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6. Architectural History in Academia and the Wider Community

Deborah Howard (University of Cambridge)

Respecting buildings

How can academic research in the arts and humanities make its impact in the cultural context promoted by today's celebrity-focused media and by government policy that privileges applied research? This essay will argue that the humanistic disciplines, in reality, represent one of the country's most valuable resources. While 'Englishness' may be highlighted in travel supplements to encourage tourism, in reality our culture is, of course, not insular but continually enriched by influences from outside, a process that is accelerating exponentially in the global universe.

I am an architectural historian – which, I would argue, is not at all the same thing as an 'historian of architecture'. Architectural history is a profoundly interdisciplinary practice that explores the role of buildings as settings for human activity. It involves at least some understanding of a daunting spectrum of other fields, ranging from engineering to economics, from religion to social history and from geography to archaeology. Since every citizen inhabits and uses built structures, no one is untouched by the architectural setting. About twenty years ago I heard a lecture by a celebrated French conservation architect, Didier Repellin, who told two anecdotes that seemed to underline the value of my own subject (Repellin 1991: 109–10). In the first story, he explained how he had dissuaded the council of his home town, Lyons, from demolishing the medieval quarter on the banks of the Rhône – a drastic threat imposed by fire regulations – by simply persuading the emergency services to make smaller fire engines. Public policy, he demonstrated, can be guided by enlightened historical awareness in simple, cost-effective ways. The second story recounted his ambition to take a group of severely disturbed and delinquent youngsters up the scaffolding to see the restoration of Lyons cathedral. Somehow he managed to overcome the opposition of the Bishop who feared damage and disaster, and the boys were transfixed with wonder. They watched the restoration work with such concentration that they forgot to be naughty. My point is that every member of society has a potential to be inspired and even influenced by the built environment. The Ciceronian view that an ordered society and a well-designed townscape are inseparable still deserves recognition.

Architectural history teaches the public to respect and value buildings around them, and to take an informed interest in the places they occupy and visit. I spent a decade lecturing at Edinburgh University in the 1980s

and was struck by the exceptional knowledge and involvement even of the least educated tradesman in the city's architecture. New buildings were talked about in the street and the pub, as well as in the media, while old buildings aroused pride and curiosity. Lectures and visits to historic buildings frequently attracted capacity audiences. Government should never underrate humanity's natural inquisitiveness. The fundamental question at issue in this essay is how far the research of a university scholar or department can help to engender civic pride of this kind, and how far political benefit may be claimed, directly or indirectly, from research in the field.

The word 'culture' involves growth, and obviously no civilization can exist in a vacuum. What is the role of research in the arts and humanities in today's dizzy process of cultural diffusion? In the twenty-first century the identity of specific places is threatened with dilution – or even Disneyfication – by the instant diffusion of images from across the globe at the touch of a mouse. In this overload of visual information, how can any community possibly understand the historical significance of its own surroundings? Within academia the sector is threatened as never before by lack of resources, in comparison with the competing fields of science, technology and medicine. In my own university, Cambridge, the School of Arts and Humanities is now the smallest and poorest because it lacks the massive grant income of the richer scientific schools, although we teach almost half the undergraduates.

The concept of applying for research grants is foreign to many senior figures in arts subjects. According to the traditional mode of research, the lone scholar ferrets in a library or archive, collecting material for a 'great book'. Such independent scholarship is now considered old-fashioned, but it is worth remembering that this is an extremely economical process, only requiring funding for the senior academic if the relevant source material is far from home or if the researcher needs extra sabbatical leave. The results can be groundbreaking – and eventually internationally influential through diffusion in publications, and thereafter by the internet and the media. Perhaps research by individuals deserves a more sympathetic calibration as 'extremely good value for money'. Such work can play a vital role in helping to trace the trajectory of the discipline as it evolves.

For almost forty years, my main field of research has been the art and architecture of Venice and the Veneto. As the longest lasting republic in history, Venice has much to teach a modern democracy, both positively and negatively. Fortunately, the city has preserved remarkable archives – the Venetian State Archive alone has literally miles of shelves. The historian of Venice can indulge in a captivating process of time-travel, exploring past centuries that in many respects were far more 'real' than the city of today, now depopulated and swamped by tourism. Archival research is like detective work – one discovery leads on to another, and each day brings both excitement and disappointment in varying measures – but the crucial issue in documentary research is to ask questions that have both focus and

relevance. The ways in which civic buildings were erected under the patronage of elected committees, and subjected to public consultation and enquiries, resonate strongly with the issues surrounding contemporary public building initiatives (Howard 2008).

West meets East

Some years ago, I became curious about the cultural relationship between Venice and the Islamic world. Like many earlier travellers and critics, I was struck by the exotic, seemingly orientalizing qualities in the architecture of Venice, and suspected that they might reveal a long process of cultural diffusion fed by commercial exchange. Official documents tell a story of constant friction – war, piracy, extortion and espionage – yet when I began to explore other sources such as merchant letters, pilgrim chronicles, travel narratives and legal documents, I was intrigued to uncover a web of much closer and more intimate contacts between Venetians and their Muslim trading partners, sustained over many centuries.

Although the papacy and the Byzantine emperors continually tried to prevent Venetians from trading with the Islamic world, afraid – with some justification – that the exported wood and metals could be used to manufacture arms, the Venetians defended their role as protectors of the Christian faith while indulging in the constant exchange of both ideas and goods with Islamic trading partners. Many young Venetian men spent their formative years in the great emporia of the Eastern Mediterranean such as Damascus, Acre and Alexandria, where they studied Arabic and book-keeping, and learned how to trade in a dazzling array of valuable commodities including exotic spices, valuable textiles, gems and pigments. Inventories of Venetian merchants who died overseas revealed an extraordinarily cosmopolitan range of possessions, ranging from a ‘German roasting-spit with counterweights’ to a rare pigment known as ‘dragon’s blood’. Venetian merchants were the only westerners allowed by special trading privileges to wear local dress when living and travelling in the Near and Middle East (Howard and Bianchi 2003).

In 2000 I published a book entitled *Venice and the East*, in which I attempted to show how Venetian civilization in its widest sense had been deeply influenced by this dense web of cultural and commercial exchange (Howard 2000). The book sought to make a small contribution to the important process whereby Western civilization builds a better understanding of Muslim culture and religion, a matter of crucial significance to public policy. The book was followed by two major art exhibitions, both of which attracted considerable public interest. The first, *Bellini and the East*, held at the Isabella Stewart Gardner Museum in Boston and the National Gallery in London, explored a very short time-span, focusing on the period 1480–1500, while the second, *Venice and the Islamic World*, shown in Paris, the Metropolitan Museum in New York and in Venice, covered the much longer period 829–1797.¹ This demonstrates how research initially stimulated by a

single academic's personal inquisitiveness can broaden out to influence the educated public over a very wide geographical area, and may even help to inform public awareness of current political issues.

Over the past two decades, brave attempts have been made to foster a new kind of academic research in the arts and humanities involving more than one individual, and often more than one institution. The idea that academics in the arts should work, like those the sciences, on major grant-aided collaborative projects has been perceived as a means of raising the status of research in the humanities. Ambitious international networks have been set up involving regular meetings of scholars and huge multi-author publications, and applications have been invited for themed research areas. Such exercises are an extremely expensive use of public money – especially now that universities can claim such high overheads – but they play a crucial role in providing opportunities for post-doctoral scholars and in creating webs of international contacts.

Sound and space

The scope of a grant-aided research project can be immeasurably more exciting than lone-scholar research. In February 2005 I began a three-year project, funded by the Arts & Humanities Research Council (AHRC), to explore the relationship between architecture and music in Renaissance Venice. How can one justify the expense of public money on such an exercise? First of all, one has to place trust in the curiosity of the taxpayer to learn about the great achievements of civilization. In the sixteenth century, Venice stood at the forefront of European achievement in both architecture and music. Its principal architects, Sansovino and Palladio, were not only gifted designers but also great problem-solvers, intrigued by the specific needs of every commission. Together they infused the Venetian townscape with a new monumentality and classical discipline, learned from their studies of ancient Rome, but they also created – or modified – ecclesiastical spaces for a range of different kinds of worship: the grand state ceremonial of St Mark's, the simplicity of parish life, the solitary routine of the monastery, the great preaching arenas of the friars and the settings for the choirs of orphan girls in the four hospitals that would eventually grow into famous music conservatories.

Meanwhile, remarkable developments were underway in sacred music, as composers began to break free from the constraints of plainchant. Although Gregorian chant could be embellished with fixed harmonies that simply followed its words and rhythms, this improvised polyphony was rarely written down. By simply adding a time signature and bar-lines, polyphonic music could evolve into far more complex patterns, using counterpoint and canons. In Venice a pathfinding role was performed by the Flemish composer Adrian Willaert, who introduced into St Mark's an early form of stereo known as *coro spezzato*, in which two spatially separated choirs sang in a

dramatic form of musical dialogue. Although some church reformers were suspicious of the worldly seductiveness of the new polyphony, it was soon realized that sincere and powerful religious ideas could be expressed in this way. Andrea and Giovanni Gabrieli and Claudio Monteverdi were among the composers who revolutionized the composition of sacred music during their employment at St Mark's.

How did these groundbreaking achievements in music and architecture interact? Any act of worship involves ritual movements within a spatial setting, and depends on the communication of religious doctrine and spirituality in words and music; yet space and sound have rarely been considered together. In architectural history, a church interior is traditionally analysed in terms of its visual qualities – the plan and details of the design – while in recent decades attention has also been paid to broader issues such as patronage and ceremonial. But unlike lighting, circulation, decoration and proportion, the aural dimension is usually sacrificed, because the words and music are ephemeral, surviving only in liturgical texts and musical notation.

How can the sound qualities of a space be reinstated? Our project tackled the issue on several fronts. First of all, we pursued an intensive programme of traditional historical research into the musical, liturgical and architectural traditions of each type of religious institution, and selected a dozen case studies for detailed investigation. Meanwhile, we organized an interdisciplinary international conference in Venice, bringing together for the first time architectural historians, musicologists and acousticians. This allowed the three separate constituencies to communicate and exchange their expertise. Somewhat to our surprise, these disparate groups found they had much to learn from each other.²

As the project gained in momentum, the merits of international and interdisciplinary collaboration became more and more evident, as we benefited from the sponsorship offered by a range of other organizations. The most significant of these was the generous support of two leading acoustic laboratories, one in Cambridge and one in Venice.³ These allowed us to carry out scientific assessments of the acoustic properties of our chosen churches. One of them, the church of the Incurabili hospital, was demolished in 1831, although it had been renowned for centuries for its excellent acoustics. In collaboration with the Acoustics Department of Venice University's Architecture School (IUAV), we were able to set up a student project to make a virtual reconstruction of the former church and to play anechoic recordings in its simulated virtual space in order to recreate some impression of its musical acoustic. Meanwhile, the Acoustic Laboratory of the Fondazione Scuola di San Giorgio carried out a systematic programme of measurement of the acoustic parameters of ten selected surviving churches. Qualities such as the reverberation times of the spaces and their ability to sustain different frequencies were measured, using a range of positions for both sound emission and microphone based on the evidence of our historical research.

A year after the first conference, we gathered together the same team of scholars to take part in a workshop in Cambridge to plan a programme of choral experiments. The climax of the research was to be the visit of St John's College choir to Venice in April 2007, and we needed to take the best possible advice from our experts. Of course, we were fortunate to have the services of an internationally renowned choir, but we needed to be clear about what we wanted to test. Where did singers perform in each church, and what sort of musical repertoire was involved? How far did the acoustics of each building suit the musical and liturgical needs of that particular institution? How did the audience and singers respond to the acoustic environment? The search for 'authenticity' was not a primary objective, as we were sceptical that it is an achievable goal. Instead, we sought to acquire rigorous comparative evidence by performing the same repertoire in a variety of different spaces.

The visit of the choir in April 2007 was inspiring and instructive in equal measure. The support of the choir's Director of Music, David Hill, was invaluable, as was the skill and enthusiasm of all the singers – even the boy choristers were able to sight-sing complex Renaissance polyphony. By chance, the size and composition of St John's College Choir was very similar to that of the choir of St Mark's in the sixteenth century. In other churches, we varied the composition and size of the group of singers according to the historical context. In the hospital churches, for example, we needed only children's voices: in the absence of any girls' choir with the necessary skills, we used the boy choristers of St John's (in any case, recent research has revealed no perceptible differences in boys' and girls' voices up to the age of thirteen – Howard *et al.* 2002). In the monastic churches, the college's adult choral scholars played the role of monks, usually singing in beautiful inlaid wooden choir stalls.⁴

Within the city of Venice itself, the programme of choral experiments aroused considerable local interest. The series was widely advertised, as we needed to fill the churches for acoustic reasons – an empty church is far too reverberant. The audiences included local parishioners, tourists, architectural historians and musicologists, as well as parents and friends of the members of the choir. With the advice of our Cambridge acoustics consultants, Arup Acoustics, we devised a questionnaire for the audiences, using numerical scales to assess qualities such as reverberation, warmth, volume, envelopment and brilliance. We also invited the performers to give us their own reactions to the acoustics in each church. We returned from Venice with a suitcase full of questionnaires and eight CDs' worth of music recorded using the latest all-round 'Soundfield' microphone technology, not to mention the copious scientific data from the programme of acoustic measurements.

The next stage was to set about the analysis of this material. The Music Faculty of the University of Cambridge gave us the use of its acoustic laboratory to allow further reflection on the musical recordings and comparative assessment of the acoustics of different spaces. Meanwhile, the Cavendish

Laboratory (Department of Physics) sponsored the employment of a summer student to analyse both the audience questionnaires and the scientific data. This Cambridge-based scheme, known as UROP (Undergraduate Research Opportunities Programme) paid for an enthusiastic second-year engineer with both musical and computer skills, who worked intensively for two months under the direction of physicist Malcolm Longair to collate and analyse all the data. The result was a remarkable body of unique evidence which forms the technical appendix of the project's final book.

The most fascinating outcome of this scientific offshoot of our project was that we discovered significant links between the subjective and objective data. In other words, the responses of our randomly selected audiences corresponded very closely with the measurable acoustic characteristics of the various church interiors. This is the first time in the history of acoustics research (as far as our professional consultants are aware) that such a correlation between objective measurements and audience responses has ever been attempted. The results were presented at the international conference of the Association of Acousticians in Paris in June 2008. The audience questionnaires also showed a remarkable agreement with the informed judgments of one of our acoustic specialists, suggesting that even amateur listeners have discriminating responses to acoustic environments. It is inspiring that an arts-based collaborative project can break new ground even in a complex area of scientific research, thanks to the enthusiasm of the project partners and the intrinsic interest of the specific historical question.

The final dissemination of the research took the form of a full-length book, published by Yale University Press, written with the help of my principal collaborator, a young Italian scholar called Laura Moretti (Howard and Moretti 2009). Trained as both a professional cellist and architect, Moretti has proved the ideal partner, and her input into the whole project has been immeasurable. The book is profusely illustrated, both with plans and views of the buildings themselves but also with photographs of the scientific measurements and the choral experiments in progress. The technical appendix was written by our two acoustics experts, Davide Bonsi and Raf Orłowski, together with our physicist Malcolm Longair and the summer student Philip Garsed. The data are presented in graphs and diagrams so that they can be easily understood by a non-specialist. The book is linked to a website on which we have placed a selection of the musical recordings.⁵

The churches discussed in the book are all well known to both architectural historians and tourists. In addition to St Mark's and the principal surviving churches of Sansovino and Palladio, we included some older churches with features that influenced the acoustic conditions. We were especially interested in different types of ceilings, such as ship's keel vaults, barrel vaults, Gothic rib-vaults, mosaic domes and flat coffered wooden roofs. Even in the Renaissance, it was well understood that a vaulted roof gave greater resonance for singing, whereas a flat wooden ceiling was more suitable for

the spoken word. We were also interested in the effects of wooden choir-stalls, such as the beautiful choir that still survives in the Franciscan church of Santa Maria Gloriosa dei Frari. In Venice a particularly distinctive feature of some monastic churches is the *barco*, or raised choir gallery, at or near the back of the nave. Both Palladio's most celebrated Venetian churches, San Giorgio Maggiore and the Redentore, were visited annually by the Doge and the Signoria in a huge procession accompanied by the choir of St Mark's. In each church the monks or friars sang from secluded choir-stalls hidden behind the high altar, but the ceremonial books are unclear where the singers from St Mark's were positioned. We were able to try out different possibilities and investigate what worked best musically, especially when compositions for divided choirs or *coro spezzato* were involved.

Our subsequent studies of the musical recordings reinforced our first impressions, that is to say, that the differences between the acoustic properties of the various types of churches we studied were extremely marked. The scientific analysis confirmed the listener's experience that the acoustics could be graded typologically. The most reverberant spaces were the large monasteries and friaries, where traditional plainchant sounded breathtaking, whereas the spoken word was difficult to understand. At the other extreme the parish churches were rather 'dry', an effect exacerbated in the choral experiments by the carpets and hangings put out for Easter. Here the acoustic properties would have favoured small, intimate family rituals such as baptisms, marriages and funerals. The best position for musical performance in the parish churches was the organ loft over the entrance. In St Mark's, a spacious five-domed Byzantine-style church, the acoustics were surprisingly good, especially from the position of the Doge's own throne, just inside the rood-screen. The positions of singers and the liturgical furnishings were modified during the sixteenth century, in response to the demands of the new polyphony for a more favourable musical environment.

The best acoustics, by far, were experienced in the two hospital churches: the Ospedaletto and the Mendicanti. The four hospitals all had orphanages attached, and it was the female orphans who became renowned for their musical excellence. As mentioned, Sansovino's church of the Incurabili hospital, admired for its exemplary acoustics, no longer survives, and in this case we had to rely on a virtual reconstruction. The church of the fourth hospital, the Pietà, was rebuilt in the eighteenth century, and thus fell outside the time period of our project. Its present church, popularly known as 'la chiesa del Vivaldi', was in fact rebuilt after Vivaldi left Venice for Vienna and has very problematic acoustics. At least the original orphanage of the Pietà still survives, and it was here, most appropriately, that St John's College Choir lodged during its visit to Venice.

What were the characteristics that made the Ospedaletto's acoustics so special? The amount of reverberation was just enough to give a resonance to the sound, yet every change of harmony was clear and every fast passage

discernible. The music from the raised singing gallery over the high altar seemed to float along the ceiling and then gradually descend to envelop the spectator in a rich, warm glow of sound. The effect was transfixing and difficult to describe in words, but we were reassured to discover that the scientific measurements confirmed the phenomenon of sound descending vertically. The Ospedaletto has a classic 'shoebox' interior, like the musical spaces most celebrated for their excellent acoustics – the Musikverein in Vienna, the Concertgebouw in Amsterdam, and the Boston Symphony Hall.

What might be the benefits to the wider community of a funded research project such as this one? The amount of public interest in Venice during both our first conference and the choral experiments demonstrated the intrinsic relevance of the research. The buildings themselves, the music written for them and the quality of the execution by St John's College Choir are all examples of excellence, according to any international criteria. But this is not a project that speaks only to the elite – local women of the parish, who admitted to knowing nothing about either music or architecture, came along to our choral experiments. Furthermore, in any society people of any class or age group attend musical performances of one kind or another, whether in a religious or secular context. The sort of architectural characteristics that favour speech over music, or vice versa, need to be better understood in the design of a huge range of spaces from schools to restaurants, not to mention concert halls. Spaces have sound qualities that are often ignored in our overwhelmingly visual culture, yet, as we demonstrated, listeners are sensitive to acoustical differences.

The currently available technology offers the potential for interactive use of websites – for example, the listener of the recordings could choose to vary the sound by adding sound-absorbing tapestries, as we know was done in the basilica on special ceremonial occasions, or by changing the number of spectators. During the academic year 2009-10 this exercise was carried out in a follow-up project using virtual models of four of the churches made by Braxton Boren under the supervision of Malcolm Longair, with striking results (Boren 2010).

The value of grant-aided research in the arts and humanities

The project on architecture and music in Renaissance Venice was one that seemed to be beset by good fortune, and it certainly proved how exciting international and interdisciplinary collaboration can be. In parallel I led another AHRC research project entitled *Sharing and Visualising Old St Peter's: East and West in Renaissance Rome*, part-funded by Cambridge's Isaac Newton Trust. In this project a post-doctoral Research Associate Christiane Esche explored how pilgrims from Armenia, Ethiopia and Hungary gathered together in their own special national compounds on the south side of Old St Peter's. The historical research investigated the

artistic contacts between each of these groups and fifteenth-century Rome, and showed how even before the discovery of the New World, the horizons of the papacy extended far beyond the boundaries of Europe. Despite the longer timescale involved in international communication, the Early Modern period, like our own, was one of rapidly increasing speed in the processes of cultural exchange. Because most of the remains of the pilgrim hostels were obliterated in the later rebuilding of St Peter's, the project used sophisticated virtual simulation techniques to reconstruct the area occupied by these foreign pilgrims, based on the careful analysis of a wide range of surviving graphic evidence. Two short films reconstructing the experience of pilgrims were made in collaboration with Stanislav Roudavski.

'Sharing and visualizing Old St Peter's' involved collaboration with local experts in three countries – Ethiopia, Hungary and Armenia – and uses state-of-the-art computer simulation skills. As in the architecture and music project, the combination of interdisciplinarity, international collaboration and sophisticated scientific procedures gave this specific historical question a far wider relevance. The virtual simulation employed groundbreaking technology that will lend itself to future research projects as well as to the wider community. At the same time, we hope that the historical investigation will help to inform public understanding of the three countries involved, especially Armenia and Ethiopia which are still relatively little known.

The scope and opportunities offered by major research grants open up the arts and humanities to an array of international opportunities and interdisciplinary collaborations that were unimaginable thirty years ago. The technology available to us offers invaluable new ways of analysing historical problems and allows innovative research to be disseminated across the world. The role of the AHRC in expanding the horizons of researchers in the arts and humanities – across disciplines, periods and geographical areas – has enabled projects of far greater ambition to be undertaken, generating new practical applications and methodologies, and providing intellectual discoveries and insights of real significance to civilization in its widest sense. The major research funding opportunities, both for individuals and for collaborative projects, have enabled British academia to retain its high status in the international scholarly community. This innovative work underpins and enriches the evolution of our national culture, which, as we saw at the start of this essay, is one of the UK's most valuable assets.

Notes

- 1 *Bellini and the East* was curated by Caroline Campbell and Alan Chong, and *Venice and the Islamic World* by Stefano Carboni.
- 2 The conference proceedings, issued nine months later in a bilingual paperback book by a prominent Italian publisher, established the state of knowledge at the outset of our research project (Howard and Moretti 2006).

- 3 These were Arup Acoustics in Cambridge and the Laboratorio di Acustica Musicale e Architettonica of the Fondazione Scuola di San Giorgio in Venice.
- 4 The remarkable result of a major international project such as this one was that additional support and sponsorship continually assisted us when resources were tight. As well as the two acoustic laboratories previously mentioned, who worked without remuneration, the Gladys Krieble Delmas Foundation of New York and St John's College both subsidized the choir's expenses. In Venice, we were given official encouragement by the Regione Veneto, while the organization known as 'Chorus', which manages the tourist visits to the city's most celebrated churches, paid for the publicity for the choral experiments.
- 5 <http://www.yalebooks.co.uk/soundandspace>.

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