

# Theoretical Hope: A Vision for the Application of Historically Informed Theory

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The widespread uncritical acceptance of outdated methodologies has been restricting the development of musicology and music theory over the past fifty years, in spite of the best endeavours of many musicologists and theorists to introduce radical change.<sup>1</sup> It was during this fifty-year period that the early music movement came of age, when musicians were under pressure to meet the demands of market forces, while longing to be fed historical details that could inform performance. There have also been many pressures on musicological research and output, for good or ill. The daily realities of credibility metrics,<sup>2</sup> financial cutbacks, institutional closure and tenure have encouraged a move away from time-consuming documentary and historiographical scholarship. And traditional forms of research and dissemination are being challenged by the information explosion of new media.

The purpose of this essay is four-fold: (1) to stimulate discussion of how twenty-first century technology and source availability can be effectively harnessed to enrich Bach studies; (2) to spread an awareness of the shortcomings of many methods currently used in Bach studies; (3) to make a case for the adoption of the principles of historically informed theory (HIT) to rebuild the theoretical foundations of our discipline; and (4) to envision a worldwide inter-disciplinary pool of time- and location-specific knowledge that could be easily and freely accessed.

<sup>1</sup> Radical changes resulting from a discipline-wide critical self-examination have included new fields of study, new musicology itself, and reactions to new musicology. For example, Joseph Kerman, 'How We Got into Analysis, and How to Get out', *Critical Inquiry* 7/2 (1980), 311-31; Nicholas Cook and Mark Everist (eds.), *Rethinking Music* (Oxford: Oxford University Press, 1999); Kofi Agawu, 'How We Got Out of Analysis, and How to Get Back In Again', *Music Analysis*, 23/2-3 (2004), 267-86; Richard Taruskin, *The Danger of Music and Other Anti-Utopian Essays* (Berkeley: University of California Press, 2008).

<sup>2</sup> Richard Price, 'After Aaron, Reputation Metrics Startups aim to Disrupt the Scientific Journal Industry', *Techcrunch*, Sunday 3 February 2013. <http://techcrunch.com/2013/02/03/the-future-of-the-scientific-journal-industry/>

## Ageing methods

Among all that is excellent and foundational in musicology, there is much that could benefit from renewal and updating. Since the late nineteenth century a common musicological language has evolved, which includes various melodic and chordal descriptions, formal labels and analytical paradigms. This language is integrated into commonly used methods, which are accepted in the canon of musical studies because they are familiar and time-saving, rather than because of their historical or documentary pedigree. Translation and transmission of these methodologies have added layers of distortion to their original formulation. And this familiarity and ease have tended to generate an unconsidered attitude towards their use, as pressures to publish have increased.

One such is the method of musical figures known as 'Figurenlehre'.<sup>3</sup> Arnold Schering formulated this in 1908,<sup>4</sup> before the days of co-educational universities in Germany,<sup>5</sup> before the cultural devastation of the 1940s, and well before the non-elitist democratisation of the internet. Schering had access to some great research libraries whenever his paid employment and library opening hours permitted. His 'Figurenlehre' was an appropriate, source-based method for its time, given the aims and scholarly ideals of the early twentieth century; but today it is inadequate.

Although numerous articles pointing out the shortcomings of 'Figurenlehre' have been published,<sup>6</sup> it continues to be as popular among performers as if it were a universal method. This may indicate the limited impact of scholarly journals and traditional publications upon the busy performer. It may also reflect the fact that outdated information is being deposited on open access internet sites. Twenty-first century technology presents new possibilities for the effective dissemination of research results. The increasing online availability of rare seventeenth- and eighteenth-century treatises<sup>7</sup> presents modern scholars with opportunities to run broad surveys of primary materials that a scholar in Schering's time, restricted by conventional library hours and the limitations of travel, could have never have dreamt of. It is incumbent upon us to handle this unimagined wealth of possibilities to the greatest advantage of our discipline. An

<sup>3</sup> Peter Williams, 'Figurenlehre from Monteverdi to Wagner. 1: What is "Figurenlehre"?', *The Musical Times*, 120/1636 (1979), 476–9.

<sup>4</sup> Arnold Schering, 'Die Lehre von den musikalischen Figuren im 17. und 18. Jahrhundert', *Kirchenmusikalisches Jahrbuch*, 21 (1908), 106–14.

<sup>5</sup> Patricia M. Mazón, *Gender and the Modern Research University: The Admission of Women to German Higher Education 1865–1914* (Stanford: California University Press, 2003), p. 10.

<sup>6</sup> John Walter Hill, 'A Small Selection from among the Many Things that I Still Do Not Know about Baroque Music', *Journal of Music History Pedagogy*, 1/2 (2011), 132 note 50, citing Cameron, Forchert, McCreless, Vickers and Williams in Jonathan Gibson, "'A Kind of Eloquence Even in Music": Embracing Different Rhetorics in Late Seventeenth-Century France', *The Journal of Musicology*, 25/4 (2008), 394–433, together with five articles by Carl Dahlhaus, including 'Bach und der Zerfall der musikalischen Figurenlehre', *Musica*, 42/2 (1988), 137–40 and 'Zur Geschichtlichkeit der musikalischen Figurenlehre', *Festschrift Martin Ruhnke zum 65. Geburtstag* (Neuhausen: Hänssler, 1986), pp. 83–93.

<sup>7</sup> There are many sites that offer free .pdf downloads of seventeenth and eighteenth century books, including MDZ (Münchener Digitalisierung Zentrum), Archive.org and Google books.

encyclopaedic documentation of time- and location-specific musical practices would now be possible.<sup>8</sup> Open databases, such as RISM,<sup>9</sup> have shown how international co-operation can serve the community. Were it possible to tagline and deposit such cultural practices in an open access pool, scholars and practitioners from all disciplines would be able to retrieve relevant time- and location-specific knowledge from primary sources they could never read. This would facilitate the application of primary sources to every aspect of a subject, including methodologies and performance.

Generalisation of knowledge has contributed to the distortion of many musicological methods, as a result of limited space and the lack of reference footnotes in widely-published reference works and in popular transmission. The misleading generalisation is then taken on trust by the busy musician, who transmits it through teaching and sometimes in publications. For example, in his entries on rhetorical figures and their affects in *New Grove*,<sup>10</sup> George J. Buelow is forced to simplify what he says, with the result that his words of caution about the direct application of 'Affektenlehre' and 'Figurenlehre' are lost among positive statements.<sup>11</sup> In the short satellite article 'Affections', he wrote:

No single 'doctrine' of the affections was, however, established by the theorists of the Baroque period. But beginning with Mersenne and Kircher in the mid-17th century, many theorists, among them Werckmeister, Printz, Mattheson, Marpurg, Scheibe and Quantz, gave over large parts of their treatises to categorizing and describing types of affections as well as the affective connotations of scales, dance movements, rhythms, instruments, forms and styles.<sup>12</sup>

Whereas when he had more space he could be more specific about Mattheson's use of the term:

It is clear from the content of this chapter<sup>13</sup> that Mattheson means by *Affecten-Lehre* a concept parallel to *Natur-Lehre* (physics) ... Therefore, by *Affecten-Lehre* Mattheson means in all three instances the Cartesian theory basing human

<sup>8</sup> Examples of traditional documentation of musical figures, include Dietrich Bartel, *Musica Poetica: Musical-Rhetorical Figures in German Baroque Music* (Lincoln: University of Nebraska Press, 1997).

<sup>9</sup> Répertoire Internationale des Sources Musicales, <http://www.rism.info/>

<sup>10</sup> *The New Grove Dictionary of Music and Musicians*, ed. Stanley Sadie (London: Macmillan Publishers, 1980), s.v. 'Figures, doctrine of musical (Ger. *Figurenlehre*), 'Affections, doctrine of the Ger. *Affektenlehre*) and 'Rhetoric and Music'.

<sup>11</sup> *New Grove*, s.v. 'Rhetoric and Music, §2 Musical-rhetorical concepts', vol. XV, p. 794, col. 1: 'While neither Mattheson nor any other Baroque theorist would have applied these rhetorical prescriptions rigidly to every musical composition, it is clear that such concepts not only aided composers to a varying degree, but were self-evident to them as routine techniques in the compositional process.' Column 2: 'There is clearly no one systematic doctrine of musical figures for Baroque and later music, notwithstanding frequent references to such a system by Schweitzer, Kretzschmar, Schering, Bukofzer and others.'

<sup>12</sup> George J. Buelow, *New Grove*, s.v. 'Affections, doctrine of the (Ger. *Affektenlehre*)'.

<sup>13</sup> Johann Mattheson, *Der Vollkommene Capellmeister* (Hamburg: Christian Herold, 1739), Part I, Chapter 3, §86, p. 19.

emotions on physical laws for the physical body. Although *Der Vollkommene Capellmeister* includes much more discussion concerning musical styles, forms, instruments, and so on, never again does the author use this term to suggest that he meant a musical application of the Doctrine of Affections, nor does the word *Affektenlehre* appear in subsequent treatises by him or in works of those writers upon whom he had a strong influence, such as Scheibe, Marpurg and C. P. E. Bach.<sup>14</sup>

Even when the entry has been written by the world expert, the complexity of the subject matter is lost in the compressed dictionary format. Granted this format has made the subject more easily accessible to the non-specialist, but at the cost of a watered-down view of 'Figurenlehre' and 'Affektenlehre'.

I would like to see twenty-first century technology harnessed to make uncompressed knowledge easily accessible and digestible to the non-specialist. It is ironic that outdated dictionary knowledge is still being transferred to the internet, even though we now have the possibility of capturing and transmitting the full complexity of a subject matter, unrestricted by the limitations of the printed dictionary format. For example, Andreas Werckmeister (1645–1706) has a reputation for his influential work on temperaments, as well as negatively for his association with questionable symbolism, due to an unguarded comment in the *New Grove Dictionary of Music and Musicians*.<sup>15</sup> But the tiny section on symbolism appears on one side of a short appendix 'Von der Allegorischen und Moralischen Music', in the context of a much longer dissertation on the natural properties of musical proportions *Musicae Mathematicae Hodegus Curiosus*.<sup>16</sup> It is a far more complex allusion than Buelow's compressed version suggests, and the compression has caused a negative distortion of Werckmeister's work.<sup>17</sup>

The new online availability of sources is enabling the reputation of many theorists to be reassessed. Werckmeister's foundational treatise, *The Noble Art of Music: Its Greatness, Use and Abuse explained from the holy Scriptures, from some pure Old and New Church Doctrines and from the basics of Music Itself*, has been widely ignored until recently.<sup>18</sup> The title promises an explanation of which part of music

<sup>14</sup> George J. Buelow, 'Mattheson and the invention of Affektenlehre' in George J. Buelow and Hans Joachim Marx (eds.), *New Mattheson Studies* (Cambridge: Cambridge University Press, 1983), p. 399 f.

<sup>15</sup> George J. Buelow, *New Grove*, s.v. 'Werckmeister, Andreas', vol. XX, p. 344: 'No other writer of the period regarded music so unequivocally as the end result of God's work, and his invaluable interpretations of the symbolic reality of God in number as expressed by musical notes supports the conclusions of scholars who have found number symbolism as theological abstractions in the music of Bach; for example, he not only saw the triad as a musical symbol and actual presence of the Trinity, but broke it down as 1-the Lord, 2-Christ and 3-the Holy Ghost'.

<sup>16</sup> Andreas Werckmeister, *Musicae Mathematicae Hodegus Curiosus* (Frankfurt and Leipzig: Theodorus Philippus Calvisius, 1687), the appendix (Anhang) is 14 sides, in the context of the entire volume of 160 sides, excluding index and errata.

<sup>17</sup> *Ibid.*, p. 146.

<sup>18</sup> Andreas Werckmeister, *Der Edlen Music-Kunst Würde, Gebrauch und Mißbrauch So wohl Aus der Heiligen Schrift Als auch Aus etlich alten und neu-bewährten reinen Kirchen-Lehrern und dann aus den Music-Gründen selbst eröffnet und vorgestellt von Andreas Werckmeister Stiffts Hoff-Organisten in Quedlinburg* (Frankfurt and Leipzig: Theodorus Philippus Calvisius, 1691).

was considered great in Saxony in 1691, of how one could abuse music, and the role played by the holy Scriptures and church doctrines in all this. The canon of the history of music theory will expand enormously when these hitherto little-known sources and their specific views of music have been assimilated.

A similar example can be drawn from the well-known publication by Johann Heinrich Buttstett (1666–1727), *Ut, Mi, Sol*.<sup>19</sup> It has earned a place in music theory because it sheds light on the concepts of modes and tones.<sup>20</sup> However, even a cursory reading of the full title shows that it addresses far more complex issues.

*Ut, mi, sol, re, fa, la, the totality of music and eternal Harmony, or Newly published, old, true, sole and eternal Foundation of music, opposed to the Neu Erröfnete Orchestre, divided into two parts. In which, in the first part the erroneous views of the Author of the Orchestre with respect to tones or modes are refuted. In the second part, however, the proper [true] foundation of music is shown; Guidonian solmization is not only defended, but also shown to be of special use in the introduction of a fugal answer, and lastly, it will also be maintained that someday everyone will make music in Heaven with the same [Sonis] sounds that are used here on earth.*<sup>21</sup>

There is undoubtedly an important part about the modes, but how much is known about Buttstett's view of the proper or right foundation of music? How does it differ from Werckmeister's view, published just 25 years earlier in a city 100 kilometres away? How many other composers in this area and at this time thought like Buttstett? And what did he mean that the sounds used here and now on earth will be used to make music in Heaven? Based in the capital of Thuringia for most of his life, and closely associated with the Bach family, Buttstett's views on these subjects are particularly important for the Bach scholar.

A worldwide inter-disciplinary pool of time- and location-specific knowledge would also help overcome the traditional compartmentalisation of knowledge within scholarly disciplines. In music, for example, Johann Mattheson (1681–1764) is famous for his publication *Der Vollkommene Capellmeister*, his *Ehrenpforte* biographies, his *Critica Musica* volumes with their multiple comments on just about every aspect of music. He is widely considered to have been an enlightened, modern thinker with a sharp pen, and it is well known that he worked from a base in northern Germany, while living internationally with a British wife. But less well known is that at the height of his fame, the sixty-six year old published a book on heavenly music: *The Declaration of Heavenly Music on*

<sup>19</sup> Johann Heinrich Buttstett, *Ut, Mi, Sol, Re, Fa, La, Tota Musica et Harmonia Æterna, Oder Neu-eröffnetes, altes, wahres, einziges und ewiges Fundamentum Musices, entgegen gesetzt Dem neu-eröffneten Orchestre* (Erfurt: Werther, [1716]).

<sup>20</sup> Joel Lester, *Between Modes and Keys: German Theory, 1592–1802* (Stuyvesant, NY: Pendragon Press, 1989).

<sup>21</sup> *Ibid.*, p. 119. Translation based on Lester, with revision of the translation of 'recht' from 'true' to 'correct', and of 'Sonis' from the misleading and incorrect '[solmization] syllables' to 'sounds'. In Johann Heinrich Zedler, *Großes vollständiges Universal Lexicon aller Wissenschaften und Künste* (Leipzig and Halle, 1732–1754), s.v. 'Schall', the word 'sonus' is the Latin equivalent of the German 'Schall', and Johann Gottfried Walther, *Musicalisches Lexicon oder Musicalische Bibliothec* (Leipzig: Wolfgang Deer, 1732), s.v. 'Sonus' gives the German synonym 'Klang'.

*the grounds of Reason, Church Doctrine and Holy Scriptures*.<sup>22</sup> The title has a familiar ring because it uses two of the three elements of proof that Werckmeister had used in the title of his own doctrinal statement of music half a century earlier.<sup>23</sup> Although Mattheson's *Declaration* has recently come to the attention of those working in the area of theology and music,<sup>24</sup> its impact upon Bach scholarship and the history of music theory will remain minimal until its principles have been distilled and made accessible to scholars and performers.

The three short examples above show that Werckmeister, Buttstett and Mattheson were concerned with far more than the well-rehearsed technicalities of modes, tones, figures and rhetoric. They described music as something that could be abused and thus morally right or wrong, and that might last for eternity. They were thinking deeply about music in terms and concepts that are foreign today, just as many later theorists were to think in different terms and concepts that are also foreign today.

Factual errors have also slipped unnoticed into the canon of musicological knowledge, weakening otherwise useful methods. These can come in the form of historical evidence used to support an analytical point, which instead can act as a smokescreen. An example introduced by Newman Powell in the 1970s is the error of Boethius' knowledge of the Fibonacci series.<sup>25</sup> It happened when Powell used the Fibonacci sequence in an analysis, as if the sequence had been known throughout the Middle Ages as an extension of Nichomachus' tenth proportion.<sup>26</sup> This error was perpetuated when leading medieval and Renaissance scholars used the technique for their own analyses.<sup>27</sup> To be fully useful to musicology, this method needs to be rewritten and applied in light of historical evidence from specific times and locations.

Translations can also introduce error, masking a meaning specific to a particular time and place. In my own work the translation of the word 'Verhältnis' as 'relationship' rather than as 'proportion' in Bach sources alerted me to missing descriptions of compositional proportions.<sup>28</sup> Dictionaries from

<sup>22</sup> Johann Mattheson, *Behauptung der Himmlischen Musik aus der Gründen der Vernunft, Kirchen-Lehre und heiligen Schrift* (Hamburg: Christian Herold, 1747).

<sup>23</sup> Werckmeister, *Der Edlen Music-Kunst*.

<sup>24</sup> Joyce L. Irwin, 'Bach in the Midst of Religious Transition' in Carol K. Baron (ed.), *Bach's Changing World: Voices in the Community* (Rochester, NY: University of Rochester Press, 2006), pp. 108–26.

<sup>25</sup> Newman W. Powell, 'Fibonacci and the Gold Mean: Rabbits, Rumbas, and Rondeaux', *Journal of Music Theory*, 23/2 (1979), 230.

<sup>26</sup> Ruth Tatlow, 'The Use and Abuse of Fibonacci Numbers and the Golden Section in Musicology Today', *Understanding Bach*, 1, 77–9, Online: <http://www.bachnetwork.co.uk/ub1/tatlow.pdf>

<sup>27</sup> Mark T. Rimple, 'The Enduring Legacy of Boethian Harmony' in Noel Harold Kaylor and Philip Edward Phillips (eds.), *A Companion to Boethius in the Middle Ages* (Leiden and Boston: Brill, 2012), p. 473: 'many scholars of medieval and Renaissance music heartily joined Lendvai's search for divine proportions', and note 127 where he lists nine articles including Margaret Bent, 'Deception, Exegesis, Sounding Number in Machaut's Motet 15', *Early Music History*, 10 (1991), 15–27.

<sup>28</sup> Ruth Tatlow, 'When the Theorists are Silent: Mattheson, Bach and the Development of Historically Informed Analytical Techniques' in Per F. Broman and Nora A. Engebretsen

Bach's time show that 'Verhältnis' was primarily a mathematical term,<sup>29</sup> which music theorists of the period, and even later periods,<sup>30</sup> used to mean 'proportion'. Unfortunately the word is often translated in musicological texts by the general word 'relation' or 'relationship', thus disguising the numerical implications.<sup>31</sup> For example, Harriss' translation of the phrase 'Verhältniß, Gleichförmigkeit und Uibereinstimmung' as 'relation, uniformity and agreement', misses the numerical and aesthetic implications of the original description.<sup>32</sup> Here is a revised translation of the passage:

Whoever wishes to make full use of the aforementioned method, regardless of his compositional skill, should outline his complete project on a sheet of paper, sketch it roughly, and then set it into order before he proceeds to the elaboration. In my opinion this is the absolute best way to organise a work so that each part demonstrates a true proportion, uniformity and unison ('Verhältniß, Gleichförmigkeit und Uibereinstimmung'): for nothing in the world is more pleasing to the ear than this.<sup>33</sup>

(eds.), *What Kind of Theory is Music Theory? Epistemological Exercises in Music Theory and Analysis*. Stockholm Studies in Musicology, I (Stockholm: Stockholm University, 2007), p. 210 and note 9.

- <sup>29</sup> Johann Heinrich Zedler, *Großes vollständiges Universal Lexicon aller Wissenschaften und Künste* (Leipzig and Halle, 1732–1754; Online: <http://www.zedler-lexikon.de/index.html>), vol. XLIX, many sides; the entry 'Verhältnis, Gleichmaß, Ebenmaß' on p. 790 refers the reader to vol. XXIX, p. 889 s.v. 'Proportio'. Both Fritsch and Walther define 'Proportio' and 'Proportion', confirming the numerical meaning, although neither include an entry for the German synonyms 'Verhalt' or 'Verhältnis'. See *Teutsch-Englisches Lexicon, Worinnen nicht allein die Wörter samt den Nenn-Bey- und Sprich-Wörten, Sondern auch so wol die eigentliche als verblümete Redens-arten verzeichnet sind* (Leipzig: Thomas Fritschen, 1716); Online: <http://www.archive.org/stream/teutschenglische00leipuoft>.
- <sup>30</sup> For example, Daniel Gottlob Türk, *Anleitung zu Temperaturberechnungen* (Halle and Leipzig: Schwickert, 1806), §5, p. 3: 'Sind die beyden Glieder einer Ration gleich groß, wie bey 1:1 oder bey 2:2 etc, so haben sie das so genannte Verhältniß der Gleichheit zu einander'; and §7, p. 4: 'Die beyden Glieder eines Verhältnisses können auf zweyerley Art, nämlich entweder arithmetisch oder geometrisch, mit einander verglichen werden'.
- <sup>31</sup> For example, Edward Lippman, *Musical Aesthetics: a Historical Reader* (New York: Pendragon Press, 1986), vol. I, p. 136, Mattheson's *Verhalt* as 'Relation in BWV 248/52'. And again in Nancy Kovaleff Baker and Thomas Christensen, *Aesthetics and the Art of Musical Composition in the German Enlightenment* (Cambridge: Cambridge University Press, 1995), pp. 37–41, citing Sulzer, *Allgemeine Theorie der schönen Künste*. Their use of the English word 'relation' however is not always as a translation of 'Verhältniß'.
- <sup>32</sup> Ernst C. Harriss, *Johann Mattheson's Der Vollkommene Capellmeister [1739]: a revised translation with critical commentary* (Ann Arbor, MI: UMI Research Press, 1981), p. 478. Harriss frequently chooses the translation 'relation' over 'proportion' for 'Verhalt' and 'Verhältniß'.
- <sup>33</sup> Mattheson, *Der Vollkommene Capellmeister*, Part II, Chapter 14, §30, p. 240: 'Wer sich also, seiner Fertigkeit im Setzen ungeachtet, der oberwehnten Methode, auf gewisse ungezwungene Art bedienen will, der entwerffe etwa auf einem Bogen sein völliges Vorhaben, reisse es auf das gröbste ab, und richte es ordentlich ein, ehe und bevor er zur Ausarbeitung schreitet. Meines wenigen Erachtens ist dieses die allerbeste Weise, dadurch ein Werck sein rechtes Geschicke bekömmet, und ieder Theil so abgemessen werden kan, daß er mit dem andern eine gewisse Verhältniß, Gleichförmigkeit und Uibereinstimmung darlege: maassen dem Gehör nichts auf der Welt lieber ist, denn das.'

The words 'Gleichförmigkeit' and 'Übereinstimmung' meant 'uniformity' and 'unison',<sup>34</sup> the numerical equivalent of a 1:1 proportion.<sup>35</sup> Another proportional word weakened by translation is 'Glieder', meaning one of the two parts of a ratio or proportion.<sup>36</sup> In Mattheson's phrase 'Den Verhalt aller Theile, Glieder und Gliedmassen wohl beobachten',<sup>37</sup> was translated by Harriss as 'Observe well the relationship of all parts, members and limbs',<sup>38</sup> rather than as 'Observe well the proportion of all parts and sections of the proportion'. Türk's writings show that these specific musical and numerical meanings of 'Verhalt' and 'Glieder' continued for at least a further seventy years.<sup>39</sup>

Many translations of standard Bach reference works also miss numerical and proportional implications. For example, *The New Bach Reader's* translation of Forkel's description of the young Bach refining his compositional technique misses the original numerical meaning of 'Verhalt'. Here is a revised translation:

He [Bach] soon began to feel that eternal rushing and leaping led to nothing; that there must be order, connection and proportion ('Ordnung, Zusammenhang und Verhältniß') in the thoughts, and that, to attain such objects some kind of guide was necessary. Vivaldi's Concertos for the violin ... served him for such a guide. He so often heard them praised as admirable compositions that he conceived the happy idea of arranging them all for his clavier. He studied the chain of ideas, their proportion [NBR 'relation'] to each other (das Verhältniß derselben unter einander), the variations of the modulations, and many other particulars.<sup>40</sup>

Forkel claimed that much of his source material came directly from Bach's two elder sons' reports, and therefore his reports, however anecdotal, must be taken seriously. This particular account strongly suggests that the numerical proportions of a composition were an integral part of Bach's learning process,<sup>41</sup> and that Bach studied these as he made the concerto transcriptions.<sup>42</sup>

<sup>34</sup> Fritsch, *Teutsch-Englisches Lexicon*, s.v. 'Gleichförmigkeit (die) ... a conformity, a uniformity'; 'Die übereinstimmung zweyer music-noten, the unison of two notes in musick'.

<sup>35</sup> Zedler, *Universal Lexicon*, s.v. 'Eurythmie'.

<sup>36</sup> Zedler, *Universal Lexicon*, s.v. 'Glieder': 'Lateinisch Terminus, heisset in der Mathematic dasjenige, so einen Theil von einer Grösse ausmachet, die man als ein gantzes ansiehet, aber unter gewissen Theilen, die auf verschiedene Art mit einander combiniret sind, dem Verstande vorstellig gemacht wird, und davon ein solcher Theil eben ein Glied genennet wird.'

<sup>37</sup> Mattheson, *Der Vollkommene Capellmeister*, Part II, Chapter 5, §52, 5, p. 141.

<sup>38</sup> Harriss, *Johann Mattheson's Der Vollkommene Capellmeister*, p. 313.

<sup>39</sup> See note 30 above.

<sup>40</sup> NBR, pp. 441–2, with edited translation of 'Verhältniß'. Original German in *BDok VII*, p. 36.

<sup>41</sup> The meaning of the word 'Verhältniß' changed little in Leipzig between Forkel's use in 1802 and Zedler's definition s.v. 'Proportio' in vol. XXIX in 1741, as can be seen by comparing Zedler's definition with that by the head librarian of the Royal Library in Leipzig, Johann Christoph Adelung, in the second edition of his *Grammatisch-kritisches Wörterbuch der hochdeutschen Mundart* (Leipzig, 1793–1801), s.v. 'Das Verhältniß'.

<sup>42</sup> The transcriptions in the fair copy collection of twelve made by J. B. Bach, P 280, BWV 972–982 and 592 fulfil all the characteristics of a revised Bachian collection. Results appear in Ruth Tatlow, *Bach's Numbers: The Riddle Unravels* (in preparation—previous working title *Bach's Numbers Explained*).



To summarise, it is time to revise what is good and throw out what is faulty in our discipline. Twenty-first century technology and exponential developments in sharing and storing knowledge present possibilities that are beyond any conventional vision of scholarship and scholarly dissemination. The free availability of rare seventeenth- and eighteenth-century books online today gives the scholar research facilities that would have been unimaginable even twenty years ago. If the information in these primary resources could be captured and made available to all, the impact of our research could be far-reaching and contribute to the revitalisation of our discipline for the electronic age.

### **Historically informed theory (HIT)**

Methodological renewal and development is part of every vibrant academic discipline. It is widely acknowledged that the procedure of distilling knowledge from historical documents is problematic.<sup>43</sup> There are chasms of time, philosophy, language and location between the historical source and the scholar. But if the problems are acknowledged, there are ways of bridging these chasms and avoiding predictable mishaps.

It was the methodological problems surrounding the analysis of Bach's scores that caused me to attempt a bridge-building exercise, devising three simple guidelines towards a definition of historically informed theories (HIT).<sup>44</sup> I see a historically informed method as one that is supported at every stage by appropriate historical sources, that uses tools the composer himself could have used, and that is formulated in terms and concepts the composer would have recognised. A systematic use of these principles while studying historical documents and analysing music of the past will help the process of renewal and discovery in musicology.

Tools to help decipher cultural codes in Bach studies include dictionaries and reference works published in the Leipzig area between c.1700–1750. Arguably the greatest resource for informing every aspect of knowledge in this period and location is Zedler's *Universal-Lexicon*.<sup>45</sup> For help in understanding how German was translated into English in Leipzig, the best possible resource is Fritsch's German-English dictionary,<sup>46</sup> although scholars must be aware that the synonyms represent early eighteenth-century English, or risk falling into the very time-bound trap they are trying to avoid.

The daily increase in music treatises available freely online provides scholars with unprecedented research resources, albeit in a decade when confidence in

<sup>43</sup> Robert D. Hume, *Reconstructing Contexts: The Aims and Principles of Archaeo-Historicism* (Oxford: Oxford University Press, 1999), p. 1 offers a renewed justification of old historicism, defining and formulating a method, Archaeo-historicism, with which scholars can reconstruct past contexts to replicate as closely as possible the events, values, circumstances, judgements and *Weltanschauung* of a particular past time and place and which can be applied to the interpretation of works and events of that time.

<sup>44</sup> Ruth Tatlow, 'When the Theorists are Silent', pp. 203–16.

<sup>45</sup> See note 29.

<sup>46</sup> *Ibid.*

historical methodology is at an all-time low.<sup>47</sup> Ironically, when nineteenth- and early twentieth-century scholars were scouring rare books and sources for the ideal universal principle, access to treatises was limited by location and library opening hours.

Pursuing the ideals of historically-informed theory—that principles, methods or practices are formulated in terms and concepts that the composer of the time and location would recognise—the most basic category to be checked is the manner in which the composer thought of method, practice and theory. Zedler's article s.v. 'Übung' demonstrates that the concept of Practice (Übung, Praxis) was the antonym of Theory (Theorie, Theoria).<sup>48</sup> Likewise, the multiple entries for 'Methoda'<sup>49</sup> show that the practice of adopting a clear methodology to study a subject would have been second nature to an educated Leipzig citizen in the 1730s. By comparison, the entry of various kinds of 'Thema' is considerably shorter.<sup>50</sup> On the other hand, the famous music dictionary written by Bach's relative Johann Gottfried Walther (1684–1748) and published in Leipzig in 1732 has only two sentences for the entry 'Theorie', and no entry for 'Methode', 'Lehr-Art (Methode)' or 'Übung', in spite of the documented fact that Bach and composers of the period used the word 'Übung' for the title of published musical collections. This illustrates the dangers of relying upon a limited selection of sources.

The adoption of the three HIT guidelines will facilitate the renewal of existing musicological methods, and the discovery of methods that remain unrecognised in historical sources. Understanding the complex reality of the original meaning and usage of terms and concepts will open our eyes to many features that have

<sup>47</sup> Rob Wegman 'Historical Musicology: Is it Still Possible?' in Martin Clayton, Trevor Herbert and Richard Middleton (eds.), *The Cultural Study of Music: A Critical Introduction* (New York and London: Routledge, 2003), pp. 136–45.

<sup>48</sup> Zedler, *Universal Lexicon*, s.v. 'Übung', oder Ausübung, Uiben, Ausüben Lat. Praxis.

<sup>49</sup> Zedler, *Universal Lexicon*, s.v. 'Methoda' vol. XX, pp, 1291–1338, i.e. 96 columns on 48 pages devoted to more than forty different methods, including (translated into English) Method, Universal Method, Alphabetic method, Analytic Method, Archimedian Method, Problematics Method; Augustinian Method; Axiomatic or Canonic method; Backer method; Curious or Hidden Method; Demonstration or Scientific Method, which names also rational, logical, systematic apodictic, mathematic, philosophical, contradiction methods); Differential method; Dogmatic method; Particular or Partial Method; Explanatory or Defining Method; Megarica Disputandi; Moral Method; Mythological Method; Natural and Unnatural Method; Necessary Method; Oratorical Method (see Hidden method); Rivinian Method; Philophical Method; Physical Method; Categorical or Predicamental Method: Homiletic Method; Ramistic Method; Riddling Method; Satyric Method; Schematic Method; School Method; Sensual or Imaginative Method; Slusian Method; Speaking Method; Symbolic or Emblematic method; Synthetic, Inventive or Contemplative Method; Tabular Method; Thetic method; Varronic Method; Irenic Method; Mixed Method; Doctrinal or didactic Method; Polemic Method; Conditional, Positive or Quodlibet Method; Question and Answer Method; Largest and Smallest Method; Causal Method.

<sup>50</sup> Zedler, *Universal Lexicon*, s.v. 'Thema', pp. 602–11, seven pages, 13 columns, including (translated into English) Thema Acceptum, Acceptance, parenthetical, allegorical, analytical, arbitrary, artificial, symbolic, emblematic natural, axiomatic, celestial, compositional, finite, hermeneutic, infinite, liberal, mythical, natural, particular, practical, proper, rhetorical, schematic, simple, synthetic textural methodological, universal.

been missed, and I suspect will lead to the formulation of many new methods and theories.

### **Proportional parallelism: a new historically-informed theory**

One such newly-formulated method using HIT principles is proportional parallelism, which I discovered when investigating Friedrich Smend's idea that Bach had intentionally used the number of bars to order his compositions. From the manual counting of bars, the tabulation of movements, the concepts of musical proportions and the significance of Harmony,<sup>51</sup> to the terms 'proportional' and 'parallelism', the theory uses tools that Bach could have used, and it is, as far as possible, expressed in terms and concepts he would have understood.<sup>52</sup> Historical evidence supporting every aspect of the method preceded the startling discovery of Bach's numerical revision procedure and his introduction of what was later named proportional parallelism. Trying to understand his motivation for introducing the parallel proportions was the final stage.

Bach's addition of movements and bars when he prepared his collections for publication has been well documented by editors. The theory of proportional parallelism has recently shown that, while he was making these revisions, he was using the number of bars and other units to form parallel proportions. These large-scale 1:1 and 1:2 proportions can be seen in all of his publications and in the majority of fair copies, regardless of whether the collection was compiled from pre-existing movements or revised from an earlier incomplete version, such as the Six Solos for violin (BWV 1001-1006).<sup>53</sup>

A brief description of the construction of the Christmas Oratorio, based on his fair copy score *P* 32, will serve to demonstrate proportional parallelism and how it helped Bach create a perfectly proportioned whole in a six-part construction.<sup>54</sup> When reading the numerical results, it is important to realise that striving to achieve proportion, rather than to introduce specific numbers, was Bach's primary goal. The numbers themselves hold no significance: they are simply the means through which Bach achieved the all-important proportions.

As Bach constructed the Oratorio, he introduced three large-scale double 2:1 proportions within a 3465-bar structure.<sup>55</sup> The first large-scale proportion is formed by the number of bars within the six Parts themselves (Table 1), in which Parts 1, 2, 4 and 6 have 2310 bars and Parts 3 and 5 1155 bars. The proportion is double because 2:1 is formed simultaneously within the six Parts (4:2) and by the number of bars (2310:1155).

<sup>51</sup> See discussion of the meaning of 'harmony' and its proportions below.

<sup>52</sup> Zedler, *Universal Lexicon*, s.v. 'Parallelismus'.

<sup>53</sup> Ruth Tatlow, 'Collections, bars and numbers: Analytical coincidence or Bach's design?' *Understanding Bach*, 2 (2007), pp. 37–58; <http://www.bachnetwork.co.uk/ub2/tatlow.pdf>.

<sup>54</sup> Full results of all Bach's publications and fair copies will appear in Tatlow, *Bach's Numbers*.

<sup>55</sup> All the bar numbers are based on the manuscript score, *P* 32 and the *stollen* repeat indication essential for the chorale texts is included. The bar count in the Schmieder BWV catalogue (1950 and 1990, but not 1998) includes all repeats and all da capo sections, making a total of 4140 bars.

<b>BWV 248</b>	<b>Bars</b>	<b>2:1</b>
Part One	590	590
Part Two	499	499
Part Three	602	602
Part Four	554	554
Part Five	553	553
Part Six	667	667
<b>Bar total</b>	<b>3465</b>	<b>2310:1155</b>

Table 1: A double 2:1 proportion, 2310 bars in 4 parts and 1155 bars in 2 parts

The second large-scale 2:1 proportion is created within the musical settings that Bach chose for the different types of text. He ensured that the free-texted solo Arias and Tutti opening choruses have exactly 2310 bars (Table 2). All the remaining movements have 1155 bars. And this ordering of 2310:1155 bars forms a large-scale parallel with the first 2:1 proportion shown in Table 1. Bach designed the second proportion as he allocated the text to musical genre. He set the freely-composed rhyming verses, marked 'ARIA' in the original textbook, as accompanied arias with a solo voice.<sup>56</sup> The freely-composed rhyming verses that open five of the six parts of the Oratorio, marked 'Tutti' in the textbook, were set as Tutti choruses. The direct citations from the Bible specified for the Evangelist in the original textbook he set as secco recitatives, and designated them as either Evangelista, or in abbreviated forms Evangelist. Evang. in his score. The free-texted recitatives, marked 'Recit.' in the original textbook and score, he set as accompanied recitatives. Eleven of the Lutheran chorales were set as plain four-part harmonisations, and he wrote elaborate settings for two.<sup>57</sup> And he chose three texts with biblical words to set as choruses, with specific characters.<sup>58</sup>

Table 2 shows the disposition of the 2310 bars of Arias and Tutti. Column 5 shows which movements were parodied and which newly composed. By ensuring that the newly-composed Aria 31 had exactly 146 bars and that the Tutti Chorus 43 had 126 bars, Bach was able to achieve not only a total of 2310 bars, but a symmetrically-organised 2:1 proportion within this grouping: 1540:770 bars (Column 6). Columns 7 and 8 show that two further proportions can be formed from the number of bars, but the proportions may be natural occurrence, rather than evidence of Bach's planning.

<sup>56</sup> The exceptions are BWV 248/29 'Herr dein Mitleid' marked 'ARIA' in the textbook, but 'Aria Duetto' in the score, set for Soprano and Bass soloists; and BWV 248/51 'Ach wenn wird die Zeit erscheinen?' marked ARIA in the textbook, but 'Aria Terzetto' in the score and set for Soprano, Alto and Tenor soloists.

<sup>57</sup> BWV 248/42 'Jesus richte mein Beginnen' and BWV 248/64 'Nun seydt ihr wohl gerochen', are the extensively elaborated, and may have been the means with which Bach achieved the specific total.

<sup>58</sup> BWV 248/21 Chorus is specified 'Chor der Engel', BWV 248/26 'Lasset uns nun gehen' is the response of the Shepherds, and the Magi ask the question posed in BWV 248/45 'Wo ist der neugebohrne König der Jüden'.

<b>BWV 248</b>	<b>Bars</b>	<b>Original</b>	<b>2:1</b>	<b>1:1</b>	<b>1:1:1</b>
4. Aria	138	BWV 213/9	138	138	138
8. Aria	120	BWV 214/7	120	120	120
15. Aria	131	BWV 214/5	131	131	131
19. Aria	152	BWV 213/3	152	152	152
31. Aria	146	<b>NEW</b>	<b>146</b>		<b>146</b>
39. Aria	138	BWV 213/5	138		138
41. Aria	70	BWV 213/7	70		70
47. Aria	144	BWV 215/7	144		144
57. Aria	96	BWV 248VIa/3	96		96
62. Aria	176	BWV 248VIa/5	176		176
<b>Subtotal bars</b>	<b>1311</b>				
1. Tutti	201	BWV 214/1	201	201	201
24. Tutti	96	BWV 214/9	96	96	96
24. Repetatur	96	BWV 214/9	96	96	96
36. Tutti	240	BWV 213/1	240	240	240
43. Tutti	126	<b>NEW</b>	<b>126</b>	<b>126</b>	<b>126</b>
54. Tutti	240	BWV 248Via/1	240	240	240
<b>Subtotal</b>	<b>999</b>				
<b>Bar total</b>	<b>2310</b>		<b>1540:770</b>	<b>770:770</b>	<b>770:770:770</b>

Table 2: A double 2:1 in 2310 bars (10 solo arias: 5 opening tutti choruses) showing proportion within the 14 pre-existent and 2 newly composed movements

To create a large-scale 2:1 proportion with the 2310 bars of Arias and Tutti choruses, Bach required a further 1155 bars. Towards this he had two pre-existent ensemble arias which together gave him 355 bars.<sup>59</sup>

<b>BWV 248</b>		<b>Original</b>
29. Aria - Duet	166	BWV 213/3
51. Aria - Trio	189	Not new: original lost
<b>Bar total</b>	<b>355</b>	

Table 3: 355 bars of pre-existent material: Duet and Trio

He was then left with a neat total of 800 bars with which to achieve his total of 1155 bars. And even at this layer, he created perfect proportions. Table 4 shows that he next allocated 355 bars for the Evangelist recitatives, the free-texted accompanied recitatives and the hybrid 'Choral und Recit', thus forming a 1:1 proportion with the 355 bars of the pre-existent Duet and Trio.

<sup>59</sup> The original source for trio BWV 248/51 'Ach wenn wird die Zeit erscheinen' has not survived, but Dürr believes there was one: 'The trio provides a further instance of a movement written out so neatly that we assume it to be a parody of a lost original' Alfred Dürr, 'Commentary to the Facsimile reprint edition of the autograph'. *Johann Sebastian Bach Weihnachts-Oratorium*, Documenta Musicologica, II/13, 2<sup>nd</sup> edn (Kassel: Bärenreiter, 1984), p. 11.

<b>BWV 248</b>	<b>Bars</b>	<b>1:1</b>	<b>2:3</b>
29. Aria - Duet	166	166	
51. Aria - Trio	189	189	
Evangelist	142	142	142
Other Recitatives	213	213	213
<b>Bar total</b>	<b>710</b>	<b>355:355</b>	<b>142:213</b>

Table 4: A 1:1 proportion in 355:355 bars of Ensemble arias and recitatives

And he distributed these 355 bars in such a way as to create a further perfect proportion, allocating 142 bars for the Evangelist, and 213 bars for the free-texted recitatives, including those with an interspersed choral verse (Table 4 column 4, and Table 5).

<b>Biblical/Secco</b>	<b>Bars</b>	<b>Free-texted/Accomp.</b>	<b>Bars</b>	<b>Biblical:Free-texted</b>	
2. Evangelist	19	3. Recit.	10	19	10
6. Evangelist	5	7. Choral and Recit	66	5	66
11. Evangelist	10	14. Recit.	9	10	9
13. Evangelist	8	18. Recit.	9	8	9
16. Evangelist	4	22. Recit.	6	4	6
20. Evangelist	4	27. Recit.	8	4	8
25. Evangelist	3	32. Recitative	5	3	5
30. Evangelist	15	38. Recit Choral and Recit	28	15	28
34. Evangelist	6	40. Recit. and Choral	18	6	18
37. Evangelist	7	49. Recit.	8	7	8
44. Evangelist	7	52. Recit.	5	7	5
48. Evangelist	3	56. Recit.	11	3	11
50. Evangelist	19	61. Recit.	21	19	21
55. Evangelist	11	63. Recit.	9	11	9
58. Evangelist	16	<b>Subtotal</b>	<b>213</b>	16	
60. Evangelist	5			5	
<b>Subtotal</b>	<b>142</b>			<b>142:213</b>	
<b>Total</b>				<b>355 bars</b>	

Table 5: A 2:3 proportion (142:213 bars) in 355 bars of Recitative

The bar totals illustrate the creative use Bach made of the numerical constraints he had imposed before he wrote out the recitatives. Following his standard Leipzig custom, he composed the recitatives directly into the score, writing the Evangelist's text into the score before adding bar lines or setting it to music.<sup>60</sup>

In order to achieve the final total of 1155 bars Bach had to allocate the remaining 445 bars for the Chorales, Choruses and the opening movement of Part Two. This he did by the judicious addition of at least three new movements shown in Table 6, Column 4. There are no further proportions within this section.

<sup>60</sup> Robert Marshall, *The Compositional Process of J. S. Bach: A Study of the Autograph Scores of the Vocal Works* (Princeton: Princeton University Press, 1972), vol. I, Chapter 5 'Autograph Scores of the Recitatives', pp. 90-117. Also Dürr, 'Commentary to the Facsimile', p. 11.

<b>BWV 248</b>	<b>Incipit</b>	<b>Bars</b>	<b>Originally</b>
21. Chorus	Ehre sei Gott	65	NEW
26. Chorus	Lasset uns nun gehen	27	NEW
45. Chorus Recit	Wo ist der neugeborne König	28	BWV 247/39b?
<b>Sub-total</b>	<b>3 choruses</b>	<b>120</b>	
5. Chorale	Wie soll ich dich empfangen	16	
9. Chorale	Ach mein herzliebes Jesulein	15	
12. Chorale	Brich an, o schönes Morgenlicht	16	
17. Chorale	Schaut hin, dort liegt im finstern Stall	8	
23. Chorale	Wir singen dir in deinem Heer	14	
28. Chorale	Dies hat er alles uns getan	10	
33. Chorale	Ich will dich mit Fleiß bewahren	13	
35. Chorale	Seid froh dieweil	11	
42. Chorale	Jesus richte mein Beginnen	53	
46. Chorale	Dein Glanz all Finsternis verzehrt	12	
53. Chorale	Zwar ist solche Herzensstube	12	
59. Chorale	Ich steh an deiner Krippen hier	14	
64. Chorale	Nun seid ihr wohl gerochen	68	BWV VIa/7
<b>Sub-total</b>	<b>13 chorales</b>	<b>262</b>	
10. Sinfonia		63	NEW
<b>Sub-total</b>		<b>445</b>	
	<b>Recitatives</b> - 142:213 bars forming 2:3	355	
	<b>Duet-Trio</b>	355	
<b>Total</b>		<b>1155</b>	

Table 6: 1155 bars: 120 bars Choruses, 262 bars Chorales, 63 bars Sinfonia

The third large-scale 2:1 proportion is formed not by ordering of the number of bars, but in the schedule of the original performances stipulated by the church authorities. The locations for performances were printed together with the anonymous libretto<sup>61</sup> in the text booklet, available in advance of the first performance on Christmas Day 1734.

<b>Performance</b>	<b>Bars</b>	<b>Early</b>	<b>Afternoon</b>	<b>2:1</b>
25 December 1734	Part 1	Nikolaikirche	Thomaskirche	Twice
26 December 1734	Part 2	Thomaskirche	Nikolaikirche	Twice
27 December 1734	Part 3	Nikolaikirche		Once
1 January 1735	Part 4	Thomaskirche	Nikolaikirche	Twice
2 January 1735	Part 5	Nikolaikirche		Once
6 January 1735	Part 6	Thomaskirche	Nikolaikirche	Twice

Table 7: A double 2:1 proportion in the performance schedule

<sup>61</sup> The libretto may have been by Picander. Editors of the *NBA*, Blankenburg and Dürr, remain agnostic on the question of text authorship, although recent scholars seem more confident it was Picander. See *NBA KB II/6*, p. 209. See also Kerala Snyder, 'Oratorio on Five Afternoons: From Lübeck Abendmusiken to Bach's *Christmas Oratorio*' in Daniel R. Melamed (ed.), *J. S. Bach and The Oratorio Tradition*. Bach Perspectives, VIII (Urbana: University of Illinois Press, 2011), p. 81, note 27, and Markus Rathey, 'Drama and Discourse: The Form and Function of Chorale Tropes in Bach's Oratorios' in Melamed (ed.), *J. S. Bach and the Oratorio Tradition*, p. 57.

Four Parts were performed twice on their designated festival days (in both Thomaskirche and Nikolaikirche), and Parts 3 and 5 were heard only once (in Nikolaikirche). Perhaps coincidentally, perhaps not, the order of this 2:1 is identical to that of the first large-scale 2:1, in which Parts 1, 2, 4 and 6 had 2310 bars, and Parts 3 and 5 had 1155 bars. It could be claimed that this forms a triple 2:1 proportion within the work. Furthermore, the visible double 2:1 schedule is parallel to the two invisible triple 2:1 mega-structures in the score. Location-wise the distribution Nikolaikirche:Thomaskirche is 6:4 (3:2). The preaching and music roster for the season was drawn up well in advance. I suspect the visible proportion of space and location gave Bach some private amusement, and may even have influenced his decision to enact the inaudible triple 2:1 across time.<sup>62</sup>

The three 2:1 mega-structures formed within 3465 bars and across a two-week performance schedule are sensationally perfect. The evidence strongly suggests that Bach used the formation of these layers of proportion to facilitate construction of the whole.

Proportional parallelism sheds light on many aspects of Bach's compositional procedure. It can suggest the order in which he constructed and revised collections. It can verify the status of collections that have been transmitted in the hand of a copyist, when an autograph copy is missing. It offers a new explanation for Bach's revisions, suggesting reasons for musical changes that have hitherto lacked a satisfactory explanation.<sup>63</sup> It also raises the question of where Bach learnt the technique, which of his predecessors used it, and whether any composers used it after his death. It is a historically informed theory, and it could not have been discovered without the intentional use of HIT guidelines at every stage.<sup>64</sup>

Bach's proportions cannot be heard, and it was when I was searching for an answer to why he had taken the trouble to create inaudible proportional parallelism<sup>65</sup> by adding bars and movements to already excellent music, that I discovered the significance and motivational morality in the word 'Harmony' in Bach's time and location.<sup>66</sup>

<sup>62</sup> A unity (1:1) between time and space in its broadest sense is formed by these 2:1 mega structures. In 'Drama and Discourse' (see note 61), pp. 42–68, Markus Rathey discusses Gottsched's recommendation of the Aristotelian principle of unity of time and unity of space in tragedy, as does Karol Berger in *Bach's Cycle, Mozart's Arrow: An Essay on the Origins of Musical Modernity* (Berkeley: University of California Press, 2007).

<sup>63</sup> Hans Eppstein, 'Fragen der Ordnungsprinzipien in Bachs Köthener und Leipziger Instrumentalsammlungen' in Ulrich Leisinger (ed.), *Bach in Leipzig – Bach und Leipzig. Bericht über die Internationale Wissenschaftliche Konferenz Leipzig, 27. bis 29. Januar 2000*. Leipziger Beiträge zur Bach Forschung, V (Hildesheim: Olms, 2002), pp. 131–5.

<sup>64</sup> My current research 'Bach's Proportional Parallelism: the Historical Development of a Compositional Technique', sponsored by The Swedish Research Council, addresses these questions.

<sup>65</sup> The suggestions posited in Tatlow 'Collections, bars and numbers', pp. 53–4 predate the findings presented in II below.

<sup>66</sup> Throughout this essay the English version Harmony will be used, with a capital 'H', rather than either the Latin *harmonia* or the German *Harmonie*.



## Harmony in Bach's time: recapturing the complexity of a concept

Harmony has had many shades of meaning since it was coined as a concept in classical times. A codified modern view of Harmony, written by the legendary Carl Dahlhaus, can be found in the *New Grove*.<sup>67</sup> Although his detailed coverage traces the changes of Harmony as a musical technique over the centuries, the dictionary format imposes a separation within musical Harmony, and between Harmony and Harmony of the spheres, forcing Dahlhaus to omit the essence of what Harmony 'proper' and 'musical' had meant philosophically and theologically in Western Europe for two millennia. Although proportions are integral to harmony, the entry on 'Proportions' is a satellite article to 'Notation', also separate from 'Harmony'. Associated chiefly nowadays with acoustics and pitch, the 1:1 proportion of the unison, 1:2 of the octave, 2:3 of the fifth, 3:4 of the fourth, 4:5 of the major third and 5:6 of the minor third have lost the implications they once held. Expressed in both sounding and non-sounding forms, these proportions were deemed to be beautiful and perfect, the more so as they approached the most perfect unison 1:1.<sup>68</sup>

The word is defined and categorised quite differently in dictionaries that Bach could have read. Walther's music dictionary, published in 1732, gives four separate definitions for the word Harmony and its related forms; i) 'Harmonia (lat), Harmonie (gall)' harmony formed as the result of combining different tones to make a beautiful and enjoyable consonance; ii) 'Harmonica, Harmonice (lat)', citing Mattheson, *Orchestre 3*,<sup>69</sup> is a science, the proportional measurement, order and magnitude of sound, embracing 'Sonos, Intervalla, Systemata, Genera, Tonos, Tonorum commutationes'; iii) 'Harmonici', a discussion of the meaning of the 'harmonicists' who allegedly give more authority to the Ear than to Reason; and iv) the French, 'harmonieux, -euse'.

**lorum, eine Wissenschaft/wie die Töne  
ne sich gegen einander in ihrer Ord-  
nung und Größe verhalten. Da ist**

Figure 1: Mattheson, *Orchestre 3*, p. 284

Zedler's dictionary includes fifteen entries for the word and its related forms, including two that were taken directly from Walther: 'Harmonia' and 'Harmonici'. The remaining thirteen entries include: 'Harmonia or Armonia' in

<sup>67</sup> *New Grove*, s.v. 'Harmony'.

<sup>68</sup> Johann Gottfried Walther, *Praecepta der musicalischen Composition* (manuscript kept at the Landesbibliothek in Weimar, shelfmark Hs. Q 431c), vol. II, §7, p. 20. This important source remained unpublished until 1955 when it was published in an edited transcription by Peter Benary (Leipzig: Breitkopf & Härtel, 1955). On p. 79 Walther wrote: 'Reg. 1. Proportio quo vicinior aequalitati eo perfectior. Reg. 2. Proportio quo remotior ab aequalitate eo imperfectior. Das ist. Je näher eine Proportion der Unitaet oder Gleichheit, je vollkommener und begreiflicher ist sie; je weiter aber eine Proportion der Unitaet oder Gleichheit abgelegen, je unvollkommener und verwirrter ist sie'.

<sup>69</sup> Johann Mattheson, *Das Forschende Orchestre, oder desselben Dritten Eröffnung...* (Hamburg: Schiller, 1721), p. 284. Figure 1.

anatomy; 'Harmonia or Hermione' the daughter of Mars and Venus; 'Harmonia corporum Mundi totalium', also listed as 'Harmonica Mundi' and 'Harmonie der Welt', harmony of the world; 'Harmonia praestabilita', also listed as Vorherbestimmte Harmonie, Harmonie Prästabilirte; and 'Harmonica Proportio, continua & discreta' and 'Harmonisch-proportionirte Größen', all of which are discussed under 'Harmonische Proportion', which is by far the longest entry of all, covering one-and-a-half columns.

The single entry in Fritsch's German-English dictionary reads: 'Harmonie oder übereinstimmung (die), harmony. Sie leben in guter harmonie mit einander, they agree pretty well together', see Figure 2.

**Harmonie oder übereinstimmung ( die ) harmony. Sie leben in guter harmonie mit einander, they agree pretty well together.**

Figure 2: Fritsch, *Teutsch-Englisches Lexicon* (Leipzig, 1716), s.v. 'Harmonie'

These reference publications help today's scholar to appreciate the breadth of definitions of the word in Bach's time and location, but they do not explain how the word was used or what it implied. The following examples have been chosen to illustrate the subtle complexities of its usage in sources known to Bach.

a) *Predestined Harmony: Christian Wolff*

Bach would have known something of Christian Wolff's understanding of the word Harmony through the concept of predestined Harmony (*vorherbestimmte Harmonie*). It was one of the chief causes of Wolff's dismissal on 8 November 1723 from his Halle professorship, when a royal decree banished him from the city within 24 hours and from Prussian territory within 48 hours, on pain of death. The affair caused a public outcry.<sup>70</sup> One opponent, who argued that Wolff's proof of predestined Harmony was based on false principles,<sup>71</sup> was the namesake of Bach's relative, Johann Gottfried Walther (d. 1727).<sup>72</sup> Bach lived only 45 kilometres from the scene of the scandal,<sup>73</sup> and would have heard all about it.<sup>74</sup>

The importance of Wolffian philosophy to our understanding of Bach and his compositional motivation cannot be underestimated.<sup>75</sup> Lorenz Mizler, Bach's

<sup>70</sup> Zedler, *Universal Lexicon*, s.v. Wolf (Christian, Reichs, Frey und Edler Herr von), 64 columns. p. 583–4. Wolff was reinstated by the Holy Roman Emperor, in 1744 in an installation ceremony equally as public as his earlier dismissal. Wolff was the first and only academic ever to be elevated to this position.

<sup>71</sup> Walther, *Eleatische Gräber*, Chapter 6, p. 50 f. Zedler, *Universal Lexicon*, s.v. 'Vorherbestimmte Harmonie', p. 828.

<sup>72</sup> Zedler, *Universal Lexicon*, s.v. 'Walther, Johann Gottfried, ein Magister'.

<sup>73</sup> 45 kilometres on modern roads. Cöthen was even closer, lying just 35 kilometres north of Halle.

<sup>74</sup> The family moved to Leipzig from Cöthen on 22 May 1723, with his formal official installation at St Thomas School on 1 June.

<sup>75</sup> Lutz Felbick, *Lorenz Christoph Mizler de Kolof: Schüler Bachs und pythagoreischer Apostel der Wolffischen Philosophie* (Hildesheim: Olms, 2011).

student and younger colleague, acknowledged his philosophical allegiance to Wolff in the seventh statute of his Corresponding Society:

VII In preparing their articles [for the journal] Members should see the writing style of the Leipzig Deutsche Gesellschaft and the teaching and principles of Wolff's philosophy because while both are rational, the latter are, above others, the most useful for music.<sup>76</sup>

In a footnote to this statute, Mizler promised to publish a demonstration of the usefulness of Wolffian philosophy to music, although there is no evidence that he fulfilled the promise.<sup>77</sup> In a music review published six months later, however,<sup>78</sup> he revealed something about his view of Wolff and Harmony:

But where in Wolffian philosophy does it deny that God is the originator of Harmony? Who has demonstrated the proof of the essence of God, the structure of the universe and all that's in it, and also Harmony (I am talking about the course of nature) better than Wolff.<sup>79</sup>

After a period of deliberation, Bach chose to become a member of Mizler's corresponding society in 1747, understanding the stipulation of the seventh statute, suggesting a strong line of influence. Nonetheless, it was before he knew Mizler, and before the scandal of Wolff's dismissal, that Bach learnt how to use the word 'Harmony'.

b) *Confusion of Harmony proper and Harmony in music: Buttstett and Mattheson*

An important clue to the use and significance of the word 'Harmony' can be found in the publications covering the famous conflict between Mattheson and Buttstett, which began in 1713 with Johann Mattheson's *Orchestre 1*.<sup>80</sup> Because he

<sup>76</sup> Mizler, *Musikalischen Bibliothek*, vol. I, Part IV (April, 1738). There are twelve statutes, p. 75: 'VII Die Mitglieder sollen bey Verfertigung ihrer Schriften vor allen auf die Schreibart der Deutschen Gesellschaft zu Leipzig und die Lehrart und Grundsätze der Wolfischen Weltweisheit deswegen sehen, weil iene vor andern vernünftig diese aber in der Musik vor andern nützlich sind\*'.  
<sup>77</sup> Ibid., p. 75: 'Den Nutzten der Wolfischen Weltweisheit in der Musik werde ich in einer besondern Schrift: *de usu ac praestantia philosophiæ Wolfianæ in musica*, zeigen'. The title he chose is an adaptation of a 19-side tract he had published two years earlier: *De Usu Atque Praestantia Philosophiæ In Theologia, Jurisprudencia, Medicina breviter disserit*.

<sup>78</sup> Ibid., vol. I, Part V (October, 1738), p. 67. Mizler's review is headed 'III Einige zur Musik gehörige Poetische Gedancken bey Gelegenheit der schönen neuen in der Frauen-Kirche in Dreißden verfertigten Orgel aufgesetzt von Theodor Christlieb Reinholdt, des musikalischen Chors Director'.

<sup>79</sup> Ibid., p. 68: 'Wo ist aber in der Wolfischen Philosophie gezeugnet, daß Gott nicht der Uhrheber der Harmonie sey? Wer hat wohl das Wesen Gottes, und daß dieser Weltbau, mit allem so in selbigem vorgehet, und also auch die Harmonie (ich rede bloß vom Lauf der Natur) seinen Grund in ihm habe, besser gezeiget, als eben der Herr Regierungs-Rath Wolf.'

<sup>80</sup> Johann Mattheson, *Das Neu-Eröffnete Orchestre, Oder Universelle und gründliche Anleitung, Wie ein Galant Homme einen vollkommenen Begriff von der Hoheit und Würde der edlen Music erlangen ...* (Hamburg: Schiller, 1713), hereafter *Orchestre 1*.

believed that Mattheson's views in *Orchestre 1* 'contravened the word of God',<sup>81</sup> Buttstett decided to present the right biblical view of the matter in a publication of his own.<sup>82</sup> Infuriated, Mattheson responded in double-quick time with a complete scriptural defence of his position, turning the accusation on its head and charging his opponent with sinfulness and blasphemy.<sup>83</sup> The battle fizzled out when Buttstett was reduced to silence after a brief final response in 1718.<sup>84</sup> Mattheson continued with his publication plans thereafter as if nothing had happened.

The root of the disagreement lay in their different understandings of Harmony. The following is typical of Buttstett's style of writing, with its mixture of moral, theological and musical reasoning:

We see that this governing principle also agrees with the laws of Musical Proportion and Harmony, and how Harmony sounds in our ears ... and how the Harmony of the universe falls into our souls ... Therefore now that our souls are and remain in pure Harmony, they can continually remain in Harmony with the universe, indeed in Harmony with the Creator Himself. For God is a God of order, and is pleased with order. But I exclude at all times the abusers. For as God takes no pleasure in those who abuse and misinterpret his Word and his will, so the Abusers of Music cannot please God either.<sup>85</sup>

A year later in *Orchestre 2*, Mattheson replied point by point to Buttstett's arguments, including the following clarification of what he understood to be a confusion in Buttstett's use of the word Harmony. Mattheson insists on making a distinction between Harmony proper and Harmony in music:

But Mr Organist, as you are so keen to prattle on about Distinctions and Explanations, why don't you distinguish excellently between what is properly called Harmony and Harmony in Music? All your images, your grand and mighty Clavis B, the proportions of the Mercy Seat, of the Incense Altar etc demonstrate a Harmony, but a silent Harmony is not true Music. It may make a three or six-fold species of Musical Harmony, but so long as a

<sup>81</sup> Buttstett, *Ut, mi, sol*, p. 3: 'Es ist auch solches kühnes Unterfangen wieder Gottes Wort'.

<sup>82</sup> Full title on p. 37 above. Included in the full title 'im andern Theile aber das rechte Fundamentum Musices gezeiget'.

<sup>83</sup> Johann Mattheson, *Das Beschützte Orchestre, oder desselben zweyte Eröff, worinn nicht nur einem würrcklichen Galant-homme, der eben kein Professions-Verwandter, sondern auch manchem Musicoselbst die alleraufrichtigste und deutlichste Vorstellung musicalischer Wissenschaften, wie sich dieselbe...* (Hamburg: Schiller, 1717), hereafter *Orchestre 2*.

<sup>84</sup> Johann Heinrich Buttstett, *Der wieder Das beschützte Orchestre* (Erfurt, 1718).

<sup>85</sup> Buttstett, *Ut, Mi, Sol* (1716), p. 53–4: 'Hieraus sehen wir abermahl, daß auch dieses Regiment in den Musicalischen Proportionen und harmonia bestehe; und wie die klingende Harmonia in unsere Ohren fället: ... also fället die Harmonia des Gestirnes in unser Gemüthe ...: So nun unsere Gemüther in reiner Harmonia sind und bleiben, können sie stets in Vereinigung stehen mit dem Gestirn, ja mit dem Schöpffer selbst; Denn Gott ist ein Gott der Ordnung, und hat ein Wohlgefallen daran. Ich nehme aber allemahl die Mißbräuche aus; Denn wie Gott an denen, die sein Wort und Willen mißbrauchen und anders deuten, keinen Gefallen hat, also können die Mißbräucher der Music Gott auch nicht angenehm seyn'.

thing does not sound, I cannot call it Musical Harmony. I will with the help of God in my third volume deal in more detail with Harmony,<sup>86</sup> and be able to see how far the properties of this word can be stretched into music. All the panes in the windows have a Harmony, but nonetheless have no music in them, unless you call the noise music, when someone dubs a Cavalier a knight and smashes the window.<sup>87</sup>

Mattheson was fully aware that Buttstett was describing an ancient and still-prevalent view of Harmony, which embraced both sounding and non-sounding proportions. Nonetheless he continued his attack, accusing Buttstett of forcing Scripture to agree with music theory, and using logic and Scripture himself to discredit Buttstett's view of proportional harmony. Paraphrasing God's words to Moses in Exodus 25:17, Mattheson wrote:

Moses had to make a mercy seat [atonement cover] two and a half ells long and one and a half wide, therefore it becomes a harmonic construction, from which to take the Triad and Music. I have an ironing table in my laundry room with the same width and the same length, but one could beat or grab it from now until Eternity before it would make a single note, let alone a musical concord.<sup>88</sup>

The mercy seat was kept inside the Temple's innermost sanctuary, the Holy of Holies, and was associated with the presence of God: God had stipulated its dimensions. Although the logic is inescapable, the parallel between beating an ironing table and the mercy seat, if not blasphemous, would at the very least have been provocative.<sup>89</sup>

<sup>86</sup> Evidence that already in 1717 Mattheson had a plan for *Orchestre 3*.

<sup>87</sup> *Orchestre 2*, Part II, Chapter 5, §3, pp. 456–7: 'Aber, Herr Organiste, weil ihr doch so viel von *Distinctionibus* und *Explicationibus* schwatzet, warum *distinguiet* ihr denn nicht hauptsächlich *inter Harmoniam propriè sic dictam, & Harmoniam in Musicis*? Alle eure Bilder, euer großmächtiger *Clavis B*, die *Proportion* des Gnaden-Stuhls, des Rauch-Altars ꝛc. zeigen eine *Harmoniam*, aber eine ***Harmoniam mutam, non vero Musicam*** an. Es mage einer *Harmonia Musicæ* dreyerley oder sechserley Arten machen; so lange mir ein Ding nicht klinget, kan ichs nicht *Harmoniam Musicam* nennen. Wir werden aber mit der Hülffe Gottes in der dritten Eröffnung etwas ausführlicher *de Harmonia* handeln, und nach Vermögen sehen lassen, wie weit sich des Wortes Eigenschafft in *Musicis* erstrecke. Alle Scheiben in den Fenstern haben eine Harmonie, aber deswegen steckt keine Music darinn, es sey denn, daß man den Lerm vor Music halten wolte, wenn etwan ein Cavallier daran zum Ritter wird und die Fenster einschlägt.'

<sup>88</sup> *Orchestre 2*, Part II, Chapter 5, §16, pp. 472–3: 'Wir wollen Gottes Worte ansehen, daraus man *Theoriam Musices* erzwingen will: Siehe zu, sprach Gott ... daß du es machest nach ihrem Bilde, das du auf dem Berge gesehen hat. Moses solte einen Stuhl machen, drittehalb Ellen lang und anderthalb Ellen breit, *ergo* war es ein Harmonischer Bau, daraus *Trias Harmonica & Musica* abzunehmen. Ich habe einen Tisch, der ist just so breit und just so lang, man braucht ihn im Waschhause zum Zeug glätten; aber einer möchte von nun an biß in Ewigkeit darauf schlagen oder greiffen, ehe er einen Thon, geschweige einen Musicalischen Zusammenklang von sich gäbe.'

<sup>89</sup> *Orchestre 2*, p. 285, Mattheson accuses Buttstett of smattering *Ut, mi, sol* with defamation and blasphemy, 'Vielfältige grobe und *brutale* Lästerungen und *Calumnien*', pointing his readers to pages '30, 54, 100, 134 etc'. I assume therefore that Mattheson sees the the ironing table/Mercy Seat parallel as provocative rather than blasphemous.

These examples may give the impression that Mattheson had little or no spiritual understanding of, or belief in, musical proportions, but this is far from the truth. In the next paragraph Mattheson makes what amounts to a creedal statement.

There is no doubt whatsoever that the Lord God is pleased with Proportions, and the Universe demonstrates this, both in the Microcosm and Macrocosm, about which Robert Fludd has written sufficiently. And there is no doubt that God is pleased with Musical sounds and their proportions: I doubt that as little as I doubt Christ's Birth, because Music is His Creation, indeed one of his best Creations and Gifts. But I [Mattheson] would have to be inhumanly gullible to believe that God had nothing besides the six Aretinian syllables in stock, and that He would have needed to show our Musical Triad through the measurement of the Mercy Seat. Were one to claim that the Mercy Seat and other things in the Old Testament had been arranged according to music, that no single mystical theologian has ever thought of, can this prove that our (even our imperfect) music will last into eternity?<sup>90</sup>

This statement goes a long way towards explaining why Mattheson was so frustrated with Buttstett. Buttstett believed from Scripture that musical compositions composed on earth would survive into eternity. Mattheson did not. Although he believed profoundly in Heavenly music, he did not believe that compositions we know here would be heard in Heaven, even less that Scripture proved it. He was incensed by the illogic of Buttstett's demonstration.

Their conflict over Harmony goes far deeper than the well-worn argument of whether sounding music or rational proportions are the greater. At stake was whether the earthly efforts of the Christian composer would survive for ever.

*c) Harmony in 1687, 1691, 1708: Werckmeister and Walther*

In the light of Buttstett's belief, Bach's understanding of the word Harmony becomes enormously relevant as we consider his compositional motivation and use of proportional parallelism. Buttstett's predecessor at the Predigerkirche in Erfurt, Pachelbel, taught Bach's eldest brother. Had Bach's parents lived, it is highly likely that Buttstett would have been their first choice as music teacher for their youngest son, Johann Sebastian. Although this did not materialise, we can

<sup>90</sup> *Orchestre 2*, Part II, Chapter 5, §17, pp. 473–4: 'Daß Gott der Herr gefallen habe an *Proportionen* ist ausser allen Zweifel, und bezeugt auch solches der *Universe*, so wohl *Microcosmus* als *Macrocosmus*, wovon *Robertus Flud*, *alias de Fluctibus*, Zeuges genug geschrieben hat. Daß Gott auch gefallen habe an den Musicalischen Thonen und deren *Proportion*, daram zweifle ich so wenig als an Christi Geburt; denn es ist ja auch die Music sein Geschöpff, ja seiner besten Geschöpfe und Gaben eine. Aber, daß ich darum glauben solte, Gott hätte keine andere, als die Aretinischen *Sex voces* im Vorrath, und hätte mit der Abmessung des Gnaden-Stuhls unsere *Triadem in Musicis* eben anzeigen wollen, so treuhertzig macht mich kein Mensch. Gesetzt auch der Gnaden-Stuhl der Rauch Altar, und andere Sachen im alten Testament, wären um der Music willen geordnet worden, welches doch keinem eintzigen *Theologo Mystico* jemahls im Sinn gekommen. (q) kan denn das beweisen, daß unsere (eben unsere Stückwerckische) Music ewig bleiben werde?' English synonyms for Stückwerck given in Fritsch, *Teutsch-Englisches Lexicon* include: imperfect, weak, lame, patched up and pieced up.

be sure that Bach and Walther, neighbours in Weimar, would have read and discussed the content of the Mattheson-Buttstett battle in view of their familial associations with one of the protagonists.

Walther, who for a short while was also a student of Buttstett, was an enthusiastic scholar of music theory. A theorist whose work influenced him greatly was Andreas Werckmeister. In his *Noble Art of Music* Werckmeister wrote that 'Music is a foretaste of Heavenly Harmony ... [which] presents to us the Wisdom of God'.<sup>91</sup> This belief was motivated by his understanding that the unity of the 1:1 unison lay at the heart of God's creation: 'God Himself has made Nature through his omniscient counsel, in such a way that everything might strive to achieve unity (1:1) and take pleasure in it'.<sup>92</sup> He understood that every aspect of musical order strives after the equality of 1:1, including musical pitch, the degrees of the scale, the bar, speed, and range,<sup>93</sup> that the 1:1 proportion of Harmony can also be seen in God, eternity and in mankind, and that this causes human beings to rejoice whenever they hear music, because Harmony reflects both their own image and the image of the wisdom of God.<sup>94</sup> The mirror image,<sup>95</sup> with its perpetual and positive reflection that leads to many good things, leads to the following behavioural application: 'we [Christian musicians] must help each other to know how to use [music] to glorify the Almighty Creator and to be wary of all misuse thereof'.<sup>96</sup>

The word to strive (*streben*: to use all endeavours to get it, to bestir yourself mightily, to use all your effort to acquire it),<sup>97</sup> demonstrates the active response demanded of the musician who believed in the proportional perfection of Harmony. This belief seems to have been widespread, at least in the region of Thuringia, where Bach grew up and was educated. It is implied in the opening definition of Walther's first music treatise, *Praecepta der Musicalischen Composition* (1708):<sup>98</sup> 'Music is a heavenly-philosophical science based specifically on mathematics, which consists of sound, so long as the sound itself produces a

<sup>91</sup> Werckmeister, *Der Edlen Music-Kunst*, Chapter summary, p. 42: 'Die Musica ist ein Vorschmack Himlischer Harmonie. Durch die Music wird uns die Weißheit Gottes vorgestellt'.

<sup>92</sup> Werckmeister, *Musicae Mathematicus hodegus*, p. 69, 'daß alles nach der Gleichheit strebe, und sich daran belustige'.

<sup>93</sup> Werckmeister, *Der Edlen Music-Kunst*, pp. 8-9.

<sup>94</sup> *Ibid.*, pp. 10-11.

<sup>95</sup> A development of Bartholdi's statement, cited also in Walther, *Praecepta*.

<sup>96</sup> Werckmeister, *Der Edlen Music-Kunst*, p. 12: 'Also ist die Music ein Spiegel der Göttlichen Geschöpfe und Weißheit Gottes, ja Gottes Geschöpfe und Ebenbild (auff gewisse Maße) selbst, weil sie in solcher Form und *Proportion*, wie der Mensch bestehet: ... So können wir auch nicht alle Ursachen erforschen warum Gott die liebe Music zu seinem Dienste verordnet hat, wir müssen uns behelffen, daß wir wissen, wie wir sie dem allmächtigen Schöpfer zu Ehren gebrauchen und anwenden, auch uns für allen Mißbrauch derselben hüten sollen'.

<sup>97</sup> Fritsch, *Teutsch-Englisches Lexicon* (1716) col. 1889, s.v. 'streben, to strive, strain or labour for a thing'.

<sup>98</sup> See note 68.

good and artistic Harmony or agreement'.<sup>99</sup> Three pages later he writes that 'good Harmony will result not only when it is composed after the artistic rules, but above all when it is used in virtuous and God pleasing practices'.<sup>100</sup> This shows some of the moral and spiritual implications of Harmony: the more the musician practised godliness and virtue, the better the quality of Harmony produced.<sup>101</sup> Achieving Harmony in music-making and composition was a spiritual exercise, about which Walther wrote:

Even the blind heathen had noticed these qualities about Harmony. How much more therefore should we Christians use this noble gift of God correctly, so that God might take pleasure in His handiwork; for through music man rejoices not only because he sees his own image (i.e. that he has been created harmonically-proportioned), but music also confronts God with His own Divine Wisdom.<sup>102</sup>

For Walther, belief in Harmony demanded moral, behavioural and theological responses. As Bach had been raised within a family, with similar theological and philosophical values, it is likely that he too thought of Harmony in this way.

Bach, Walther and Buttstett came from Thuringia, the cradle of Lutheranism. Mattheson, on the other hand, was a North German, married to an English woman and influenced by the British Royal Society. Nonetheless, there was a common core of agreement in their philosophy of proportions and Harmony: all of them believed that God is pleased with proportions, i.e. that 1:1 and 1:2 in Harmony pleased God. Mattheson called this proper Harmony.<sup>103</sup> And they all believed that God is pleased with musical sounds, that the perfectly proportioned intervals that created Harmony are pleasing to God. Mattheson called this

<sup>99</sup> Walther, *Praecepta*, vol. I, §1, p. 1 in Benary, p. 13: 'Die Music ist eine himmlische-philosophische, und sonderlich auf Mathesin sich gründete Wissenschaft, welche umgehet mit dem Sono, so fern aus selbigen eine gute und künstl. Harmonie oder Zusammenstimmung'.

<sup>100</sup> *Ibid.*, vol. I, §1, (f), p. 5 in Benary, p. 14: 'Eine gute Harmonie hervorbringen und machen, importiret vornehmlich dieses, daß solche nicht allein nach denen Kunst Regeln wohl eingerichtet, sondern auch zuförderst und einig zu tugendsamen, und Gott wohlgefälligen Übungen angewendet werde'. The phrase 'godliness and virtue' had many resonances at this time, e.g. Fritsch, *Teutsch-Englisches Lexicon* (1716), s.v. Übung (die), p. 2078, the phrase 'Die Übung der gottseligkeit, tugend,' being translated as 'The practice of piety and virtue. and the title appearing for Lutheran hymnbook for example 'Übungen in Gottseeligkeit, in Singen und Beten'.

<sup>101</sup> The use of the word 'Übung' and its association with the full spiritual implications of Harmony in this context strongly suggests that the published *Clavier Übungen* 'composed for music lovers to refresh their spirits', promised something far more spiritual than mere technical piano training 'exercises'.

<sup>102</sup> Walther, *Praecepta*, vol. I, §1, pp. 5–6 in Benary, p. 14: 'Wie viel mehr sollen wir Christen diese edle Gottes Gabe recht gebrauchen, damit Gott einen Gefallen an seinen Wercken haben möge; denn durch die Music wird dem Menschen nicht allein sein Ebenbild (nemlich daß er harmonisch zubereitet sey) vorgelegt, sondern es wird auch Gott sein göttl. Weißheit vorgehalten, darinnen Er sich belustiget; schreibt M. Bartolus in seiner *Musica Mathematica*'. See generally Abraham Bartolus, *Musica Mathematica*, *Das ist: Das Fundament der allerlieblichsten Kunst der Musicæ ...* (Altenburg, 1614).

<sup>103</sup> *Orchestre 2*, Part II, Chapter 5, §3, pp. 456–7: 'Harmonia propriè sic dictam'.



Harmony in Music.<sup>104</sup> Whereas Mattheson made a distinction between sounding and non-sounding Harmony, Werckmeister and Buttstett understood the sounding and non-sounding aspects of Harmony to be an integrated whole, and they believed their view to be the correct scriptural interpretation of Harmony. It led them also to believe that well-proportioned music composed on earth would last into eternity.

It might be more comfortable for Bach scholars to dismiss these views as backward-looking and medieval,<sup>105</sup> but that would be to distort the documented views of modern-thinking and highly respected Lutheran musicians working in the region in the 1700s. Such views also appear beyond these denominational and political borders. The Catholic Fux, working in Vienna, for example, emphasised the centrality of the proportions 1:1 and 1:2 in his famous Latin *Gradus ad Parnassum*, citing the same motto Walther had used in 1708. In his 1742 German translation of Fux's treatise, Mizler added a footnote to this motto explaining that 'these edifying/devotional thoughts are founded on the old truth'.<sup>106</sup> It is not insignificant that Mizler used the word 'erbaulich' in the context of this belief in proportions. Even with its devotional element, Mizler saw the proportional view of music as a rational and accurate explanation of the modern view of music. Although advanced mathematics and calculus were commonly used by this time, it was the simplest proportions that described harmonic perfection, and the ideal was the 1:1 of the unity.<sup>107</sup>

#### d) Bach and Harmony

What Bach meant when he used the word Harmony now becomes a complex and significant issue. Did he strive for 1:1 unity in his compositions, and in his life? Are the 1:1 and 1:2 parallel proportions in his revised and published collections evidence of this belief? Was he striving to introduce proportional parallelism into his publications because he believed that the Harmony of the 1:1 and 1:2 proportions would ensure that his revised and perfected compositions would last for eternity? Several documents have survived in which he uses the word. For example, in his letter of resignation from his Mühlhausen post on 25 June 1708, he wrote:

<sup>104</sup> Ibid: 'Harmonia in Musicis'.

<sup>105</sup> Buelow, *New Grove*, s.v. 'Werckmeister': 'in many of his [Werckmeister] views remained a mystic and decidedly medieval'.

<sup>106</sup> Johann Joseph Fux, *Gradus ad Parnassum, oder Anführung zur Regelmäßigen Musikalischen Composition Auf eine neue, gewisse, und bishero noch niemals in so deutlicher Ordnung an das Licht gebrachte Art*, trans. Lorenz Christoph Mizler (Leipzig: Mizler, 1742), pp. 35–6, note 12: 'Diese erbauliche Gedancken gründen sich auf die alte Wahrheit: je mehr eine Sache zusammen gesetzt ist, je unvollkommener ist sie, und je mehr eine Sache einfach ist, je vollkommener ist sie. Drum haben die Weltweisen Gott allezeit vor das aller einfacheste Wesen unter allen Dingen, und also vor das allervollkommenste allezeit gehalten und der Vernunft zu Folge davor halten müssen'.

<sup>107</sup> Walther, *Praecepta*, vol. II, §7, p. 20 in Benary, p. 79: 'Proportio quo vicinior aequalitati eo perfectior. Proportio quo remotior ab aequalitate eo imperfectior. Compare with Mizler/Fux 1742 (note 106).

I should always have liked to work toward the goal, namely, a well-regulated church music to the Glory of God and your will, and would have helped out as much as possible with the church music that is growing up in almost every township, and often better than the [Mühlhausen version of Harmony] Harmony fashioned here ...<sup>108</sup>

What did he mean? If he believed as Walther did that 'good Harmony will result not only when it is composed after the artistic rules, but above all when it is used in virtuous and God pleasing practices' he may have been implying that the practices in Mühlhausen had not been entirely virtuous or God-pleasing.<sup>109</sup> If so, his sentence contained a hefty innuendo that the authorities would not have missed.

How Bach's sons used the term when writing about their father may also be significant. A famous phrase in the 1754 obituary in the *New Bach Reader* translation reads:

If ever a composer showed polyphony ('Vollstimmigkeit') in its greatest strength it was certainly our late lamented Bach. If ever a musician employed the most hidden secrets of Harmony ('Harmonie') with the most skilled artistry, it was certainly our Bach'.<sup>110</sup>

Using the English words 'polyphony' and 'harmony' for the German 'Vollstimmigkeit' and 'Harmonie', the *NBR* translation suggests that the authors of the obituary were contrasting Bach's use of counterpoint and harmony. But I suspect this is a distortion. According to Fritsch's German-English dictionary, the word 'Vollstimmigkeit', meant 'harmony and unanimity', 'unity or one accord'. Whereas both 'vieltimmig' and 'vollstimmig' meant 'unity' and 'harmony',<sup>111</sup> only the word 'vieltimmig', not used in this passage, meant specifically 'with many voices or polyphony'.<sup>112</sup> I suspect that, rather than praising Bach's incomparable techniques of counterpoint and harmony, the obituary authors are praising the unity of Bach's compositional writing, which displays the unseen mysteries of Harmony in its fullest sense.

If ever a composer showed unity [1:1] in its greatest strength it was certainly our late lamented Bach. If ever a musician brought the most hidden secrets of Harmony (i.e. of that unity 1:1) into artistic practice, it was certainly our Bach.

<sup>108</sup> *NBR/32*, p. 57; *BDok I/1*: 'Wenn auch ich stets den Endzweck, nemlich eine regulirte kirchen music zu Gottes Ehren, und Ihren Willen nach, gerne aufführen mögen, und sonst nach meinem geringen vermögen der fast auf allen Dorschafften anwachsenden kirchen music, und oft besser, als allhier fasionierten harmonie möglichst aufgeholfen hätten ...'

<sup>109</sup> See note 107 above.

<sup>110</sup> 'Hat jemals ein Componist die Vollstimmigkeit in ihrer größten Stärke gezeigt; so war es gewiß unser seeliger Bach. Hat jemals ein Tonkünstler die verstecktesten Geheimnisse der Harmonie in die künstliche Ausübung gebracht; so war es gewiß unser Bach'.

<sup>111</sup> Fritsch, *Teutsch-Englisches Lexicon*, s.v. 'Vollstimmige 1. music (eine), a symphony, a harmony a consort of musick. 2. Eine vollstimmige wahl, a unanimous election; an election performed with one accord, or by all the votes united together'.

<sup>112</sup> *Ibid.* s.v. 'Vieltimmige music (eine) eine music mit vielen stimmen, a symphony or harmony; a consort, or concert, of musick. Ein vieltimmig musicalisch instrument, a polyphon'.

With the nuances of the words clarified, the sentences can be understood as a valuable testimony to Bach's use of proportional parallelism.

The idea of Bach spending time to create perfect proportions in his collections through the number of bars, particularly when the resulting Harmony would not be heard, runs counter to modern thought and to our accepted view of Bach. However, the demonstration above shows that Bach would have understood the layers of proportion in his collections as Mattheson's Harmony proper, and not as Harmony in music. The proportions in his works are a literal 1:1 or 1:2 design, just as the proportions of the Mercy Seat of the Incense Altar. There are many possible reasons why Bach introduced these proportions as he revised his works for publication. From the evidence presented above we can see that at this time and in this location, the proportions 1:1 and 1:2 were still considered the ideal of perfection. And if Bach believed in Harmony as Buttstett did, it is quite possible that he introduced the parallel proportions to ensure that his revised and published compositions would last not only for posterity, but for eternity.

The period between 1700 and 1770 was a turbulent time for German musicians. Progress in science and philosophy was challenging what had seemed for generations to be the gospel truth about the divine position of proportions in music, with all its implications for the status, calling and practice of the musician. In how many other regions of Europe, and for how long, this hangover from Greek, Judaeo-Christian and Renaissance thought remained active needs to be investigated. In the 1650s Athanasius Kircher spread a similar philosophy through Jesuit channels, and the Vienna-based Catholic theorist Fux repeated the philosophy in the 1720s. By the end of the eighteenth and early nineteenth centuries it seems that the word Harmony had begun to shed its spiritual implications. New time- and location-specific sources will be needed to ascertain how the word was understood at different times, across different confessional and political borders, and also by later Lutherans in the Leipzig area.

## Ways forward

'Harmony' is just one term. I could have used many different musicological terms to illustrate the process of recapturing the complexity of historical words and concepts. The word 'Canon' in Bach's time is rich with implications, as can be seen in the conflict documented in 1722 between Mattheson and the Wolffenbüttel-based Heinrich Bokemeyer (1679–1751).<sup>113</sup> Similarly, the implications of the phrase *Soli Deo Gloria* as it was used in Bach's time promises rich rewards. In a letter to Mattheson, Bokemeyer explains that many baptised Christians, duty bound to use their talents, knowledge and art primarily to serve God and his Glory, write *Soli Deo Gloria* at the end of their church compositions,

<sup>113</sup> Johann Mattheson, *Critica Musica. d.i. Grundrichtige Untersuch- und Beurtheilung, Vieler, theils vorgesaßten, theils einfältigen Meinungen, Argumenten und Einwürffe, so in alten und neuen, gedruckten und ungedruckten, Musicalischen Schrifften zu finden. ...* (Hamburg: Wiering, 1722), Part IV, §42, p. 286: 'diese blosser *doctrina de Canone*'.

while in their hearts they think *Soli Musico Gloria*, which in reality means *soli carni, mundi & diabolo victoria*.<sup>114</sup>

Proportional parallelism is just one historically-informed theory relevant to Bach's time and location. Many more theories are waiting to be discovered in the rare books that are now at our disposal to download and read at our leisure on many a connected device.<sup>115</sup> We are free to choose how to use this wealth of freely available books and treatises. My hope is that scholars will catch the vision for historically-informed methodology and co-operate across disciplines, institutions and countries to build an easily-accessible worldwide knowledge bank. It is difficult to know what shape and form this ideal could take. In a recent discussion article, I aired the idea of a possible Virtual World Bach (VWB) academy.<sup>116</sup> In response, Yo Tomita described his vision for the use of an e-Science Grid system to facilitate the dissemination of knowledge,<sup>117</sup> based on ideas he had published prophetically over a decade earlier.<sup>118</sup> A related idea is to create an accessible pool of information with a time, location and key concept tagline, which could enable the specialist and non-specialist to discover more accurately how a composer and his contemporaries thought and worked, and in turn provide new insights for Bach studies and performance.

In the past, the top prizes for scholarship went to those with photographic memories and the most accurate speed-reading abilities to process with maximum efficiency the available historical information. But the tools and rules of the game are changing fast. Not only are limitless cultural treasures freely available to anyone, regardless of title or institutional affiliation, there are now electronic resources that can facilitate the retrieval of knowledge, beyond the computing ability of the greatest human brain. The problem is that musicologists hold the key to unlocking these rich cultural sources that many performers and listeners wish to understand, but are unable to process. I believe that hope for our discipline lies in theory, and in how we use this key. The challenge, it seems to me, is to decide how to invest in research that will contribute to long-lasting results, to help renew and lay more accurate theoretical foundations that will better serve our discipline in a digital age. This will require creative thinking about the optimal medium of dissemination and international co-operation. Will this hope remain theoretical? Or will the renewal of our discipline come through music theory? It is our choice.

<sup>114</sup> Ibid., §26, pp. 344: 'Viele schreiben zwar hinter ihre gefertigte Kirchen-Stücke: *Soli Deo gloria*, Allein im Herzen heißt es oft: *Soli Musico [Cerei, Baccho, Veneri †] gloria*. Und in der That bleibet *soli carni, mundo & diabolo victoria*'.

<sup>115</sup> Granted that sources in every physical library remain largely unmined due to the limits of human lifespan, nonetheless both the physical factor of travel to libraries, and the restriction of limited opening hours are removed from the equation.

<sup>116</sup> Ruth Tatlow, 'Challenging Virtuality: A Personal Reflection', *Bach Notes: Newsletter of the American Bach Society*, 16 (Spring 2012), 5–6. Repr. *Understanding Bach*, 7 (2012), pp. 56–60.

<sup>117</sup> Yo Tomita, 'Challenging Virtuality: A Response to Ruth Tatlow', *Bach Notes: Newsletter of the American Bach Society*, 18 (Spring 2013), 3–6.

<sup>118</sup> Yo Tomita, 'Breaking the Limits: Some Preliminary Considerations on Introducing an e-Science Model to Source Studies', *Musicology and globalization: proceedings of the International Congress in Shizuoka 2002 in celebration of the 50th anniversary of the Musicological Society of Japan* (Tokyo: Nihon Ongaku Gakkai, 2004), pp. 233–7.