Institution: University of Birmingham

Unit of Assessment: UoA27: English Language and Literature

Title of case study: Reshaping Natural History Museums through the Arts and Humanities

Period when the underpinning research was undertaken: 2015 to December 2020

Details of staff conducting the underpinning research from the submitting unit:

Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Prof. John Holmes	Professor of Victorian Literature and Culture	2015–present
Dr Will Tattersdill	Senior Lecturer in Popular Literature, Liberal Arts and Natural Sciences	2013–present

Period when the claimed impact occurred: 2016 to December 2020

Is this case study continued from a case study submitted in 2014? No

1. Summary of the impact

Working with a group of Natural History Museums (NHM) in the UK, University of Birmingham (UoB) researchers have had three types of **impact on these museums' practice, participation and engagement,** particularly with the Oxford University Museum of Natural History (OUMNH) and Lapworth Museum of Geology in Birmingham (LMG). We have:

1. Extended NHM reach to include new audiences;
2. Changed NHM museum practice;
3. Stimulated and led debate among stakeholders, reconceiving the public role of NHMs in the UK and internationally.

2. Underpinning research

In research developed through two publicly funded projects, Holmes and Tattersdill have shown how the interpretation of natural history in museums from the 19th century onwards has been shaped by intense creative engagements with the arts. Building the Book of Nature: The Poetics of the Natural History Museum was funded by the Canadian SSHRC (2015–2017: Janine Rogers, PI, Mount Allison University; Holmes, CoI, UoB; Verity Burke, PGRA, UoB); this project revealed how the architecture, sculpture and decorative art of NHMs built in the UK, Ireland and Canada from the 1850s to the 1930s convey distinct scientific conceptions of nature. Narrativising Dinosaurs was funded by the AHRC (2018–2019: Tattersdill, PI, UoB; Burke, PDRA, UoB); this project showed how popular images of dinosaurs — profoundly shaped by NHMs and at the heart of their public appeal — have always depended upon an interplay between empirical study and the artistic imagination.

The key findings of these research projects include:

RF1: The architecture of the UK's major Victorian NHMs was a product of the Pre-Raphaelite movement in art and poetry, and its reciprocal engagement with science (RO1);
RF2: The design, fabric and decoration of 19th- and 20th-century NHMs across Europe and North America carry meanings fundamental to their history and purpose (RO2);
RF3: The institutional histories and artistic heritage of NHMs bear on, inflect and inform their interpretation of natural history and of humanity's impact on the environment (RO3);

RF4: Representations of extinct animals through palaeoart in NHMs and beyond further complicate the presumed objectivity of science, sharing techniques with fiction and fantasy world-building, and revealing the role of the arts in reconstructing the past (RO4–RO5).

3. References to the research

RO1. John Holmes, *The Pre-Raphaelites and Science* (New Haven and London: Yale UP, 2018). ISBN: 9780300232066. Awarded the British Society for Literature and Science Book Prize for 2018, finalist for Historians of British Art Book Award (post-1800), submitted for REF 2021 (chapters 5 and 8 on Natural History Museums).
RO2. John Holmes, 'Science and the Language of Natural History Museum Architecture: Problems of Interpretation', *Museum and Society*, 17.3 (2019), pp. 342–61. (Open Access journal article).
RO3. John Holmes and Paul Smith, 'Visions of nature: reviving Ruskin's legacy at the Oxford University Museum', *Journal of Art Historiography*, 22 (2020), 15 pp. (Open Access journal article).
RO4. Will Tattersdill, 'Work on the Victorian dinosaur: Histories and prehistories of 19th-century palaeontology', *Literature Compass* (2017), 8 pp. DOI: 10.1111/lic3.12394
RO5. Jordan Kistler and Will Tattersdill, 'What's Your Dinosaur? Or, imaginative reconstruction and absolute truth in the museum space', *Museum and Society*, 17.3 (2019), pp. 377–89. (Open Access journal article).

4. Details of the impact

Impact has been achieved through engagement with specific Natural History Museums that has improved their audience (both in reach and types of visitor) and changed practice in these museums and beyond.

1. Contributed to audience reach in terms of larger total numbers and more first-time visitors to Oxford University Museum of Natural History (OUMNH) and Lapworth Museum of Geology in Birmingham (LMG).

1.i. OUMNH and LMG have been enabled to attract **increased in-person visitor numbers and audiences who previously would not have visited a science museum by utilising arts programming to present alternative narratives on natural history**. OUMNH has seen a very **substantial rise in absolute visitor numbers**, growing by 25% from 640,000 in 2015 to 800,000 in 2020, a feat attributed by its Director to a 'sustained period of innovation' incorporating the arts alongside the science (S1). This innovation began with *Visions of Nature* (*VoN*), co-designed by Holmes, which launched in 2016. *VoN* drew 570,000 in-person visits to its four exhibitions, totalling more than 250 new works devised by over 50 artists, alongside a programme of events and poetry residencies. It increased overall visitor numbers by over 28,000 on the previous year. Further, the museum achieved its stated aim of attracting greater numbers of first-time visitors. The flagship *Microsculpture* exhibition, as part of VoN, found 44% of visitors were new to the museum, with 45% having come specifically because of the exhibition. OUMNH **increased its overseas profile and gained new audiences** across Europe, North America and the Middle East touring *Miscosculpture* (RF3; RO3; S1–S2).

Extended audience reach was also achieved with LMG's series of evening arts and science events entitled 'Lapworth Lates', aimed at a young adult audience 'which had historically been an under-represented group within the Lapworth's general audience profile'. The initial *Dinosaurs in Popular Culture Late*, devised by Tattersdill in 2018, had 45% attend who were first-time visitors, and this 'original model' has now become 'a highlight' in the LMG's public engagement calendar, helping improve the museum's offer and regularly attracting 200 to each event. It contributed to a threefold increase in attendance at LMG overall between 2015 and 2019 (22,000 visitors p.a. increased to 65,000 p.a.) (RF4; RO4–RO5; S3).

1.ii. In addition to extending overall audience reach, OUMNH **engaged with two disadvantaged groups (the homeless and those recovering from brain injury)** who lack equal access to cultural institutions such as NHMs and who were **empowered to make their own contribution** to the museum's provision. Through partnerships with local charities, in 2019 OUMNH used the 'Ruskin 200' project, co-curated with Holmes, to engage specific groups in co-producing exhibition content and the delivery of museum tours. Working with Crisis Skylight Oxford, confidence-building training in public speaking for **homeless people** was provided, enabling them to lead tours of the museum informed by Holmes's research (RO1, RO3), whilst a collaboration with Headway Oxfordshire supported **people with brain injuries** to create art work inspired by John Ruskin and the museum which Ruskin co-founded. OUMNH's own assessment of visitors' feedback to 'Ruskin 200' observed how the museum felt 'more accessible' as a result (S1, S4).

1.iii. These successes in growing visitor numbers were threatened by the COVID-19 national lockdowns. Holmes enabled OUMHN to open up audience access despite lockdown restrictions by **moving the visitor experience to digital media and innovating with different types of virtual guided tour**. This digital exposure showed the value of combining the arts and humanities with natural history to enhance the public reach of NHMs. A video recognising OUMNH's 160th anniversary achieved significantly better online exposure than the Museum and Gallery industry benchmark and performed over 80 times better on Facebook than OUMNH's average for a post, while the first of a series of illustrated podcasts received over 800 views on You Tube in the first two months, well in excess of the norm for OUMNH videos (RF1, RF3; RO1; S1).

2. Changed practice of particular NHM museums.
We have **diversified and enriched the core provision of NHMs'** public science education and engagement by introducing arts and humanities material and approaches across the breadth of their activities as follows:

2.i. **Curatorial innovation** can be seen in the development of **exhibitions able to adapt to different types of science museum and to take different forms**. 'Drawing out the Dinosaurs' (DoD), co-curated by Tattersdill in 2018, conceived the history of dinosaurs as an art history as well as a scientific one and was visited by over 21,000 (RF4; RO5). This conception was characterised by the Coordinator of the Black Country UNESCO Global Geopark and Keeper of Geology at the Dudley Museum (DM) as 'such a novel and very relatable take on the science and culture surrounding dinosaurs' (S5). It was designed to be able to **capitalise on distinct contexts and reach different audiences** as it toured between three very different kinds of institution, each with a focus on science: first LMG, a university museum; then from 2019 Erasmus Darwin House (EDH), an Enlightenment period house; and finally DM, a regional collection. At both LMG and EDH, DoD was the first exhibition held in a new exhibition space, inaugurating a new approach to exhibiting the cultural factors involved in science at both museums (S3, S5–S6). In addition, a **mobile, interactive** version of DoD, initially devised as a workshop for a conference co-organised by Symbiosis (see 3.ii. below) in Toronto in 2018, showcased DoD's new concept and practice to museum professionals (S7). This was reprised and revised for a public audience at OUMNH as part of 'Ruskin 200', in collaboration with Dr Verity Burke and the Natural History Museum, London (S4).

2.ii. These NHMs have recognised how **institutional and art histories can inform their exhibits and their use of their premises** as a result of collaborations with UoB researchers (RF1, RF3). As a result, **exhibit re-interpretation** has occurred both with temporary and permanent displays. LMG **secured funding from the National Archives** for an archivist to develop and inform new displays at the museum (RF3; S3). The Natural History Museum, London, in 2017, adopted an audio recording by Holmes on its architecture to accompany a permanent exhibit (RF1; RO1, S8). In 2019, OUMHN adopted a 20-year strategic plan that explicitly recognised how the museum's decorative art and architecture could be used to redisplay collections and open up heritage spaces; Holmes played an integral consultancy role

and advised on a successful HLF bid to restore the original decorated entomology museum as a new public engagement space (RF2–RF3; RO1; S1).

2.iii. UoB researchers have developed **participatory experiences** that enable NHM visitors to **understand the science of natural history through their own artistic practice**. DoD provided direct, hands-on experience of the crucial role played by art in the apparently objective scientific reconstruction of fossils (RF4; RO5). A key exhibit was a disinterred set of dinosaur bones. Visitors drew their own reconstructions of what they imagined the animal might have looked like in life, showing that the 'correct answer' — one of four pieces of palaeoart by Mark Witton commissioned especially for the exhibition — was itself a piece of art, not simple scientific fact (S3). At OUMNH, visitors to *VoN* and 'Ruskin 200' were enabled to develop their own understanding of and responses to specimens and exhibits, to reflect on the meaning of the museum and to evolve **co-curated exhibits** through creating their own poetry and art (RF3; RO3; S2, S4).

2.iv. **Using contemporary art to communicate science and changes to the natural world** Following the success of *VoN*, OUMNH has incorporated newly commissioned art into each of its major Contemporary Science and Society exhibitions in what the Director describes as '**a permanent change to exhibition and programming practice**' (RF3; RO3; S1). For example, in the *Bacterial World* (2018–2019) exhibition, which drew 175,000 visitors, Luke Jerram's sculptures of *E. coli* and Elin Thomas's crocheted models of bacteria grown in Petri dishes 'were key in conveying the scale and pervasiveness of bacteria' and were the individual exhibits that visitors were most likely to stop and look at (S9). This prompted **OUMNH to adopt a policy** of 'placing eye catching art "strategically" throughout' future exhibitions (S9). Art is used by NHMs to **enhance the visitors' understanding of complex ideas** whether by explaining the ecological importance, and threats to, Bee populations (Kurt Jackson's multi-media exhibition *Bees (and the Odd Wasp) in my Bonnet*) or tracing changes to Arctic landscapes and ecologies driven by climate change (*Artweeks Arctic*) (S2).

2.v. The arts and science have been combined in **interdisciplinary education interventions** within these two NHMs. Building on DoD, Tattersdill and Burke created a worksheet on dinosaurs to enhance LMG's provision for schools which reaches 3,000 pupils per annum (RF4; RO5–RO6). As dinosaurs feature in the new KS2 syllabus, NHMs have a key role in supporting school groups in learning about them. Integrating learning outcomes from KS2 science and English curricula, the worksheet provides students not only with different perspectives on dinosaurs but also with a rare and valuable opportunity to bridge the gap between literature and science. Tattersdill and Burke also supported Richard O'Brien, the editor of *Dragons of the Prime* (Emma Press, 2019) — a book of dinosaur poems for children with notes by Tattersdill — in leading a poetry-writing workshop at LMG for children in August 2019. Tattersdill contributed textual notes to 'point out where the writing gets particularly creative and help you to think critically about the line between fact and fiction' (S12). The success of this workshop has led to the adoption of poetry as a regular component of the LMG's Learning Programme (S3). DoD enhanced education provision at DM too, where it was integrated into the education suite (S5).

3. Stimulated debate among stakeholders, reconceiving the public role of NHMs.
New public and political engagement has been stimulated, trialled and fostered (i) in the UK through direct interventions with OUMNH and (ii) internationally through the creation of a new network to promote the role of the arts within NHMs (S1, S7, S10, S11).

3.i. OUMNH recognised it needed to act as 'agents for change' through informing public understanding about the natural environment in crisis (S1). To do this, it mobilised art and science, and drew on its own heritage to galvanise public action. In an open-access manifesto article, Holmes and the Director of OUMNH Paul Smith argued that the mobilisation of Ruskin's legacy at OUMNH beginning with *VoN* has set a **precedent for the sector as a whole** in the ways in which it combines science, art and environmental activism (RF3; RO3; S1). For example, in September 2019, OUMNH collaborated with the activist organisation Extinction Rebellion on an Art-Science Extravaganza, including the reading, printing and distribution of

poetry commissioned from the three poets from *VoN*, again co-ordinated by Holmes. Attended by *c*.6000 people in a single day, this partnership engaged the public with research on climate change and environmental damage in a radically new way for an NHM **by using the combination of inspirational art and rigorous science to mobilise the citizenry and empower visitors to make informed decisions in their own lives** (RF3; RO1; S1). To articulate NHMs' new political and overtly environmental role to a public audience, for the post-lockdown reopening of OUMNH in Sept 2020, Holmes and Smith co-curated a display setting out, across ten new exhibition cases, OUMNH's mission as an NHM in an age of environmental crisis, stressing its use of the arts to engage the public with science and to reflect on its significance, and tracing this mission back to the museum's origins in a collaboration between artists and scientists (RF3; RO3; S1, S7).

3.ii. UoB researchers have **extended their new model of practice and policy to NHMs internationally**, **stimulating debate among multiple stakeholders worldwide** (RF2–RF3). This has been achieved by establishing Symbiosis, a new international network of museums and universities to cultivate the use of arts and humanities within NHMs through collaborative projects, a website hosted by UoB and a series of professional and public meetings in-person and online (S7, S10, S3). In November 2020, Symbiosis reached an audience of over 200 in 27 countries across Europe, Asia, and North and South America through a public, free-to-access online conference (S11). Symbiosis has been characterised as 'fruitful, productive and inspiring' by the Head of the Humanities of Nature Department at Museum für Naturkunde Berlin (MfN) (S10), an 'amazing initiative' by the Deputy Director of the NHM in Porto (S1) and as 'not just valuable, but essential' by one of the conference speakers (S11). Audience feedback from the conference shows active engagement of a wide range of stakeholders including creative practitioners, scientists and members of the public as well as museum professionals globally. For example, through reflections on practice across diverse stakeholder professions, including the team working on the renovation of MfN, informed by discussions of the history of NHM architecture (S10), the curator of an upcoming exhibition on the Anthropocene in Stuttgart said the conference had enhanced their preparations for their exhibition, and a writer declared that they 'would definitely use some of this information in an upcoming novel' (S11).

5. Sources to corroborate the impact

S1. Testimonial from the Director of Oxford University Museum of Natural History (OUMNH) (2020).
S2. OUMNH Report on *Visions of Nature* (2017).
S3. Testimonial from the Director of Lapworth Museum of Geology (2021).
S4. OUMNH Report on 'Ruskin 200' (2020).
S5. Testimonial from the Keeper of Geology at Dudley Museum and Black Country UNESCO Global Geopark Coordinator (2020).
S6. Testimonial from the Chairman of the Executive Committee at Erasmus Darwin House (2020).
S7. Symbiosis network website.
S8. 'Architecture' Soundcloud audio for the Natural History Museum.
S9. OUMNH Report on *Bacterial World* (2019).
S10. Testimonial from the Head of the Humanities of Nature at Museum für Naturkunde Berlin (2020).
S11. Data analysis from Symbiosis online conference (2020) from the OUMNH.
S12. Richard O'Brian (ed.) *Dragons of the Prime* (The Emma Press, 2019).