British products had been lagging behind European competitors – particularly in terms of design. So steps were taken to remedy this shortfall by bringing art and design teaching within the control of a nationalised system of education. In this context, the primary mission of the government schools of art and design was to recapture the competitive advantage initially created by the industrial revolution in making Britain a world power through the mass production and distribution of goods.

The aim of these new schools of art and design (in the UK and elsewhere) was to ensure that the nation’s enormous production base would keep churning out goods as aesthetically desirable as they were technically advanced in an increasingly competitive international market. So, with this emphasis on industrial production, most of the first art and design schools were established in regional centres associated with manufacturing industries, such as potteries, glass, textiles, lace, furniture and carpet weaving.

Interestingly, one of the first pupils to register in a government school of art and design, in 1847, was the Scottish artist-craftsman Christopher Dresser, whose work included carpets, ceramics, furniture, glass, graphics, metalwork and both printed and woven textiles. Not only did Dresser come to be one of the most influential designers in late 19th-century Europe and internationally (combining industrial production methods with advanced design sensibility) but he was also possibly the first designer to be awarded a doctorate. In this case, it took the form of a PhD by publication in recognition of his writings on botany – *Rudiments of Botany* (1859) and *Unity in Variety* (1859) along with a short paper on plant structure. And we might ask how much has subsequently changed since the award of this first PhD to a designer – for theoretical writing in a discipline that was not his core practice. Furthermore, Dresser’s PhD was not awarded by a UK institution but by the University of Jena in Germany.

As industrialisation began to create increasingly competitive global markets, in which the design of products, distributed en masse, was essential to their market success, and to the prosperity of each nation, so did the creation of the publicly funded state arts schools start to spread across Europe. In the UK, it was only after a further century had passed, just 40 years ago, that the majority of these independent arts schools were then combined with technical colleges to form the first vocationally orientated polytechnics. It was only 20 years ago, in 1992, that the UK polytechnics were then transformed into modern universities being permitted, for the first time, to compete for public research funding against the older, and more well-established, universities. Six years later in the UK, in 1998, the Arts and Humanities Research Board was created along with the first national scheme to award doctoral scholarships in the creative arts.

Therefore, in the timeline of institutionalised education – since the first universities were founded – less than one-third of that lifespan has included the creative arts in which learning through making had precedence. Only in the last 20 years, in the UK, has competitive funding for research in art and design been accessible, and only in the last 10 years has the practice-based PhD begun to embed itself in the modern university system. This historical vignette illustrates the fact that practice-based research in art and design has a very short history within the system of education offered by public institutions across Europe and is still working to establish its own forms of scholarship as they are appropriate to the specific conditions of artistic research.

This work has been hampered by the historic legacy of an artificial division emerging between scholars and practitioners. It began with the first universities, where scholars were on one side of the divide and artisans, trained by guilds, on the other. With the demise of the medieval guilds, and rise of 20th-century art schools, artisans became practitioners who remained on this other side of the divide to university scholars. Furthermore, a wide range of disciplines outside the creative arts also use practice as the *modus operandi* for their research – just as scholarly rigour likewise underpins excellent research in artistic research. Given the relatively short history of artistic research within the academy, it is understandable that its underlying scholarly principles are still maturing. This process is to ensure that such principles are appropriate to the specific conditions of research in the creative disciplines (rather than being a reflection of more well-established, and different, traditions in the sciences and humanities).

Systems for the public funding of research in the creative arts only began to emerge in the UK. At that time, the UK had no funding bodies, in which research into the creative arts would be funded, not until 1996 when the independent Higher Education Funding Council for England (HEFCE) was established on behalf of the four nations of Britain.

The process (R&D in the UK) is still being found to exclude research funding for practice-related education in the creative arts. It is also hard to access research funding for creative research. Therefore, the objectives of the arts research sector are still hazy, even less well established, in the creative arts. The sector with its framework, has a peer review structure aiming to establish such an objective with the Frameworks and the support of the Higher Education Research Fund (HERF) of HEFCE. 1

Although the arts and humanities in Scotland and the other nations of the UK have the same research funding framework, each of the countries has adopted its own specific principles for the funding of research in the creative arts.
subsequent exercises, have been that (i) the assessment is through peer review based on evidence, and (ii) that the submitting institutions are not required to include all of their work but only that research which they consider to be excellent. Indeed, institutions are not required to submit any work for assessment and may choose not to be involved in the exercise.

Throughout this initial period of assessment, research in the creative arts was at an important moment in its historical development since the first arts schools were created in the mid-19th century. As artistic research continued to make an immense contribution to social, cultural and economic wellbeing, its impact was, nonetheless, difficult to evidence for the purposes of assessment. As discussed above, this was partly because the nature of the research outputs (of which most were in non-text form) but also because the forms of scholarship appropriate to these disciplines were still in the process of development.

In this context, the RAE and REF have helped, overall, to advance UK research in the creative and performing arts as well as bringing its considerable public benefits to wider audiences. The process of assessment has also gathered a rich source of evidence about research in the various disciplines and in individual institutions that can now be used to inform our self-knowledge and shape future research (one recent example of such self-knowledge is a report produced to inform the music community of changes in the balance of research activity between RAE2008 and REF2014).

The systematic introduction of research assessment also stimulated a focus on practice-based research that was less evident in the years prior to 1992. This focus on the assessment of non-text outputs seems to have emerged with the introduction of assessment criteria and practices that are rooted in the long-standing traditions of research in the life and physical sciences. Here the scientific communities largely subscribe to, and share, a common language to describe those elements within an overall research ecology where much of the material is text-based. This cannot yet be said for the artistic research community, where much of the language is contested or still maturing. I would suggest that a significant challenge for the artistic research community in coming years is to develop sufficient of a shared language that is appropriate to the conditions of artistic research and can be accessed and understood by a wide range of communities and stakeholders. Furthermore, it is important that the community develops a clearer understanding of the relative merits, and differences between, artistic research and advanced practice (the latter of which is still often presented as if it were the former).

The UK Research Excellence Framework 2014 (REF2014) was structured around four main panels, each of which embraced a set of cognate research disciplines: Life/Health Sciences, Physical Sciences, Social Sciences and the Arts and Humanities. Together, these four areas represented a holistic environment for research in which both disciplinary and interdisciplinary work may be conducted.

Both historically and traditionally, the creative and performing arts (but not the humanities) have, largely, considered themselves to constitute a stream of activity that is separate from this overall research ecology, in order to focus on the specialist conditions of artistic research and its emerging forms of scholarship (Illustration I).

Illustration I: The traditional model of established universities without artistic research

Traditionally, the approach of artistic researchers (but not always) has generally tended to be inquiry-based, i.e. conducted by individual scholars pursuing a puzzle or conundrum without a specific outcome or application in mind. Alongside this type of research there is another equally important form of inquiry that is challenge-driven, and which is perhaps more familiar to the life and physical sciences, where teamwork is a norm. Here researchers do undertake the work with a particular objective in mind or they may have first identified a specific problem to solve.

Though inquiry-based and challenge-driven research have different points of departure, working methodologies are still important to the research ecology and translation.

The starting point of each research project is knowledge and expertise. In the arts, each research project has a number of elements, or research themes, each generation of the other. In turn, such a rich multidisciplinary by its nature is not unique.

The creation of traditional research, and the research team from the academic world, has an ecology of research communities to draw upon, but that ecology also generates an environment in which research is accessible and valuable. Indeed, because research is not a brief, and the challenge to these disciplines then the need for a period of development may be identified. This distinction is not, however, the same. This research is an approach to disciplinary knowledge that better clarifies...
disciplines within an overall research ecology that includes artistic research (Illustration 2).

Illustration 2

One characteristic of the disciplines shown in Illustration 2 is that each will place a greater or lesser emphasis on discovery science as they will on creativity and innovation. In this respect, the Life/Health Sciences and Arts and Humanities are at the opposite ends of this spectrum, with the former having an emphasis on text-based discovery and the latter on object-based innovation. These boundaries are not so clearly defined in practice and there will often be much overlap between the approaches, especially given the multidisciplinary nature of challenge-driven research, in which much activity will overlap towards the centre of Illustration 2, where the disciplines converge.

Many recent regimes for research assessment have been based on the well-established principles of text-based outputs in discovery science. Here, the implicit if not underpinning definition of research has been the discovery and verification of new knowledge. In this definition, artistic researchers produce just a small proportion of research that could claim to be new knowledge that is communicable in textual form. One outcome of this has been a sense that practice-based researchers need to legitimise their work through its translation into the form of more traditional outputs, such as conference papers or journal articles. Indeed, artistic research would benefit from greater precision in the definition of knowledge in these disciplines and how this could be communicated. Indeed, in artistic research there are two other definitions of research that underpin the work. The first is testing the boundaries of existing knowledge in order to determine its limitations. The second is the recovery of lost knowledge. In the first instance, much of what we know about the world, the ways in which we construct society, is built upon assumptions that constantly need testing. In the second instance, there are many contemporary examples from digital heritage where technology has enabled the recovery of knowledge about ancient civilisations, where artefacts have been damaged, vandalised or simply lost. For research to always be constrained within the narrow confines of any of the disciplines shown in Illustration 2 (which in the creative arts may often be no more than a means of production) could serve to misrepresent the intellectual and creative content of that work. The following is an example of artistic research where too narrow a definition of the disciplinary boundary inhibits a fuller appreciation of the work, as well as restricting its translation to other intellectual and creative domains. This research has been conducted within the field of photography and its subject matter is the changing face of Poland. The work, undertaken by Mark Power, took the form of an exhibition and a publication.

The primary output from this research was in the form of visual evidence (selected examples are shown in Illustration 3). In this case study, the research could also be described as social anthropology with a camera. Power spent extended periods of time living in, and traveling throughout, Poland in order to document a country that had been through tremendous political and social upheaval, a country that was moving from a heavily industrialised society into the post-industrial world. He created and structured the visual evidence in order to document people at work and at play, where they lived and where they laboured, their families growing up as well as the beauty and ugliness of the landscape in which all of this was lived out. Once the context and aims of this research are clear, no further textual material is needed for the visual evidence to be “read” and understood by experts and non-experts alike. It also provides a permanent record of the work.

This is not the case, however, for all (if not the majority) of work undertaken by artistic researchers where, in many instances, an object, a performance or a composition will not readily communicate or reveal the research imperatives that underpin it. In many cases, too, the work is ephemeral, leaving no trace unless documented by the researcher. So we return to the two questions set out at the beginning of this chapter. First, how do we know that the work is artistic research (and not advanced practice, etc.)? Second, what evidence of some sort of evidence is now open to both image-based and text-based researcher?
to collaborate in the construction of new and novel readings.

By contrast, one important aspect of every researcher’s endeavour is to effectively share the knowledge gained from their research with users who may benefit in one way or another, and to make this knowledge accessible so that it can be found. So it is central to the work of all researchers within the academy that they plan for the effective sharing of their research as well as its production.

It is also the case that an artefact, performance or composition can exist in both domains – of practice and research – though advanced practice, by itself, is not research until its imperatives have been effectively shared by the researcher. The following example helps to illustrate this point.

The work is entitled Chromatic Fields and is by Duncan Bullen, a fine arts printmaker. The work comprises a series of 21 colour drawings and a book of the score and by themselves and enigma audience are of indeterminacy. So despite they are also published in print 4 below.

To account for differences in the domain of research, commissions and initiatives undertaken. Illustration 5 is an alteration of the work that provides an accessible work alone. The work was then recovered into six sections and the research work in their own right. In particular, the research in explaining

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Illustration 3: A small selection of visual evidence from *The Sound of Two Songs* by Professor Mark Power

Illustration 4: Three drawings by Duncan Bullen from the series *Chromatic Fields*