Structured abstract:

Design/methodology/approach
This research investigated whether there is evidence that tailored provision for creative practice was spreading across disciplines in the period 2014-2020 in the United Kingdom. In doing so, I examined the potential and limitations of the archives of a national research assessment exercise as a source for understanding perceived priorities in doctoral provision during a period of recent history.

Purpose
The study examined descriptions of doctoral provision in the research environment statements that formed part of the publicly available submissions to the 2021 Research Excellence Framework (REF). Aligning with meta-research and historical discourse analysis approaches, the study involved a close reading and critical analysis of a small sample of documents across four different disciplinary areas.

Findings
In creative disciplines tailored support was identified for creative practice in practice research. There was a lack of discussion of such provision in other disciplines, including in education research where arts-based methods are used. The study demonstrates the limitations and challenges of using the REF archives to understand the history of doctoral provision. Only qualified interpretations can be made about actual institutional practice, revealing more about perspectives on the relative importance of different facets of doctoral provision.

Originality/value
The research is novel in investigating the potential of discipline level REF research environment statements as sources for research into discourse on doctoral education. In identifying evidence for tailored provision and the missing stories of this spreading to other disciplines, it challenges us to consider the support requirements for creative practice appropriate to our own doctoral education contexts.

Creative contagion or missing story? – examining the REF archives for evidence of provision for creative practice in doctoral study

Introduction

With continued growth in practice research in creative disciplines and the spread of creative methods across disciplines at the doctoral level (Leavy, 2018, Vear *et al,* 2021), we might presume that provision for postgraduate researchers (PGRs) would be responding to this diversification in the methods of knowledge generation and articulation in the doctorate. This paper discusses whether evidence of such a change in the practices and structures of doctoral education in response to the needs of creative practice during the period 2014-2020 can be found in a significant archival dataset on research infrastructure in the United Kingdom – the publicly available submissions to the Research Excellence Framework (REF).

Whilst the REF data is specific to the national context of the UK, globally a variety of national, funding body, institutional or disciplinary models exist for quality audits of research, which may or may not include in their scope research environments, researcher development and/or doctoral education (Adams *et al.,* 2022). I demonstrate the potential and limitations of such datasets and archives as sources for understanding both discourse and practice in doctoral education. In comparing descriptions of doctoral provision across four disciplines in the submissions to REF2021, I identify examples of tailored support in creative disciplines and a seeming lack of specific support elsewhere. This raises questions both around supporting the needs of PGRs engaging with creative practice and about REF submissions as discourse on doctoral education.

The spread of creative practice in doctoral study

This paper seeks to examine the extent of what I term creative contagion across disciplines in doctoral education, by which I mean the spread and influence of creative practice. I do not mean to infer by contagion the spread of a harmful practice. As an alliterative shorthand, I deploy the term creative contagion to indicate the spreading through close contact of the ideas, methods, and requirements of creative and artistic practice as it is adopted and adapted within research in other disciplines. The terminology around creative practice in doctoral research remains diverse (Vear *et al*, 2021) and slippery. In this paper I use the term practice research (Bulley and Sahin, 2021) as an umbrella term for artistic and design research in the performing arts and creative disciplines such as art and design by creative professionals. But even this remains slightly unsatisfactory. There are other forms of professional who embed and deploy their professional experience and skills in practitioner research in other disciplines. The term creative is as complex. Disciplines within art and design and the performing arts do not, of course, have a monopoly on creativity, which has been recognised as a key facet of all doctoral study (Brodin and Frick, 2011).

Practice research is now widely accepted at the doctoral level, and it is recognised that creative practice can be the mode, method, tool, object, subject and/or embodiment of

doctoral research in the arts and humanities PhD (Vaughan, 2024). The acceptance of practice research at doctoral level in creative disciplines has a history spanning at least the last 50 years of the modern doctorate, with Rowe and Carter identifying that PhDs with creative practice 'have been possible within the Sorbonne University in Paris since the 1970s' (2011, p.1). In the United Kingdom, this history dates back at least as far as the late 1980s and early 1990s. At my own institution [redacted] a PhD was awarded in 1993 to Tom Gilhespy for *A theoretical appraisal and artistic response to Soviet monumental sculpture* which included Gilhespy's own sculptural practice. By 1997 the UK Council for Graduate Education survey of *Practice-based Doctorates in the Creative and Performing Arts and Design* demonstrated that least 17 higher education institutes were already supporting doctoral submissions that included the outcomes of creative practice as well as text.

As a result in the creative and performing arts there is now a diversity of possible formats in which the doctoral thesis is appropriately articulated and submitted for examination which can include exhibitions, performances, recordings, artefacts and artworks as well as written text. It has been recognised that PGRs engaging in practice research in creative disciplines have specific needs and challenges (Hockey, 2008, Candy and Edmonds, 2018), whether that be in the pedagogical approach from supervisors (Allpress *et al*, 2012, Hamilton and Carson, 2015, Wisker and Robinson, 2014), in rethinking the modes of communication in the traditional research seminar (Adams *et al.*, 2015) and from opportunities for doctoral community (Vaughan, 2021a) as well as the technical equipment, materials, workshops, studios, exhibition and performance spaces to support their creative practice. An expansive research methods literature on practice research has emerged to support PGRs and their supervisors (e.g. Barrett and Bolt, 2007, Nelson 2013, Smith and Dean, 2009, Vear *et al*, 2021).

The growth of creative methods and arts-based methods in the social sciences and education research also means that data is increasingly gathered through creative means in many professional doctorates. This acceptance and adoption of creative practice as a mode of knowledge generation and articulation spreading across disciplines is one facet of what I term creative contagion. In North America, Elliot Eisner is credited as one of, if not the, first to advocate for arts-based research in educational research back in the 1970s (Barone 2006), when he was initially focused on creative writing (Eisner, 2006). The use of creative methods has since expanded and diversified to include visual, material, audio and performance practices in qualitative educational and social science research and is supported by specialist research methods literature (e.g. Kara, 2020, Leavy, 2018). The extent to which the individual postgraduate researcher's own creative practice is developed and extended through their doctoral study can vary, it may be minimal in for example, the case of photo-elicitation methods being used to capture participant data. At the other end of a wide spectrum, doctoral study in educational and social science research might result in

new creative practice outputs by the PGR that are of the equivalent of doctoral work in creative disciplines.

Some of the most frequently cited global examples of alternative thesis formats are in other disciplines than those traditionally considered as the creative professions. Nick Sousanis used a comic book format for his Doctorate in Education dissertation *Unflattening: A Visual-Verbal Inquiry into Learning in Many Dimensions* at Columbia University in 2014, subsequently published to critical acclaim (2015). A.D. Carson submitted his 2017 PhD thesis for the Rhetorics, Communication and Information Design programme Clemson University in South Carolina on Hip Hop music to as digital archive featuring a 34-track rap album *Owning My Masters: The Rhetorics of Rhymes & Revolutions*. At the University of Iowa, Anna Williams dissertation for her 2019 English PhD was *My Gothic Dissertation: a podcast*, which mixed voice, music and sound to dramatize scenes from novels and incorporate analysis through her narration. In the UK context too, thesis submissions across disciplines are incorporating creative elements. To give just one example, Chris Bailey's thesis for his 2017 education doctorate at Sheffield Hallam University on '*Investigating the lived experience of an after-school Minecraft club'* incorporates comic strips as integral elements of the main text as well as embedding a link to a soundscape complied and composed from his data. In previous research I examined the flexibility of the regulatory frameworks for doctoral education in the UK to accommodate alternative formats of doctoral thesis encompassing creative practice. I found both constraints resulting from persistent expectations of solely traditional academic texts, and the emergence of supportive processes and tailored guidance for creative practice formats across multiple disciplines (Vaughan, 2021a).

The spread of creative practice and of the generation, articulation and dissemination of knowledge by PGRs in such a diversity of textual and non-textual forms represents a significant change within doctoral education over recent decades. My paper here is concerned with investigating the evidence for the extent of a second form of creative contagion, that of changes to the nature and structures of doctoral provision in response to this spread of creative practice across disciplines.

Turning to the REF in meta-research
The Research Excellence Framework (REF) is a roughly seven-year audit and assessment of research in higher education institutes in the United Kingdom which requires the submission of evidence around research outputs, research environment and impact. The REF has been examined and contested from multiple perspectives (e.g. McNay, 2015; Murphy and Sage, 2014; O'Regan and Gray, 2018; Siversten, 2017). It is undoubtedly a hugely burdensome bureaucratic demand on institutions, subject to problematic 'game-playing' to influence both resulting resource distribution and league table positions, and it is underpinned by notions of 'excellence' that can reinforce structural inequalities. My concern in this paper is not with the process or politics of REF, the problematics of bureaucratic quality audits and

concepts of excellence, it is with considering the latent value of the resulting aftermath – the archives of submissions published online (REF, 2021) – for other forms of research.

As such the focus of my analysis is not on the number of star ratings achieved in the quality assessment, but on what the archive might reveal about the structures and processes of the doctoral landscape in the UK. In seeking and evaluating evidence for the spread of support for creative practice in doctoral education, my study can be aligned with the growing field of meta-research in being research about how research is produced. Meta-science is also used to describe 'research about research', particularly where large-scale datasets are concerned. However, meta-research "comes without the full epistemological undertones of the term meta-science'' and refers "to a broad landscape of knowledge that encompasses the full spectrum of modes and types of scholarly inquiry" (Oancea et al, 2024, p.3).

Specifically, it is the corpus of environment statements at subject level (unit of assessment) that form the archival dataset considered within this study. In the most recent iteration, the REF exercise of 2021, 157 institutions submitted across 34 units of assessment, resulting in a total of 1,878 submissions. Each of these submissions includes a statement on the environment to support research and enable impact, documents between 8,000 and 12,000+ words depending on the size of the submission (REF, 2019a). In REF, these were assessed for sustainability and vitality alongside data on research income and completed doctoral degrees to produce quality profiles. My study sought to test what this vast archive might reveal about changes in the doctoral landscape in response to creative practice in the UK.

Approaching the REF data as discourse and creating a sample
I approached my study as the examination of a period of recent history as the REF environments statements can be considered an archive covering the period 2014-2020. This entailed a close and critical reading of the documents informed by my knowledge of the literatures on doctoral education, practice research, and creative methods in an approach to document analysis similar to historical discourse analysis (Jóhannesson, 2010). It enables me to construct an interpretation and narrative around both evidence of the spread of support for creative practice in the time period covered and the potential use of REF datasets for understanding doctoral education provision and discourse. REF environment statements are highly crafted pieces of text, through which institutions aim to present their best faces and demonstrate good practice in supporting research. Such texts should not be taken at face value, that is they should not be read in a positivist light as unproblematic evidence of what actually happens in an institution. The environment statements are not works of creative fiction either, they do represent and present aspects of doctoral provision in each institution. As texts, they are situated within and across specific social, political and institutional contexts. Thus, I approached the environment statements critically, analysing and interpreting the texts as discourse, and being mindful of the aphorism that "absence of

evidence is not evidence of absence". The environment statements reveal and infer the value judgements around which elements of doctoral provision are considered significant and important through naming and inclusion in the statement.

I needed to select a readable sample that would enable me to interrogate the potential of the archive for insights into the discourses of doctoral provision and the spread of support for creative practice. I decided to sample four units of assessment. I selected UoA32 (Art and Design: History, Practice and Theory) and UoA33 (Music, Drama, Dance, Performing Arts, Film and Screen Studies) as subject areas where practice research is firmly established as evidenced in the literature. Although both UoAs do also include significant proportions of more traditional research: art history, design history and contemporary art theory in UoA32; musicology (the history of music) and history of theatre and performance in UoA33. I selected UoA23 (Education) as a predominantly social science discipline where I knew of the use of creative methods from the literature and from my participation in education conferences. My final choice was UoA12 (Engineering) as a discipline considered as an applied science and thus in a completely different more positivist research paradigm. Engineering does however also encompass material practices in experimental design and is a discipline where quantitative and/or qualitative approaches may sit alongside design research practices (Escudero-Mancebo et al, 2023).

In each of these UoAs, I started with the top 20 ranked submissions. REF itself does not produce these rankings. I used the league tables produced by the publication Times Higher Education from the REF2021 results which rank overall quality profiles including the quality of research outputs and the impact of research as well as the research environment (THE, 2021). League tables are contested facets of neoliberal higher education and are not unproblematic. However, in selecting from those whose assessment in the REF was deemed 'good' in comparison with others in their discipline in this way, I ensured that my sample could be understood as representing articulations of institutional support for research considered effective in higher education discourse.

In narrowing down each unit of assessment list to ten, I purposefully chose environment statements from institutions that were represented in at least two the four subject areas (UoAs) on the assumption that there might be more chance of identifying a spread of creative practice across disciplines in an institution where creative disciplines resided. REF league tables tend to be dominated by Russell Group institutions, which are elite and often older universities in the UK with more resources for research. Significantly they are also often without departments or schools that teach (and thus research) creative practice disciplines, whose history tends to be in vocational colleges and polytechnics and now are more common in small specialist institutions and larger post-92 universities. I looked to ensure that post-92 (former polytechnic) universities as well as elite Russell Group universities were included in my sample to get a picture across research-intensive and more

teaching-focused institutions. The 40 selected environment statements came from 17 institutions spread across England and Scotland. Aware of the limitations with such a relatively small sample, I also created a secondary sample for comparison if needed. I selected the environment statements in Education (UoA23) for six other non-Russell group institutions. I chose these examples because although they had not ranked as highly in the REF league tables, I knew from my participation in subject organisations and conferences in the UK that they have an interest in arts-based methods in education research and/or a significant concentration of practice research in creative disciplines in their institution.

The process of reading and analysis

I began this research by looking at the requirements and guidance published by REF to identify where I might expect to find reference to doctoral education to guide my reading. For the 2021 REF exercise, the environment statement narrative had to follow a structure which included a section on "people" which was required to cover staffing strategy, staff development and research students as well as one on "income, infrastructure and facilities" (REF 2019a, p.82). Thus, each institution through its UoA environment statement must comment explicitly on PGRs and on researchers' staff development, which presumably might include supervisor development. The requirement to describe the infrastructure and facilities for research could enable descriptions of specific support for creative practice, and for example of workshop, exhibition, or studio facilities - the technical support which can be required for making knowledge through other-than written forms. The panel criteria and working methods guidance document for the 2021 REF exercise gives more detail on what is expected to be narrated regarding research students:

> 350. Submitting units are invited to provide evidence of the quality of training and supervision of PGR students and how the unit has developed a research culture into which research students are fully integrated and prepared for further research activity. This may include (but is not limited to):
>
> > • the approach to recruitment of doctoral research students, including those with protected characteristics
> > • evidence of studentships from major funding bodies (the sub-panels recognise the challenges of recruiting doctoral students in the current funding environment)
> > • details of monitoring and support mechanisms linked to evidence of progress and of successful completions
> > • details of the support provided to research students in terms of skills development and preparation for their future career.
>
> (REF 2019b, p.63)

In the 'details of support provided' we might expect to find evidence of specific researcher development investments in relation to creative practice, potentially support for exhibition and material costs as well as the more traditional support for conference presentations as forms of professional development. Drawing on the REF guidance documents and my knowledge from the literature and previous research (Vaughan, 2021b), I constructed a list of the types so support for creative practice in research I might expect to identify in the REF environment statements which included PGR specific provision as well as general research facilities.

My method in approaching the documents was a close and critical reading of each environment statement, noting my initial impressions and questions alongside conducting a systematic content analysis to record all examples where the categories of support that I had identified were described. This enabled me to identify and compare patterns and characteristics across the four subject areas. I quickly realised that many of the environment statements were less explicit about supporting creative practice than I had expected. I read through my secondary sample of additional environment statements from the UoA23 (Education) where a similar pattern presented itself, confirming that this was not primarily a consequence of my sampling criteria.

Taking an interpretative approach that viewed the documents as part of the wider discourses of both doctoral education and creative practice, in my analysis I considered the discursive themes from the literatures that were not evident in the environment statements. In summarising my study and drawing conclusions through this paper, my intention is that the "story and the contradictions it may reveal can be understood for use in contemporary debates" (Jóhannessen, 2010, p.259) prompting institutions to consider the extent to which creative practice might sit and thus need to be supported within their doctoral provision.

Finding evidence of support for practice in traditionally creative disciplines
The REF environment statements in the two artistic disciplines that I sampled did include descriptions of specific resources and support for creative practice and practice research in the institutions' doctoral education as shown in Table I. This included a range of provision and facilities, and the results suggest some differences between disciplines and between comments relating to doctoral education and those relating to academic staff as researchers.

REF environment statement mentions:	UoA33	UoA32
Creative practice-specific PGR training/events	8	5
Support for 'creative' professional development	1	0
PGR use of creative practice studios/workshops	1	3
PGR use of gallery, theatre, exhibition spaces	3	3
Creative practice studios/workshops	5	7
Gallery, theatre, exhibition spaces	8	5
Creative practice-specific groups/events	5	3

Table I: Frequency of identification of types of support for creative practice identified in the environment statement samples from Music, Drama, Dance, Performing Arts, Film and Screen Studies (UoA33) and Art and Design: History, Practice and Theory (UoA32) (Source: Author's own work)

Across the ten environment statements for Music and Performing Arts (UoA33) there was frequent description of practice-research specific provision, particularly in relation to creative practice specific training and events for PGRs which eight out of the ten named in their text. There was little indication of specific PGR access to physical facilities and resources, with only one commenting on studio or workshop access. Interestingly, there were more comments on support and facilities for practice research available for staff, with half of the statements commenting on the existence of studios and workshop facilities, rising to eight out of ten that pointed to performing and showing spaces such as gallery, theatre, and exhibition spaces. These allusions to studio and workshop, showing and performing spaces and creative practice specific groups and events, albeit non-PGR specific are still indicative of value and investment ascribed to a supportive environment for practice research. There is a limitation to my analysis here in interpreting the frequency with which PGR access to facilities is explicitly stated. It is not always specifically made clear whether PGRs could, or could not, use these facilities, so we should be wary of presuming that PGRs were excluded from wider provision for practice research.

In the music and performing arts sample (UoA33), there were commonly researcher development or research community events referenced that specifically focused on practice research, aligning with the specialist spaces for dialogue and sharing of practice-in-progress the literature recognises need to be developed (Adams et al, 2015, Vaughan, 2021b). These included a practice as research reading group, practical workshops, a student-led Practice-as-Research Lab, skills sessions on practice-based methodologies, workshops on practice research and in one statement a reference asserting that the "PGR community has led the Sound Thought showcase, an annual festival of music and sound research, composition and performance" (University of Glasgow). There were also examples of the citing of specific funding streams to support the costs of practice research, including one where it was made explicit that PGR Small Grants that could be used for the acquisition of special equipment and another environment statement named a specific Practice as Research Fund, albeit just for staff.

Looking next at Art and Design (UoA32), as Table I shows, again in the sampled environment statements there were inclusions that could be interpreted as evidence of the tailoring of doctoral provision for creative practice and practice research. There are specific training and community events for doctoral students focused on practice noted in half of the statements, so less frequently than in the Music and Performing Arts sample. In the Art and Design sample, these included seminars, group exhibitions and workshops, as well as research crits, with the 'crit' being a standard feature of art and design higher education in which a student's practical work is discussed in situ in a studio. There was also one example of an open-access online research journal focused on practice research run by a self-organised PGR collective with support from the University Press. I only found one reference to alternatives or adaptations to doctoral examination in response to creative practice where it was stated that research seminars "emphasise parity between exegesis and practice-led study, and include gallery workshops where students test their work, experiment with artistic methods and consider provocations, such as a model for a performance-led viva" (Newcastle University). At the same institution it was stated that for new academic staff "the Certificate of Advanced Studies in Academic Practice includes modules in practice-led research methods", suggesting the tailoring of academic development to enable staff to supervise practice research by students appropriately (Allpress *et al*, 2012, Hamilton and Carson, 2015, Wisker and Robinson, 2014). Whilst not focused on research skills, another institution described in some detail training for doctoral students in teaching contemporary art in Higher Education, an example of discipline specific training in support of future careers as academics as well as of enabling and supporting teaching opportunities during doctoral study (University of Oxford – The Ruskin School of Art).

Similarly, though to the Music and Performing Arts sample, whilst facilities for making and showing creative work are highlighted in the environment statements in my Art and Design sample, it is not always made explicit that PGRs could use these facilities. There was also the occasional disjuncture evident in the environment statements from Art and Design. For example, an institution proudly stating that PhD projects "encompass drawing practices, creative writing, film production, and curatorial practices" (University of Manchester) whilst making no allusion to providing workshop, studio or production facilities or specific training to support such creative practice.

Overall though, there were clear indicators in my sample from creative disciplines of tailored doctoral provision for practice research that was considered important to reference in articulating a supportive research environment. This encompassed physical resources and facilities as well recognising the need for spaces for discourse around and with practice.

Finding few signs of support in other disciplines

In contrast I found little evidence in the REF environment statement narratives for the tailored doctoral support for practice research and creative methods in Education (UoA23), or Engineering (UoA12). As Table II shows, there was little sign of my second form of creative contagion - the influence on changing doctoral provision.

REF Environment statement mentions:	UoA23	UoA12
Creative practice-specific PGR training/events	1	0
Support for 'creative' professional development	0	0
PGR use of creative practice studios/workshops	0	0
PGR use of gallery, theatre, exhibition spaces	0	0
Creative practice studios/workshops	1	1
Gallery, theatre, exhibition spaces	1	0
Creative practice-specific groups/events	3	0

Table II: Frequency of identification of types of support for creative practice in the environment statement samples from Education (UoA23) and Engineering (UoA12) (Source: Author's own work)

From the research methods literature, it is in the social sciences that that creative and art-based methods are increasingly used in data gathering and research dissemination. (eg. Kara 2020). However, looking at the sampled environment statements for Education (UoA23), there were few comments pertaining to supporting arts-based methods or creative practice in doctoral provision. There was only one articulation of any specific creative practice support for doctoral students, and that was described as a Creative Academic Writing Group. Whilst I found scant evidence of specific doctoral provision for creative practice or arts-based methods included in the Education environment statements, three of the ten did identify staff research groupings focused in related areas. These included a research group including arts-based practices, an Arts and Creativities group, and a Centre for Research in Arts, Creativity and Literacy. One environment statement identified the existence of a maker space and another reported access to "extensive exhibition spaces for arts-based pedagogical research" (University of Glasgow). However, these were both described as staff facilities and in neither statement was there an explicit reference of the facilities use by PGRs. Looking at my secondary sample of UoA23 environment statements from six institutions where I knew there was active engagement with arts-based methods and/or practice research, the pattern did not significantly change. Whilst staff were described as engaging in arts-based and arts-informed methods there was no reflection of this in the descriptions of doctoral provision, other than one more reference to workshops on creative writing.

In reading the REF environment statements sample for Engineering (UoA12) I found no references to creative practice in the artistic sense, or to arts-based methods in research as Table II indicates. I did find references to "unique facilities and creative spaces" (Newcastle University) and "creative engineering" (Nottingham Trent University). This phraseology serves as a useful reminder that it is not only artistic practices and disciplines that should be considered as creative. Whilst not in the sections of narrative around doctoral education, there were frequent references to exhibitions and collaborations with artists as part of public engagement activities in engineering research, including for example descriptions of outreach teams running activities such as "the use of poetry to explain supply chains of chocolate", and "storytelling with collaborative computing" when working with local schools (both at University of Warwick). This suggests the use of arts-based methods in the dissemination of research by collaborators, if not in the research process itself by engineers. Evidence of a third type of creative contagion perhaps, a more instrumentalised co-option of arts-based methods in other disciplines as part of the impact agenda (Bayley 2023, Pfoser and de Jong, 2023), and one that is beyond the scope and focus of this paper.

Reflections on not finding and on finding other things

I set out to explore whether this large UK archive of REF environment statements evidences specific support for creative practice in doctoral education during the period 2014-2020, whether as practice research or arts-based methods. Within creative disciplines such evidence can be found, although my study suggests there is little evidence in the environment statements of a similar response to creative practice that can be identified in doctoral provision beyond traditionally creative disciplines. Through a meta-science lens this could be seen as a negative result for my study, disproving a hypothesis about creative contagion happening across disciplines.

However, viewed in alignment with the broader lens of meta-research and historical discourse analysis approaches, the gaps and absences of evidence were of further interest to me in what they might suggest about the disjunctures between REF documents as political discourse and the lived realities of academia (O'Regan and Gray, 2018). Just because an activity is not included in a REF environment statement, we cannot assume it does not take place. For example, it may well be that the staff research groups around arts-based methods and exhibition spaces for arts-based pedagogical research were open to, and thus supporting, PGRs in education. Similarly, where funding is described as available for "fieldwork" and "research costs" we cannot presume whether this might or might not have been able to be used to support the costs of creative practice. There are broader considerations too in trying to interpret omissions from the environment statements. Some forms of arts-based methods require little in the way of specialist resources and spaces, such as photo elicitation and poetic enquiry. PGRs might be accessing facilities, resources, training and research communities for creative practice outside an education department or school, for example facilitated in conjunction with cross-disciplinary supervision teams. I

might speculate that more informal and smaller scale support for creative practice is spreading between as well as across disciplines and departments in ways that either elude capture in institutional REF documentation or are not considered of scale and significance for inclusion in the highly crafted narratives. The environment statements I read did demonstrate that creative and arts-based methods were present in education research.

More generally than considerations of creative practice, this small-scale study has indicated the potential and limitations of using REF environment statements to understand the changing landscape of provision in doctoral education in the UK. My sample of just 40 of the 1,878 submitted environment statements did reveal some early indications of disciplinary differences in what is considered a significant element of a research environment to support postgraduate researchers and thus included in the disciplinary narrative. As an example, in contrast to the other three disciplinary areas, I found no comments in the Engineering environment statements about support for conference attendance or other professional development funding for PGRs. This raises questions about to disciplinary norms and expectations. The REF archives clearly indicate the different sizes of doctoral populations across types of institution and discipline. The environment statements reveal how, in this period, Engineering as a single subject area within a higher education institution could have a doctoral population numbering above a thousand and with an annual intake of around 200 new doctoral students. This dwarfed the reported size and scale of entire institutional doctoral populations in many specialist institutions or post-92 universities in a stark contrast. The proportions of funded students described within the Engineering statements are similarly higher, and it is possible that the provision of funding for conference attendance or other professional development is normally a funding body rather than university responsibility. This could account for its omission in the environment statements, read through a disciplinary lens the equation of studentship in engineering with funded conference attendance might be automatic.

There is another significant limitation when drawing conclusions from discipline or subject unit level environment statements about more generic rather than subject-specific doctoral provision. In the 2021 REF exercise there were also institutional level environment statements. It may be that if activities such as supervisor development were described in the institutional level statement, it was thought that they need not be duplicated at unit or disciplinary level. This may account for the relatively low levels of reporting around supervisor training and development activity which was only referenced in 16 of the 40 environment statements, despite being long acknowledged as vital in the literature (Pearson and Brew 2002).

Despite the high profile of PGR mental health and well-being in the literature (Schmidt and Hansson, 2018), this receives relatively little attention in any of the sampled subject level environment statements. Given recognition of the importance of community and social

support in doctoral study for both intellectual development and well-being (Mantai, 2019), it seems significant that the well-being aspect is not highlighted more frequently at the local, disciplinary unit level. Specific support is referenced in only five of the 40 documents and with four of those being in Music and Performing Arts. Although not specifically linked in the narrative to practice research, there was a reference in one of the UoA33 environments statements to workshops on "best practice in supervision of neurodiverse PGRs, offering adaptations that are responsive to sensory and communication preferences" (University of Kent). This is a small yet intriguing indicator of the development of novel provision and support for neurodivergent doctoral students, at a time when neurodivergence is increasingly recognised within academia (Grant and Kara, 2021; Robertson and Ne'eman, 2008) which would suggest that models and expectations of doctoral provision would need to adapt accordingly. There were also comments within the research environment narratives in my sample about study spaces, industry collaborations and both cross and inter-disciplinary supervision, indicating that the larger archive of all unit and institutional environment statements might reveal patterns and discursive themes about these aspects of doctoral education in the UK and how they are valued. Longitudinal and historical analysis of doctoral education discourse across the series of REF and RAE exercises since 2008 could also prove fruitful. With REF2029 confirmed and indications in announcements of changing open access requirements for at least a further REF2035, there will be more data in the future that can provide a lens on to what is perceived as significant in institutional provision for doctoral education in the UK.

Conclusions

In the context of meta-research, my study demonstrates some potential and the significant limitations of the discipline level research environment statements submitted to the UK's REF2021 exercise for research into doctoral education between 2014 and 2020. In taking a critical interpretative stance towards REF environment statements in and as discourse, we must recognise that they evidence as much about the value judgements around what is worthy of including, as they might in terms of actual practice on the ground. Inferences can be made as to institutional practices and more significantly about institutional and disciplinary perspectives on the relative importance of different facets of doctoral provision. Particularly for historical and longitudinal research into changes in these perceptions of quality in doctoral provision, I contend that the REF archives do have value as sources for research about doctoral education. Within a broader discourse of policy and regulation and across the archives of international variations of quality audit mechanisms, I believe stories can be found and written about the histories of developments in doctoral education.

I set out to investigate whether the archives of this national research quality assessment could reveal developments in the structures and provision for doctoral education in response to creative practice, and whether such tailored provision was spreading as a form of what I term creative contagion across disciplines. My findings confirm the existence and

value ascribed to examples of tailored provision in creative disciplines in terms of professional development and research methods support, as well as the physical and technical facilities and discursive spaces required for practice research.

I found few such stories of support for creative practice in other disciplines which might suggest that the spread of practice research and arts-based methods across disciplines is not happening, a reading and interpretation that the literature disproves. It raises questions about the extent to which the spread of arts-based and creative methods is being accompanied by appropriate tailored support for PGRs engaging with creative practice. My study of the REF environment statements did not evidence this second form of creative contagion across disciplines in the UK. Even noting the limitations of the discourse of REF submissions in reflecting practices in doctoral education, I contend that this finding should prompt reflection for supervisors and those leading doctoral programmes in disciplines beyond those viewed as traditionally as creative. It is imperative to ask if there are appropriate local resources and opportunities to support the nature and extent of creative practice undertaken by PGRs in their institution. Where might experiences and innovations be shared across disciplines to support the expanding and innovative range of research methods and approaches to generate and disseminate knowledge through creative practice in doctoral education?

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