

NEW DIRECTIONS FOR THE DOCTORAL THESIS

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ABSTRACT

Purpose — This chapter focuses on the impact of digitization on the conception, development and examination of the doctoral thesis in the contemporary university.

Methodology — The approach taken is that of reflective inquiry. The author has taken a lead role in the editing of two handbooks for Sage: one on e-learning research and the other on the digital dissertation/thesis, and this chapter reflects on the changes taking place in higher education as a result of digitization. A number of examples are used to illustrate the possibilities afforded by digitization not only at doctoral levels but also in all dissertations.

Findings — It is proposed that digitization affects not only the conception and direction of doctoral research for the student but it has implications also for supervisors, those who 'upgrade' work from MPhil to PhD levels and also for examiners and librarians. Changes in the format of the presentation of the digital thesis allow moving image and sound, as well as still images, to be incorporated into the main body of the text rather than be relegated to an appendix (e.g. in a CD-Rom).

Investing in our Education: Leading, Learning, Researching and the Doctorate
International Perspectives on Higher Education Research, Volume 13, 75—92

1 *The storage of the completed thesis in digital form, via a number of dif-*
 2 *ferent repositories, allows for greater access and use.*

3 Research implications — *One of the major implications of the digital*
 4 *thesis is that all universities must regularly re-visit their regulations to*
 5 *ensure that the parameters for doctoral research are clear, and that they*
 6 *are appropriate for the kind of research that is undertaken by students.*

7 *Many universities are now making a digital copy of the thesis for princi-*
 8 *pal submission, with print copies as optional.*

9 Originality and significance — *Consideration of the implications of the*
 10 *digital thesis for students and universities is essential not only in terms of*
 11 *knowledge creation but also in terms of validation of such knowledge and*
 12 *its dissemination and use.*

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 15 Keywords: Digital dissertation; digital thesis; higher education;
 16 supervision; examination; dissemination

21 INTRODUCTION

22
 23 In the *Handbook of Digital Dissertations and Theses* (Andrews, Borg, Boyd
 24 Davis, Domingo, & England, 2012), my fellow editors and authors mapped
 25 out what impact, we thought, digitization has on the nature and format of
 26 the dissertation and thesis. Our approach, though initially focussed on doc-
 27 torates, was applied in the end to any kind of dissertation — at undergradu-
 28 ate, Masters and doctoral levels. In this chapter, however, I focus more
 29 sharply again on the doctoral thesis: its function, its possibilities and what
 30 these say about the nature of knowledge creation at doctoral level within a
 31 wider context of the present volume, with its focus on leadership and policy
 32 implications. I include consideration of the possible direction that digitiza-
 33 tion can afford to the doctoral student but also look at the kinds of knowl-
 34 edge that are being generated by the contemporary doctorate in the arts,
 35 social sciences and humanities. My approach — typical of someone with a
 36 background in the communication arts (see Andrews, 2014) — begins with
 37 the nature and format of the contemporary doctorate but moves backwards
 38 and forwards between the genre itself and the social and political contexts
 39 of the genre. It looks at current practice in an education and social science
 research institution with a large cohort of doctoral researchers where

1 digitization and multi-modality have impacted on the creation, develop-
ment and examination of the doctoral thesis.

3 Digitization is changing the nature of doctoral submission, though the
possibilities of this shift are yet to be fully realized in practice. For some
5 years, many universities in the United Kingdom have required, like many
universities worldwide, that the final written (printed) thesis submission —
7 two copies, softbound until approved by the examiners and then hard-
bound for the library shelves and public access — should be *accompanied*
9 by a digital version in Word or in a pdf format. It makes sense for candi-
dates to submit the initial version in Word as well as printed form so that
11 amendments and corrections can be incorporated after the viva. The finally
approved thesis can be submitted in pdf and then stored digitally by the
13 university in its repository of theses, as well as submitted to EthOS at the
British Library. But from the period since 2010, the guidance for submis-
15 sion has been changing. In a pivotal and indicative shift of practice (and
possibility) in 2013 at my own university, the digital submission became an
17 option as the *principal* text, with the printed softbound copies an *accessory*
to the digital version.

19 Such practices have been evident since at least 2010 when the University
of Illinois at Urbana-Champaign, more radically, indicated to its doctoral
21 students that it would no longer accept printed, softbound or hardbound
copies but would receive only the digital version of the thesis. Readership
23 of the submitted digital theses increased 10-fold in the first year. Such a
change in submission requirements has a potentially profound impact on
25 the whole doctoral research process. Knowing that digital submission is
required will encourage some students to conceive of their research pro-
27 jects, *ab initio*, differently. A major consideration will be the degree to
which multi-modal approaches to the presentation of the thesis are
29 included.¹ Multi-modality suggests the inclusion of word, still image,
moving image, sound, gesture etc., and it is possible to conceive of a study
31 that embraces some or all of these modes of communication. Such a broad
use of and combination of modes have been possible in arts-based research
33 for decades — art installations, exhibitions and sculptures are presented,
usually as *part* of the doctoral submission (accompanied by a ‘critical’
35 dimension, conventionally supplied in word form). But the practice is rela-
tively new in the humanities and social sciences, bound as they have been
37 more conventionally in the ‘classic’ verbal (spoken and written) tradition.
However, photographs or other forms of digital still image have already
39 become part of the conventional printed thesis. Now, as digitization influ-
ences practice more deeply, an arts, humanities or social sciences research

1 student could incorporate, for example, documentary film as part of their
 2 submission.

3 The reciprocal relationship between new technologies on the one hand
 4 and new practices and forms of knowledge creation on the other has impli-
 5 cations beyond that of format and presentation. Among these implications
 6 are increased researcher agency, a changing relationship between research/
 7 doctoral study and the student researcher and the process of research. In
 8 the following sections, I try to chart some of these changes.

9

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CONCEPTION

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14 The *conception* of the research topic, and its subsequent treatment by the
 15 research student, needs to be dwelled on further before we move to other
 16 implications of the digital thesis. These may continue to be *about* a topic in
 17 a post hoc approach. Such post hoc abstraction is partly a result of the nature
 18 of the verbal mode: it consists of critical, reflective words about phe-
 19 nomena. However, the inclusion of other modes of communication and
 20 representation means that the researcher and the reader can get closer to
 21 the primary experience that is being investigated. Instead of (or as well as)
 22 writing about film, the researcher can show the film or film extracts; instead
 23 of (or as well as) writing about music through the prisms of, first, notation,
 24 and second, critical verbal commentary on such notation, the researcher
 25 can actually present the music itself as part of the thesis. One could see the
 26 proximity of the primary material as a threat to research if we conceive of
 27 research only as an abstracted, reflective activity mediated by words. If
 28 research means, to paraphrase an eighteenth century definition of research
 29 in music, ‘the seeking of patterns of harmony which once found, are used
 30 in the piece to played afterwards’ (think of pattern-seeking in data through
 31 analysis, which once found can be applied to real-world problems and solu-
 32 tions), then those patterns need to be identified and shown in primary data,
 33 even though they might be analysed in another mode.

34 Such presentational possibilities raise the question of how studies are
 35 framed (see Andrews, 2010), and these need to be made clear in the intro-
 36 duction to a thesis so that all who read it are clear about the paradigm
 37 within which the research project is undertaken, and more pragmatically,
 38 what to expect — and how to read it — as they embark on the ‘reading’ of
 39 the thesis.

What does this more direct form of communication in the doctoral thesis
 say about knowledge and the creation of new knowledge? First, that

1 academic framing of knowledge need not be bound by the verbal code, and
 2 that other forms of ‘knowing’ — visual, aural, synaesthetic, tactile, kinetic —
 3 can be validated. Second, that the layering of critical commentary can be
 4 arranged and weighted by the research student to indicate precisely where
 5 his or her focus of attention is, and how that modal focus of attention is
 6 related to other modes. Third, that ‘an original contribution to knowledge’
 7 (never well-defined) can take even more various forms, from the offering of
 8 new perspectives, to the re-configuration of existing ideas and assumptions,
 9 to the presentation of new material and so on.

10 Fourth, what kinds of argument are presented by a digital thesis that
 11 uses a wide set of possibilities as set out above? Argument (the product)
 12 and argumentation (the process) are likely to continue to be central to the
 13 criteria for success at doctoral level as they are at both Masters and under-
 14 graduate levels. Does the move away from a necessarily linear argumenta-
 15 tional sequence in the conventional written/printed thesis — say, in the
 16 presentation of a thesis in a website form, where the points of entry are
 17 multiple and where the material need not necessarily be read in a prescribed
 18 order — compromise the argument of a thesis or could the argument be
 19 (partially) constructed by the reader? Can a set of images argue? Can a
 20 musical composition be said to make an argument, irrespective of whether
 21 it is accompanied by 40,000 words of written critical commentary or not?
 22 We are faced here with issues of implied argument and explicit arguments.
 23 Doctoral work tends to the explicit because it is set within an academic
 24 context. But such explicitness is not always the choice of those presenting
 25 theses for examination and is not a worldwide universality: a doctoral
 26 study on the historical emergence of manga as an educational tool, for
 27 example (Ellis, 2008), eschewed explicit articulation of its thesis within a
 28 Japanese tradition of suggestion and implicitness rather than the somewhat
 29 less refined practice of explicit exposition.

30 Issues around the *conception* of the digital thesis are considered here
 31 because these are central to the kinds of knowledge that are anticipated in
 32 a doctoral course of study and to the student who is embarking on that
 33 course. The next matter to consider is the *supervision* of that course of
 34 study and its implications for the process of research as the basis of a thesis
 35 or dissertation.

37

SUPERVISION

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Supervisors are key not only to the development of a research student’s
 research project, particularly in the structural design of the thesis (the

1 principal aspect that supervisors can be held to account for if the student is
 2 not successful), but also for the depth of scholarship, the elegance of the
 3 design overall, the degree of theory that is introduced and the methodologi-
 4 cal rigour. Above all, the supervisor's role is to guide (navigate) the student
 5 successfully through the demands and rituals of the doctoral journey. It is
 6 thus all the more important, when there is a new direction to navigate, that
 7 the supervisor — even if he or she has not travelled the specific territory —
 8 is able to map-read and work with the student to ensure a successful
 9 passage. Again, this responsibility for navigation comes back to the regula-
 10 tions of the university and the guidance offered to the student in terms of
 11 criteria for success.

12 The regulations at one UK higher education institution include the fol-
 13 lowing (I have included only those that are relevant to the argument of this
 14 chapter; details about length of registration, eligibility etc. are left out):

15 The MPhil/PhD thesis must
 16 6.3.1 consist of the candidate's own account of his/her investigations;
 17 6.3.2 be an integrated whole and present a coherent argument;
 18 6.3.3 include a full bibliography and references;
 19 6.3.4 be written in English and of a satisfactory standard of literary presentation. (2012
 20 regulations, p. 6)

21 and perhaps more pointedly for the purposes of this chapter:

22 6.10 If appropriate to the field of study, and subject to approval by the Academic
 23 Registrar, a candidate may undertake research leading to the submission of a portfolio
 24 of original artistic or technological work undertaken during his/her period of registra-
 25 tion. The work may take the form of, for example, objects, images, films, performances,
 26 musical compositions, webpages or software, but must be documented or recorded in
 27 the portfolio by means appropriate for the purposes of examination and eventual
 28 deposit in the Institute library. The portfolio must include written commentary on each
 29 item of artistic or technological work and either an extended analysis of one item or a
 30 dissertation on a related theme. The written commentaries and extended analysis or dis-
 31 sertation must together be no more than 40,000 words. (*ibid.*, p. 7)

32 I will take up four main areas in these regulations that a supervisor and
 33 student must address if the student decides to go down the route of less
 34 conventional thesis. These are the nature of the *argument*, the *bibliography*
 35 *and references*, the *portfolio* and the *written* element. Collectively, these pro-
 36 vide the framework for the thesis and, as such, require the guidance of the
 37 supervisor.

38 Discussion of how *argument* manifests itself in a multi-modal, digital
 39 thesis was begun above. It also needs to be said that the argument can take

1 various forms. It need not proceed via some of the conventional models,
2 like the proving or disproving of a hypothesis or the sequential and logical
3 or quasi-logical setting out of a position. What it must contain is a series
4 (not necessarily chronological or logical) of propositions supported by evi-
5 dence and a critically informed position taken by the researcher. This series
6 of propositions can be spatially arranged, like paintings in a gallery or
7 pages on a website where it is up to the reader to determine the sequence in
8 which the elements are experienced, thereby creating their own narrative —
9 and by implication, argument — of the experience. The critically informed
10 position is a matter of development through the material, weighted up by
11 the researcher with a view to find his or her own position in relation to it
12 (to the ‘existing body of knowledge’).

13 The *scholarship* in a digital multi-modal thesis need be no different from
14 that in a conventional thesis. There will be references and/or a bibliogra-
15 phy. These can be presented separately as they are in a conventional social
16 sciences thesis, or as footnotes, as is the convention in a humanities thesis.
17 Scholarship will also include a critical and careful examination of the
18 problem or the topic analysed.

19 The *portfolio* is the position taken by the university in question for the
20 specific purposes ‘of examination and eventual deposit in the Institute
21 library’. That is to say, the submitted work cannot be a website or a film or
22 an installation per se, but the artefact must be contained with a portfolio
23 (this could be an electronic folder) along with a ‘written commentary’. This
24 regulation is central to the argument of this chapter because it defines what
25 is allowed by the university and the format in which the doctoral submis-
26 sion must be contained.

27 The relatively conservative positioning of this university is reflected in its
28 insistence that there should be ‘written commentary on each item of artistic
29 or technological work and either an extended analysis of one item or a
30 dissertation on a related theme’ of not more than 40,000 words. The written
31 commentary on one item could be on the only item contained in the
32 portfolio, if there is not more than one. If there is a collection or series of
33 items — as in a critical catalogue of an exhibition — there needs to be a
34 commentary on each item. In addition — not as an alternative — there needs
35 to be an extended (critical) analysis of one item or a dissertation. There is
36 thus some degree of choice for the researcher as to what they put in the
37 portfolio. The written element is deemed to take up about half of the full
38 submission. Sometimes, the artefact is termed the ‘creative’ element and
39 the written commentary the ‘critical’ element, but the distinction is a
40 blurred one. There is no reason why the artefact cannot be critical in its

1 response to an existing context. A fuller discussion of the spectrum of possi-
 3 bilities for the submission and form of a doctoral thesis is contained in
 5 Andrews and England (2012). We can imagine at one end of the spectrum,
 7 the conventional written thesis and at the other end, a thesis that contains
 9 no words at all.

9 UPGRADE AND EXAMINATION

11 Most doctoral degrees — and certainly the MPhil/PhD route — require the
 13 consideration of an ‘upgrade’ from MPhil to PhD registration during the
 15 course of study. In effect, this often takes the form of an interim ‘viva’ in
 17 which the student’s work is subjected to close perusal by academics other
 19 than the supervisor. Some universities also make provision for an internal
 21 reader to undertake a critical look at the draft thesis before it is submitted.
 23 Along with the formal examination at the end of the process, these
 25 occasions have in common the *critical and formative assessment* of the
 27 student’s work.

29 The experience and imagination which the internal readers and internal
 31 and external examiners bring to the process of review is crucial to the suc-
 33 cess and future direction of the student. An examiner or internal reader of
 35 work who has digitally submitted (and in which the student brings an iPad
 37 or other tablet to the meeting rather than a printed document) must be sen-
 39 sitive not only to the format in which the work is presented but also to the
 paradigm in which the student is working. Assuming this to be within the
 framework of regulations, the research paradigm — how the research is
 approached, what values underpin it, what counts as evidence, what place
 sequentiality plays in the work etc. — is crucial to its appropriate considera-
 tion. It follows that either experience, imagination or training is required
 for internal readers and examiners who are invited to take part in the doc-
 toral degree process. There are thus implications for institutions to make
 sure such academic staff are properly prepared.

It is in the management of upgrade and examination, and the wider
 responsibilities that are bound up with them, that institutions can take a
 leading role in re-thinking the parameters for the doctoral dissertation or
 thesis. Heads of doctoral or graduate schools have a complex job, often
 concerned with applying and interpreting the detailed rules of submission,
 upgrading and examination. The exciting challenge for institutions, how-
 ever, and those with leadership responsibilities in these regards, is how to

1 adapt and update the regulations and guidance to reflect the changing
2 nature of knowledge generation and representation.

3

5

6 SOME TECHNICAL AND DESIGN ISSUES

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8 There are some technical issues in the transition from paper-based to digital
9 submission of theses that require brief discussion. Over 100 years of the
10 printed doctoral thesis (see Borg & Boyd Davis, 2012) has established
11 detailed conventions for submission from institution to institution. Some of
12 these look outdated, for example, ‘Theses must be presented in a perman-
13 ent and legible form in typescript or print except that mathematical or
14 similar formulae may be inserted neatly by hand. Photographic and other
15 illustrations should be permanently mounted on A4 size paper and bound
16 within the thesis. In no circumstances should “Sellotape” or similar materi-
17 als be used for any purpose’ and ‘Any material which cannot be bound in
18 with the text must be placed in a pocket inside or attached to the back
19 cover or in a rigid container similar in format to the bound thesis.’
20 Furthermore, illustrative material may be submitted in the following forms:
21 ‘a) audio recording [on] compact cassette tape C60 or C90, b) photographic
22 slides [should be] 35 mm in 2 inch by 2 inch frame.’

23 No such detailed instructions exist for digital formatting and presenta-
24 tion but they could include something like the following: ‘digital submis-
25 sions must be in a format that allows weblinks, and links to other modes
26 like sound and (moving) image. Three-dimensional phenomena, like sculp-
27 ture, installations and performance, must be rendered in two-dimensional
28 form. The submission must give access to the examiners and all subsequent
29 readers the full experience of the proposed thesis. It should be accompanied
30 by a printed version which indicates where, and how material that cannot
31 be included in print form, can be accessed’.

32 In terms of the actual submission of the thesis, candidates must often
33 wait upon the decision of the examiners who will be asked by the Research
34 Degrees Examination Officer whether they would prefer to read a hard
35 copy or an electronic copy. ‘If the examiners request hard copies, you can
36 choose to submit your thesis for examination in one of two ways, *either*
37 *softbound in medium blue cloth or spiral bound with clear plastic covers*.
38 Again, there is no detailed specification for the electronic submission,
39 other than ‘in pdf format’. This requirement appears to assume that the
40 material submitted will be static and renderable in the pdf format — as if

1 the digital version were simply an electronic version of the written, printed
 3 submission.

3

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7 STORAGE AND DISSEMINATION

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9 The regulations, quoted above, stipulate that the portfolio of submitted
 11 work must be ‘documented or recorded ... by means appropriate for the
 13 purposes of ... eventual deposit in the library.’ In many cases, in a reverse of
 15 the conventional procedure for the submission of a doctoral thesis for exam-
 17 ination, the digital copy is usually accompanied by a hard copy for backup
 19 purposes. Universities which subscribe to the EthOS national thesis service
 21 of the British Library (and students of those universities) can access these
 23 digital copies of the thesis — via the full text where possible. Currently there
 25 are about 300,000 records of theses from over 120 institutions, with about a
 27 third available in full text. Of the remaining 200,000, three-quarters are
 29 available to be scanned. Each month about 3,000 new records are added
 31 and about two-thirds of these now provide the full texts of the theses.
 33 Access is determined by the host institution and may depend on mandatory
 35 electronic deposit of new theses, availability of the theses in the institution’s
 37 own repository and to what extent digitization of print theses is prioritized
 39 locally. Doctoral students and others are over 100 times more likely to
 access doctoral theses via this portal than via conventional means.

25 Such digital storage and accessibility means that dissemination is partly
 27 on demand. Titles and abstracts are available, as well as full texts — though
 29 the abstract is often embedded in the thesis — but so far there is no sys-
 31 tematic and extensive provision of, say, 10—20-page summaries of theses
 33 written for lay or academic audiences that will give a substantial insight
 35 into the research that has been undertaken. The closest we have come to
 37 such a service is via agencies and research units which provide summaries
 for different audiences or the Research Impact summaries that universities
 33 have provided for the Research Excellence Framework — which do not
 35 tend to cover doctoral theses. What this gap suggests is that doctoral stu-
 37 dents themselves might wish, in future, to provide 10—20 page summaries
 for their respondents and for interested stakeholders. The public engage-
 39 ment agenda is important here, and projects like Catalyst operate at the
 interface of research scholarship and public interest.

39 Most university libraries now house e-repositories for digitized data,
 e-journals, e-books, digitized course readings and doctoral (and sometimes

1 Masters) theses and dissertations (e.g. <http://eprints.ioe.ac.uk>). Furthermore,
2 making a digital version of the thesis available enables the metadata to be
3 'harvested' by search engines worldwide, for example, via DART-Europe,
4 the European research libraries e-thesis portal (see www.dart-europe.eu).
5 The online catalogue at my own university library, for example, has
6 ambitions for a 'discovery layer' to give access to all of this material. Such
7 a 'layer' would map thematic routes through the material to enable easier
8 access for research students, keying in more to their needs. The key is that
9 digital materials not only enable worldwide access but also enable better
10 access by users with disabilities and/or learning differences.

11

13

15 HOW DO THESE CHANGES AFFECT KNOWLEDGE 16 PRODUCTION AND USE?

17 There are at least three aspects of knowledge production and use that are
18 raised by the move to digital/multi-modal theses. One concern is what
19 kinds of knowledge are generated in doctoral work, another is whether
20 research knowledge is upstream or downstream of application and third is
21 the extent to which the users of knowledge influence (or should influence)
22 the creation and design of the knowledge that is generated.

23 It could be said that if research operates without an accessible abstract
24 or summary, it often remains unread — as was the case with pre-EthOS
25 and pre-digitization. If the researcher, on embarking on a doctoral course
26 of study, knows that his or her work will be read and that the available
27 resources include all the modes of communication, the project and the
28 knowledge generated will be different.

29 Each of the modes of communication has its own affordances. Verbal
30 language, whether spoken or written, has the possibilities of abstraction,
31 generalization (nouns themselves are thought to be generalizations), logical
32 sequencing, hierarchical categorization. The still image has the affordances
33 of direct, potentially visceral communication, whether in photographic or
34 painted (digital) form. Words are still the mode via which search engines
35 operate, whereas images (including signs and icons) are increasingly used
36 to represent ideas. Each of these modes may sit in a dominant position
37 to the other: we can imagine an illustrated book on the one hand, where
38 the written word is primary and the illustrations secondary or, on the other
39 hand, a series of photographs where the written word is secondary, as in
40 captions.

1 Both of these major modes of communication are *framed* differently.²
 2 Verbal, written and printed language abides by the medium which carries
 3 it: the page and the page on the screen. Currently I am working, in the
 4 United Kingdom, on an A4 page on computer screen. Because this is (aca-
 5 demic) prose, the words wrap around at the end of the line unless I press
 6 ‘Enter’ for a new line or paragraph. The size of the page changes if the text
 7 is moved into a book (very few books are A4 in size) where the framing —
 8 as manifested in the words and in the design of the pages in the book as a
 9 whole — generates expectations as to the content.

10 The still image is always more consciously and more evidently framed,
 11 even if (or especially if) it is a cropped photograph. The inclusion and pla-
 12 cing of a photograph in a thesis says something different from the adjacent
 13 written text. It represents a kind of knowledge that is direct, non-sequential,
 14 more sensory, observational, of a particular moment. Knowledge that
 15 comes in written form, especially academic writing, is almost by definition
 16 abstract, generalized, logical or quasi-logical propositional.

17 The combination of these two modes brings together these two sets of
 18 affordances: mostly in complementary fashion, sometimes in tension.

19 It is the nature of written academic prose in the doctoral thesis that it
 20 tends to operate downstream of innovation; in other words, it is post hoc.
 21 Its abstract nature allows it to *reflect back* on practice or phenomena, seek-
 22 ing to understand them by the identification of pattern. Once the pattern is
 23 identified and transformed into a theory and/or model, it can be applied
 24 for future practice and phenomena. But because of the downstream nature
 25 of the academic doctoral thesis, many of them remain unread and unused.
 26 How can advanced research of this kind be brought more upstream of
 27 practice and policy? Part of the answer lies in research teams, some of
 28 whom are engaged in post hoc analysis, and others who are applying that
 29 knowledge to the design of new products and new ways of doing things —
 30 and thus creating new communities of knowledge.

31 One further specific implication or unforeseen consequence of the move
 32 to the digital is obviating of the need for transcription of oral data into
 33 writing.

35

37 THE END OF TRANSCRIPTION?

39 While, on the one hand, there has been interesting and valuable discussion
 in multi-modal circles of the nature of transcription (seeing as one example

1 of transduction from one mode to another), the practice of transcribing
3 from oral recorded data into written transcript must become an increas-
5 ingly rare activity for researchers. First, the oral data are almost always
7 recorded digitally. They can be stored in sound files. They can be incorpo-
9 rated into the main body of a thesis and/or into its appendices; even in the
now outmoded practice of collecting ancillary data on a CD-Rom which is
appended to the thesis, sound files can be recorded, stored digitally and
presented as part of the thesis as a whole. Transcription is labour-intensive
and probably takes up time that could be better spent by the researchers in
designing research and collecting or analysing data.

11 Transcribing one or two interviews, for example, is always useful. The
very act of transcription — the transduction from one mode to another —
13 makes one look at the data carefully, seeking patterns that may or may not
be replicated in subsequent interviews. The inclusion of a full transcript in
15 an appendix — particularly if translation from one language to another is
involved — provides evidence of the nature of the interview and of tran-
17 scription conventions that have been used. But if the research involves
moderate or large numbers of interviews or if the data takes the form of
19 sound (e.g. recordings of naturally occurring sound phenomena) then it
makes sense not to transcribe all the data but to let it ‘speak for itself’.

21 The suggestion that transcription may not be necessary is a simple,
radical idea that may generate opposition. But it is worth asking: why is
23 transcription necessary? Is the expense in time and/or money worth it?
Could the research be presented more engagingly by providing direct access
25 to the sound files themselves? The abstraction — literally — the pulling
away from the core, original data that are involved in transcription create a
27 distance between the reader and the data: one which may be conventional
and enjoyed in academia but which may be a practice that is increasingly
29 vestigial. *As long as the analytical function is carried out*, which involves
standing back from the data so that patterns can be identified, the data
31 itself can be presented more directly. The data can be re-represented in dif-
ferent modes if such an action makes them clearer to the author, and to the
33 reader, where the patterns exist and what form they take.

It is understandable that some researchers may object to the idea that
35 transcription of every digital sound recording may not be necessary. They
will argue that analysis must be based on the written transcript, but the
37 argument in the present chapter is that there is more to be gained in presen-
tation of the original data, in the mode in which it was generated (and
39 accessible if needed) accompanied by succinct analysis of its significance,
than in the laboursome practice of transcription.

1 NEW COMMUNITIES OF KNOWLEDGE

3 Crowdsourcing is one form of collection and generation of knowledge that
4 may well have further impact on the doctoral thesis. By making the thesis
5 publicly available in digested, summary and full forms, it can be reviewed,
6 commented upon, answered and be generally open to discussion in a way
7 that was not possible 10 years ago. Although initially used by companies
8 and other organizations to garner collective wisdom, crowdsourcing can be
9 used as a research tool to generate and refine knowledge on a particular
10 topic. Wikipedia is one result of such crowdsourcing, but it can be used
11 more interactively to continue a dialogue about newly created knowledge.

12 The principle behind such interactive approaches to the generation of
13 knowledge is dialogism, indicating a move away from one authoritative
14 voice to a more collective creation of new knowledge. Such a move has
15 implications for the doctoral thesis. As a genre and a rite of passage, the
16 doctoral thesis tends to be an individualistic project in arts, humanities and
17 social sciences. It will remain so as the qualification must be awarded to an
18 individual. More team-based research — for example, involvement in a sys-
19 tematic review of research and/or a research project that involves a range
20 of different types of engagement and outcome — will give scope for an indi-
21 vidual dimension of the group activity to be separated for research degree
22 purposes, as is often the case in the sciences. As expressed elsewhere in this
23 chapter, such doctoral degrees can be factored into the design of research
24 projects at the bidding stage and have to be managed carefully by both stu-
25 dent and supervisor(s) to make sure that the outcomes are successful for all
26 concerned.

27 One further aspect of new communities of knowledge is the facility for
28 summaries of doctoral theses to be accessed by mobile technologies in a
29 variety of media. It is not beyond imagination to conceive of digests of
30 research findings that can be used by practitioners at the point of need:
31 such is already the case in medical and health care; it could be the same in
32 social care, education and other fields where practice needs to be informed
33 by research. Research thus becomes *upstream* of practice.

35
37 PUBLIC ENGAGEMENT

39 The impact and public engagement agenda is largely concerned with grant-
40 holding higher education institutions, and more specifically through an

1 initiative via Research Councils UK. A number of universities across the
2 United Kingdom — Aberdeen, Bath, Exeter, the Institute of Education,
3 Nottingham, Queen Mary, Sheffield — have been awarded catalyst funding
4 to strengthen the commitment to public engagement, integrate public
5 engagement into core research activity, support researchers at all levels
6 within their institutions to engage and create networks within institutions
7 to support and develop good practice in public engagement. See [http://
www.rcuk.ac.uk/per/Pages/catalysts](http://www.rcuk.ac.uk/per/Pages/catalysts).

9 To what extent is this movement towards impact and engagement relevant
10 to and feasible for doctoral researchers?

11 Public engagement generally can take different forms. The approach at
12 my own institution is set out at <http://www.ioe.ac.uk/research/86369.html>
13 where sharing ideas, forming research partnerships, following good practice
14 and learning about engagement are four dimensions of the work that is
15 being undertaken to forge a better relationship between research and its use.

16 Research briefings of two pages in length (longer than an abstract and
17 more user-focused) are another way in which engagement and impact can
18 be fostered. As part of a whole series at [http://www.ioe.ac.uk/research/
19 87680.html](http://www.ioe.ac.uk/research/87680.html), two examples are (a) a briefing on a study of the evidence
20 available for teaching English as an additional language (EAL) in class-
21 rooms, and particularly at training for teachers in the field, which draws
22 mostly on research published in the United States, Australia and the United
23 Kingdom ([http://www.ioe.ac.uk/Research_Expertise/RB18_Strategy_EAL_
24 Andrews.pdf](http://www.ioe.ac.uk/Research_Expertise/RB18_Strategy_EAL_Andrews.pdf)) and (b) on the experience of the United States in developing
25 and implementing a National Writing Project for teachers to inform the
26 establishment of a similar project in the United Kingdom ([http://www.ioe.
27 ac.uk/Research_Expertise/RB25_National_Writing_Project Andrews.pdf](http://www.ioe.ac.uk/Research_Expertise/RB25_National_Writing_Project_Andrews.pdf)).

28 Doctoral research, in arts, humanities and social sciences at least, has
29 been largely individualistic and driven by curiosity of the researcher rather
30 than by any larger social agenda. As noted above, team-based approaches
31 to research which involve doctoral students are rare. As research project
32 proposers include studentships within their work, however, the likelihood
33 for a doctoral study to be aligned with a larger research project is becoming
34 more common, and thus the possibility for stakeholder input at an early
35 stage in the research design process — for example, setting the research
36 question — is growing. The research impact agenda — seen most clearly in
37 the requirement for the 2014 Research Excellence Framework to provide
38 case studies of research that have had an impact on individuals, institutions
39 or in other ways — is part of this wider picture of public engagement.
Research impact tends to be seen as one-way; public engagement in

1 research is more reciprocal and cyclical in that such engagement can be
 2 included at the start of research projects, throughout their development,
 3 and again at the end of the project when dissemination and impact are
 4 considered.

5

7

CONCLUSION

9

10 I have argued in this chapter for a shift of practice in the way doctoral
 11 theses are conceived, supervised, developed and examined, in response to
 12 digitization and multi-modality and also in response to new practices
 13 in storage and dissemination. Such changes do not happen quickly in the
 14 university sector, but they can indicate changes in the way knowledge is
 15 generated.

16 In particular, the place of the doctoral thesis in the generation of new
 17 knowledge is put into question. If the doctoral thesis continues in its indi-
 18 vidualistic way in social sciences, arts and humanities, it is likely to be seen
 19 more as a *rite de passage* for the candidate rather than at the cutting edge
 20 of new knowledge. For a start, unless a doctoral candidate has undertaken
 21 a full systematic research review of the field in which he or she is working,
 22 there can be no guarantee that there is a genuine gap in knowledge being
 23 addressed or filled. By definition, individual researchers cannot undertake
 24 full systematic reviews because these require a team effort. It is thus the
 25 case — not often acknowledged — that the originality of the doctoral thesis
 26 is based more upon it not having been done in exactly this form before (its
 27 novelty) rather than on an original conception, design, dataset or
 28 conclusion.

29 Perhaps the degree of originality is a problematic concept in itself? Even
 30 if an individual researcher, working as part of a research team, identifies
 31 his or her contribution as clearly separate from the work of the team as a
 32 whole, there are questions about the dividing line between the individual's
 33 contribution and that of his/her part in the team.

34 My argument has been based on changes in the possibilities of new for-
 35 mats of submission and as such is limited to that perspective. Wider issues,
 36 like whether and if so, how the doctorate is used as a career stepping stone,
 37 about knowledge as generated outside the doctoral thesis and outside the
 38 academy and intellectual copyright issues that arise from the open and pub-
 39 lic availability of doctoral theses — are not addressed in this chapter. On
 the last issue, the more readily available nature of the doctoral thesis in its

1 digital form is generally seen by students who are studying, by the candi-
3 dates themselves and by the wider academic community as a positive
5 change in public dissemination and engagement. This degree of accessibility
7 is important not only to fellow research students but also to users in wider
9 communities in distilled forms like the one-page, two-page and 20-page
11 summary (and other variations).

13 From the point of conception of a doctoral research project to the final
15 points of dissemination, the affordances of new technologies, combined
17 with an understanding of the multi-modal nature of composition, provide a
19 challenge and opportunity to further research practice.

21 IMPLICATIONS FOR POLICY, EDUCATIONAL 23 LEADERSHIP, MANAGEMENT

25 Finally, what are the implications for policy, educational leadership and
27 management of the move towards the digital/multi-modal thesis? These are
29 broad terms, so it is perhaps best to focus on the implications for doctoral
31 schools and for innovative leadership in the field of research theses.

33 I would suggest the following:

35 There will be an increasing integration of research studentships into
37 funded research projects so that early career researchers can respond to
39 issues of public engagement and impact at the start of their research
degrees. Early career researchers will learn how their own doctoral research
fits into a larger picture of team-based research as well as into different
communities of practice (including e-communities).

Highly desirable would be a move of research upstream so that it feeds
into the practices and policies that flow from it rather than always address-
ing the matter 'downstream' or *post facto*/'after the case'. Such a move
would make research more productive in that its results would feed into
learning design rather than attempt to study learning after the event.

All of the above suggests that guidance for students, supervisors and
examiners as to the possibilities afforded by the digital/multi-modal thesis
will need to be reviewed and revised. While not being presented as tem-
plates for future research, a collection of exemplars of theses that have
exploited the possibilities that the digital/multi-modal dimensions would be
very useful for research students. These could be stored on the university
intranets and/or in libraries. The libraries themselves may need to develop
more secure (backup) institutional repositories for digital doctoral theses,

1 as well as national and international collections like EthOS and
2 DART, so that hard copies are no longer necessary.

5 NOTES

7 1. Digitization and multi-modality are not synonymous, but the advent and
8 wide use of digitization in the early 1990s coincided with the rise of
9 interest in multi-

10 modality, probably as a result of the birth of the Internet and the more
11 widespread use of the computer screen.

12 2. See <http://multimodalblog.wordpress.com/2013/10/15/framing-as-a-methodological-strategy/> (Andrews & Davison, 2013).

13 REFERENCES

14 Andrews, R. (2009). *Argumentation in higher education: Improving practice through theory and*
15 *research* (p. 233). New York, NY: Routledge.

16 Andrews, R. (2010). *Re-framing literacy: Teaching and learning in english and the language arts*
17 (p. 240). New York, NY: Routledge.

18 Andrews, R. & Davison, J. (2013). *Framing as a methodological strategy*. Retrieved
19 from [http://multimodalblog.wordpress.com/2013/10/15/framing-as-a-methodological-](http://multimodalblog.wordpress.com/2013/10/15/framing-as-a-methodological-strategy/)
20 [strategy/](http://multimodalblog.wordpress.com/2013/10/15/framing-as-a-methodological-strategy/)

21 Andrews, R. & England, J. (2012). New forms of dissertation and thesis: A discussion of
22 the

23 seminar series and proposed guidance for universities. In Andrews, R., Borg, E.,
24 Boyd Davis, S., Domingo, M., & England, J. (Eds.). (2012). *The SAGE*
handbook of digital

25 *dissertations and theses* (530 pp.). London: Sage.

26 Andrews, R., Borg, E., Boyd Davis, S., Domingo, M., & England, J. (Eds.). (2012). *The*
27 *SAGE*

handbook of digital dissertations and theses (530 pp.). London: Sage.

28 Borg, E. & Boyd Davis, S. (2012). The thesis: Texts and machines. In Andrews, R.,
29 Borg, E., Boyd Davis, S., Domingo, M., & England, J. (Eds.). (2012). *The*
SAGE handbook of

30 *digital dissertations and theses* (pp. 13—30). London: Sage.

31 Ellis, K. B. (2007). *The emergence of study manga in Japan: A historical and semiotic*
approach.

32 PhD thesis, University of York, UK.

33 Institute of Education. (2012). *Regulations for the degree of MPhil/PhD*. London: University
of London, Institute of Education.

34 Milsom, A. M. (2008). *Picturing voices, writing thickness: A multimodal approach to*
translating the Afro-Cuban tales of Lydia Cabrera. PhD thesis, London
35 Metropolitan University.

36 UNCITED REFERENCES

37
38 Andrews (2009); Ellis (2007); Institute of Education (2012); Milsom
39 (2008)