

Research Studentship into the effect of sound-induced vibration on canvas paintings

Project: Research into the effect of sound-induced vibration on canvas paintings

4-year DPhil studentship [under the AHRC's [Collaborative Doctoral Partnerships \(CDP\) scheme](#)]

Supervisors: Prof Manolis Chatzis (University of Oxford), Catherine Higgitt, Lynne Harrison and Christine Riding (National Gallery)

Project partner: Tomasz Galikowski (Bickerdike Allen Partners)

As heritage institutions seek to use their collections and buildings in ways never previously considered to engage audiences and raise income, this often has the unintended consequence of increasing vibration exposure, e.g. increased transportation, construction works or hosting music events near collections. The impact of vibration exposure is believed to be cumulative: changes may not be visible until the onset of major damage or catastrophic failure.

There is thus a very real, urgent need to improve understanding of the impact on collections of repeated exposure to vibration from a variety of sources and how to minimise the associated risk. This project focuses on improving understanding of the risks of direct exposure of Old Master paintings to music- or sound-induced vibration. It extends the work of a current Oxford/NG CDP student focused on structure-borne vibration (e.g. from construction or activities held outside a heritage institution) but vibration associated with sound/music in the same room as artefacts complicates the situation, with the potential for vibration to travel through air and impact directly.

While questions remain regarding vibration-induced failure mechanisms in paintings and the role of different transmission pathways for sound vibration, it is clear that sound exposes paintings to a mechanical load that can cause vibration and thus potentially damage. Further, the most common metric available to heritage organisations - simple sound level measurements - is not a good indicator of the impact on collection materials. A further complication is that the impact is highly dependent on factors such as the construction, size and contents of the room, and the location and mounting of speakers.

Award Value

CDP doctoral training grants fund full-time studentships for 4 years or part-time equivalent up to a maximum of 8 years.

The award pays tuition fees up to the value of the full-time home UKRI rate for PhD degrees. The award pays full maintenance for all students both home and international students. The UKRI National Minimum Doctoral Stipend for 2024/2025 is £19,237, plus an additional allowance of £1000/year and a CDP maintenance payment of £600/year. The student is eligible to receive an additional travel and related expenses grant from the National Gallery worth up to £4000 over the studentship. The successful candidate will be eligible to participate in events organised for all CDP students who are registered with different universities and studying with cultural and heritage organisations across the UK.

Eligibility

- This studentship is open to both Home and International applicants.
- To be classed as a home student, candidates must meet the following criteria:
 - o Be a UK National (meeting residency requirements), or
 - o Have settled status, or

- o Have pre-settled status (meeting residency requirements), or
- o Have indefinite leave to remain or enter

Further guidance can be found here - <https://www.ukri.org/wp-content/uploads/2021/02/UKRI-030221-Guidance-International-Eligibility-Implementation-training-grant-holders-V2.pdf>

- International students are eligible to receive the same full award for maintenance as home students. For fees, international students will need to pay the difference between the funding AHRC provide to the university for tuition and the fess charged by the university for international students studying for a doctoral degree.
- We want to encourage the widest range of potential students to study for a CDP studentship and are committed to welcoming students from different backgrounds to apply. We particularly welcome applications from Black, Asian, Minority, Ethnic (BAME) backgrounds as they are currently underrepresented at this level in this area.
- As a collaborative award, students will be expected to spend time at both the University and the National Gallery
- NB. All applicants must meet UKRI terms and conditions for funding. See: <https://www.ukri.org/funding/information-for-award-holders/grant-terms-and-conditions/>

Candidate Requirements

Prospective candidates will be judged according to how well they meet the following criteria:

- A first-class* honours degree (or equivalent) in Engineering, Physics, Mathematics, Applied Mathematics, Chemistry.
- Excellent written and spoken communication skills in English
*Applicants with a good 2.1 degree are also encouraged to apply if they can demonstrate excellent previous research relevant to conservation or dynamics through a graduate or undergraduate project.

The following skills are also highly desirable:

- Ability to program in Matlab, or similar
- Excellent understanding of Dynamics and Vibrations

Application Procedure

Candidates must submit a graduate application form and are expected to meet the graduate admissions criteria. Details are available on the course page of the [University website](#). Before going through this process, applicants are strongly encouraged to make informal enquiries, which should be addressed to Prof. Manolis Chatzis (manolis.chatzis@eng.ox.ac.uk) and Catherine Higgitt (catherine.higgitt@nationalgallery.org.uk)

More information: <https://www.findaphd.com/phds/project/research-studentship-into-the-effect-of-sound-induced-vibration-on-canvas-paintings/?p170542>

Please quote **24ENGCL_MC** in all correspondence and in your graduate application.

Application deadline: 20 April 2024

Start date: October 2024