology, history and recent pasts’
- Bjerregaard, P. ‘COLLAPSE and the renewal of the first floor of KHM’
- Kausland, K. ‘Notes from the field: challenges for PhD research’
- Liepe, L. ‘“The material turn”. A dispatch from the frontlines of medievalist art history’
- Sandmo, E. ‘The Champion of the North. History, religion and prophecy in Olaus Magnus’ Carta Marina (1539)’
- Marincola, M. ‘Do books on conservation practice still have value? Information dissemination in an accelerating context’
- Streeton, N.L.W. ‘Writing histories for late-medieval things: the engagement of conservation with theoretical perspectives on material culture’