

## Introduction

Cheesecake. One of the greatest gifts of the culinary gods: ‘Decadent and delicious’, according to *The Cheesecake Bible* (2015);<sup>1</sup> pure ‘seduction’, claims the title of *Cheesecake Seduction* (2008);<sup>2</sup> ‘excess’, declares *The Joy of Cheesecake* (1980).<sup>3</sup> Cheesecake conjures up all sorts of images, but the word excess sums them up. It suggests something surplus to requirement, superfluous, spare, redundant, unwanted, unnecessary, excessive and leftover<sup>4</sup> – something unessential for survival, fundamentally unadaptive and vaguely pointless. In *How the Mind Works* (1997) Stephen Pinker argues that the arts are excessive too; like ‘alcohol, drugs, and rich deserts’<sup>5</sup> they represent ‘a biologically pointless challenge: figuring out how to get at the pleasure circuits of the brain and deliver little jolts of enjoyment without the inconvenience of wringing bona fide fitness increments from the harsh world’.<sup>6</sup> All the arts may be pointless but one stands out from the rest; metaphorically speaking, it is cheesecake:

as far as biological cause and effect are concerned, music is useless. It shows no signs of design for attaining a goal such as long life, grandchildren, or accurate perception and prediction of the world. Compared with language, vision, social reasoning, and physical know-how, music could vanish from our species and the rest of our lifestyle would be virtually unchanged; ‘music is auditory cheesecake, an exquisite confection crafted to tickle the sensitive spots . . . of our mental faculties.’<sup>7</sup>

Pinker’s hypothesis reflects a common theoretical viewpoint amongst evolutionary psychologists called EEA (environment of evolutionary adaptedness): ‘the idea that only those functions that evolved in the distant

<sup>1</sup> Emma Watt, *The Cheesecake Bible*, Homemade Cookbook, n.p.: Emma Watt, 2015, 9.

<sup>2</sup> Catherine Lau, *Cheesecake Seduction*, Singapore: Marshall Cavendish Cuisine, 2010.

<sup>3</sup> Dana Bovberjerg and Jeremy Iggers, *The Joy of Cheesecake*, Hauppauge, NY: Barron, 1980, 3.

<sup>4</sup> [https://www.google.co.uk/search?q=excess&rlz=1C5CHFA\\_enGB748GB748&oq=excess&aqs=chrome..69i57j0l5.1026j0j7&sourceid=chrome&ie=UTF-8](https://www.google.co.uk/search?q=excess&rlz=1C5CHFA_enGB748GB748&oq=excess&aqs=chrome..69i57j0l5.1026j0j7&sourceid=chrome&ie=UTF-8).

<sup>5</sup> Joseph Carroll, ‘Steven Pinker’s Cheesecake for the Mind’, *Philosophy and Literature* 22/2 (1998), [https://www.google.co.uk/search?q=excess&rlz=1C5CHFA\\_enGB748GB748&oq=excess&aqs=chrome..69i57j0l5.1026j0j7&sourceid=chrome&ie=UTF-8](https://www.google.co.uk/search?q=excess&rlz=1C5CHFA_enGB748GB748&oq=excess&aqs=chrome..69i57j0l5.1026j0j7&sourceid=chrome&ie=UTF-8).

<sup>6</sup> Stephen Pinker, *How the Mind Works*, London: Penguin, 1997/1999, 524.

<sup>7</sup> Pinker, *How the Mind Works*, 528; 534.

evolutionary past have any particular adaptive status'.<sup>8</sup> According to advocates of EEA music appears too recently in the evolutionary history of man to be adaptive (the first instruments appear roughly 40,000 years ago). Cultural archaeologist Steven Mithen offers a compelling – if speculative – alternative. In *The Prehistory of the Mind* (1996) he proposes a theory of 'cognitive fluidity'<sup>9</sup> in which previously separate parts of the brain developed connections when subject to the environmental changes initiated at and by the dawn of culture (around the same time musical instruments and other evidence of culture begin to appear). Mithen gives the impression of rather pitying Pinker: 'Is music no more than auditory cheesecake, as Pinker would have us believe? Is it simply an evolutionary spin-off from language – a lucky break for humankind, providing song and dance as a relief from the tedium of survival and reproduction?'<sup>10</sup> Not at all; for Mithen the Neanderthals evolved 'a music-like communication system that was more complex and more sophisticated than that found in any of the previous species of Homo ... which via iconic gestures, dance, onomatopoeia, vocal imitation and sound synaesthesia, resulted in a further expansion of the brain and changes to its internal structure as additional neural circuits were formed'.<sup>11</sup> Whether or not music is auditory cheesecake one thing is certain: the cheesecake wars continue to rage to this very day without an obvious winner; as Nicholas Bannan suggests, they have been raging ever since Rousseau.<sup>12</sup> *Evolution and Victorian Musical Culture* extends the debate by exploring how and why evolutionary ideas about music shaped Victorian thought and behaviour. It seeks to debunk the common misapprehension that the sciences influence the arts more than the arts influence the sciences, and it aims more broadly to prove that music helped evolution evolve.

## Structure and Rationale

*Evolution and Victorian Musical Culture* is organized around a structure which reflects, I believe, the dominant evolutionary science of Victorian

<sup>8</sup> Carroll, 'Steven Pinker's Cheesecake For The Mind'.

<sup>9</sup> Steven Mithen, *The Prehistory of the Mind: A Search for the Origins of Art, Religion and Science*, London: Phoenix, 1996/2003, 76, and *passim* 154–246.

<sup>10</sup> Steven Mithen, *The Singing Neanderthals: The Origins of Music, Language, Mind and Body*, London: Phoenix, 2005, 11.

<sup>11</sup> Mithen, *Singing Neanderthals*, 234.

<sup>12</sup> Nicholas Bannan (ed.), *Music, Language and Human Evolution*, Oxford: Oxford University Press, 2012, 4.

musical culture – the Great Chain of Being, a concept ordering nature in a fixed, ascending sequence from the lowest to highest forms of life. Thus each chapter explores a different discipline linked to music in the ascending order of the Great Chain of Being: Chapter 1 (Zoomusicology) focuses on music and animals; Chapter 2 (Ethnomusicology), the music of non-Western savagery; Chapter 3 (Folk Musicology), folk song and the domestic peasant; Chapter 4 (Music Pedagogy), educational music for children; Chapter 5 (Music Biography), biographies of great musical individuals; Chapter 6 (Music History), musical histories of great men; and Chapter 7 (Music Theology), music and concepts of God. An epilogue rounds it off with thoughts on the place of music beyond God. Each chapter includes a brief outline; an introduction to the chapter's key discipline and its interaction with musical culture; and an extended set of case studies. Chapters are intended to be discrete though there is, inevitably, some continuity between them – mostly between Chapters 2 (Ethnomusicology) and 3 (Folk Musicology), and 5 (Music Biography) and 6 (Music History).

As a structure for organizing material the Great Chain of Being has many theoretical benefits but, admittedly, there are a few practical disadvantages as well. Some readers may find fault with my choice of disciplines or genres, for example, omitting as I do fiction and poetry, or psychology, philosophy and art history. As a guiding principle I exclude these (but reference them abundantly) because as disciplines they tend not to focus on any one particular type of being in the Great Chain itself. Some disciplines have, moreover, been studied much more comprehensively than others – fiction and poetry, for example.<sup>13</sup> The disciplinary and genre-related status of biography is also problematical. Birgitte Possing describes biography as '*the interdisciplinary analytic field* known as biographical studies': the field, she argues, 'distinguishes between the *genre*, this being the empirical narratives of individual lives as they can be read from antiquity to the present day, and the *academic discipline*, which this genre comprises'.<sup>14</sup> There is also some variability in the way Victorian

<sup>13</sup> See Phyllis Weliver, *Woman Musicians in Victorian Fiction: Representations of Music, Science and Gender in the Leisured Home*, Aldershot: Ashgate, 2000; Delia da Sousa Correa, *George Eliot, Music and Victorian Culture*, Houndmills and New York: Palgrave Macmillan, 2003; Sophie Fuller and Nicky Losseff (eds.), *The Idea of Music in Victorian Fiction*, Aldershot: Ashgate, 2004; Phyllis Weliver (ed.), *The Figure of Music in Nineteenth-Century British Poetry*, Aldershot: Ashgate, 2005; and Claire Mabilat (ed.), *Orientalism and Representations of Music in Nineteenth-Century British Popular Arts*, Aldershot: Ashgate, 2008.

<sup>14</sup> Birgitte Possing, 'Biography: Historical', [www.possing.dk/pdf/historicalbio.pdf](http://www.possing.dk/pdf/historicalbio.pdf), accessed 17/2/16.

culture ordered the Great Chain. Non-Western savages, domestic peasants and children are often grouped together in Victorian thinking, and many believed that man (not God) stood at the apex of the ordered world. I respond to this predicament by problematizing the role of theology within zoology (Chapter 1) and the role of evolutionary thought within theology (Chapter 7). This is intended to give the impression of an inherent circularity in the Great Chain of Being which I believe corresponds to what Arthur O. Lovejoy calls a ‘Great Chain of Becoming’ (examined in the Epilogue). Daniel Wilson rightly notes that Lovejoy was desperate to preserve God’s presence within the created order;<sup>15</sup> indeed, in his seminal book *The Great Chain of Being* (1936) Lovejoy declaims: ‘Not only had the originally complete and immutable Chain of Being been converted into a Becoming, in which all genuine possibles are, indeed, destined to realization grade after grade, yet only through a vast slow unfolding in time; but now God himself is placed in, or identified with, this Becoming’.<sup>16</sup>

Lovejoy’s reading of the Great Chain of Being provides *Evolution and Victorian Musical Culture* with three underlying concepts: plenitude, continuity and gradation. Plenitude suggests that for every being in the world ‘there must be an ultimate reason, self-explanatory and “sufficient”’; continuity demands that ‘there are no sudden “leaps” in nature; infinitely various as things are, they form an absolutely smooth sequence, in which no break appears’; and gradation, the Aristotelian idea of arranging ‘all animals in a single graded *scala naturae* according to their degree of “perfection”’.<sup>17</sup> I do not observably apply Lovejoy’s three evolutionary principles to my study of Victorian musical culture but let them freely permeate the fabric of the book as a whole. Chapter 1 (Zoomusicology), for instance, uses the plenitude of birdsong to explain what it was like to think (and hear) like a Victorian – to rationalize, insofar as possible, the meaning of birdsong for Victorian musical culture. At the same time it reveals how concepts of continuity between humans and animals (what today is called human–animal relations) undergirded that meaning, and how the structurally liminal position of birds within the Great Chain of Being predetermined the contingency of a relationship between men and birds. The same principles operate at the opposite end of the Chain (and book). Chapter 7

<sup>15</sup> Daniel J. Wilson, ‘Lovejoy’s *The Great Chain of Being* after Fifty Years’, *Journal of the History of Ideas* 48/2 (April to June 1987), 196.

<sup>16</sup> Arthur O. Lovejoy, *The Great Chain of Being: A Study of The History of An Idea*, New York; Harper Torchbooks, 1936/1960, 325–26.

<sup>17</sup> Lovejoy, *Great Chain of Being*, 327; 327; 58.

(Music Theology) uses the plenitude of Christology to explain music's relationship to man and man's relationship to Christ and God's creation. It explores the creative continuity between God and His creation within nature, and the seamless contractually unbroken relationship between human beings and their creator.

Despite the intellectual virtuosity of his *Great Chain of Being* Lovejoy actually spends very little time on the topic of music, but as I show in the following pages their interrelationship is acute in Victorian culture. One factor brings this into high relief, and it is that factor which principally motivated the writing of this book: *The Land Without Music*. *The Land Without Music* is a long-standing chauvinism against English musical culture, and much of the Victorian period was spent refuting the accusation and dispelling the myth. What few people realize is that evolutionary thought played an essential role in Britain's musical defence. As I show in Chapter 5 (Music Biography) and 6 (Music History) it was evolutionary language which provided the ammunition in the war against this particular prejudice, especially in the writings of C. Hubert H. Parry and Henry Davey. Music fought that battle armed with the latest science because it was science, not music, which was the universal language of the time. Like Bengali nationalist musicologist Sourindro Mohun Tagore (discussed in Chapter 2, Ethnomusicology) critics of *The Land Without Music* spoke a language their European musical colonizers could understand – evolution – and they used that language to assert their individual difference, or what Homi Bhabha calls 'a difference that is almost the same, but not quite'.<sup>18</sup> It could go both ways, however – evolutionary ideas could work against Victorian musical culture. Nicholas Temperley, for instance, charts the rise and fall of *The Land Without Music* in his provocative article 'Xenophilia in British Musical History' (1999), using music histories to measure and reveal four noticeable trends: (1) a period declines into a dark age from the 1700s to 1800s, (2) a mixed period of transition from the 1800s to 1830s, (3) a period of increasingly upward trajectory from the 1830s to 1870s, and (4) an entirely positive trajectory (known as the English Musical Renaissance) from the 1870s. As shown in Chapters 5 and 6 many people have tried to explain historical reasons for *The Land Without Music*, myself included, but Temperley's reason is amongst the most compelling: 'Social emulation of the upper classes', he suggests, 'was the spur that energized the middle classes to the great achievements of the

<sup>18</sup> Homi K. Bhabha, *The Location of Culture*, London: Routledge, 1994, 86.

Victorian age . . . In music, emulation of the upper classes was disastrous, because they had long since downplayed its value and adopted foreignness as their shibboleth. This is the point of my argument'.<sup>19</sup> Interesting in itself Temperley's argument tells only half the story because behind the musical effect is a sociological cause underpinned by a Great Chain of Being translated into an order of social class. The middle class, in other words, aped the tastes of the upper class – or mimicked its superior colonizer – as an evolutionary mechanism of survival to climb higher on the evolutionary chain. Temperley was right: it was *disastrous* for British musical culture, but conversely it was *good* for the idea of the Great Chain of Being.

Three historical factors lie behind Victorian xenophilia and its brush with the Great Chain of Being: (1) the development of professional disciplinary organization, (2) changes in higher education and university curriculums, and (3) popularization, and these run like a current through *Evolution and Victorian Musical Culture*. The first of these concerns the more positive role science played in helping form the discipline and professional organization of music. The importance of science is evident from the very founding of Britain's first professional musicological society, the Musical Association. William Spottiswoode, one of its first Vice Presidents, records the moment of conception:

It has been suggested by several leading persons interested both in the theory and practice of Music, that the formation of a Society, similar in the main features of its organisation to existing Learned Societies, would be a great public benefit. Such a Musical Society might comprise among its members the foremost Musicians, theoretical as well as practical, of the day; the principal Patrons of Art; and also those Scientific men whose researches have been directed to the science of Acoustics, and to kindred inquiries. Its periodical meetings might be devoted partly to the reading of Papers upon the history, the principles, and the criticism of Music; partly to the illustration of such Papers by actual performance; and partly to the exhibition and discussion of experimental relating to the theory and construction of musical instruments, or to the principles and combination of musical sounds.<sup>20</sup>

The Musical Association practiced what they preached, and the first issue of the *Journal of the Musical Association* was crammed with scientific articles focusing on experimental work in acoustics, scales, tunings, pitch

<sup>19</sup> Nicholas Temperley, 'Xenophilia in British Musical History', in Bennett Zon (ed.), *Nineteenth-Century British Music Studies*, vol. 1, Aldershot: Ashgate, 1999, 14.

<sup>20</sup> William Spottiswoode, 'Letter, Addressed by William Spottiswoode, Esq., M.A., F.R.S., to Some Leading Members of the Musical and Scientific World, Originated this Association (8 April 1874)', *Proceedings of the Musical Association* 1 (1874–75), iii.

and other areas of music including William Stone's 'On Extending the Compass and Increasing the Tone of Stringed Instruments, with Especial Reference to the Author's and Mr. Meeson's Elliptical Tension-Bars'; Robert Bosanquet's 'Temperament; Or, The Division of the Octave' and 'Temperament; Or, The Division of the Octave (Part II)'; Sedley Taylor's 'On a Suggested Simplification of the Established Pitch-Notation'; James Baillie-Hamilton's 'On the Application of Wind to String Instruments'; and Alexander John Ellis's 'Illustrations of Just and Tempered Intonation'.<sup>21</sup> Subsequent issues continue this trend but then dip in the 1880s as increasingly historical interests squeezed science out of its pole position. Experimental musical science (which is not the subject of *Evolution and Victorian Musical Culture*) was dominated by the massively influential scientist Hermann von Helmholtz, an enthusiastic Darwinian whose work in practice appears to have influenced Darwin more than Darwin influenced him, especially in the field of optics.<sup>22</sup> Beyond the pages of the Musical Association the experimental literature of Victorian musical science tend, broadly speaking, to reflect Helmholtz's approach, underwriting simpler popular primers like Sedley Taylor's *Sound and Music: A Non-Mathematical Treatise on the Physical Constitution of Musical Sounds and Harmony* (1873), Pietro Blaserna's *The Theory of Sound in its Relation to Music* (1876), Stone's *The Scientific Basis of Music* (1878), John Cook's *Sound and the Physical Basis of Music* (1877) and more comprehensive studies like William Pole's *Philosophy of Music* (1879) to name but a few publications.

A second related cog in the evolutionary machine of Victorian musical culture is higher education and its role in diffusing scientific knowledge about music. Rosemary Golding gives us a good overview of problems associated with higher education. Before the Victorian period musical science was conducted by amateurs largely outside universities but in venues like the

<sup>21</sup> See *Proceedings of the Musical Association* 1 (1874–75): W. H. Stone, 'On Extending the Compass and Increasing the Tone of Stringed Instruments, with Especial Reference to the Author's and Mr. Meeson's Elliptical Tension-Bars', 1–3; R. H. M. Bosanquet, 'Temperament; Or, The Division of the Octave', 4–17, and 'Temperament; Or, The Division of the Octave (Part II)', 112–158; Sedley Taylor, 'On a Suggested Simplification of the Established Pitch-Notation', 18–40; J. Baillie-Hamilton, 'On the Application of Wind to String Instruments', 42–46; and Alexander John Ellis, 'Illustrations of Just and Tempered Intonation', 159–65.

<sup>22</sup> Gary Hatfield, *The Natural and the Normative: Theories of Spatial Perception from Kant to Helmholtz*, Cambridge, MA, and London: MIT Press, 1990, 192.



Royal Institution.<sup>23</sup> Early models propose incorporating musical science into curriculums through acoustics, reflecting the university curriculum of the Middle Ages when music comprised the mathematical component of the quadrivium. But as Golding separately recounts even the term ‘musical science’ was not consensually understood. For some it meant the experimental science of acoustics; for others the study of musical composition or the wider art of music studied systematically.<sup>24</sup> One of the earliest music courses to appear in Victorian Britain was created at the University of Edinburgh in 1838, and overseen by Edinburgh Chair of Music John Donaldson. True to his contractual duty Donaldson incorporated acoustics, justifying its inclusion as something which, like the liberal arts, would help broaden the intellect.<sup>25</sup> Cambridge, Oxford and London did similarly. Cambridge taught acoustics from the 1830s, as revealed in the dedication to Airy’s *On Sound and Atmospheric Vibrations, with the Mathematical Elements of Music* (1868), and by the 1870s it was a fully integral component in curriculum reforms which sought to legitimate musical qualification against more established disciplines – ‘to “rebrand” music as a science or liberal art, rather than an art influenced by aesthetic or artistic criteria’.<sup>26</sup> Acoustics was slow to find a home at Oxford but in the 1870s Music Professor Sir Frederick Gore Ouseley agitated for the creation of an acoustics laboratory complementing, but separate from, a music school.<sup>27</sup> Trinity College London followed suit and around the same time registered agreement on the study of acoustics as an essential prerequisite to ‘proficiency in the Science of Music properly so called’.<sup>28</sup> Because, however, both higher education and music’s professional association considered musical science to be synonymous with methodologically empirical experimental acoustics, evolutionary theories had free reign on the Victorian intellectual imagination. At the same time professional and academic prioritization of experimental science institutionalized a methodological gulf between the theory and practice of evolutionary musical sciences – a gulf which despite all of our advances exists to this very day, if the recent cheesecake wars are anything

<sup>23</sup> Rosemary Golding, *Music and Academia in Victorian Britain*, Farnham: Ashgate, 2013, 4. See also Jamie Kassler, ‘The Royal Institution Music Lectures, 1800–1831: A Preliminary Study’, *Royal Musical Association Research Chronicle Volume 29* (1983–85), 1–30.

<sup>24</sup> Golding, *Music and Academia in Victorian Britain*, 4–5, and Bennett Zon, *Music and Metaphor in Nineteenth-Century British Musicology*, Aldershot: Ashgate, 1999, 115–20.

<sup>25</sup> Golding, *Music and Academia in Victorian Britain*, 37.

<sup>26</sup> Golding, *Music and Academia in Victorian Britain*, 106.

<sup>27</sup> Golding, *Music and Academia in Victorian Britain*, 68.

<sup>28</sup> Senate Minutes, Volume IX [University of London shelfmark UA/ST 2/2/9], 56 (21 June 1867), cited in Golding, *Music and Academia in Victorian Britain*, 68.



to go by. Like Darwin and Spencer, Pinker and Mithen battle it out without any real – or at the very least highly speculative – evidence. As the evidence of Victorian publications and university curricula suggests, acoustics tended to be introduced to Victorian students when they were developed enough to comprehend complex mathematical formulations, circularly justifying the teleological propulsion of the Great Chain of Being. As discussed in Chapter 3 (Education), early stages of education were devoted almost entirely to simple historical and technical issues while later ones evolved into more complex intellectual propositions. Henry Keatley Moore and Mrs Curwen embody this common Victorian approach to educational development.

The third factor influencing the role of evolution in Victorian musical culture, both in the United Kingdom and (as shown in Chapter 3) abroad, is also linked to education and professionalization: popularization. Bernard Lightman introduces us to the popularization of Victorian science with a positively tree-like image of Darwinian cultural branching:

Just two years after the [Great] Exhibition [of 1851] opened, the naturalist and popularizer Henry Gosse predicted in his *Naturalist's Rambles on the Devonshire Coast* (1853) that the marine aquarium would soon be found in many Victorian parlours. Almost overnight the aquarium became a national craze . . . At the same time, fern collecting became a widespread fad . . . followed by an intense curiosity in dinosaurs . . . in the early 1860s the British public became interested in gorillas, in part due to curiosity about the relationship between humans and apes in light of Darwin's theory of evolution and because of the activities of the explorer Paul du Chaillu . . . Patronized by [the anatomist Richard] Owen, du Chaillu's gorillas became entangled in the celebrated debate between Owen and Huxley on the anatomy of human and ape brains. The public's curiosity about apes was lampooned in *Punch* and immortalized in [the writer Charles] Kingsley's *Water Babies* (1862).<sup>29</sup>

To this description add music; like all the arts musical culture played a vital part in this process of popularization. As Lightman explains, a new generation of middle-class consumers had more money to spend on leisure activities, and science was one of those activities. Science 'became fashionable and respectable within a broader spectrum of the populace, not just within the circles of the well to do . . . Scientific knowledge seemed to offer the magical password – the "open sesame" – that unlocked the doors to exhilarating new works in the second half of the century'.<sup>30</sup> In addition to visual and sonic art forms the popularization of science within Victorian musical culture was intimately

<sup>29</sup> Bernard Lightman, *Victorian Popularizers of Science: Designing Nature for New Audiences*, Chicago and London: University of Chicago Press, 2007, 2.

<sup>30</sup> Lightman, *Victorian Popularizers of Science*, 2–3.

bound up with popular literary culture in ways that vernacularize complex scientific ideas<sup>31</sup> through general periodicals, books and all their literary forms, like the extended essay, reportage, poetry, fiction and non-fiction. Ultimately those ideas coalesce in a term coined by Thomas Huxley in *Essays upon Some Controverted Questions* (1892): the ‘principle of the scientific Naturalism of the latter half of the nineteenth century’.<sup>32</sup> According to Frank Turner scientific naturalism was ‘a historiographic category denoting the secular creeds of the generation of intellectuals’ who in the wake of Darwin’s *Origin of Species* (1859) ‘wrested cultural authority from the old Anglican establishment and installed themselves as a new professional scientific elite’,<sup>33</sup> but the literature of popularization reveals many consumers roaming unrepentantly across religious and scientific boundaries.<sup>34</sup> Dawson, Noakes and Topham regard books as secondary to general periodicals in influence. Books are ‘date-stamped’, to use Margaret Beetham’s words,<sup>35</sup> but accordingly it is precisely the ephemeral nature of periodicals which gives them permanent value to historians today. There is, however, the thorny problem of ‘literary replication’<sup>36</sup> in the diffusion of ideas through periodicals, with book material often excerpted, extracted, reviewed, advertised and communicated through correspondence and passing comment.<sup>37</sup> While the role of music journalism within Victorian musical culture has received some – though not terribly extensive – treatment<sup>38</sup> the role of the general periodical in disseminating scientific knowledge within Victorian

<sup>31</sup> Katherine Pandora, ‘Knowledge Held in Common: Tales of Luther Burbank and Science in the American Vernacular’, *Isis* 92/3 (Sept. 2001), 491–92.

<sup>32</sup> Thomas Henry Huxley, *Prologue, Essays Upon Some Controverted Questions*, London: Macmillan, 1892, 35.

<sup>33</sup> Gowan Dawson and Bernard Lightman, ‘Introduction’, in Gowan Dawson and Bernard Lightman (eds.), *Victorian Scientific Naturalism: Community, Identity, Continuity*, Chicago and London: University of Chicago Press, 2014, 1; 1.

<sup>34</sup> See David Ray Griffin, *Religion and Scientific Naturalism: Overcoming the Conflicts*, Albany, NY: State University of New York Press, 2000.

<sup>35</sup> Margaret Beetham, ‘Towards a Theory of the Periodical as a Publishing Genre’, in Laurel Brake, Aled Jones and Lionel Madded (eds.), *Investigating Victorian Journalism*, Basingstoke: Macmillan, 1990, 21, 19–32.

<sup>36</sup> James A. Secord, *Victorian Sensation: The Extraordinary Publication, Reception and Secret Authorship of Vestiges of the Natural History of Creation*, Chicago and London: University of Chicago Press, 2000.

<sup>37</sup> Geoffrey Cantor, Gowan Dawson, Graeme Gooday, Richard Noakes, Sally Shuttleworth and Jonathan R. Ropham (eds.), *Science in the Nineteenth-Century Periodical: Reading the Magazine of Nature*, Cambridge: Cambridge University Press, 2004, 3.

<sup>38</sup> See Leanne Langley, ‘The English Music Journal in the Early Nineteenth Century’, PhD diss., University of North Carolina, Chapel Hill, 1983, and ‘The Musical Press in Nineteenth-Century England’, *Notes* 46/3, (1990) 583–92, and Nigel Scaife, ‘British Music Criticism in a New Era: Studies in Critical Thought, 1894–1945’, DPhil diss., University of Oxford, 1994.