



**ANNUAL
REVIEW
2020-21**

“

The History of Science Museum must ensure it remains relevant, outward-looking and sustainable for the future.”

Front cover image: single nanoparticle of the Oxford AstraZeneca COVID-19 vaccine sculpted in glass and one million times its actual size. Created by renowned artist Luke Jerram.

97 years of the History of Science Museum

In 1683 the building on Broad Street, Oxford, which is now the History of Science Museum, opened as the home of a new institution, the Ashmolean Museum. Created to house the collection of Elias Ashmole, it was much more than just a display of objects. It became the centre of Oxford science in the late 1600s, with teaching in the entrance gallery and a chemical laboratory and anatomical theatre in the basement. By the time the Ashmolean Museum was built, experimental science was already flourishing in Oxford: in particular, Robert Boyle and

Robert Hooke carried out their famous research on the air pump in a house on the High Street. Boyle and Hooke were leading lights in the early days of the Royal Society of London, founded in 1660.

In 1924 a new museum for the history of science was founded in the same building. Like Noah's Ark, it was intended as a place of safety, preserving objects from the threat of destruction. Robert Gunther and Lewis Evans together were the driving force behind the new museum. Evans donated his collection of historic scientific instruments to the University in 1924. Gunther campaigned for them to be displayed in the building then known as the Old Ashmolean. A well-connected individual with an encyclopaedic knowledge of the history of science, Gunther rescued many historic scientific artefacts and transferred them to the Museum. Lewis Evans's collection provided the nucleus around which the Museum grew. Subsequent acquisitions have come especially from Oxford colleges and departments as well as major donors such as J A Billmeir (1957), C F C Beeson (1966), the Royal Microscopical Society (1968) and the Marconi Corporation (2004). The Museum now holds an unrivalled collection of early astronomical and mathematical instruments from Europe and the Islamic world and an exceptionally rich set of microscopes. Complementing the wide range of objects are manuscripts and early printed books, early photographs, portraits of scientists and scientific prints.

◀ Images: Ian Wallman



From the Director

Who would have thought that the request to close, and then reopen, a whole museum, that in pre-pandemic times would have met with an incredulous ‘you want us to do WHAT?!’ response, would become a matter of almost routine? But close and reopen we did – not just once, but three times (so far ...) with ever increasing confidence that we are well prepared and able to respond calmly and innovatively to crisis - with *Vision 2024*, our ambitious strategy for complete transformation in time for our centenary, firmly in our sights.

Our newly launched *Vision to Reveal Beauty – Highlight Ingenuity – Inspire Curiosity* and our Mission to *Explore the connections between people, science, art, and belief* are at the very heart of our work: of our ground-breaking displays onsite and online, of our vibrant events programme

that through digital means reached audiences who had previously never even heard of us, of our inspiring *Virtual Classrooms* project that touched pupils far beyond Oxfordshire – and of so much more that you will find on the subsequent pages.

These past twelve months have been exhausting and exhilarating in equal measure. None of the achievements that we are proudly looking back on in this Review would have been possible without the extraordinary commitment of my colleagues in the Museum and across our division Garden, Libraries and Museums (GLAM), and the generosity of our supporters. THANK YOU!

Dr Silke Ackermann FSA
Director



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◀ Image: Ian Wallman

From the Pro-Vice-Chancellor

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In a year in which scientific history was being made at the University of Oxford, and around the world, through the remarkable development of vaccines, treatments and newly engineered mechanisms for tests that have allowed our escape from the last eighteen months of COVID-19, it is wonderful to see that the History of Science Museum is in close pursuit of those history makers by swiftly moving to curate artefacts and personal stories of this period through their project *Collecting COVID @ UO*. It will be important to relate to future generations how the pandemic emerged and developed through this lens, and we are proud to be able to contribute to the telling of its histories.

Last year, due to the imposed closures, the Museum pivoted to digital access and activities. This year has seen the fruits of that switch including the launch of the HSM *Collections Online*, which means that we can all browse our favourite objects from home. It has also provided an environment in which we could build on those digital foundations whilst also welcoming visitors to new exhibitions and that dual achievement is evident throughout this report.

Luke Jerram's exquisite glass artwork, celebrating the remarkable story of the Oxford University researchers who developed the vaccine, provided an excellent opportunity for a new display. An online 'in conversation' event accompanied the vaccine sculpture, where the artist and Professor Dame Sarah Gilbert engaged in conversation with HSM Director, Dr Silke Ackermann, exploring the topic from both an artistic and scientific perspective.

This type of digital experience was one of many that has drawn fresh, as well as built deeper relationships with existing, audiences. In reading the annual report you see other examples of this including the Museum's *Virtual Classrooms* project. Supported by the Art Fund's *Respond and Reimagine* programme, the virtual workshops have enabled the Museum staff to sustain and strengthen established relationships with local schools whilst reigniting engagement with others.

The restrictions of COVID-19 also led to rethinking of the physical spaces of the Museum to allow visitors to safely enjoy the exhibitions and collections. Characteristically, the team took this as an opportunity to enhance visitor experience by ensuring a balance and

range of attractions that were evenly spread throughout the building. This is a forerunner of the creativity we see at work for *Vision 2024* where this year the team have progressed through the RIBA Stage 2 to prepare initial designs of the new spaces within the HSM. No doubt we will see much more of this exciting initiative in the year to come.

This short introduction alone illustrates how successfully the Director and the History of Science Museum Team are delivering on their Mission *Exploring the connections between people, science, art, and belief, Giving voice to the histories that their collections can tell and Sharing the stories of science in Oxford*.

In a year that has been difficult for all, they have achieved a great deal and moreover have done so with a positivity and creativity that is an exemplar to us all – thank you and congratulations.

Professor Anne Trefethen
FBCS FREng

Pro-Vice-Chancellor for People and Gardens, Libraries and Museums (GLAM)

Image: John Cairns ▶

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“
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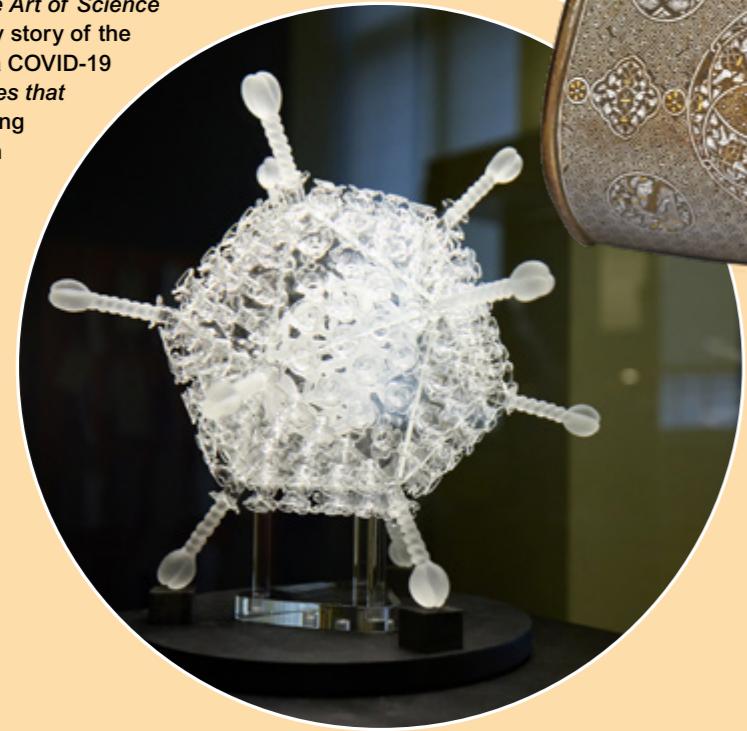
Headlines 2020/21

New Vision and Mission Statements

Launched at the start of the calendar year, the new Vision and Mission statements powerfully express the Museum's unique offer and are central to all activities, inspiring innovative approaches, and bringing new audiences to the Museum.

Ground-breaking displays on site and online

Three new displays were opened with *Precious and Rare* showcasing Islamic metalwork from The Courtauld and the theme of cultures in conversation, *The Art of Science* for the extraordinary story of the Oxford AstraZeneca COVID-19 vaccine, and *Watches that Tell Stories* presenting aviation, exploration and innovation through remarkable timepieces.

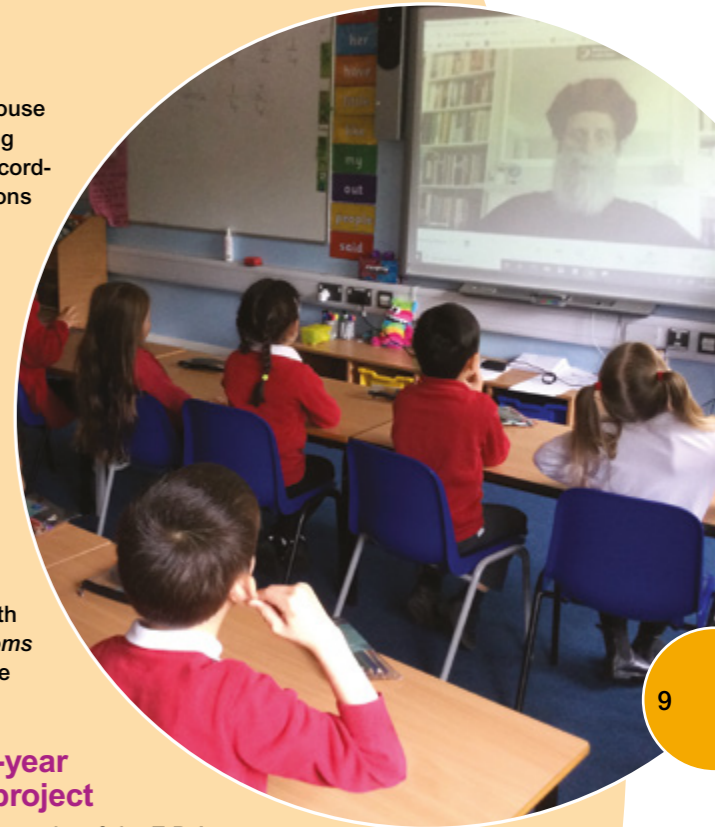


Breaking Visitor Giving Records

Once again, the Front of House team and online marketing campaigns produced record-breaking visitor donations of 76p per visitor. This represents an increase of 124% on pre-COVID giving and is a remarkable achievement demonstrating our resilience in the face of the pandemic.

Virtual Classrooms

A generous grant from the Art Fund enabled the Museum (in collaboration with the Bodleian Libraries) to develop and implement *Virtual Classrooms* providing a far-reaching, much praised, and effective shift to online delivery of learning activities.

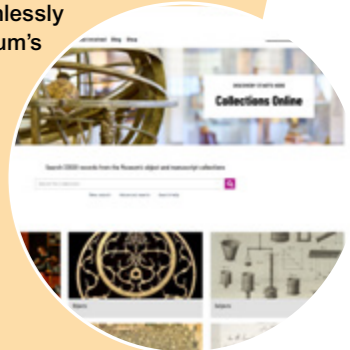


Awarded funding for a two-year Collecting COVID project

Thanks to the generosity of the E P A Cephalosporin Fund, the Museum was able to secure funding for a two-year *Collecting COVID* project in collaboration with the Bodleian Libraries.

Collections Online

The new Collections Online platform was launched which seamlessly integrates with the Museum's website and opens up the collections for online browsing and searching.



Facts and Figures

Staff and Volunteers

5 volunteers gave 18 hours. These hours were donated in the monthly Staff Meetings (14), Public Engagement and Vision 2024 (2.5) and Online Collections Database (1.5).

28 staff in total equalling 14.15 FTE on 31 July 2021 (including part time and fixed term contracted)

Research, Teaching and Collections

3 new displays

2 teaching modules drawing on the collections

152 collections and research enquiries



Operations & Planning

£6,800 76p raised from visitor donations
£12,112 average per visitor shop income
£1.36p average spend per visitor

HSM Website

172,906

visitors for the year

1,065 Website page views from social media

220,895

sessions for the year

01:09

average dwell time

Marketing

9,520

newsletters delivered

36%

open rate

6.6%

click rate

945

website pages views from newsletter

Learning and Engagement

19 facilitated primary school sessions delivered online

464 students in facilitated primary school sessions online

21 facilitated secondary school and post-16 sessions online

512 students in facilitated secondary school and post-16 sessions online

976 school age students (5-18) in facilitated sessions online

12 students in Higher Education and training in facilitated sessions online

60 children (0-16) participating in family activities online

20 adults independently and with children in family events online

4 volunteering opportunities created in family events

50 student teachers (PGCE) in facilitated sessions (in-person)

Social Media

Instagram

3,219

followers

13,183

engagements (Likes and video plays)

Twitter

15,478

audience (followers)

33,677

engagements (Likes, Comments, content views & retweets)

Facebook

8,010

followers

4,705

engagements (Page Likes)



New Displays

Precious and Rare

Precious and Rare: Islamic Metalwork from The Courtauld was born as a collaboration between HSM and the Courtauld Gallery in London, showcasing for the first time in Oxford an extraordinary collection of Islamic metalwork. Under the theme of *Cultures in Conversation* the loan items were displayed alongside selected HSM objects to create a dialogue between art objects and scientific instruments, breaking the traditional barriers between the two. The exhibition, which was curated in collaboration with Multaka-Oxford volunteers, took the visitors on a journey from China, across Central Asia, all the way to Europe, highlighting the exchanges of shapes, techniques, and decorative motifs that occurred through the centuries in both directions. Visitors were encouraged to explore the use of Chinese elements, such as the Lotus flower, in Egyptian Mamluk art; they could admire a unique metal handbag made for a Mongol lady in Iran by Arab craftsmen; and were presented with Italian metal items made and decorated with Islamic motifs.

A group of volunteers from Multaka-Oxford further enhanced the exhibition by producing additional resources. One volunteer created a video, displayed both online and in the gallery, illustrating the application of some mathematically based patterns on artworks followed by an interactive game which allowed the visitors to create their own patterns. Another volunteer created an online exploration of the contacts between Italian and Islamic art, while others brought the timespan of the exhibition up to the present day by introducing some of their own modern metal objects and by sharing the stories behind them.

Never before has one of our exhibitions required so many changes of location, timetable, format and scale as we implemented COVID adaptations. The exhibition opening was conducted via Teams Live and our curator Dr Federica Gigante co-organised the Courtauld online symposium in December 2020 to celebrate and reflect on the *Precious and Rare* tour throughout the UK.



Heartbeat of the City

Heartbeat of the City is a display of notable watches coordinated with the Institute for Digital Archaeology and including loans from significant watchmakers such as Vacheron Constantin and Charles Frodsham & Co. Ltd. It achieved wide media coverage for its personal stories of aviation, exploration and innovation. As the Museum responded to COVID changes, and with the help of our generous lenders, we were able to update the display twice to include new watches and themes.

Other exhibition news

Our contribution on women photographers to the Photo Oxford 2020 Festival was reconfigured online, with images projected onto buildings in Central Oxford.

The success of the *Alice in Typhoidland* exhibition and its heightened relevance in an age of mass vaccination led to its continuation and adaptation to reflect COVID and the university's rapid vaccine development response. The project has received further awards for its public engagement (the website www.typhoidland.org lists all the awards).



Collections

Acquisitions

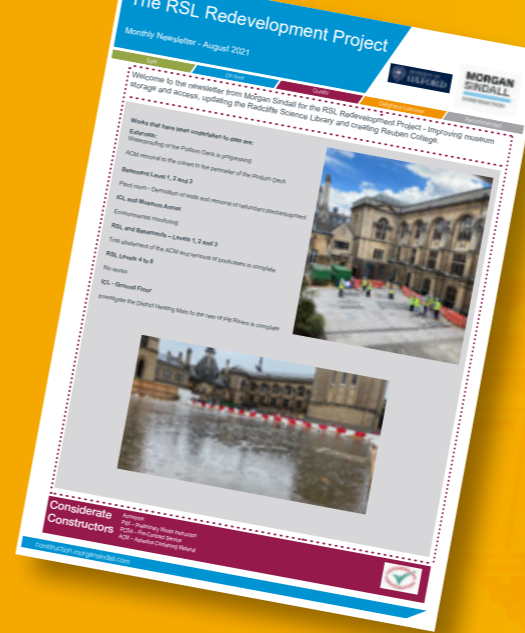
The pandemic continued to impact our ability to finalise and receive new acquisitions. We are eager to properly resume this key activity, so crucial to the dynamism of the collection. New gifts waiting in the wings include a major donation which will transform our holdings of one of the most significant figures represented in the collection. We look forward to a bumper year in the next Review.

Some limited activity was nevertheless possible. The Museum continues to acquire from the Oxford scientific community, though sometimes in ways that go beyond current research. Sir Jack Baldwin (1938-2020) was Waynflete Professor of Chemistry at Oxford and a major figure in organic synthesis.

A bequest from his estate brings to the Museum not the modern apparatus with which he had re-equipped laboratories from the 1980s onwards but a century-old microscope, which he had acquired for its historical value.



Van Heurck microscope by W. Watson and Sons, London, c. 1900 ▶



Major projects

The major capital programme to rehouse and provide access to the stored collections of the four University museums made significant progress during the year. The Collections Teaching and Research Centre (CTRC), at the central Oxford site shared with the new Reuben College and Bodleian Libraries, was able to proceed, despite COVID restrictions. Key work such as waterproofing began ahead of the main site contract. Collections Manager Lucy Blaxland continued representing History of Science Museum interests, and the collections perspective for the four museums, as the practical work commenced.



Image courtesy of fjmtstudio, architect for CTRC project ▶

At Swindon, planning for an extension of the Bodleian Libraries Storage Facility (BSF) to provide collections storage for both libraries and museums got underway. Renamed the Collections Storage Facility (CSF) this new build will apply modern high bay and palletised storage methods to manage museum collections.

Supporting both of these capital projects and a key part of the University Museum Collections Storage and Access strategy, is the GLAM Collections Storage team. Tasked with coordinating a complex programme of collections moves across GLAM they are helping the Museum's collections team with planning the moves into the new storage spaces, as well as with our Vision 2024 decant plans.



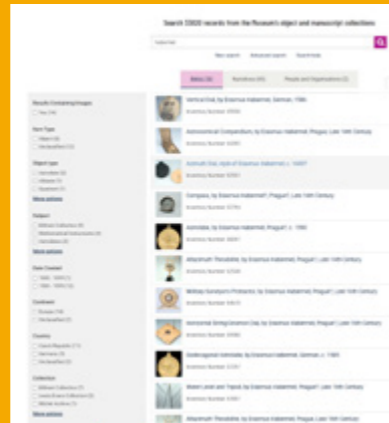
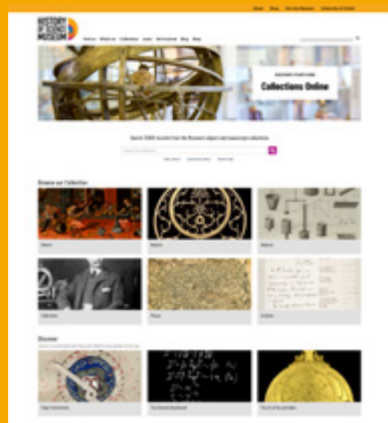
Digital Projects

The major event for the digital side of RTC operations has been the launch of Collections Online, an attractive new public front-end for our EMU collections management system. Fully integrated within our university-supported Mosaic website platform, Collections Online brings powerful new search and browse capabilities, previously only available to Museum staff working in EMU itself, to all-comers. Virtual visitors – an important constituency in 2020/21 – can obtain entirely new overviews, cross-sections or close-up views of the collections through advanced searching or filtering on simple search results. To aid the expert researcher, full records can be downloaded for offline study or analysis while visitors driven only by their curiosity can browse by makers,

places, collections and subjects – all without entering any search terms and therefore without prior knowledge of the collections. Students at all levels of the curriculum and their teachers now enjoy easier access to information about all of the collections, including items not currently on display. The interface also provides access to the records of the Museum's archive holdings that have recently been catalogued, in some cases accompanied by images of individual documents and with the capacity to benefit from future digitisation.

The new interface, funded by the university's GLAM Digital Strategy, is part of a significant investment in collections and digital asset management systems across all the

Oxford museums. By the common adoption of Collections Online the museums will realise significant economies of scale as well as the potential for searching across collections. At HSM, development of Collections Online was led by Dr Giles Bergel, with development support from IT Services and involving close consultation with colleagues across the Museum. Curators and collections managers are now involved in thinking afresh about how holdings are catalogued and contextualised in order to make the most of the new system's capabilities, their skills having been boosted by some advanced training sessions on EMU that took place in collaboration with the Museum of Natural History.



▲ *New and old conservation working microscopes*

Conservation

From August 2020, our conservator Cheryl Wolfe was able to return to site, working under strict COVID protocols to prepare objects for exhibition, pack items no longer required for display and fulfil agreed loan requests for other institutions. Essential collections care was resumed on a more frequent basis, including pest monitoring and the maintenance of environmental conditions. One of the most challenging elements of the latter was creating the stringent conditions stipulated for the Courtauld display. Achieving approved humidity levels inside Entrance Gallery cases was time-consuming but provided valuable experience towards the environmental specification of Vision 2024. Being back on site also enabled assistance to other members of the collections staff,

such as providing essential information and images of objects and archival material for research requests.

The University Museums Conservation departments were also successful in a bid for funding to upgrade equipment. This enabled HSM conservation to purchase a much-needed higher specification working microscope with integral camera and light sources. Very detailed work can only be done whilst working under magnification and the improvements to microphotography allow conservation reports to show greater clarity of condition and treatment, as well as greater accuracy in museum pest identification.

Two types of carpet beetle caught on a blunder trap; image taken under magnification on the new microscope. ▶



Model barge conserved for loan to the Museum of Oxford (inv. 18381) ▶

Research and Teaching

Research Support

Last year our CDP doctoral student Mathilde Daussy-Renaudin worked together with curator Federica Gigante as they both undertook a remote process of collections familiarisation. Further pandemic innovation occurred this year as staff were gradually allowed back into the building – with Federica now mediating access to objects for Mathilde via video.

Research visits to the collections continued to be severely curtailed by COVID restrictions. Most of our external research support was conducted by email, with 152 enquiries on research topics and collections items dealt with through the year.

If physical access was limited in this year, our collections nevertheless continue to inspire research. New work by a range of academic, museum and independent researchers has produced publications in a wide variety of international venues. These range from refereed journals to society periodicals, and over subjects from the origins of orreries to the iconography of sundials.

Sundial by Christoph Trechsler, inv. 49305, featured in Julia Ellinghaus, 'Bilderwelten auf wissenschaftlichen Instrumenten der Frühen Neuzeit und ihre graphischen Vorlagen', *Imprimatur: Jahrbuch für Bücherfreunde*, 27 (2021) ▶



▲ Sector by Robert Beckett, inv. no. 38251, featured in Boris Jardine, 'Robert Beckett (fl. 1597): Humfrey Cole's apprentice and the first stationer-instrument maker', *Scientific Instrument Society Bulletin*, 147 (December 2020)



▲ Orrery by George Graham and Thomas Tompion, inv. 97810, featured in Rory McEvoy, 'George Graham and the Orrery', *Nuncius*, 35 (2020)



Sundial by Christoph Trechsler, inv. 49305, featured in Julia Ellinghaus, 'Bilderwelten auf wissenschaftlichen Instrumenten der Frühen Neuzeit und ihre graphischen Vorlagen', *Imprimatur: Jahrbuch für Bücherfreunde*, 27 (2021) ▶

Teaching

Teaching has been maintained through the pandemic. Undergraduate teaching for the first year history option in *Nature and Art in the Renaissance* was again conducted online – though students were offered live question and answer sessions in addition to recorded lecture content. For graduate teaching within the History of Science, Medicine and Technology we were also online for our MSc/MPhil option paper on the History of Astrology. But while the students were remote, we used live video from the Museum to provide close access to objects, retaining the special connection with the Museum collection that is characteristic of our teaching.

Stephen Johnston continued to serve on the Examination Board for graduate teaching in the History of Science, Medicine and Technology.

Publications

Honorary Research Fellow Dr Elizabeth Bruton published:

Russell G. Egdell and Elizabeth Bruton, 'Henry Moseley, X-ray spectroscopy and the periodic table', *Philosophical Transactions of the Royal Society A*, 378, issue 2180 (2020)

Honorary Research Fellow Dr Paul Trafford published:

Buddhism and Computing: How to Flourish in the Age of Algorithms (2021)

'Designing Software for the Present Moment', *Interreligious Insight*, 19 (2021)

'Introducing KEPLAIR - A Platform for Independent Learners', *EDULEARN21 Proceedings* (2021) with S. Ferilli, L. Loop, W. Rankin,

'More than one slice?', *The Alternative UK* (2021)



◀ Used for remote teaching: astrolabe rete, by Allah-Dad, Lahore, c. 1570, inv. 47376

National and International Impact

Loans

Numerous loans had to be rescheduled due to COVID, but new practices were also explored and implemented, most notably virtual couriering, where remote supervision of objects being mounted and installed was conducted by video link online. This was conducted not only for our own outgoing loans but as part of the Courtauld installation.

Temporary loans that were successfully installed included *Top Secret: From Ciphers to Cybersecurity* at the Science and Industry Museum, Manchester. This was the second venue in this exhibition's Science Museum Group UK tour. As curator Dr Elizabeth Bruton noted 'The Marconi

Bellini-Tosi Direction Finder is a key object ... prominently displayed and interpreted in the wireless direction-finding part of the *Top Secret* exhibition, highlighting the importance of air defence and signals intelligence during the First World War.' *Epic Iran*, the Victoria & Albert Museum's major exhibition of art and design from 3000BC to the 21st century featured our early 18th-century astrolabe made by Khalil Muhammad ibn Hasan for his vizier, Mirzā Muḥammad Tāhir.

After an abrupt closure shortly after opening, Chelmsford City Museum was able to reopen *On Air: Chelmsford's Global Experiment*, an exhibition celebrating the centenary of the first

public entertainment broadcast by Dame Nellie Melba from the Marconi New Street factory in June 1920. Our loans to the exhibition were an aircraft wireless telephone transmitter and a telephone arc transmitter both from the Marconi Collection.

In addition to short-term loans to temporary exhibitions, two long-standing loans were reviewed and renewed during the year; the loan of 29 Marconi Collection items to the Ship's Cabin display in the Telecommunications Gallery at the Science Museum, South Kensington, and the loan of items to the Ashmolean Museum for their 'West Meets East' and Founding Collections displays.

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▲ Marconi aircraft wireless telephone transmitter, 1921, inv. 81229



▲ Marconi Bellini-Tosi direction finder, c.1916, inv. 20815



▲ Marconi telephone arc transmitter, 1910, inv. 69632



◀ Astrolabe lent to *Epic Iran* at V&A Museum, inv. 33739

Advisory Bodies

The Director, Dr Silke Ackermann, served as follows:

Member of the Research Advisory Boards of Deutsches Museum Munich, Staatliche Kunstsammlungen Dresden, and the Centre for History of Science at the Royal Swedish Academy of Sciences Stockholm.

External Advisor for Eton College Collections Committee on outreach and access.

The Head of Research, Teaching and Collections, Stephen Johnston, served on the Thomas Harriot Committee.

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Rete

The Museum continues to administer Rete, the international mailing list on the history of scientific instruments. The membership of the list was stable this year, with a slight increase to 762 subscribers. Rete's coverage is genuinely global, reaching at least 43 countries in Europe, the Americas, Asia and Africa. Through the mailing list the Museum not only serves and connects a worldwide community of individual researchers, academics and museum professionals, but also provides the principal means of communication for the Scientific Instrument Commission of the International Union of History and Philosophy of Science.

New Approaches

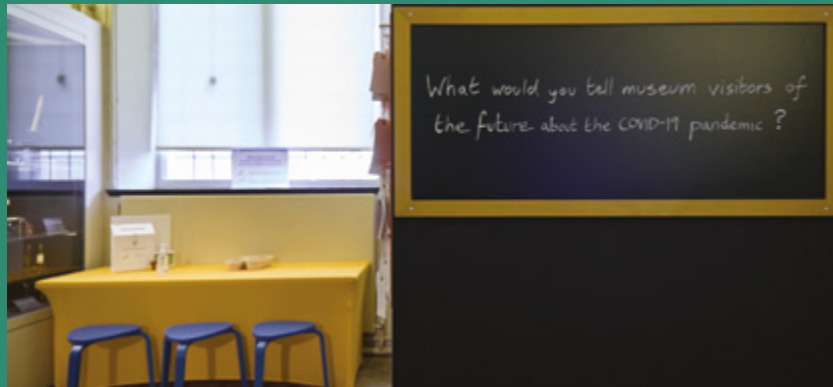
This has been a year of transition in Public Engagement & Programmes at HSM. To bring our new Vision and Mission to life, we are re-imagining our public engagement programme in collaboration with stakeholders and audiences.

Alongside the capital project, which will transform our Museum into an accessible, compelling space for future audiences, we are developing new working practices to drive our public engagement projects. The fundamental shift in approach connects across Museum teams and places audiences more meaningfully at the heart of our work. Building on the success of the Multaka-Oxford project, we aim to be one of the world's small museums leading the way on big thinking in relevant, cross-disciplinary, and audience-centred programming.

A Series of Experiments

Inspired by our collections and research heritage, we aim to approach public engagement as a series of experiments – asking questions of ourselves and our audiences to test out new ideas for connecting with our collections and programme. The framing of an experiment allows us to create space for things that might not always work perfectly first time, to be more agile in learning from visitor responses, and iterate our approach in real time to implement feedback on the spot.

Supported by individual gifts from members of the HSM Director's Circle, our first experiment began in May



2021 when we reopened HSM with a new object that perfectly represented two key elements of our new Mission – to connect art and science and to tell the stories of science in Oxford. Internationally renowned artist Luke Jerram has created a limited series of glass sculptures of a nanoparticle of the AstraZeneca COVID-19 vaccine, and the one we have acquired at HSM is the only one on public display in the UK.

We built an audience input space to accompany the sculpture, where visitors can leave their comments handwritten on luggage tags hanging on the wall. In the context of the presentation of the vaccine sculpture, it felt important for people to be able to express their experiences of the pandemic and feel that the Museum is a safe space for them to do that. We prompted visitors to respond to the question "What would you tell Museum visitors of the future about the COVID-19 pandemic?" This experiment in inviting audience input in HSM has received hundreds of responses in gallery and online and gives us a clear demonstration of visitor appetite to continue to provide an input space in the Museum.

In Conversation

To accompany our display of Luke Jerram's stunning vaccine sculpture, we piloted a new 'In Conversation' event format in May. The event saw artist Luke Jerram and Professor Dame Sarah Gilbert engage in stimulating conversation with the Director, Dr Silke Ackermann. It was a great opportunity to explore a topic from both an artistic and scientific perspective, and in this instance, to engage with the history of science in the making through the story of the vaccine development in Oxford. The survey from the event showed that 60% of attendees had never been to a Museum event before, and there was significant interest in the connections between science and art for future events. We were also pleased to be able to offer live captioning for this online event, to improve our access for audiences coming to HSM events.

We are planning to continue this event format in online and hybrid form, to bring together practitioners from different disciplines, including art, science and belief, to open up ideas behind our collections, and invite contributions from our audiences.



▲ Silke Ackermann
Image: Ian Wallman



Sarah Gilbert ▲
Image: John Cairns



Luke Jerram ▶



Public Engagement Workshops & Consultation

Between May and September 2021, we ran six online workshop sessions with staff, GLAM peers, volunteers, and a group of international science students. Further sessions will continue in the autumn. We are using a creative collaboration platform online to explore our new Vision and Mission statements with audiences and to better understand how they perceive us and what they would like HSM to do and be in future. The insights from these workshops will help to develop our new public engagement strategy with people-centred design at the heart of it. We already have a clear mandate for telling stories about the people behind our objects and for exploring what interactivity might mean in the context of our collections.



◀ Image: Ian Wallman



Precious and Rare: Islamic Metal Work from the Courtauld. Cultures in Conversation

We are also building our public engagement experiments from the trust and strength in participative working developed from previous projects, in particular Multaka-Oxford, where volunteers were involved in collaboration around object research, tours, and family events. A group of Multaka-Oxford volunteers supported the development of our temporary exhibition *Precious and Rare: Islamic Metalwork from The Courtauld — Cultures in Conversation*.

From stunning court fashion and intricate astrolabes to beautiful bowls and candlesticks, *Precious and Rare* explored the history of Islamic metalwork in The Courtauld Gallery and the History of Science Museum collections.

Some of the finest metalwork from Asia, Africa, and Europe revealed how the ebb and flow of people, goods, and ideas left a legacy of 'cultural conversations', pushing the boundaries of skill, knowledge, and beauty, always rooted in its distinctive Islamic heritage.

The online exhibition exclusively showcased community objects and

“ I shared my video with friends in Jordan, and they really enjoyed it”
(Multaka-Oxford volunteer)

stories supported by Multaka-Oxford volunteers, including developing a hugely popular programme for audiences to create their own Islamic patterns, Islamic jewellery with a personal tale to tell and historical blog posts,

“ It was an amazing experience”
(Multaka-Oxford volunteer)

Volunteers played a vital part in supporting the Museum in the past, particularly in the delivery of live events for families and local communities. For example, the Multaka-Oxford volunteers have played a key role in the planning and delivery of Oxford's successful Christmas Light Festival at HSM over the last few years. But as the country moved into a second lockdown last autumn, the event shifted online with a series of weekly Zoom meetings. Multaka-Oxford volunteers created a 40-minute family-focused live programme that was streamed on the evening of 20th November, featuring emotive and personal responses to objects from the Courtauld Islamic metalwork exhibition.

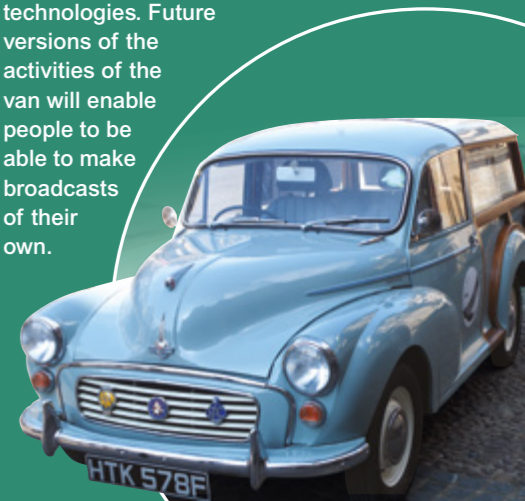
The Multaka-Oxford team are:

Abdullah, Afraa, Alison, Antionette, Ashley, Dhamyaa, Dilber, Dot, Duncan, Eva, Farida, Francesca, Ghufra,

Haffendi, Hiba, Jenan, Jonathan, Khadeje, Lily, Loubna, Lynn, Mariam, Marriam, Marwa, Matti, Michael, Miranda, Mohamed, Mohammad, Nav, Nawar, Nicola, Niran, Niveen, Rachida, Rana, Roushin, Sanda, Safaa, Sally, Sarah, Shaimaa, Thabo, Waed.

Visiting Display

The Institute of Digital Archaeology brought their new travelling exhibition to the History of Science Museum in May 2021, celebrating the past, present, and future of microwave physics. Housed inside a refurbished and specially refitted vintage Morris van, the touring public exhibition featured old broadcasting equipment on display to the public, to bring Oxford's contribution to the microwave revolution to life and connect to the Marconi collection inside the Museum. The objects in the van prompted visitors to consider the basic science underlying Marconi's life-changing invention of wireless communication technologies. Future versions of the activities of the van will enable people to be able to make broadcasts of their own.



Learning

New Ways of Engaging Young People and Families

Children with special educational needs and disabilities (SEND) have had a particularly challenging year due to the pandemic. Building on a long-term partnership, the Museum was keen to support students at The Iffley Academy. In the summer of 2020, the team reimagined previously planned engagement around the *Precious and Rare* exhibition with students from the school, all of whom have complex physical and learning challenges. Our goal was to give the children the same degree of sensory experiences which would have been possible in person. This was achieved by delivering a collection of handling objects to the school to support online sessions along with a range of craft and drama-based activities for the children. The project culminated with a celebration in May 2021 when the children were delighted to welcome us back into the school and share what they had done:

“The children are super proud of all of the wonderful work they have completed during this project. A big THANK YOU for all of your creative ideas and putting together this project which has been perfect for the class!”

(Iffley Academy teacher)

Our family learning offer this year has also included a live pinhole camera making workshop in October as part of the IF Science and Ideas festival, and online resources including videos and activities for school holidays and Oxford’s annual Alice Day.



▲ HSM Learning Producer Helen Pooley



HSM Learning Producer Chris Parkin ▶



PUBLIC ENGAGEMENT AND PROGRAMMING

Virtual Classroom Pilot Project

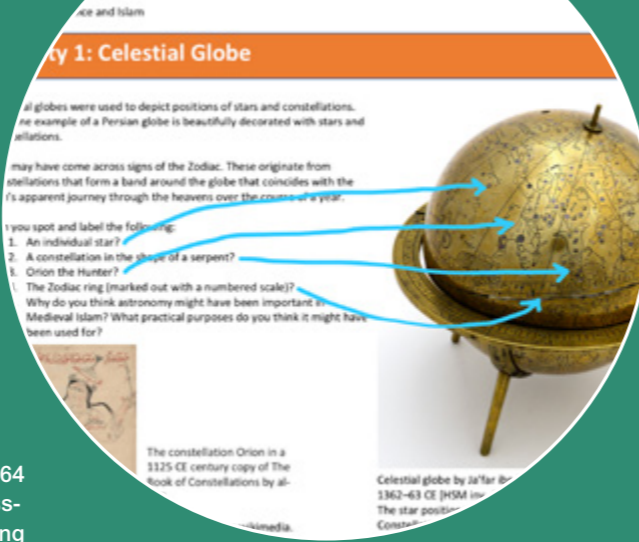
Experimenting with new ways of working extends to our formal learning programme too. At the end of 2020 we were successful in securing a grant from Art Fund for our Virtual Classrooms project in partnership with Bodleian Libraries. The project involved developing and piloting a series of virtual workshops aimed at schools from Early Years to Key Stage 4.

Creating online sessions took a huge amount of planning and upskilling, as the team learnt to use different platforms, including Microsoft Teams and Google Meet effectively. The team also acquired video-making skills that allowed them to create new digital learning resources and showcase Museum objects virtually. Throughout the project, the focus was on creating

hands-on, interactive sessions to engage pupils in the classroom and support teachers in local schools through this difficult and challenging period.

Across 7 local primary schools, 464 students benefited from new cross-curricular virtual sessions including 'Space Explorers', 'Maths Inventors', and 'House of Wisdom'.

“ Thank you so much Helen for a really lovely KS1 Space Explorers virtual visit to the History of Science Museum today - KS1 absolutely loved it, they were so excited to see the museum even virtually!” (Year 1 teacher)



And across 6 secondary schools, 512 students benefited from new virtual sessions across a range of curriculum subjects including 'Science and Islam', 'Observing the Universe', 'Curious Calculators', and 'Alice in Typhoidland'.

“ The session was fantastic and the students enjoyed the session throughout the time available.” (KS3 Science teacher)

Virtual workshops enabled us to sustain and strengthen established relationships with local schools. They also meant we could reach out to new audiences and revive historic relationships. This was the case with the Langley Academy partnership that had lapsed due to the logistical challenges of travel between Slough and Oxford. A high proportion of Langley students are from ethnic minorities, many from Muslim families, and the Science Department jumped on the opportunity to pilot the 'Science and Islam' workshop with all seven of its classes in Year 8.

Study days for GCSE and A-level students delivered in conjunction with other academic departments have been a significant feature of the Museum's learning programme in previous years. In the absence of in-person visits, the learning team sought to create virtual alternatives. In collaboration with the Bodleian's learning team, a set of digital resources including recorded talks, a virtual workshop and a short video on 'Frankenstein and Electricity' were created in place of the successful Frankenstein study day for GCSE students.

“ Very well presented and prepared. It got students to think about the whole process of an investigation and some of the great scientists' experiments and theories.” (Key Stage 3)

Following a successful 'Women in Astronomy' study day aimed at encouraging girls at GCSE into Physics in 2020, this year the Museum piloted a virtual seminar for students involving women researchers from the Astrophysics Department addressing 'Big Questions in Astronomy'.

The Museum has been actively supporting schools in extra-curricular projects too, for example creating a virtual workshop as a stimulus for

a Museum Project for a group of year 9 students at Oxford's Cheney School. Along with learning colleagues across other GLAM organisations, the Museum also contributed to the creation of an online cultural careers website featuring short videos of staff in various roles across the Museums and libraries and signposting other resources.

Teachers have not been forgotten either; the Museum normally supports the teacher training programmes at both Brookes and Oxford Universities' educational studies departments. The Museum contributed to an introductory programme on museum learning for this year's cohort of secondary science and maths PGCE students from the University. Many will go on to work in local schools and will, we hope, be future subscribers to the Museum's varied learning programme.

As the Virtual Classrooms pilot wraps up, and we begin to invite schools back into the museum, we will start to experiment with a blended offer of both physical and digital engagement, giving us the flexibility to reach bigger and broader audiences than ever before.

“ Outstanding! The session engaged all the pupils in class.” (Year 5 teacher)



Income

University funding	£510,900	Trust and Investment Income	£30,000
Research England	£135,000	Sales, Services & Trading	£11,800
Arts Council England	£144,000	Internal Sales and Services	£1,300
Furlough Income	£43,000	Other Income	£400
Visitor Donations	£6,800	TOTAL INCOME	£982,400
Other Donations (CRF, JEF etc.)	£99,200		

The COVID-19 Pandemic had a huge impact on the Museum's commercial income for the financial year 2020 – 2021. HSM secured no commercial income from events due to COVID restrictions; however, the onsite shop was able to operate in its new Basement Gallery location when the Museum reopened, and the online shop was also available. The Museum received most of its income from the University of Oxford with additional income from Arts Council

England and Research England all of which supported the delivery of the Museum's core activities and roles.

As the Museum was closed for most of the year, HSM once again engaged with the Coronavirus Job Retention Scheme (furlough). The Front of House team were largely furloughed during closure although there were opportunities for redeployment across other GLAM institutions and internally within HSM. Other public-facing roles

at the Museum, such as those in the Learning Team, were also furloughed. Thanks to the understanding and flexibility of many members of staff, we were able to reclaim £43,000 in furlough income for FY20/21.

HSM was also awarded £16,000 of deficit support from the Cultural Recovery Fund (CRF). This additional funding was used to promote reopening, renew COVID signage, and improve messaging for visitors.

Throughout 2020-21 Museum staff worked tirelessly when they were able to generate income and reduce the reliance on trust funds. For instance, huge efforts were made to improve the programme of visitor giving by utilising new training approaches and encouraging donations via the HSM website.

Expenditure

Payroll	£764,200	Library and Museum Expenses	£2,800
Non-Payroll Casual & Agency Staff	£20,200	Publicity and Advertisement	£29,500
Supplies and Consumables	£3,700	University Recharges	£32,400
Premises Related Costs	£22,600	Other Expenses	£29,100
Equipment Purchases and Maintenance	£31,400	Capital & Infrastructure Costs	£133,800
Staff Support Costs - Travel & Training	£7,500	TOTAL EXPENDITURE	£1,077,200

The financial year concluded with an approved deficit of £94.8k due to the closure of the Museum to the public

following the COVID-19 Pandemic. Payroll overheads represented a significant proportion of the overall operating costs at 71%. The Museum successfully operated within a strict equipment and consumables budget which has been reduced as most staff continued to work from home. Additional funding from donors enabled experimentation and delivery of new displays both physically and digitally. This has been a great achievement in a time of uncertainty and disruption.

Visitor Giving and Commercial Activity

*The Museum enjoyed three periods of operation this year between lockdowns, during which we welcomed **8,894 daytime visitors**. Our guests each made an average donation of **76 pence**. This surpassed last year's record-breaking per-visitor level by **124%** and generated **£6,800** of visitor giving income for the Museum.*

Visitor Giving

For HSM, COVID became a story of new opportunities to give our visitors a better experience.

The challenge of reopening a COVID-secure museum, while preserving the building's unique character and appeal, necessitated a radical redesign of our spaces. We returned to the Museum's beginnings in 1683 and used the original ceremonial entrance in the Sheldonian Yard to create a one-way route through the Museum. We used social distancing as a positive driver to enhance visitor experience by ensuring a balanced range of attractions that were evenly spread throughout the building. To achieve this, we undertook a wholesale relocation of our retail space; we increased the available gallery footprint; and we created an experimental space to allow us to pioneer new approaches to displays in preparation for Vision 2024.

A bespoke ticketing system was implemented to support our capacity control. This allowed us to ensure that guests would have the space to enjoy our galleries safely, while bolstering our brand visibility and autonomy from sister

GLAM sites. Ticketing allowed us to substantially increase visitor income by encouraging donations and purchases from the Museum shop at the point of booking.

We extended and developed our Front of House Storytelling Project during furlough. Phoebe Homer led our team in a series of sessions to explore and bring to life the captivating hidden stories of the Museum's collections. We have incorporated this into our culture of engagement and gallery hosting and have garnered positive visitor feedback.

Quality of Visitor Welcome

“The staff were friendly, knowledgeable and passionate about the displays and keen to share their enthusiasm - there are things that we may have missed if it wasn't for the person on duty pointing things out to us.” (HSM visitor)

“Fabulous little museum - we had a great time. I'm from Oxford but had never been here, and I'm so glad to have discovered it. The staff were welcoming and knowledgeable. Just wish we had more time there - there's so much packed into such a small space!” (HSM visitor)

Donations Per Visitor
2017-18
15p

Donations Per Visitor
2018-19
26p

Donations Per Visitor
2019-20
34p

Donations Per Visitor
2020-21
76p

We are proud to be represented by our Front of House team, who have worked so hard to adapt to changed circumstances, and who are exemplary ambassadors for the Museum.

Our team has welcomed two new starters during the year. Congratulations to Becca Brown and Chris Bentley, who have stepped up to join our team of Supervisors.

The Museum's retail business recorded a record-breaking per-visitor spend of £1.36 during 2020-21. This represents an increase of 183%.



Retail

The Museum's onsite retail space was relocated and transformed as part of our COVID-secure measures. A new, dedicated retail space, with a larger, more user-friendly footprint was created within our historic basement. This space had first played host to a commercial pharmacy when the Museum opened in 1683, and so the relocation represented a return to our roots(!). In addition, a new retail offer was developed as part of the ticketing system where guests were offered a range of merchandise at the point of

booking. Inevitably, capacity controls and lockdowns have impacted the overall volume of trading, which stood at £12.1k, however this comfortably surpassed budget projections by £2.4k.

Events & Venue Hire

The impact of the pandemic suspended our exciting venue hire plans for 2020-21, however with support from the Culture Recovery Fund we have been replenishing venue hire images to shine a light on all that



we can offer in our magnificent and unique setting.

Group Bookings

Due to health and safety restrictions in line with COVID guidelines, group bookings were suspended in 2020/21.

2020-21*		2019-20
£1.36	Spend Per Visitor	48p
£14.73	Average Transaction Value	£10.30
52%	Average Margin	53.1%
9.1%	Customer Conversion	4.6%
805	Total No. Transactions	3857
£12,112	Total Retail Turnover	£39,750
£2,400	Retail Profit	£7,300

*Museum reopened to public from 9 October 2020 – 4 November; 3 December – 23 December; 18 May 2021 onwards

** Museum closed to public from 5 November – 2 December; 24 December 2020 – 17 May 2021



Images: Ian Wallman

Museum Staff and Volunteers

Directorate

Dr Silke Ackermann, Museum Director
Suzy Gooch, Executive Assistant to the Director

Dr Stephen Johnston, Head of Research, Teaching and Collections

Rhiannon Jones, Head of Public Engagement and Programmes (to December 2020, maternity leave throughout 2021)

Jessica Bradford, Joint Head of Public Engagement and Programmes (maternity cover from January 2021)

Anna Starkey, Joint Head of Public Engagement and Programmes (maternity cover from January 2021)

Lynda Knill, Senior Development Manager

Cai Marshall, Operations and Commercial Manager

Liam Nash, Administration and Finance Manager

Andrea Ruddock, Marketing and Communications Officer

Research, Teaching and Collections

Dr Federica Gigante, Curator of the Collection from the Islamic World

Lucy Blaxland, Collections Manager

Melanie Howard, Collections Assistant

Rana Ibrahim, Collections Project Officer (Multaka-Oxford Project to November 2020)

Dr Lee Macdonald, Research Facilitator (to August 2020)

Dr Giles Bergel, Digital Projects Officer (from January 2021)

Cheryl Wolfe, Conservator

Public Engagement and Programmes

Keiko Ikeuchi, Photographer/Designer (to September 2020)

Chris Parkin, Lead Learning Officer

Helen Pooley, Learning Officer

Owen Shaw, Display Technician

Operations and Planning

Chris Bentley, Front of House Supervisor

Rebecca Brown, Front of House Supervisor

Marie Chapman, Gallery Assistant

Manfred Driver, Gallery Assistant

Peter Eills, Gallery Assistant

Phoebe Homer, Front of House Supervisor (to August 2021)

Chris Humphrey, Front of House Supervisor

Karen Humphrey, Gallery Assistant

Rana Ibrahim, Gallery Assistant

Silvia Pinna, Gallery Assistant

Izzy Treyvaud, Front of House Supervisor

Shared Services within GLAM (Gardens, Libraries and Museums)

Anjanesh Babu, Garden & Museums IT

Nicola Bird, Outreach

Diana Boxall, GLAM Finance

Nicole Cunningham, GLAM Finance

Karen Gent, GLAM Finance

Antony Green, Development

Catherine House, Development

Hayleigh Jutson, Volunteering

Miranda Millward, Arts Engagement Officer

Caroline Moreau, Volunteering

Carl Parker, Gardens & Museums IT

Joy Todd, Volunteering

Spiro Vranjes, Gardens & Museums IT

Honorary Research Fellows

Dr Elizabeth Bruton

Dr Paul Trafford

Students working closely with HSM

AHRC Collaborative Doctoral Award student, Mathilde Daussy-Renaudin

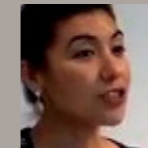
GLAM Volunteer Service

On-site volunteering was largely suspended across the Oxford University Gardens, Libraries and Museums in 2020/21. Nonetheless, 410 volunteers contributed over 7,500 hours to GLAM organisations, mostly through online volunteering. The GLAM Volunteer Service continued to keep in touch with volunteers via its regular, volunteer-led GLAMazine newsletters and monthly online social events, many of which took inspiration from the collections. History of Science Museum volunteers created Volunteer Stories and Me and the Moon videos and took part in Vision 2024 workshops. In addition, Multaka-Oxford volunteers contributed to the 'Precious and Rare' online exhibition and accompanying online events, as well as to an online exhibition for the Adler Planetarium in Chicago.

Board of Visitors



Professor Roger Davies (Chair), Philip Wetton Professor of Astrophysics and Fellow of Christ Church College, University of Oxford



Dr Erica Charters, Associate Professor of Global History and the History of Medicine (Faculty of History), Director of the Oxford Centre for the History of Science, Medicine and Technology and Co-Director of the Oxford Centre for Global History and Fellow of Wolfson College, University of Oxford



Imam Monwar Hussain MBE DL FRSA, 3rd Chairman and Founder, The Oxford Foundation; Imam of Eton College



Professor Robert Iliffe, Professor of the History of Science and Fellow of Linacre College, University of Oxford. General Editor of the Newton Project



Mr Henry Kim, former Director and CEO of the Aga Khan Museum, Toronto.



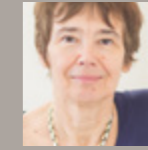
Professor Zoltán Molnár, Professor of Developmental Neurobiology (Medical Sciences Division) and Fellow of St John's College, University of Oxford



Professor Mark Pollard, Edward Hall Professor of Archaeological Science (Social Sciences Division), Vice-Principal and Fellow of Linacre College, member of the Oxford Martin School Management Committee, University of Oxford



Dr Venetia Porter, Assistant Keeper (Senior Curator), Islamic and contemporary Middle East art, the British Museum



Professor Sally Shuttleworth, Professor of English Literature (Humanities Division), Fellow of St Anne's College, University of Oxford



Professor Anne Trefethen, Pro-Vice-Chancellor People and GLAM, Professor of Scientific Computing and Fellow of St Cross College, University of Oxford



Professor John Wheeler, Professor of Physics (Mathematical, Physical and Life Sciences Division), Fellow of University College, University of Oxford

One of the Proctors or the Assessor of the University of Oxford

Vision 2024: Shining a Light on the Heritage of Science

The History of Science Museum has made good progress towards its first centenary, though the COVID-19 pandemic has continued to have a major impact on the Museum, its activities, visitors and staff.

In response to these continuing challenges, the HSM has rapidly evolved its methods of working and embraced fresh opportunities for innovation. This review highlights the many successes achieved and the highly creative results of the team's efforts. Remarkably, the adaptability shown has meant the Museum has been able to reach wider audiences than ever before.

Such progressive change lies at the core of *Vision 2024*, the ambitious strategy for the transformation of the Museum as it approaches its one hundredth anniversary. The experience gained in digital learning and online content has increased the Museum's resilience and demonstrates that by taking an adaptable approach it will

be able to continue serving its hybrid audiences for generations to come. The rethinking which was necessitated by restrictions on visitor capacity and other constraints over the past year has contributed to the further refinement of the proposed design for refurbishment and enhancement of its Grade I-listed building.

A rich and inventive programme which draws upon the world-class collection housed within the Museum building that has been made fit for the next 100 years, will celebrate and honour the guiding principles of the institutional vision, enabling the History of Science Museum to "Reveal Beauty – Highlight Ingenuity – Inspire Curiosity" for all audiences, be they on-site, off-site or on-line. To achieve these aims the Museum has re-articulated its Mission: to explore the connections between people, science, art, and belief; give voice to the histories that its collections can tell; and share the stories of science in Oxford. The transformation of the building will ensure that this Vision and Mission can be realised, setting new benchmarks for the sector.

The Museum is extremely fortunate to have the support of the many generous donors and partners who have helped sustain our activities and develop new directions over the past year. Now, to deliver the necessary step-change and secure its future, HSM looks forward to deepening these connections and existing supporter relationships and to welcoming on board new organisations and individuals who are willing to join us in helping achieve our ambitious goals.



John Leighfield CBE
Chair of Director's Circle
Distinguished Friend of Oxford



Roger Davies Chair of Visitors, Philip Wetton Professor of Astrophysics



Thank you for your support in 2020-21

We are enormously grateful to all our visitors, donors, friends and volunteers who have supported the History of Science Museum over the last twelve months, in particular:

The John Ellerman Foundation, whose continuing generous support has enabled the Museum's first Curator of the Collection from the Islamic World to deliver one of the highlights of the year, the collaborative exhibition of Islamic Metalwork with the Courtauld. The Museum is now actively seeking funding to secure this important post beyond the end of its two-year fixed term.

ACE (Arts Council England) Cultural Recovery Fund which has enabled HSM to reopen and reconnect with the city and its audiences in May with a relevant, compelling and safe on-site offer. The fund also provided crucial support to improve the Museum's online offer, and it has enabled us to refresh communication and awareness of the venue hire offer to restart this important income stream.

Art Fund, which awarded a grant to the pilot Virtual Classrooms project with the Bodleian Libraries, allowing the Museum to deliver interactive sessions with school groups unable to visit central Oxford during the year and paving the way for the launch of a hybrid programme of delivery formats from late 2021.

The Institute for Digital Archaeology generously presented the display, *Heartbeat of the City*, lending a scaled replica lever watch escapement and series of watches from their private collection and those of its partners, watchmakers Vacheron Constantin and Charles Frodsham & Co. Ltd.

The Museum is also grateful to the Hong Kong-based Maxson Network Limited for their ongoing investment in new digital display screen technologies to support the Museum's cutting-edge engagement with audiences. Members of the Museum's Director's Circle group gave support which enabled the Museum to commence a series of public engagement experiments, beginning with the display of the Oxford AstraZeneca vaccine sculpture from May 2021.

In late 2020 a grant was awarded from the E P A Cephalosporin Fund Trustees to support the collaborative

'Collecting COVID' two-year project with the Bodleian Libraries to ensure the artefacts and stories of the University's response to the pandemic are captured and shared.

Support received from individuals, trusts and charitable foundations and other organisations is critical to enabling the Museum to deliver its wide variety of projects and activities. Our deep gratitude goes to the above donors, and to the following:

The late Sir Jack Baldwin, Dr James Dodd, the Evans Collection Fund, Dr Laura Fan and Claire Barnes, the AE Gunther Fund, The Institute for Digital Archaeology, Mr John P Leighfield CBE and Mrs Margaret A Leighfield, the Millburn Bequest, Research England, and all our anonymous donors.

Be part of making the History of Science Museum a museum for the future

To find out more about how you, or your organisation, can become involved in supporting the History of Science Museum fulfil its potential and create Vision 2024, please contact:

Dr Silke Ackermann FSA
Director
t: +44 [0]1865 277 281
e: silke.ackermann@hsm.ox.ac.uk

Lynda Knill
Senior Development Manager
t: +44 [0]7894 838737
e: lynda.knill@devoff.ox.ac.uk

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OF SCIENCE
MUSEUM**



**BROAD STREET, OXFORD OX1 3AZ
WWW.HSM.OX.AC.UK**



@HSMOXFORD

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